

# Amazon Interview Experience for SDE-1 (Off-Campus)

- Difficulty Level :\n[Hard](#)
- Last Updated :\n29 Apr, 2022

**Online Screening round(Jan 2022):** There was an online coding assessment in which you had two solve 2 coding questions in 70 min followed by behavioral pattern questions separately. Both coding questions were medium level and I was able to solve almost both of them. After one week of this round, I got a selection mail from their recruitment team for the next rounds. All the interviews were conducted on the Amazon Chime platform.

**Interview Round 1(Feb 2022):** The interviewer(SDE-2) started with a quick introduction about myself and then asked me to explain one of my projects, followed by some questions on that project. After the project discussion, we moved to the coding questions. I was asked to explain the best approach, write code for it and tell about space and time complexity.

- <https://www.geeksforgeeks.org/sort-array-converting-elements-squares/>
- <https://www.geeksforgeeks.org/delete-leaf-nodes-value-x/>

I was able to solve both questions in the given time and got good feedback from the interviewer. I got a call for the next round of interviews after one week.

**Interview Round 2(Feb 2022):** In this round, the interviewer(SDE-2) started with my introduction first then proceeded with one of the major projects and some discussion. After that, he started with coding questions with the same approach as followed in round-1.

- <https://www.geeksforgeeks.org/rat-in-a-maze-backtracking-2/>
- <https://www.geeksforgeeks.org/lowest-common-ancestor-binary-tree-set-1/>

I solved both questions with the best approach in very good time. The interviewer was impressed with my performance, so I got called for around 3 interviews.

**Interview Round 3(Apr 2022)- BAR Raiser:** This round was taken by the Product Manager. He started with a brief introduction and then jumped to coding questions. The same approach was followed for this round as well.

- <https://www.geeksforgeeks.org/reverse-level-order-traversal/>
- <https://www.geeksforgeeks.org/median-of-stream-of-integers-running-integers/>

I did both questions and then he proceeded to behavioral questions.

- Tell about a time, when you were able to complete the given task within a strict deadline.
- Tell about a time, when you overachieved results than what you had expected and what was the result.

**Verdict:** After a couple of days, HR called me to say you are selected and I accepted the offer letter.

## Tips:

- Practice standard coding questions, medium level from GFG and LeetCode.
- Get well versed with skills, projects, and work experience mentioned in your resume.
- Answer behavioral questions with the STAR approach and prepare these beforehand.\xc2\xao
- Amazon off-campus process sometimes takes more time as in my case, but it won\xe2\x80\x99t

be canceled in between.

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# Amazon Interview Experience

- Last Updated : \n28 Apr, 2022

**Round 1:** It was an online assessment. I don't remember the questions exactly but they were medium array questions.

**Round 2(Technical Interview):** Two coding questions were asked-

- <https://www.geeksforgeeks.org/next-smaller-element/>
- Given a file, a string, and an integer x. Let's say the string is at position y. Then you have to print all the strings from the (y-x) position to the (y+x) position. The string can appear more than once in the file. Give a space-efficient approach for this. I was able to explain my approach. The interviewer was quite satisfied with the approach

**Round 3(Technical Interview):**

- Return whether the number can be divided into any instances of 6, 9, and 20 or as a sum of all or some instances of all or any two.
- Find minimum element in O(1) time in the stack. Implement stack using linked list.

**Round 4(Bar raiser):**

- Firstly some managerial questions were asked and then one low-level design question was asked. The low-level design question was about the flight system.

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# Amazon Interview Experience for SDE (Dublin) Feb 2022

- Difficulty Level :\n[Medium](#)
- Last Updated :\n27 Apr, 2022

**Pattern:** Given in September 2021(don't lose hope. I got to interview 5 months after OA). 2 LC medium, behavioral questions, SDE simulation. 3 1-hour interviews(on the same day. 2 interviews without break and 30 mins break before the 3rd interview)

Each interview followed the same pattern:

- 30 mins behavioral/LP questions
- 30 mins code

**Interview 1:** 30 mins, behavioral/LP questions(about teamwork, how you helped a friend). Followed by the following question:

- given: int[] timestamps and double[] values. For each timestamp, we have values given and we want to aggregate(sum) those values to a resolution of 1 minute. Timestamps are given at a resolution of a second. (hashmap). In the above question, he wanted to give the resolution as a parameter and not hardcode it to 1 minute, and also instead of just aggregating he wanted me to calculate its average. (hashmap<Integer, double[]> where double[] holds sum on 1st index and freq on 2nd and at the end, we would do double[0]/double[1] to get avg.)
- can't remember but was an easy level only

**Interview 2:** Behavioral/LP questions(about customer satisfaction, tell me a time when you went out of your way to help someone, a time when you did something without asking your manager).

- system design. The question was we would be given some conditions and based on those conditions we had to filter out the files on a file system. (me being the stupid me and with no knowledge of system design I told them that you can have statements in a particular format and we can take arg as String[] instructions and then filter files but he said that was the unexpected solution(by that he meant unexpectedly stupid)). In the end, he told me to make an interface for each filter we wanted to apply).

**Interview 3:** Behavioral/LP questions(about diving deep). Then he asked following questions:\n

- isSameTree(Node a, Node b) -> self explanatory I guess
- find the missing number. (arr from 1 to N)
- find a complete 3-node binary tree inside a larger tree

Discussed space and time complexity for all.

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# Amazon Interview Experience for SDE-1 (On-Campus)

- Difficulty Level :\n[Hard](#)
- Last Updated :\n18 Apr, 2022

**Online round:** This round consisted of 7 easy debugging questions, 2 coding questions, a lot of behavioral questions, and mathematical aptitude questions. The coding questions for Amazon Online Assessment are almost always repeated. I don't remember the 2 questions I was given exactly but you might find similar questions here [https://algo.monster/problems/amazon\\_online\\_assessment\\_questions](https://algo.monster/problems/amazon_online_assessment_questions). Try to do both of them and answer behavioral questions seriously.

**Technical Interview 1:** The interviewer started with her introduction and then asked me to give my introduction. Then she directly jumped to coding questions.

- <https://www.geeksforgeeks.org/merge-k-sorted-arrays/>
- <https://www.geeksforgeeks.org/reduce-the-array-such-that-each-element-appears-at-most-2-times/>

For the first question, I was able to come up with a solution but that wasn't having the best time and space complexity. Upon being given a hint by the interviewer, I solved it with the best space and time complexity. I was able to solve the second question with the best time and space complexity in one go.

**Technical Interview 2:** Started the same as round 1, then jumped to coding.

- <https://www.geeksforgeeks.org/minimum-time-required-so-that-all-oranges-become-rotten/>
- <https://www.geeksforgeeks.org/given-sorted-array-number-x-find-pair-array-whose-sum-closest-x/>

Need to solve both the questions with the best time and space complexity. I was able to do the first one easily but for the second one I started with the two-pointer approach after sorting but he was trying to confuse me I guess so he said this might not work. Since I was not sure as well, so I gave him another approach of binary search for every number. He asked me to code the second approach. He was very helpful while I tried to dry run the second approach. The round lasted for about 1 hour 20mins. In the end, I was asked a behavioral question.\xc2\xab

Tell me about a time when you innovated/invented something?

**Bar raiser round:** Jumped straight to the coding part.

- \xc2\xab<https://www.geeksforgeeks.org/print-all-combinations-of-balanced-parentheses/>

I was able to do the above in the first 15 minutes so then he jumped to SQL. A SQL query based on join and count. Discussion on all the scheduling algorithms. What algorithms I would use for something like Cowin. Modified the questions to accommodate FCFS and priority-based scheduling in the Cowin app. Finally was asked a behavioral question. Tell me about a time you took a risk.? Then we discussed the extra-curricular mentioned in my resume.\xc2\xab

In all the rounds I was given the option to ask any questions at the end of the round, so have some questions prepared. Overall the process took more than 2 months. I'm not from CS/IT and my CPI is also not that great. I was not allowed to sit for a few companies because of my CPI but I did have faith in my skills.\xc2\xab

## Verdict: Selected

### Tips:

- DSA is important but a lot of questions are very common and are repeated. Refer to this for a starting point <https://www.geeksforgeeks.org/amazon-interview-questions/>
- I was not prepared for the theory part in the last round so prepare for those too.
- Work on communicating with your interviewer.
- Be thorough with everything you have mentioned in your resume.
- Believe in the process when you are working hard, things will work out eventually.

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# Amazon Interview Experience for SDE-1

- Difficulty Level :\n[Medium](#)
- Last Updated :\n24 Mar, 2022

**Online Round:** There were two coding questions with time complexity analysis.

1. Similar to nearest K coordinates from Origin. (Heap)
2. <https://www.geeksforgeeks.org/minimum-distance-to-the-corner-of-a-grid-from-source/>

In the end there were behavioral MCQs. After 3 days I got an email, which it mentioned that I had cleared the online assessment and will be having a quick connect with HR for further instructions.\xc2\xao

**Technical Interview 1:** This interview was taken by a SDE2. I was asked one easy question :

- There is an Olympic stadium which was filled by \xe2\x80\x98n\xe2\x80\x99 spectators of different nationalities who came in the stadium in a particular order. Find the 1st spectator to come in the stadium who was the only one from his nationality.

I gave the interviewer a solution of O(n) time complexity in few minutes. But interviewer wanted me to explore different data structures and tell him \xc2\xaoif possible, why and how can we use various DS in this problem and its time complexity and if not possible why not. He also asked me about the implementation of ordered and unordered maps and where to use what.\xc2\xao

Then he asked me few questions on Amazon Leadership Principles:

- Tell me about a time you got a feedback and how did you react to it.
- Tell me about a time you had to dive really deep to handle a crucial situation.

**Technical Interview 2:** This interview was taken by a SDM and it revolved around CS fundamentals. The interviewer asked me about the subjects I was comfortable with. I said OS/DBMS/OOP/DSA. He started with questions on OS related to scheduling algorithms, processes and threads, multithreading, deadlocks, caching. He asked whether I have implemented cache, I told him I have implemented LRU cache, he asked just the brief of the DS I used. Then asked questions on DBMS related to ACID properties, Normalization and its forms. Then he went with few questions on OOP related to polymorphism, virtual functions, inheritance. In the end he asked few questions on Amazon Leadership Principles:

**Technical Interview 3:** This interview was taken by a SDE2. I was asked the following questions :

1. \xc2\xao<https://leetcode.com/problems/jump-game/>
2. \xc2\xao<https://leetcode.com/problems/jump-game-ii/>
3. \xc2\xao<https://www.geeksforgeeks.org/connect-n-ropes-minimum-cost/>
4. \xc2\xao<https://www.geeksforgeeks.org/find-repeating-element-sorted-array-size-n/> with time complexity O(logn)

This interview continued for 1.5 hours.\xc2\xao

**Technical Interview 4:** This interview was taken by a SDM. The interviewer started by asking some situational questions around the leadership principles. He went really deep into the situations I mentioned. He focused on the minute details. Then he asked me about my projects, followed by a question on DSA.

- <https://www.geeksforgeeks.org/subtract-1-from-a-number-represented-as-linked-list/>

At the end he asked if I had any questions.

**Verdict:** After a week, I received a mail from the recruiter saying **you are selected.**

### Tips :\xc2\xab0

- Practice coding questions from GFG and Leetcode.
- Have knowledge of projects and work experience you have mentioned in your resume.
- Practice behavioral questions, don't take them lightly.
- Try to catch the hints the interviewer is giving.

### All the best!!

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# Amazon Interview Experience for SDE-1(Off-Campus)

- Last Updated : \n21 Mar, 2022

**Online round(Oct 2021):** There were 4 questions, 2 coding questions along with their algorithm with space and time complexity. Both coding questions were on the easier side. After 1 week of this round, I got a mail from their recruitment team and I have cleared this round.

**Round 1(Nov 2021):** The interviewer started with a quick introduction and then asked me to explain one of my projects and asked some questions on that project. Then we moved to the coding question.\xc2\xab0

- <https://leetcode.com/problems/longest-valid-parentheses/>
- <https://www.geeksforgeeks.org/find-the-row-with-maximum-number-1s/>

\xc2\xab0He first asked me to explain the approach and then write the code. I did both questions then he asked me the space and time complexities. In the end, he asked if I have any questions for him.

**Round 2(Nov 2021):** In this round too the interviewer started with introductions then she asked me some behavioral questions like \xe2\x80\x9cwhat do you do when you disagree with someone? \xe2\x80\x9d. Then she asked me about hash functions and some oops concepts. Finally, she asked me if I want to ask something.

**Round 3(Jan 2022):** This round was taken by SDM. He directly jumped to coding questions. He only asked me one question.

<https://leetcode.com/problems/step-by-step-directions-from-a-binary-tree-node-to-another/>

he asked me to explain the approach and then space and time complexity. I did the question but was told the wrong time complexity.

**Round 4(March 2022):** This round was also taken by SDM. \xc2\xab0He quickly jumped on my work experience and asked what are difficulties you have faced in your present job, then he asked why I want to join Amazon. Then he moved on to the coding questions.

<https://leetcode.com/problems/partition-to-k-equal-sum-subsets/>

He first told me to explain the approach, when I explained my approach then he told me to code. I could not do the question but my approach was somewhat similar to what was even in the GFG solution. Then like other interviewers, he asked me if I have any questions for him.

Verdict: After 3 days they called me to say **you are selected**.

## Tips:

- Practice coding questions from GFG and Leetcode.
- Have knowledge of projects and work experience you have mentioned in your resume.
- Practice behavioral questions, don\x9t take them lightly.
- Believe in yourself.

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# Amazon Interview Experience for SDE1 (8 Months Experienced) 2022

- Last Updated : \n15 Mar, 2022

**Online Round (Sept 2021):** Two coding questions, both were Easy-Medium Level (Don't remember the questions). I had to write the coding approach also along with the code. After this round, I got a call from a recruiter in January 2022, mentioning that I had cleared the Online Test earlier and will they will be moving forward with my candidature. All the interview rounds were taken virtually on Amazon Chime.

**1st Interview Round (Feb 2022):** The interview was taken by an SDE-II. The interview started with a quick introduction and then moved to coding questions. I was asked two coding questions, both were standard. One was Easy level and the other was Medium level.

- <https://www.geeksforgeeks.org/a-boolean-matrix-question/>

I was asked to optimize the space complexity after I initially explained my approach.

- <https://www.geeksforgeeks.org/connect-nodes-at-same-level/>

I had to give a solution that used O(1) extra space. I was expected to write fully functioning code for both the questions after I explained my approach.

**2nd Interview Round (Feb 2022):** The interview was taken by an SDE-II. The interview started with my introduction, projects I have worked on, previous experience, etc. After I told them about my projects, I was asked extensively about Relational Databases, APIs, How to maintain consistency over multiple databases, etc. This went on for around 20-25 mins. After this, I was asked one coding question and was expected to write Production Quality code.

- <https://www.geeksforgeeks.org/longest-palindrome-substring-set-1>

I was expected to write complete working code with all edge cases covered. After writing the code, I had to dry run through my code with input given by them. Both the interviews were taken on the same day and after 3-4 days, I got another mail with a schedule for the next rounds.

**3rd Interview (March 2022):** This interview was taken by an SDM who was part of the team they were hiring for. The interviewer was very friendly and gave an introduction about herself and the product on which the team was working. I was asked many behavioral questions which were based on Leadership Principles:

- A task that you recently did that you are proud of
- Any new thing that you learned recently
- How do you avoid distractions and maintain productivity, etc?

NOTE The interview mail had a few of their Leadership Principles mentioned under Competencies and the interview was based on those only.

**4th Interview (March 2022):** This was a Bar Raiser Round taken by an SDE-II. The interview started with a quick introduction. Two coding questions were asked. One was a Medium level standard question, another one was a hard question.

- <https://www.geeksforgeeks.org/queue-using-stacks/>

- After I told the time complexity of my approach, the interviewer asked to optimize the code so that the amortized time complexity can be reduced.
- I was asked to write a complete working code which was thoroughly done by the interviewer.
- <https://www.geeksforgeeks.org/find-m-th-smallest-value-in-k-sorted-arrays/>
  - After I gave an initial approach based on merging arrays, I was asked the complexity and the interviewer told me if I can optimize the time complexity.
  - Gave a lot of hints after which I was able to figure out the heap-based solution.
  - I was asked to write the code which was checked thoroughly by the interviewer.
- Two behavioral questions were asked after this which were based on Leadership Principles only.
  - Here again, there were some Leadership Principles mentioned in the mail, and the behavioral questions were based on those only.

**Verdict:** After a week, I got the call from the recruiter telling me that I was **selected**

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### Preparation Tips:

- Prepare for all Amazon standard questions as coding questions are mostly based on that.
- Keep speaking whatever you are thinking when trying to solve a coding question. The interviewers are helpful and will tell you if you are thinking in the right direction or not.
- Do consider all edge cases and special cases when writing code for a solution as they check for that.
- They expect Production Quality code, so use meaningful variable and function names and avoid using names like a, b, x, y, DP, etc.

**All the best!!**

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# Amazon Interview Experience for SDE-1 (Bangalore)

- Last Updated : \n15 Mar, 2022

**Round 1(Online assessment):** Consisted of 2 coding questions along with a code explanation for each. In code explanation, you need to explain your approach and the time and space complexity. I do not exactly remember the coding questions asked, but one was leetcode easy, and the other was leetcode medium.

**Round 2(Technical round 1):** The interviewer asked me to introduce myself. Then gave the following coding questions.

- Variation of [prerequisite tasks](#).
- A simple array-based question that used 2 pointer approach.

**Round 3(Technical Round 2):** The interviewer asked me to introduce myself. Then gave the following coding questions.

- Variation of this question: \xc2\xad<https://www.geeksforgeeks.org/partition-a-set-into-two-subsets-such-that-the-difference-of-subset-sums-is-minimum/>
- [Rotten oranges](#).

**Round 4(Bar raiser):** The interviewer asked me to introduce myself. Then he asked some questions from my resume.

- \xc2\xadTell me about the project mentioned in your resume.
- \xc2\xadVariation of stock buy and sell. Took more than 30 mins to understand and do this. The interviewer was not clear with his requirements. \xc2\xadFinally did this with recursion.

**Round 5(Managerial round):** The interviewer was very nice. He interacted with me very well. Asked several behavioral questions. Some were,

- Tell about a time when you did something challenging.
- Tell about a time when you did something innovative.

**Tips:** Keep practicing daily Practice from GFG and leetcode, that should be enough. Do not take behavioral questions lightly and practice them during the end days before your interview. Make 5-6 stories at least.

Verdict: **Selected**

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# Amazon Interview Experience for System Development Engineer (Exp \xe2\x80\x93 6 months)

- Last Updated : \n09 Mar, 2022

**Round 1 (Phone Screening):** It was a screening round to gauge my resume and also check if I was worth the further interview process for the role. The interviewer started with a basic introduction followed by some questions on the projects mentioned on my resume. Post that, I was asked a few coding questions mentioned below:

1. <https://practice.geeksforgeeks.org/problems/boundary-traversal-of-binary-tree/1>
2. <https://practice.geeksforgeeks.org/problems/add-1-to-a-number-represented-as-linked-list/1xc2xa0>

It was followed by a trouble-shooting question: What will you do if your website is unable to fetch the data from your SQL database?

**Round 2 (Tech Round 1):** This was the first Technical Round and after a quick exchange of introduction, the interviewer straight away dived into some coding questions:

1. <https://leetcode.com/problems/best-time-to-buy-and-sell-stock-ii/> (further modifications were made and was asked how different my approach would be)
2. <https://www.geeksforgeeks.org/search-an-element-in-a-sorted-and-pivoted-array/>

Then I was asked some questions on OOP and DBMS concepts. One question which stood out in the interview was to compare how similar/different would the structure of a class be when compared with an entity from the ER Model.

This round ended with a behavioral question based on ownership & customer obsession:

Mention a time when you went above and beyond what was required of you at work?

**Round 3 (Hiring Manager):** The interviewer started with a quick introduction and asked numerous things about all the technologies and projects that were mentioned on my resume. Then we started with the coding questions:

1. Sort alphabets in such a way that all the alphabets which are more than 1 in number in the given array appear first with their frequency of alphabets to follow and all those alphabets that are single appear at the end in the same order of their appearance. eg: {b, f, a, c, g, a, f, b, b, d} -> {b, b, b, f, f, a, a, c, g, d}
2. Find any subsequence from an array whose sum is zero (The array contains both positive & negative numbers)

Then it was time for some behavioral questions:

1. Tell me about the coolest thing that you have done so far.
2. Tell me about a time you had to do some work under a strict timeline and did not have the time to consider all the options.
3. Tell me about a time when you had a difficult problem to solve.

**Round 4 (Tech Round 2):** This was the second technical round and after a brief introduction the interviewer directly stepped into some coding questions:

1. A modified version of <https://www.geeksforgeeks.org/check-balanced-parentheses-expression-o1-space/>
2. <https://leetcode.com/problems/two-sum/>

This was followed by a troubleshooting question: What would you do if the webpage that you are currently on blacks out? This was more of something like a discussion with each of the answers I say leading to a new question.

This was followed by a behavioral question:

1. Tell me about a time when you had to do a lot of research to get your work done.

**Round 5 (Bar Raiser):** A bar raiser is typically your make or breaks as per Amazon. The interviewer here will have a veto at the time of debrief whether to not select you. The bar raiser generally is on various Amazon LP and will also check on your weak topics from your earlier rounds. My interview majorly comprised of some behavioral questions and a healthy discussion about my resume.

1. Mention a time when you had to react quickly in your work. What was the outcome?
2. Mention when you had to dive deep into something to get your work done. I had answered based on a college experience of mine & then the interviewer asked me to think of something that I had done during my work experience as well.
3. Talk about a time when you had taken a challenging project. What was the challenge and how did you overcome it.

After 2 days I got an email from my recruiter telling me that I had qualified the interviews.

#### Some tips:

1. Be honest with your interviewer and do not mention anything that you do not know on your resume.
2. Prepare some real-life scenarios for every Amazon LP that is there. It will always help you to make note of all the scenarios from your work experience and build a story out of it.
3. Make it a point to clarify the question once asked and also state all your assumptions well in advance.

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## Amazon Web Services \xe2\x80\x93 Introduction to Amazon EKS

- Last Updated :n11 Mar, 2022

**Amazon Elastic Kubernetes Service(ECS)**, is a fully managed service that you can use to run **Kubernetes** on Amazon Web Service. *Kubernetes* is open-source software that enables you to install and manage applications at a high scale.\xc2\xao



Its characteristics are:

- **Availability:** In order to ensure high availability Kubernetes executes and scales itself to various AWS AZs.
- **Strength:** Kubernetes automatically scales itself to avoid loads and unwanted control plane issues.
- **Scalability:** It also works with various AWS services to provide security in applications.
  - Amazon ECR for container images
  - Elastic Load Balancing for load classification.

**AWS Fargate:** It is a serverless compute engine for containers. It works with *Amazon EKS* \xc2\xao or *Amazon ECS*.

### Amazon EKS Sections :

Amazon EKS organization contains the following sections: clusters, nodes, and networking.

1. **Clusters** \xe2\x80\x93 Clusters are consists of the control plane and EKS nodes.
2. **EKS nodes** \xe2\x80\x93 Kubernetes nodes run with EC2 in your organization\xe2\x80\x99s account of amazon web service. Each cluster is defined by a unique certificate to schedule portable storage using three ways:
  - Self-Managed Nodes
  - Managed Node Groups
  - Amazon Fargate
3. **Amazon EKS Networking**-EKS operates in a Virtual Private Cloud (VPC) so that it can activate all resources to an existing subnet in a network.

### Advantages of AWS EKS :

Following are the advantages of using Amazon EKS:

1. EKS automates load distribution and parallel processing better than any DevOps engineer could.
2. EKS uses VPC networking (explained above).
3. Supports EC2 spot instances using managed node groups that follow best practices.
4. Your Kubernetes assets integrate smoothly with AWS services if you use EKS.
5. EKS allows you to run tools easily.

## Amazon EKS Control Plane Architecture:

Each cluster runs only one Kubernetes control plane. The control plane mainly consists of two API servers and three `etcd`. The `etcd` is used for storing Kubernetes data. It manages the scalability of load to have high performance. It identifies the unwanted part of the control plane and can remove it. The control plane cannot be accessed by any other AWS accounts or clusters except for the authorized user.

## Working of Amazon EKS:

- Firstly, create an Amazon EKS cluster in the console.
- Now launch the EKS nodes and place all the workloads on AWS Fargate.
- After your cluster is ready, the user can easily communicate by using different types of tools.
- Users can now manage the workloads over Kubernetes.

## Pricing of EKS:

The user can pay for both long-term service and short-term service. Long-term is a little bit cheaper than the other one because it sets a commitment from 1-3 years.

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# Amazon Interview Experience (Off-Campus) 2022

- Difficulty Level :\n[Medium](#)
- Last Updated :\n28 Feb, 2022

There is four round of interviews.

**Round 1 (Online Assessment Test):** The online test consists of 2 coding questions to be completed in 70 minutes. The questions are of medium difficulty level and I was able to solve both of them in under 40 minutes.

One of them was a variant of this question <https://www.geeksforgeeks.org/find-maximum-minimum-sum-subarray-size-k/>

**Round 2 (Technical Interview):** My interviewer asked me to introduce myself and then jumped into coding questions :

- **Question 1:** [Check if the given BST is a sum tree](#)

I gave him an optimized solution and discussed its time complexity.

- **Question 2:** You will start at a point (X, Y) on a grid of dimensions (M, N). Return the no. of ways in which you can cross the border of the grid in exactly k steps.

I initially gave a brute force solution. Later I was able to optimize my code. My interviewer was very friendly he helped me here and there if they were any errors in my code. Overall I was able to solve both the questions in under 50 minutes. Later we had a casual discussion on projects and work culture at Amazon for a few minutes.

**Round 3 (Technical Interview):** He gave an introduction about himself and asked me to do the same. Later he asked me a coding question:

- **Question 1:** [Find the maximum sum subtree which is also a BST in a binary tree. \xc2\xab0](#)

I solved the question and explained my approach and the time complexity of my solution to him. He then showed me multiple code snippets and asked me to calculate time complexities for each of them. He asked to calculate the time complexity of the [Sieve of the Eratosthenes](#) algorithm.

**Round 4 (Final Round/Bar Raiser):** We had a discussion on my previous projects for around 30 minutes. He then asked me a few behavioral questions:

- Tell me about a time when you have exceeded expectations.
- Tell me about a time when you have delivered late? If yes what was the reason for the delay?
- Why do you want to leave your current company?
- Why Amazon?

He then asked me to write production-quality code for the following question-  
<https://www.geeksforgeeks.org/sort-the-strings-according-to-its-frequency/>

**Final Result: Selected.**

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# Amazon Interview Experience for SDE-1 (Off-Campus)

- Difficulty Level :\n[Easy](#)
- Last Updated :\n23 Feb, 2022

I applied for 6 months internship at Amazon in October. I gave Open Access(OA) in November, and in December I got a mail from Amazon that they are considering me for FTE and my interview processes will happen between Jan to April.

**Online Assessment:** Typical amazon OA with five sections.

Two simple coding questions were asked. Didn't exactly remember the questions but one was easy and one was of medium difficulty. Both were greedy problems.

**Round 1:** Two coding questions

1. To find the path between two nodes in a binary tree.
2. To find the number of turns that are required in the above path if we start from one node to another.

I was able to write an optimized code for 1st. For 2nd part, he only discussed the approach as I already took some time in the first part. He seemed satisfied with my approach.

**Round 2:** Two coding questions along with some behavioral questions. \xc2\x96 \xc2\x96 \xc2\x96 \xc2\x96

1. Min k elements of an array variant. Along with it, he asked what if there is a large chunk of data being passed and at the same time, we want to print the min elements. He said how will you handle that case. He said to think outside DSA. I said it is can be done through semaphore by which either we can print data or find min k elements.
2. Minimum platform required for a station if we are given arrival and departure time.

I was able to solve the first question optimally.

In the second question, I gave him optimal code but he asked for spaced optimized approach in which time complexity can be compromised. I somehow managed to give a solution that was not the same which I later found on GFG but I think my approach was correct and he was satisfied.  
\xc2\x96

\xc2\x96 **Round 3:** Two coding questions along with a discussion on projects.

1. <https://takeuforward.org/data-structure/implement-queue-using-stack/>
2. <https://www.geeksforgeeks.org/search-an-element-in-a-sorted-and-pivoted-array/>

I was not aware of the amortized method of implementing queue. I gave a typical solution which always took linear time. But after some hints from him, I was able to come up with an optimal solution in the first go. I was scared that I required a lot of hints to solve this question but I think he was impressed by the way I approached the question and formed the logic there only unlike already knowing the optimal solution.\xc2\x96

I gave the optimal solution for the second question with some errors here and there which was pointed out by him. \xc2\x96 \xc2\x96

**Verdict: Selected!!**

## Tips:

- As you can see none of my interview rounds were perfect. So don't lose your composure and try to build a connection with the interviewer.
- Think out loud so that he/she may help if you are stuck.
- Practice standard DSA and keep revising them.

**All the best!!**

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# Amazon Interview Experience for SDE-1 (Off-Campus)

- Difficulty Level :\n[Easy](#)
- Last Updated :\n07 Mar, 2022

I got a mail from an Amazon recruiter for the SDE-1 role. I applied through the Career Site.

**Online Assessment round:** 2 coding questions were asked. (don't remember exactly), I have got an MD editor and also to explain my approach to questions and time complexities. You need to solve both questions to get a call for an interview.

**Round -1 (Coding round):** Around 3 weeks later, I received a call from the recruiter that I have 2 interview rounds in the next week on the same day. This round was taken by a senior SDE-2. We introduced ourselves and then he directly jumped into coding questions.

1. Move zeros to last (<https://www.geeksforgeeks.org/move-zeroes-end-array/>)
2. Remove k consecutive chars (<https://www.geeksforgeeks.org/reduce-the-string-by-removing-k-consecutive-identical-characters/>)

We first discussed the approaches to solve the problems and then when I reached the optimized solution to the problem. He asked me to write the code and discussed the space and time complexities.

**Round 2 (Coding round):** After one hour on the same day, I had the next round of interviews. It was taken by two senior SDE-1. They asked me to introduce myself.

1. I didn't exactly remember the question but it was an application-based modified DFS of graph problem.
2. Count ways to reach nth stairs. (<https://www.geeksforgeeks.org/count-ways-reach-nth-stair/>)

I have explained both the question in 45 minutes. They asked me if I have any questions for them. I have asked them to tell me their experience.

After around a week later, I received a call that I have the next round of interviews on the next day.

**Round 3 (Bar-raiser round):** This round is taken by a senior manager. We faced a lot of bandwidth issues from his side.

1. He asked me about my recent projects. The approach, the challenges I faced, and their solutions.
2. He asked me some behavioral questions too like Tell me about a time you made a blunder (Technical and personal both).
3. He also asked me what are questions asked in my previous rounds. and then gave me this problem.
4. Reverse zig-zag tree traversal. (<https://www.geeksforgeeks.org/zigzag-tree-traversal/>)

This round didn't go so well. I was nervous about the next round. The gap between this round and the next round was 15 minutes but this round lasted 10 minutes longer. So, I got only 5 minutes between both rounds.

**Round 4 (Bar-raiser round):** This round was also taken by a senior manager having about twelve years of experience. We started with the Introduction.

1. This was similar to the questions asked in the previous round. He asked me about my recent

- projects. The approach, the challenges I faced, and their solutions. This time he went in-depth.
- 2. Also some HR questions, Why do you want to leave your current company?
  - 3. Why Amazon?
  - 4. Maximum sum path (<https://www.geeksforgeeks.org/find-maximum-path-sum-in-a-binary-tree/>)

A week later I received a call that I got selected.\xc2\xab0

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# Amazon Interview Experience for SDE-2

- Last Updated : \n21 Feb, 2022

All the interview rounds happened virtually through Chime.

## Round 1 (Online Assessment):

Two coding questions (medium level) were given along with behavioral questions and project simulation questions. In project simulation questions, you will be given a project scenario and you will be asked to select the right decision (architectural and design) for the scenario.

## Round 2 (Face 2 Face [virtual] Problem Solving/Data Structures) :

This round is a coding round but the interviewer is more interested in my current project and asked questions in depth about the project and its design and then asked me to do design a Document transmission service.

- Question 1
  - I was asked to implement a Document Transmission service where the clients can upload one or more documents of any size and based on the client\xe2\x80\x99s requirements the service needs to transmit the document to a designated channel (mail, WhatsApp, etc\xe2\x80\x99a6) at the designated time.
    - Asked high-level design for the service
    - APIs for the service
      - Asked the details for the APIs
      - Contract for client level configurations for each transmission channel
      - Scheduler configurations
    - Asynchronous and Synchronous \xc2\x96 implementation of the service
    - Request and Response payloads at all the stages
- Question 2
  - Asked leadership questions related to Customer Obsession and Ownership

## Round 3 (Face 2 Face [virtual] Design round) :

This round is a design round with the hiring manager. The round started with questions on the project and the design of the current project

- Question 1
  - Asked leadership questions related to Ownership and Customer obsession.
- Question 2
  - I was asked to implement a News Aggregator (Google News)
    - The News Aggregator should be able to **fetch and receive** news from public and private sources
    - It should be able to crawl feed from RSS \xc2\x96 feed of different sites
    - It should have minimum latency and show the latest news to the user
    - System design for the same

## Round 4 (Face 2 Face [virtual] Problem Solving/Data Structures) :

This round is a coding round.

- Question 1

- Asked leadership questions related to Customer obsession and Bias for action
- Question 2
  - Given a directory with log files and max storage limit for the directory, insert new log files into the directory. If the limit is already exceeded, remove the log file with the maximum size and insert the news file
    - Gave max heap based approach and the interviewer is satisfied with the approach and asked to write the solution
- Question 3
  - There are many chickens on a farm where each chicken can be a child AND/OR parent of another chicken. If a chicken is infected with the virus, how many units of time does it take for all the chickens to be infected with the virus. A chicken can infect virus to its immediate parents and children in one unit of time
    - Gave BFS based solution.
    - Traverse through the graph and count one unit of time for each generation

## **Round 5 (Face 2 Face [virtual] Problem Solving/Data Structures) :**

This round is a coding round\|xc2\|xa0

- Question 1
  - Asked leadership questions related to Insist on higher standards
- Question 2
  - Asked a question similar to the chickens\|xe2\|x80\|x99 problem from the previous round, told it was asked in previous rounds so changed the question
- Question 2
  - You are given a list of employer and employee relations. Return a map of each employer and all the employees reporting to him
    - Gave DFS based solution and the interviewer is ok with it

## **Round 6 (Bar raiser) :**

- Question 1
  - Asked leadership questions related to Insist on higher standards.
- Question 2
  - [Longest Consecutive Subsequence](#) in O(N)

Verdict: Selected\|xc2\|xa0

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# Amazon Interview Experience for SDE-1 (Off Campus)

- Difficulty Level :\n[Medium](#)
- Last Updated :\n15 Feb, 2022

I was contacted by Amazon recruiter for SDE-1 role.

**Coding round:** 2 simple coding questions were asked . (don't remember exactly), you need to solve both questions to get a call for interview.

**Round 1 (Coding Round):** This round was taken by senior SDE-2. She ask me to give introduction about my-self and then directly jumped into coding questions.

1. Find the diameter of binary tree (<https://www.geeksforgeeks.org/diameter-of-a-binary-tree/>)
2. Find the number of islands (<https://www.geeksforgeeks.org/find-number-of-islands/>)

I was asked to write production-level code for both of questions.

I was able to solve both of questions within 30 mins. After that she asked questions from my resume and at the end she gave me one more coding question and i was asked to just describe approach.

- (<https://www.geeksforgeeks.org/the-celebrity-problem/>).

I was able to solve in  $O(n^2)$  but it was not optimised.\xa0

**Round -2(Hiring Manager Round):** This Round started with introduction.

## Question asked:

1. Meaning of my name(keyur)
2. Projects are done in previous organisation\xc2\xa0
3. Why you want to leave current Company
4. Why Amazon?
5. Have you resolved any production-level bugs? If yes, what was it and how you approached
6. Write Database query to find customer who has ordered in both Sep and Oct.
7. In the end, he gave me one coding question to  
solve\xc2\xa0(<https://codereview.stackexchange.com/questions/181606/determine-if-simple-arithmetic-expression-is-valid>)

## Round 3 (Coding Round):

1. Minimum platform required (<https://www.geeksforgeeks.org/minimum-number-platforms-required-railwaybus-station/>)
2. Similar to Kth smallest number(<https://www.geeksforgeeks.org/kth-smallestlargest-element-unsorted-array/>)

I was able to solve both the questions. In the end, he asked me behavioral questions. Was there any task that you were not able to complete within the time duration? If yes. What was your mistake and what did you learn from that?

**Round 4 (Bar Raiser Round):** For the first 30 mins, It was mainly around discussion around my projects. After that, he asked me to design a flight booking portal.

1. What are Apis that you will define

## 2. What database you will use.

After a week, Got a call from the recruiter that I was selected.

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# Amazon Interview Experience (On-Campus)

- Difficulty Level : \n [Medium](#)
- Last Updated : \n 10 Mar, 2022

**ONLINE ASSESSMENT \xe2\x80\x93** This Round consists of 4 sections and you need to perform well in all of these.

**A) DEBUGGING (20 mins) \xe2\x80\x93** You will be given around 7 debugging questions which will be extremely simple. You only have to correct the code to pass all test cases.

**B) CODING (70 mins) \xe2\x80\x93 Questions asked were**

1. Based on Sorting ( Can\xe2\x80\x99t find problem link )
2. <https://www.geeksforgeeks.org/count-number-of-substrings-with-exactly-k-distinct-characters/>

**C) WORK STYLE ASSESSMENT (20 mins) \xe2\x80\x93** There will be a lot of behavioral questions you will have to answer it by moving a slider to the left/right to indicate how well it describes you. You need to answer these questions with care as well as they are equally important for amazon.

**D) APTITUDE & REASONING (35 mins and 24 ques) \xe2\x80\x93** There is enough time and no negative marking, so solve all the questions.

## INTERVIEWS \xe2\x80\x93

**ROUND 1 \xe2\x80\x93** Started with introduction and then we started off with dsa problems

1. <https://www.geeksforgeeks.org/find-height-of-a-special-binary-tree-whose-leaf-nodes-are-connected/>
2. <https://leetcode.com/problems/maximum-number-of-weeks-for-which-you-can-work/>

The first one was straightforward. For the second, the interviewer gave me hints, i was initially thinking in wrong direction but he helped me to get back on the track and i ended up finding the solution and also coded the same.

**ROUND 2 \xe2\x80\x93** Started with introduction and then we discussed about one of my projects (around 4-5 mins only), and then we moved to dsa questions

1. <https://www.geeksforgeeks.org/find-a-tour-that-visits-all-stations/>
2. <https://www.geeksforgeeks.org/connect-nodes-at-same-level/>

Both the questions were standard questions, for the first question, i first started with an O(n^2) approach, then we went to O(n) with extra space and at last i was told to optimize the space as well, so i did it and also coded the space-optimized version. For the second one, i discussed only one approach and was asked to code it.

**ROUND 3 \xe2\x80\x93** Started with introduction, followed by project discussion in-depth, a lot of behavioral type question based on my project and also i was asked to show a working demo of features that i have implemented, after that we were left with 30 \xe2\x80\x93 35 mins, so only one dsa question was asked.

1. [lru-cache](#)

I was asked to write the production level code in one go, so i started with my implementation using the concept of classes and was explaining each and every line in detail, after completing the implementation, were some follow up questions about making this code more modular, and then i was asked to find out and rectify the bugs in my code if any, i was only asked to discuss about the rectifications that i can do.

**Note:** No questions were asked from theory subject like OS, OOPS, DBMS, CN but it totally depends on the interviewer, and you can be asked anything, so don't ignore these subjects as well.

### **TIPS**

1. Ask clarifying questions a lot, and always discuss your approach first, don't jump directly to the coding part.
2. Assume that you can be asked anything from your resume in detail.
3. Thoroughly go through amazon leadership principles as most of the behavioral questions were asked from that only or i can say is you will be judged on these principles in every round.

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# Amazon Interview Experience for SDE-1 (Off-Campus)

- Difficulty Level :\n[Hard](#)
- Last Updated :\n03 Feb, 2022

Status: 2021 graduate

Work: SDE1

Applied through amazon job portal.

**Round 1(Online Coding Test):** 2 questions, 120 minutes

- Explanation with Time complexity and Space complexity
- Array Manipulation question (Not remembered actually)
- Rotting oranges (LC: medium)

**Round 2(Technical Interview):** No discussion on projects direct coding question were given

1. You are riding a bus, suppose in the East direction (bus direction will not change). Given the capacity of bus \xe2\x80\x98c\x98 and an array such that [numberOfPassengers, PickUpLocation, DropLocation]. Check if you can drop all the passengers at their destinations. Return true or false

eg:

- a. Bus capacity, c=4\r\n[[3,1,5], [2,2,6]] -> Return false

Explanation: Bus capacity is 4. You pick 3 passengers at location 1, then your bus capacity will be  $4-3=1$ . Now at location 2, two more passengers are waiting but your capacity is 1 so you can't pick 2 passengers. Hence, dropping all passengers at their destinations is not possible.

- b. Bus capacity, c=11\r\n[[3,2,7], [3,7,9], [8,3,9]] -> Return true

Explanation:

Capacity:11

At location 2: Passengers = 3, Capacity =  $11-3=8$  (They will be drop at location 7)

At location 3: Passengers = 8, Capacity =  $8-8=0$  (They will be drop at location 9)

At location 7: 3 people will be dropped, Capacity =  $0+3=3$ ,

Passengers=3, New capacity =  $3-3=0$  (They will be drop at location 9)

At location 9: All 11 passengers will be dropped ( $8+3$ ).

Hence, you pick all passengers and drop them all. Return true.

2. Given an array, count pairs such that  $(arr[i]+arr[j]) \% 60 == 0$

eg. [30,20,150,100,40]\r\nOutput: 3

Explanation :  $(30+150) = 180 \ \% 60 == 0$  , Count=1

$(20+100) = 120 \ \% 60 == 0$  , Count =2

$(20+40) = 60 \ \% 60 == 0$ , Count =3

### Round 3(Technical Interview):

- Discussion on project
- Similar question with some twist: The twist is instead of sum I need to return maximum product (tree also contains negative nodes {Keep in mind: Product of two negative nodes can give maximum positive product) <https://www.geeksforgeeks.org/maximum-sum-nodes-binary-tree-no-two-adjacent/>
- Reverse nodes in K-groups, LC: Hard

Round 4:

1. Basic introduction
2. Project discussion
3. Operating system question on Internal and external fragmentation, best fit, next fit, worst fit, first fit, paging, virtual memory, different page replacement algorithms.
4. DBMS- Discussion on Normalisation and its type (1NF, 2NF, 3NF, BCNF)

### Round 5:

- Introduction
- Discussion on projects

2 coding questions:

1. Print all pair of elements with minimum absolute difference in the array. Something like this  
 $\backslashxe2\backslashx80\backslashx93$  [https://www.geeksforgeeks.org/sum-minimum-absolute-difference-array-element/#:~:text=For an element x present,abs is the absolute value.&text=Sort the array of size n](https://www.geeksforgeeks.org/sum-minimum-absolute-difference-array-element/#:~:text=For%20an%20element%20x%20present,abs%20is%20the%20absolute%20value.&text=Sort%20the%20array%20of%20size%20n).
2. Given an array, count pairs such that  $(arr[i]+arr[j]) \% 60 == 0$

eg. [30,20,150,100,40] \r\nOutput: 3

Explanation:

$(30+150) = 180 \ \% 60 == 0$  , Count=1

$(20+100) = 120 \ \% 60 == 0$  , Count =2

$(20+40) = 60 \ \% 60 == 0$ , Count =3

(Same question as asked in round 2)

I was not able to solve one coding question in 3rd round. Was expecting a positive result because the last 2 rounds were awesome \xe2\x80\x99. but luck was not with me \xf0\x9f\x99\x82

Upvote if you like :))

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# Amazon Interview Experience 1.5 years Experienced

- Difficulty Level :\n[Hard](#)
- Last Updated :\n07 Feb, 2022

I was contacted by an amazon recruiter for the SDE-1 role.

**Coding Round:** Two questions were asked to be solved in 105 minutes in which we have to write time complexity and algorithm as well.

1. Given a string which has only \xe2\x80\x98(\xe2\x80\x98, \xe2\x80\x98)\xe2\x80\x99, \xe2\x80\x98[\xe2\x80\x98, \xe2\x80\x98]\xe2\x80\x99, and \xe2\x80\x98?\xe2\x80\x99, Determine numbers of ways by which string can be split into two substrings such that characters in both substrings can form a balanced string. You can replace the question mark with any other 4 characters.

```
Input - "[(??) [??["\nOutput - 2
```

2. Given an array that has the amount of rainfall for ith day and an integer k, return indexes(start from 1) of days which are ideal for camping. A day is said to be ideal if the rainfall is in decreasing order prior to considered day and then in increasing order following k days from considered day.

```
Input - day = [3, 2, 2, 2, 3, 4], k = 2\nOutput - [3, 4]
```

I got a call after a week to schedule the first 3 rounds. All 3 rounds happened on the same day.

## Round 1(Technical):

1. <https://www.geeksforgeeks.org/find-a-triplet-in-an-array-whose-sum-is-closest-to-a-given-number/>
2. <https://www.geeksforgeeks.org/shortest-path-in-a-binary-maze/>
3. Tell me about time when you dive deeper into understanding a technology that solves a great customer problem and How your solution was better than the previously implemented solution.

## Round 2(Technical and Managerial):

1. <https://www.geeksforgeeks.org/lru-cache-implementation/>
2. How to implement threading in C++
3. How HTTPS protocol works
4. How HTTPS is passed to application via server
5. Detailed Project discussion.
6. Tell me about a time when you solve a major frequent issue that was causing a lot of trouble to customers by observation.
7. Tell me about a time when you have made sacrifices while solving a customer problem
8. How indexing and partitioning helps in optimizing DB queries

## Round 3(Technical):

1. Merge 3 sorted \xc2\xaaarrays with removed duplicates
2. <https://www.geeksforgeeks.org/merge-k-sorted-arrays/>
3. <https://www.geeksforgeeks.org/subtract-two-numbers-represented-as-linked-lists/>
4. Any scenario when you have controversy with someone with team or business or customer is unsatisfied.

#### Round 4(Bar-Raiser):

1. Given a grid , with persons standing, some are empty spaces, you need to remove minimum number of people to sure that now two people are adjacent to each other(only horizontal and vertical are adjacent).
2. Given a list of heights of building whose width is 1, find max area enclosed by buildings. Ex [5,2,4,1,1,1,2] ans is 7. <https://www.geeksforgeeks.org/largest-rectangle-under-histogram/>
3. Tell me about a time when You believer something that is quite challenging for you?
4. Tell me about when you took calculated risk?
5. Tell me about a time when you work on tough feedbacks from customer and what to do you learn from it?

All the Best

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# Amazon WOW Internship Interview Experience 2021

- Difficulty Level :\n[Easy](#)
- Last Updated :\n24 Jan, 2022

I applied for a 2-month SDE internship role in amazon through the amazon wow program 2021, This program is an initiative by Amazon to promote women in tech.

**Round 1(17th August 2021):** It was an online assessment on the Mettl platform that was around 1.5hrs long. The 9 sections of this test were: Hands-on coding, Data Structures, Algorithms, Networking, Software Testing, Software Methodologies, Linux, OOPs, and Operating Systems.

**Round 2(25th August 2021):** It was an online assessment on the SHL amazon platform.

**Note:** The paper had sectional timing.

1. Debugging section \xe2\x80\x93 we needed to solve 7 debugging questions in 20 min.
2. Coding test \xe2\x80\x93 It has 2 medium-level questions. The difficulty level of questions varies from set to set.
3. Worklife assessment \xe2\x80\x93 It has around 25-30 questions related to work ethics and perspective towards life.
4. Reasoning ability section \xe2\x80\x93 It has 24 questions that need to be answered in 35 mins (the questions were easy).

**Interview:** My interview was scheduled for 10th October, 24hrs before that I got the interview link. I was super excited at the same time nervous; the interviewer was very understanding and gave me time to get comfortable.\xc2\xab0

- She started by asking a warmup question find-next-greater-number-set-digits. First, I gave a naive approach to the solution i.e., generate all the permutations of the number and then figure out the one which is just greater than the given number. she asked me to optimize the solution and then I came up with an  $O(N \log N)$  approach after that he asked me to code it.
- The second question was to check whether a given binary tree is BST or not. I gave a naive approach (second approach in this article).
- Then she asked me to optimize if I can, and I came up with an efficient approach (3rd approach in this article)which required the tree traversal only once she was satisfied and asked me to code, I wrote the code and had a dry run to ascertain its correctness.
- She was satisfied with my approach and way of explanation.
- I was satisfied with my performance and was expecting a positive response, on 20th October I got the selection mail.

**Tips** \xe2\x80\x93 Be confident, think loud, always dry run your code before you tell the interviewer that you are done and luck plays a vital role so fingers crossed.

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# Amazon Internship Interview Experience | Off-Campus 2021

- Difficulty Level :\n[Hard](#)
- Last Updated :\n24 Jan, 2022

**Interview Difficulty Level:** Hard

**Round 1(Resume Shortlisting):** Applied on 9 Oct 2021, got test link around 10 Nov 2021.

**Round 2(Online Assessment):** There were four sections namely, code debugging, coding, workstyles assessment, and aptitude. The code debugging section consisted of 7 code snippets that were faulty and we had to debug them and find the correct output (20 minutes).

- The coding section consisted of two coding problems and the difficulty was of Leetcode Easy-Medium level (70 minutes).
- <https://practice.geeksforgeeks.org/problems/smallest-distant-window3132/1>
- And other ques I don't remember.
- The work styles assessment was based on the leadership principles of Amazon. There was no time limit for this section.
- The last section was based on aptitude and reasoning questions. There were 24 questions and we had 35 minutes to solve them.

**Round 3(Technical Interview):** The interview started with a brief introduction about myself and what projects and internships I had done. There were three panelists interviewing me. The interviewers directly jumped into coding and I was given three coding questions in phases that I had to solve. The questions were of Leetcode medium-hard difficulty. This round lasted for about 75 min.

1. <https://www.geeksforgeeks.org/count-number-of-occurrences-or-frequency-in-a-sorted-array/> (Had to solve for the best complexity)
2. <https://leetcode.com/problems/course-schedule/> ( dry run stepwise )
3. Third Ques was based on binary search which i didn't find anywhere.

**Round 4(Tech + HR):** This round went for about an hour and 20 minutes. The interviewer was friendly and we had a brief discussion about one project that I made using Machine learning. Then he gave 3 coding questions to solve. The questions were based on DP and trees. I had a good time discussing my approach. He seemed satisfied. He also asked follow-up questions based on the primary questions.

1. <https://www.geeksforgeeks.org/burn-the-binary-tree-starting-from-the-target-node/> (Hard Que took me almost 30 min to solve with best possible complexity)
2. <https://leetcode.com/problems/interleaving-string/> ( 1-Dp approach was required for better complexity)
3. Since I have spent soo much time on the first two questions interviewers didn't go further with the third ques. (They asked thought process for on what factors someone should approach a typical DSA problem by either recursion or iteratively.)

**HR Ques:**

1. Why should we hire you? (STAR approach is required )
2. Give me your two biggest weaknesses (STAR approach)
3. How are you planning on improving your weakness and what have you done till now?
4. Any Questions for us (I asked a lot of them )

The Final Results were announced after a long wait of 24 days. I was one among the selects.

**Now I would like to highlight some of my preparation tips that helped me crack this interview:**

- The very important parameter according to me for selection is your communication skills. It all boils down to the fact of how you express your thought process and ideas. Even if you know a lot of stuff, but aren't able to communicate dynamically, it may lead to rejection.
- Be very clear about your Projects and Work Experience(If any).
- In case you have Work-Ex, then 3 Projects would be sufficient & in case you don't have any Work-Ex, 5 Projects would be sufficient.
- Thorough understanding of the fundamentals related to the project Domain(In my case it was ML & Data Science), Tech stack. Focus more on relating the theoretical concepts with real-life examples.
- Don't miss out on anything you have mentioned on your resume!
- Don't neglect the Core Subjects(DBMS, OOPS, CN, OS) on the cost of Coding. (Core Subjects plays a very vital role in the clearance of the Technical Rounds).
- For Core Subjects, you can completely rely on GfG and Youtube Videos. Focus more on Important Topics first.
- Focus more on Important DSA rather than Complex & Tough DSA. Once you are confident about Important ones, you can switch to Tough Ones.
- Practice more Easy & Medium Level Questions, rather than focusing only on hard ones.
- Strike a balance between Core Subjects, Projects, Coding. (VERY IMP).
- Make your own notes and revise them multiple times. The only mantra to crack any Interview is doing revision multiple times. (I revised the core subjects minimum of 8-10 times so that I can answer them fluently during interviews.) Having conceptual clarity is more important than the number of topics.
- Don't panic if you are not able to answer any questions, just stay calm and try your level best to answer.

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# Amazon WoW Internship Interview Experience for Data Engineer 2021

- Last Updated : \n24 Jan, 2022

Amazon WoW is a networking platform for all women engineering students in India that connects them to Amazon leaders, recruiters, and the broader Amazon community.

Online test was scheduled on august 2021

**Round 1(Online test on Mettl Platform):** It consists of 1 coding question and 40 MCQs covering topics like DSA, OOPs, DBMS, Linux, Networking, Software Engineering, etc.

- I was able to pass few test cases from the coding questions and answered MCQs.
- After few weeks I got an email that I have been shortlisted for Data Engineer interview.

## Round 2(Technical Interview \xe2\x80\x93 50 mins):

- The interview happened in amazon chime platform
- Tell me about yourself
- Elaborate the projects mentioned in resume
- He gave me three tables and explained their relation. I was asked to write SQL queries to get results from the table. The questions can be easily answered if we are good at joins.
- A python question related to file handling
- An array question based on merge sort

## Round 3 (HR + Technical Interview \xe2\x80\x93 50mins):

- Tell me about yourself
- Had discussions about projects in resume
- Challenges faced during the projects
- How did you overcome the difficulties
- The first 30 mins of interview was mainly focused on behavioral questions
- Then he asked me a SQL questions which can solved by aggregate functions
- Another SQL questions which can be solved by window function

## Verdict \xe2\x80\x93 Selected

Be strong in SQL joins and get familiarized in window functions. \xc2\xad

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# Amazon Interview Experience for SDE (Off-Campus)

- Difficulty Level : \n[Hard](#)
- Last Updated : \n24 Jan, 2022

I attended a hiring event on *Codechef* for Amazon in March or April \xe2\x80\x99. I managed to solve nearly 50% of the questions. So, after nearly 6 months, I got a mail that my profile has been shortlisted from Codechef.

After attending the preparation session for 3-4 times, finally they scheduled my interviews. There were 3 rounds scheduled on the same day.

**Round 1(70 mins-Taken by SDE):** The interview started off with my introduction and I was asked some questions about my role at previous job. After that I was asked 2-3 questions on leadership principles. \xc2\xa0\xe2\x80\x93>20mins\xc2\xa0

After this, the interviewer asked 2 coding questions.

1. <https://www.geeksforgeeks.org/decode-string-recursively-encoded-count-followed-substring/>. I discussed the stack approach with the interviewer and after that I coded the solution.
2. <https://www.geeksforgeeks.org/check-if-a-binary-tree-is-subtree-of-another-binary-tree/>

After suggesting brute force approach for this, I had to take several hints from the interviewer for the optimal solution(by comparing inorder traversals of both trees). But, finally I got it right and the interviewer was satisfied.

**Round 2(60 mins \xe2\x80\x93 Taken by Technical Program Manager-II):** Again, the interview started off with my introduction and I was asked some questions about my role at previous job. After that I was asked another 2-3 questions on leadership principles. \xc2\xa0\xe2\x80\x93>20mins

After this, the interviewer asked 2 coding questions.

1. <https://www.geeksforgeeks.org/fix-two-swapped-nodes-of-bst/>. I discussed the approach with the interviewer first. It took some time for me to explain this: When there is more than one pair in inorder traversal which does not follow the property,  $in[i] < in[j]$ , which one to swap and why?
2. This one was a very specific question. But, after thinking for a while, I realized it was a basic heap question.

I was able to code both questions within time(40 mins), although I realized I gave the wrong TC for one of the questions.\xc2\xxa0

**Round 3(60 mins \xe2\x80\x93 Taken by Manager, Software Development):** It started with my introduction. After that, it moved to my CV and I was asked to choose a project mentioned in my resume. I was asking various questions about it, but I didn\xe2\x80\x99t go through my project before interview, so I wasn\xe2\x80\x99t able to answer even some of the most basic questions, I was really embarrassed. After that, they said some leadership principles. All of this took 30 mins.

After this, I was asked one coding question

1. <https://www.geeksforgeeks.org/largest-sum-contiguous-subarray/>. Along with with the sum, I also had to print the elements included in the sum. I tried to do this in single traversal only using Kadane\xe2\x80\x99s. But, the time ran out and I failed to explain the approach properly. I felt terrible after this round and I felt like I botched it.\xc2\xxa0

But, I think because my first 2 rounds were good, I got call for the last round.

**Round 4(45 mins \xe2\x80\x93 Taken by Manager, Software Development):** It started with my introduction and I was asked some basic questions about my role at current company. After that, I was asked one coding question:

1. Given a string containing of digits, print in the below manner:

```
11 -> one 1\r\n21 -> two 1's\r\n3233 -> three 2's, and three 3's
```

I discussed the approach and coded the solution.

After this, I was asked 2-3 more questions on leadership principles. Overall, I think this round was pretty chill.

**Verdict: Selected**

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# Amazon Internship Interview Experience | Off-Campus 2021

- Last Updated : \n12 Jan, 2022

**Interview Difficulty Level:** Hard

**Round 1(Resume Shortlisting):** Applied on 9 Oct 2021, got test link around 10 Nov 2021.

**Round 2(Online Assessment):** There were four sections namely, code debugging, coding, workstyles assessment, and aptitude. The code debugging section consisted of 7 code snippets that were faulty and we had to debug them and find the correct output (20 minutes).

- The coding section consisted of two coding problems and the difficulty was of Leetcode Easy-Medium level (70 minutes).
- <https://practice.geeksforgeeks.org/problems/smallest-distant-window3132/1>
- And other ques I don't remember.
- The work styles assessment was based on the leadership principles of Amazon. There was no time limit for this section.
- The last section was based on aptitude and reasoning questions. There were 24 questions and we had 35 minutes to solve them.

**Round 3(Technical Interview):** The interview started with a brief introduction about myself and what projects and internships I had done. There were three panelists interviewing me. The interviewers directly jumped into coding and I was given three coding questions in phases that I had to solve. The questions were of Leetcode medium-hard difficulty. This round lasted for about 75 min.

1. <https://www.geeksforgeeks.org/count-number-of-occurrences-or-frequency-in-a-sorted-array/> (Had to solve for the best complexity)
2. <https://leetcode.com/problems/course-schedule/> ( dry run stepwise )
3. Third Ques was based on binary search which I didn't find anywhere.

**Round 4(Tech + HR):** This round went for about an hour and 20 minutes. The interviewer was friendly and we had a brief discussion about one project that I made using Machine learning. Then he gave 3 coding questions to solve. The questions were based on DP and trees. I had a good time discussing my approach. He seemed satisfied. He also asked follow-up questions based on the primary questions.

1. <https://www.geeksforgeeks.org/burn-the-binary-tree-starting-from-the-target-node/> (Hard Que took me almost 30 min to solve with best possible complexity)
2. <https://leetcode.com/problems/interleaving-string/> ( 1-Dp approach was required for better complexity)
3. Since I have spent soo much time on the first two questions interviewers didn't go further with the third ques. (They asked thought process for on what factors someone should approach a typical DSA problem by either recursion or iteratively.)

**HR Ques:**

1. Why should we hire you? (STAR approach is required )
2. Give me your two biggest weaknesses (STAR approach)
3. How are you planning on improving your weakness and what have you done till now?
4. Any Questions for us (I asked a lot of them )

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# Amazon Interview Experience (On-Campus)

- Difficulty Level :\n[Hard](#)
- Last Updated :\n12 Jan, 2022

Amazon visited our campus for FTE recruitment in Aug, 2019.\xa0

**Round 1(Online Screening Round):** There were different sets of questions. Each set had two coding questions and mcqs based mostly on c/c++.\xa0 My coding questions were 1) <https://www.geeksforgeeks.org/counting-inversions/> and 2) finding the number of derangements.\xa0

**Round 2(F-2-F):** Started straight away with ds algo stuff. First question:\xa0<https://www.geeksforgeeks.org/k-maximum-sum-combinations-two-arrays/>. Second question was based on topological sort of a directed graph. I had to write code for both questions. Attention was given to code quality and edge cases.\xa0

**Round 3(F-2-F):** Again, the focus was on ds algo.\xa0

- At first, was given a stream of transactions and the task was to find the kth most expensive transaction. A few approaches were discussed, and then I had to code up the best approach I could come up with.\xa0
- The second question was\xca0<https://www.geeksforgeeks.org/find-number-of-islands/>. Had to code it up. The third question was a modification on finding the intersection between two linked lists. There were other small questions in between, specially pertaining to Priority Queue and its implementation.\xa0

**Round 4(F-2-F):** Given a hierarchical structure, where a node calls another node for a service, and that node may call other node(s) for a service, find the longest time taken for two \xe2\x80\x98leaves\xe2\x80\x99 of this hierarchical structure to communicate with each other. This was just a modified version of finding the longest leaf to leaf path in a tree-like structure.\xa0

- The second question:\xa0<https://www.geeksforgeeks.org/nuts-bolts-problem-lock-key-problem/>\xa0
- 3rd question was finding the largest island in a grid.\xa0
- There were small other questions as well, like the previous round.\xa0
- Had to code everything.\xa0

**Round 5(Bar Raiser):**\xa0

- Discussion about CV.
- Why I am sitting for coding profile, being from a non CS/IT background.\xa0
- Then, was asked to implement LRU Cache. Special notice was taken on the code.\xa0
- Then, was asked the trapping rain water problem, but do it with O(1) space and single pass. Had to code up the solution.\xa0

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# Amazon Interview Experience for SDE-1 | Off-Campus 2021

- Last Updated : \n12 Jan, 2022

Role: SDE1

Source: naukri.com

## Online Round: 2 Coding Question with Time Complexity Analysis

1. Similar to nearest K coordinates from Origin. (Heap)
2. Little bit of modification of 2-Sum, but I did in Brute Force way and it passed.

In the Last behavioural based MCQ Test.

After 5 days I got an email in which it mentioned that I will be having a quick connect with HR for Rounds Process.

## Round 1:

- Quick Intro
- BST Iterator <https://leetcode.com/problems/binary-search-tree-iterator/> (Medium)
- Basic Calculator <https://leetcode.com/problems/basic-calculator/> (Hard)
- I Solved both but for last one my code was not 100% complete as we were running out of time but I gave the approach and final Time Complexity.

## Round 2:

- Paint House [https://www.lintcode.com/problem/515/?\\_from=%5Bx25e2x80x98ladderxe2x80x99&fromId=%5Bx25e2x80x9916xe2x80x99\]](https://www.lintcode.com/problem/515/?_from=%5Bx25e2x80x98ladderxe2x80x99&fromId=%5Bx25e2x80x9916xe2x80x99]) (Premium on Leetcode, so attaching free Resource)
- BFS on Grid, The question was like you are given 2D Matrix with 0,1 and a starting coordinate from that you have to cover all 1's and tell how much minimum time it will take to do that and if any 1 is left return -1.

## Round 3(Behavioural, taken by SDM III):

- This Round was like brief Introduction, and that started with LP Questions
- A Deadline you missed.
- A Goal that you thought you will not be able to achieve but you did.
- A most Challenging Task you did.
- CS Fundamentals Questions, like difference between HTTP vs HTTPS, Thread vs Process, Memory Leak in Java, Classfull IP and its all Classes.
- After about a week I got an email that I am having my Last Round Next Week.

## Round 4:

- A Small Introduction
- LP Questions
- 1 Coding Questions (Now for this I want to share that Interviewer itself was in doubt, the question was like you are given a Binary Tree with atmost 2 child and every child can have atmost 2 Parents, and you have to find a Maximum Path Sum from Root to Leaf)
- I asked what is the structure of that Node, So he said what you think. I wrote this:

# Java

- So he said Yes this is, (Now I was confused how come this can have links with Parent, maybe I am not able to get!)

## Sample Test Case:

- So, 1st Solution that I gave was normal dfs based that I try every path from root till every Leaf and in that method I take current\_sum and one global\_sum and update it accordingly.

## Java

```

int ans = 0;
List<Integer> finalAns;
private void dfs(TreeNode root, int csum, List<Integer> ds)
{
if(root==null) return;
if(root.left==null && root.right==null)
{
if(csum > ans)
finalAns = ds;
}
ds.add(root.val);
dfs(root.left,csum+root.val,ds);
dfs(root.right,csum+root.val,ds);
ds.remove(ds.size()-1);
}
public List<Integer> solve(TreeNode root)
{
this.ans = 0;
this.finalAns = new ArrayList<Integer>();
dfs(root,0,new ArrayList<Integer>());
return this.finalAns;
}

```

- Time Complexity: O(more than N) I was not able to figure out but it is I guess  $O(N^2)$
- So, he told me to optimise it I told him that I will do something Post Order type Traversal and from left and right I will bring answer. But he told me that this will not work, So I was not able to find something better.

Conclusion: Be Confident in LP Questions, discuss Brute Force first.

**Verdict:** Rejected

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# Amazon Interview Experience for SDE-1

- Difficulty Level :\n[Medium](#)
- Last Updated :\n11 Jan, 2022

Applied through HackerEarth coding challenge for 6 months+ experienced

**Round 1(Hackerearth Round \xe2\x80\x93 Coding Challenge):** Two questions were asked to solved.

1. Based on the priority queue
2. Based on the map

I solved both questions within 40 minutes.

After few weeks got a call for scheduling interview rounds.

**Round 2 (Technical Interview):** Two questions were asked, along with the behavioural questions.

1. First question was based on the binary search
2. Second was a DP problem with binary tree.

I was able to solved both the problems, some questions were asked from the previous experience.

**Round 3(Technical Interview \xe2\x80\x93 Taken by a SDE-2):** Two questions were asked, along with the behavioural questions.

1. First question was similar to the problem <https://www.geeksforgeeks.org/next-greater-element/>
2. Second question was a DP problem.

The questions were followed by questions from previous experience and behavioural questions.

**Round 4(Technical Interview \xe2\x80\x93 Taken by a Senior SDM):** Two questions were asked

1. First question was OOPs concept based question, I was given with some features which needed to add in the amazon alexa, and asked to implement the generic and maintainable code, using different oops concept.
2. Second question was similar to <https://www.geeksforgeeks.org/the-celebrity-problem/>, They have provided a single array of people and a function knows(a,b) which return true if a knows b otherwise false.

Some more questions from resume, past experiences, college projects and behavioural based \xc2\x96 were asked

**Round 5(Bar Raiser Round \xe2\x80\x93 Taken by SDE-2):** Two questions along with some resume based and behavioural questions.

1. First question was based on LRU based, the question was framed in a way that you first need to understand the question itself, and ask different questions.
2. Second question was similar to the problem <https://www.geeksforgeeks.org/find-top-k-or-most-frequent-numbers-in-a-stream/>.

**Tips:\xc2\x96**

1. Thoroughly go through amazon leadership principals as most of the behavioural questions were asked from that only.
2. Be vocal throughout your interview process, incase if you are going in the wrong direction interviewer might help you.
3. Ask questions to clarify the questions that were asked
4. Always be prepared to dry run the code you have written as interviewer might not code in same language as you do.

After giving all the rounds, a few days later got informed that i was selected.

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# Amazon WoW Internship Interview Experience 2021

- Last Updated :n09 Jan, 2022

Difficulty Level: \xc2\xd0Medium-Hard

## Online Assessment 1:

- Date \xe2\x80\x93 17/08/2021
- Mettl Platform \xc2\xd0 \xc2\xd0 \xc2\xd0 \xc2\xd0 \xc2\xd0
- Time \xe2\x80\x93 90 minutes \xc2\xd0
- 9 Sections \xe2\x80\x93 41 Questions \xc2\xd0 \xc2\xd0 \xc2\xd0 \xc2\xd0
- 1 Coding questions + 40 Objectives \xc2\xd0 \xc2\xd0 \xc2\xd0 \xc2\xd0

**MCQ Topics** \xc2\xd0(5 Questions Each Section) \xc2\xd0 \xc2\xd0 \xc2\xd0 \xc2\xd0

1. Data Structures and Algorithms \xc2\xd0 \xc2\xd0 \xc2\xd0 \xc2\xd0
2. Networking \xc2\xd0 \xc2\xd0 \xc2\xd0 \xc2\xd0
3. Linux \xc2\xd0 \xc2\xd0 \xc2\xd0 \xc2\xd0 \xc2\xd0
4. Pseudocode \xc2\xd0 \xc2\xd0 \xc2\xd0 \xc2\xd0 \xc2\xd0
5. SQL Queries \xc2\xd0 \xc2\xd0 \xc2\xd0 \xc2\xd0 \xc2\xd0
6. Databases \xc2\xd0 \xc2\xd0 \xc2\xd0 \xc2\xd0 \xc2\xd0
7. Software Testing \xc2\xd0 \xc2\xd0 \xc2\xd0 \xc2\xd0 \xc2\xd0
8. Software Engineering \xc2\xd0 \xc2\xd0 \xc2\xd0 \xc2\xd0 \xc2\xd0

**Online Assessment 2:** Date \xe2\x80\x93 25/08/2021

4 Sections \xc2\xd0 \xc2\xd0 \xc2\xd0 \xc2\xd0

1. Code Debugging (6 Code Snippets) \xe2\x80\x93 20 minutes \xc2\xd0 \xc2\xd0 \xc2\xd0 \xc2\xd0
2. Coding Test (2 Coding Questions) \xe2\x80\x93 70 minutes \xc2\xd0 \xc2\xd0 \xc2\xd0 \xc2\xd0 \xc2\xd0
3. Workstyles Assessment \xe2\x80\x93 20 minutes \xc2\xd0 \xc2\xd0 \xc2\xd0 \xc2\xd0 \xc2\xd0
4. Reasoning Ability (24 Questions) \xe2\x80\x93 35 minutes \xc2\xd0 \xc2\xd0 \xc2\xd0 \xc2\xd0 \xc2\xd0

**Interview Round:** Date \xe2\x80\x93 10/10/2021

Started with the Introduction. Without wasting any second, he came to the coding part \xc2\xd0 \xc2\xd0 \xc2\xd0 \xc2\xd0 \xc2\xd0

He asked a coding question- \xc2\xd0 \xc2\xd0 \xc2\xd0 \xc2\xd0 \xc2\xd0

1. Given an array of strings. Print first non-repeating string from the stream of strings in the given array.

Input -> ["a", "b", "c", "b", "a"] \r\nOutput -> ["a", "a", "a", "a", "c"]

I gave 3 different approaches \xc2\xd0 \xc2\xd0 \xc2\xd0 \xc2\xd0 \xc2\xd0

**Approach 1:** Brute Force \xc2\xd0 \xc2\xd0 \xc2\xd0 \xc2\xd0 \xc2\xd0

He asked me to optimize it. \xc2\xd0 \xc2\xd0 \xc2\xd0 \xc2\xd0 \xc2\xd0

**Approach 2:** I gave the second approach by using a queue and a map. \xc2\xd0 \xc2\xd0 \xc2\xd0 \xc2\xd0 \xc2\xd0

But queue operations needed O(n) time so he asked to optimize it and do it in constant time by using some other linear data structure. \xc2\xd0 \xc2\xd0 \xc2\xd0 \xc2\xd0 \xc2\xd0

**Approach 3:** I didn\x9t know the solution prior so I kept thinking about it. After discussing and thinking a lot I came up with a solution. \xc2\xd0 \xc2\xd0 \xc2\xd0 \xc2\xd0 \xc2\xd0

I explained my approach by using a doubly-linked list and a map. Then he asked me to code it down. \xc2\xd0 \xc2\xd0 \xc2\xd0 \xc2\xd0 \xc2\xd0

I gave the whole working code.

I was finally hired for the Internship at Amazon. I would like to thank GeeksforGeeks which helped me a lot in my preparation.

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# Amazon Interview Experience for SDE-1 | 1 Year Experienced

- Last Updated : \n28 Dec, 2021

Applied through employee referral. Got an email for giving coding test within couple of days\nc2\x00

## Round 1(Coding Round):

1. First question was similar to <https://www.geeksforgeeks.org/find-k-closest-points-to-the-origin/>
2. Given an array of integers, find number of pairs of elements who have sum less than value \xe2\x80\x9cK\xe2\x80\x9d.\xc2\x00

Tip: Solve coding round questions using brute-force solution.

In a couple of days, got a call for scheduling interview rounds.

## Round 2(Technical Interview 1): Taken by Senior SDE with 3-4 years experience.\xc2\x00

1. Questions on current work and leadership principles.
2. Find the smallest value in array larger than a given value X. (Discussed Heap solution as well as Sorting + Binary Search solution, asked to code either of the two from scratch (implement heap data structure or merge-sort/quick-sort) as both will have worst case of O(nlogn) )\xc2\x00

## Round 3(Technical Interview 2): Taken by SDE II with 2+ years experience.

1. Questions of current work and tech stack currently working on.
2. <https://www.geeksforgeeks.org/sort-linked-list-already-sorted-absolute-values/>
3. <https://www.geeksforgeeks.org/sliding-window-maximum-maximum-of-all-subarrays-of-size-k/>

After this round, received a mail for further rounds

## Round 4(Hiring Manager):

1. Detailed discussion around current work, technologies worked on, reasons to look for change and other managerial based questions.
2. <https://www.geeksforgeeks.org/snake-ladder-problem-2/>\xc2\x00

(Initially started solving using DFS by finding all paths but after discussion, landed on BFS solution)

## Round 5(Bar Raiser):

1. Detailed discussion around current work and experience
2. <https://www.geeksforgeeks.org/median-of-stream-of-integers-running-integers/>

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# Amazon Internship Interview Experience | On-Campus 2021

- Difficulty Level :\n[Easy](#)
- Last Updated :\n28 Dec, 2021

Amazon came for a pool campus placement on October 2021 for the 6 months Software Development Engineer Role. We had a total of 3 rounds (1 Online Coding on Amazon\xe2\x80\x99s Assessment Portal + 2 Technical Interviews). \xc2\xao

Online test was given by around 1000 students.\xc2\xao

**Round 1(Online Test):** The first round comprised of 4 sections online questions including aptitude, logical, Coding questions, and technical portions (Test Duration: 90 mins):

- Debugging: We had to choose a language and debug up to 7 questions most probably. Codes were very basic like sorting, etc. I completed 6 of them.
- Coding: There were two medium-hard level questions.
- Work-style Assessment: Just try to answer as an ideal employee. Make sure your answers don\xe2\x80\x99t contradict each other.
- Aptitude: Around 25 questions.

Only 118 students were selected for the next round.

**Round 2(Technical Interview 1):** Round was on Amazon Chime(Test Duration: 75 min)

1. [Find diameter of the tree](#): I answered it, we discussed edge cases and I coded it. I think he found out that I have already done it before so then he asked to do it instead of when it's not necessary to end the path at leaf nodes. It was a simple change so I did that as well.
2. [Count Inversion](#): I was struggling to come up with a solution, so he told me to think about sort algorithms. I did and got it right eventually. I coded it and we were good to go.

He was constantly asking me to speak out my thoughts. It is very important so that interviewer can understand your problem-solving skills and help you wherever needed.

Not sure how many were selected because they got informed privately, I think the number can be around 30 to 50.

**Round 3(Technical Interview 2):** It happened the next day. It was also on Amazon Chime(Test Duration: 65 min)

1. [Find n\xe2\x80\x99th node from the end of a Linked List](#): I answered using 2 traversals. Then he asked to do it in single traversal. After some time I got it. We discussed edge cases and I coded it.
2. [Find shortest distance between 2 points in a matrix, where 2 points can be anywhere](#): I gave recursion as an approach, he asked me to give time complexity, which I told  $O(4^m \cdot 4^n)$  but I think it was wrong. Then he asked me to optimize it, and I gave him DP solution. He asked how I was sure about it, I told that it follows optimal sub-structure and overlapping sub-problems, he seemed convinced. Time was running out so he told me quickly code it but\xe2\x80\x99a
3. In between he told me to stop and asked me about projects. I told him about my Instagram Clone made in Django, so he asked why Django. I told him the reasons. Then he asked whether I have any questions, I went blank and so I asked a stupid question about meaning of 6M Intern which he answered and we were good to go.

## Tips:

- Amazon just want to see whether you have good problem-solving skills. If you show them, you are in.
- Do DSA religiously from the beginning. Use GFG, Leetcode, InterviewBit, and Youtube. These are more than enough. Doing Competitive Programming is very helpful.
- **For frequently asked questions:** Make sure you know the best approaches and edge cases, and write the whole code instead of just reading the solutions.
- Start from brute force and keep on optimizing when asked, in order to show you haven't already done the question before.
- Speak while coding or thinking.
- Repeat the question how you have understood it.
- Find edge cases
- Use STAR method for behavioral questions.

**Verdict:** Result came out after 10 days. 13 students were selected. 2 were from my college. I was one of them ; )

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# Amazon Interview Experience (On-Campus)

- Difficulty Level :\n[Hard](#)
- Last Updated :\n10 Jan, 2022

## Online Assessment

- 7 easy debugging questions
- A medium-hard difficulty Tree question.
- An easy-medium difficulty Array question.
- 24 general aptitude questions of varying difficulty levels.
- 45-50 work style based assessment

**Technical Interview Round 1:** The interviewer gave an introduction about himself and asked me for my introduction. Then he directly moved on to the questions.

Two questions were asked

- <https://leetcode.com/problems/search-a-2d-matrix/>. I gave 3 approaches of varying time complexities from  $O(nm)$  to  $O(\log n + \log m)$ . It's always better to provide all the approaches to the interviewer from brute force to fully optimized than giving the most optimized solution straight away.
- <https://leetcode.com/problems/longest-zigzag-path-in-a-binary-tree/>. I struggled a bit on this question but kept thinking out loud. As there was less time left, the interviewer gave me a hint and I was easily able to explain and code the solution after that.

**Technical Interview Round 2:** The interview started in a similar way as the 1st round with introductions and then moving on to the questions.

Two questions were asked in this round too

- **It was a simple graph coloring based problem and I easily explained my approach and coded the solution.**
- **Find the length of the longest path present in a graph. The path can start from any node and end at any node.** This question was another way of asking for the diameter of the graph. I explained my approach and coded the solution working in  $O(n)$  time. A good explanation of the approach can be found here <https://leetcode.com/problems/minimum-height-trees/discuss/923071/Python-Find-diameter-using-2-dfs-explained/754368>

In both the rounds after every approach discussed, the interviewer asked me about the time and space complexities.

## Tips:\xc2\xa0

1. Don't be intimidated by the interviewer, he/she is there to help you reach the solution.
2. Thinking out loud is *very important*.
3. Try to convert the interview into a discussion.

**Verdict:** About 300 students applied for the online assessment out of which 59 got the interview calls, finally 10 got the internship offers and I was one of them.

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# Amazon WoW Internship Interview Experience 2021

- Last Updated : \n28 Dec, 2021

I applied for the **2 month SDE intern** role through Amazon WoW drive 2021. There were a total of 3 rounds for people who applied for 2 months internship program and 4-5 rounds for people applying for 6 months internship program.

**Round 1:** It was an online test on Mettl Platform of 1 hr 30 mins, consisting of 1 coding question and 40 MCQs, 5 MCQ questions in each section where sections included Data Structures, Algorithms, SQL queries, Linux, Networking, Software Engineering.

- The coding question was a greedy one for me which I was able to complete. After a few days, I got a mail that I have been shortlisted for the second round.

**Round 2:** It was an online test conducted on the AMCAT platform, consisting of 4 sections.

- The first section (20 minutes) was the debugging section and consisted of 7 very easy code snippets which had to be debugged to get the desired output. I was able to do all.
- The second section (70 minutes) was the coding section and consisted of 2 coding questions. The first question was an Easy level greedy problem for me and the second was a hard-level dynamic programming problem.

1. <https://leetcode.com/problems/maximum-units-on-a-truck/>
  2. Given a string str that represents a large number, the task is to find the minimum number of segments the given string can be divided such that each segment is a prime number in the range of 1 to 106. Example: Input: str = "1234567890" Output: 3 (<https://www.geeksforgeeks.org/split-the-given-string-into-primes-digit-dp/>)
- The third section (20 minutes) was Workstyle Assessment. It was kind of a survey.
  - The last section (35 minutes) consisted of Logical Reasoning questions.
  - I did the debugging and the Logical Reasoning section completely. And was able to do both the coding questions as well. After around 15 days, I got a mail that I have been shortlisted for the interview round.

**Round 3(Interview Round):** It was a 1-hour interview on Amazon Chime.

- The interviewer started with his introduction and then, asked for mine.
- Then, he straight away gave me a coding question. It was a medium-hard level question based on Binary Tree which was Given a binary tree, find the maximum path sum. The path may start and end at any node in the tree. (<https://www.geeksforgeeks.org/find-maximum-path-sum-in-a-binary-tree/>)
- The interviewer seemed satisfied with my approach and asked me to code the solution in any desired language.
- Then, he gave me another coding problem which was based on Dynamic Programming. I was able to convince the interviewer with my approach and coded the solution correctly for the second problem also. Given a text and a wildcard pattern, implement wildcard pattern matching algorithm that finds if wildcard pattern is matched with text. The matching should cover the entire text (not partial text). The wildcard pattern can include the characters '?' and '\*' which matches any single character and matches any sequence of characters (including the empty sequence). (

[https://www.geeksforgeeks.org/wildcard-pattern-matching/ \)](https://www.geeksforgeeks.org/wildcard-pattern-matching/)

- The last question was to find the number of times a sorted array was rotated. ( [https://www.geeksforgeeks.org/find-rotation-count-rotated-sorted-array/ \)](https://www.geeksforgeeks.org/find-rotation-count-rotated-sorted-array/)

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# Amazon Interview Experience for SDE-I (On-Campus)

- Difficulty Level :\n[Medium](#)
- Last Updated :\n21 Dec, 2021

**Online Assessment Test:** This test consists of 4 sections.\xc2\xab0

1. Debugging(There will be 7 problems and code. You have to debug that code(both logic and syntax)).
2. 2 Coding questions (Medium level)
3. Behavioral (Very Important) \xe2\x80\x93 Most of the candidates thought this as a formality. Don\xt do that, Amazon give importance to its leadership principles and values. Do read it once before test.
4. Mcqs \xe2\x80\x93 (Aptitude and Cs fundamentals)

There were 35 students selected for interviews.

**Interview Round-1:** After the introduction, he asked me 2 DSA questions.

1. <https://www.geeksforgeeks.org/program-to-count-number-of-connected-components-in-an-undirected-graph/>\xc2\xab0  
I gave him 2 approaches. Firstly using normal DFS and second one using DSU data structures. He asked me to code it by second method.
2. Given an integer array of size n. Find number of ways to select a proper subsequence of size of K, such that it makes a number(basically subsequence shouldn\xt start with 0 and it should be of size of K ). First I gave him the approach with simple math (select a index as starting of subsequence and calculate no of subsequence.). Then he asked me tell another approach. I came up with a DP solution. He asked me to code it and then asked me how to minimize the space complexity to linear.

This interview was at 12 am. Then I had to give 5 more interviews for Microsoft and Meesho. I got a call for 2nd round at around 8 am.\xc2\xab0

**Interview Round-2:** After brief introduction, he asked me about my projects. After 5-10 mins discussion, he gave me 2 DSA questions.

1. <https://leetcode.com/problems/duplicate-zeros/> . He was expecting a linear time and constant space complexity solution. Actually for these questions, if you don\xt know the solution beforehand, it\xt really hard to come up with all the optimizations. He actually gave me a hint and I was finally able to give the solution and code.
2. <https://www.geeksforgeeks.org/minimum-steps-reach-target-knight/>\xc2\xab0  
I gave him a straightforward BFS solution. He actually asked me jokingly that how many times I have solved this question before \xf0\x9f\x99\x82

**Interview Round-3:** I got a call straight after round 2 . It was my 8th interview of the night and I was completely exhausted.

- After the introduction, he asked me about my internship experience and we had a discussion about my work there and the tech stack I had previously worked on. Then he gave me a coding problem. It was a long problem and I took 4-5 mins just to understand the problem. Honestly I had no idea how to solve this. But I was telling my thought process to him. He jokingly said, he feels bad for me that after waking up whole night and after 7 interviews I had to solve this hard problem \xf0\x9f\x99\x81 \xc2\xab0Then he asked me another problem similarly to

Subsequence/subarray with given sum And we had a discussion on this approach. Luckily he didn't ask me to code it. He finally said that he got what he was looking for  
\\xf0\\x9f\\x99\\x82 \\xf0\\x9f\\x99\\x82\\xc2\\xa0

## Selected!!

Later that evening I got to know that I was actually selected for all the 3 companies I had given interviews. I simply couldn't believe it and was out of words. Honestly I don't think I am extremely good at coding. But I had practiced a lot of problems on leetcode and GfG, I had decent knowledge of CS fundamentals (oops, OS, DBMS, CN). My suggestion for any candidates would be know about your projects(what have to used and why have you used it, what problems have you faced during it), solve a lot of problems, be confident. All the best guys. Work hard, good days are coming \\xf0\\x9f\\x99\\x82

**Happy Coding!!!\\xc2\\xa0**

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# Amazon Interview Experience for SDE-1 (On-Campus)

- Difficulty Level :\n[Medium](#)
- Last Updated :\n17 Dec, 2021

There were a total of 4 rounds (1 Coding Test+3 Technical Interviews)

## Round 1(Coding Test):\xc2\xd0

1. <https://practice.geeksforgeeks.org/problems/rotate-by-90-degree-1587115621/1>
2. An array is increasing and then decreasing find the point where it stops increasing.

Round 2(Technical Interview 1): The questions asked were:

1. Given an array and an integer K, find the maximum for each and every contiguous subarray of size k. <https://www.geeksforgeeks.org/sliding-window-maximum-maximum-of-all-subarrays-of-size-k/>
2. Given an array, print the Next Greater Element (NGE) for every element. The Next greater Element for an element x is the first greater element on the right side of x in the array. Elements for which no greater element exist, consider the next greater element as -1.  
\xc2\xd0<https://www.geeksforgeeks.org/next-greater-element/>

## Round 3(Technical Interview 2):

1. Given a binary tree, print it vertically: <https://www.geeksforgeeks.org/print-binary-tree-vertical-order-set-2/>
2. Convert a given Binary Tree to Doubly Linked List: <https://www.geeksforgeeks.org/in-place-convert-a-given-binary-tree-to-doubly-linked-list/>

## Round 4(Technical + Managerial)

1. LRU Cache Implementation: <https://www.geeksforgeeks.org/lru-cache-implementation/>
2. Then they asked me questions from DBMS, Computer Networks, OS.
3. Then there were some basic Hr questions.

**Verdict:** Selected

**Note-** I prepared from Geeksforgeeks company-wise questions that part is a gem and Strivers SDE Sheet (<https://takeuforward.org/interviews/strivers-sde-sheet-top-coding-interview-problems/>)

I would say those who are preparing concentrate more and more on DSA that will help you to get through the interview.

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# Amazon WoW Interview Experience for SDE-I 2021

- Difficulty Level :\n[Medium](#)
- Last Updated :\n16 Dec, 2021

Amazon announced only women hiring event on June 2021 (Amazon WOW 2021). There was portal where we had to register ourselves. Then an invite for exam is sent to us.

## Written Test:

1. Screening test: Computer fundamentals and 1 easy coding question.
2. Standard amazon placement test (Debugging, coding, workstyles assessment, aptitude)

## Interview:

- 1 round for 2months summer internship
- 2 rounds for 6months (January \xe2\x80\x93 June) internship
- 3 rounds for FTE
- The results of test were given on September 7th, 2021. But the interviews are scheduled very late for 2022 passouts. My first round was scheduled on November 17th, 2021. The whole process took 4 months from the first test. Keeping patient is the key.

**Round 1(November 17th, 2021):** The interviewer was Quality Assurance Manager. It was a 1hour round on Amazon chime, the interviewer gave his intro and asked mine. Then he right away gave the ques.

1. <https://www.google.com/amp/s/www.geeksforgeeks.org/sort-array-converting-elements-squares/amp/>. First, I had to tell my approach then, I had to code.
2. <https://practice.geeksforgeeks.org/problems/burning-tree/1>. I solved both of them. Some time was left and he asked me if I have any questions for him. I asked him about how they decide what kind of projects to be assigned to a fresher. He explained it.

Received a mail regarding round 2 next day

**Round 2(November 18th, 2021):** The interviewer was SDE II. The interviewer introduced himself and asked for mine. Then he asked me a bit about my intern project. Just some basic ques. Then he gave me ques to solve.

- <https://www.google.com/amp/s/www.geeksforgeeks.org/given-a-binary-tree-print-all-root-to-leaf-paths/amp/>. Here I had to return the paths as an array of linked lists. I stored all paths in a 2d array and created linked lists later.
- Some time stamps were given with call id, and call start time, end time, call failure. We have to calculate total call duration for each call id. It was very simple and due to lack of time I just had to tell him my approach.
- Then he asked me if I had any questions for him. I asked him about the work culture and his experience over there and exactly what kind of projects he work on.

After 6 days I received a call from HR on 24th November informing I have cleared round 2 and I have round 3 on same day. Then again it was rescheduled to next day.

**Round 3(November 25th, 2021):** The interviewer was a SDM with 5years experience at amazon. She joined 15min late.\xc2\xab0

- She gave her intro and asked mine. Then she asked me to explain my project and write 2-3lines

of basic algorithm I have used for my project. Then she asked about a time when I had tight deadlines and how did I handle it.

- Then she gave me ques to solve. She was in lot of hurry she did not let me explain everything completely. I was cut off in middle while explaning the projects.
- <https://www.geeksforgeeks.org/stock-buy-sell/>. Explained my approach and coded within 5mins.
- <https://www.google.com/amp/s/www.geeksforgeeks.org/given-a-number-find-next-smallest-palindrome-larger-than-this-number/amp/>. This was tough question but luckily I have seen it before in amazon interview experiences on GFG. So I could solve it. I had to write the pseudo code since she was on hurry.
- Then she asked me if I had any questions. I asked about the training given to freshers. She explained about it. Then I asked how did she become SDE I to SDM in 5 years and said that it was really admirable. She gave a compliment that researching on her shows my interest in the field and I am proactive which is exactly needed for this kind of job. Brownie points?. And that concluded the session
- Received an email informing that I am given an offer at Amazon as FTE on December 1st, 2021.Thanks to GFG, Leetcode, Interviewbit.

## VERDICT: SELECTED.

### Tips:

1. Read the interview experiences as many as possible they help a lot.
2. Always ask questions to the interviewer in the end of interview.
3. Be honest and keep cool.
4. Prepare some behavioural questions before giving the interview.
5. It's better if you have practiced intro and projects out loud to yourself.
6. Practice a lot, cover all the basic problems and practice on GFG, Leetcode, Interviewbit.

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# Amazon Interview Experience for Support Engineer Intern

- Difficulty Level :\n[Easy](#)
- Last Updated :\n14 Dec, 2021

I am really glad to share that I have joined Amazon as an Intern.

In this article, i will be sharing my first FAANG(MAANG) Interview Experience, so my resume got shortlisted after applying to Amazon through campus placements.

**OA Assessment(Online Round):** The first was an OA round, conducted on Cocubes platform

- The test contained 5 sections each containing 5 MCQ questions out of which there was 1 coding section with one question that had strict test cases. The other 4 sections had MCQ questions on DBMS, Networking, DSA and Basics Computing Skills.
- I still remember the coding question well, it was to convert infix to postfix. I attempted the question in Java.

**On-Call Tech Round (First Telephonic Round):** In this round, the interviewer introduced himself and then he asked me to introduce myself. He asked a few questions about my project. He then asked politely if we could start with the interview. He gave me two questions (Medium and Easy Level). This round lasted 45 minutes. The first question he asked was to swap linked list nodes.

1. Given a linked list and two keys in it, swap nodes for two given keys. Nodes should be swapped by changing links. \xc2\x9a0[Swap Linked List](#) on GfG. I went on with the brute force approach and solved the question, by explaining at each step. The interviewer then asked me to optimise it using a single loop and i was able to do that. I solved this question and interacted with the interviewer explaining him in each step which approach I am using.
2. The second question asked was : [To check if a string is rearranged can it form a palindrome or not](#). \xc2\x9a0As the interviewer was running a bit late, he just asked me to describe the approach \xe2\x80\x99d use to solve this question.

**Behavioral and OS+Networking Round (LAST ROUND):** So the interviewer was the best!! She was very polite. The interview started with her introducing herself, and then she asked me to introduce myself. The interview started with behavioral questions and this totally depends on your answers. Make sure you go through the Amazon company policies before the round.

After the behavioral round she said let\x80\x99s start with the technical part. The round lasted one hour, and the questions asked were mostly from Networking and OS.

Few questions asked were:

1. What are the HTTP and the HTTPS protocol?
2. What is the DNS?
3. What is the TCP protocol?
4. What is thread in OS?
5. What is a process? What are the different states of a process?
6. What is the difference between paging and segmentation?

After the interview, She asked if I had any questions, I asked how was her experience in Amazon being a Support Engineer?

I got my offer letter after 10 days of the last round.

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# Amazon Interview Experience | On-Campus 2021

- Difficulty Level :\n[Medium](#)
- Last Updated :\n14 Dec, 2021

The whole process consisted of one coding round and 3 interview rounds. Due to covid, the whole process was virtual.\xc2\xab0

**Online Coding Round:** It was conducted on AMCAT and it had 5 sections.\xc2\xab0

- A debugging section, coding questions, feedback, aptitude, and personality assessment.\xc2\xab0
- One had attempt both the coding questions, all debugging questions, and all aptitude questions correctly in order to get shortlisted.

**Round 1:** The interviewer was a straight-to-the-business man. And started the interview without introduction.\xc2\xab0

- He first asked about this question: <https://leetcode.com/problems/majority-element-ii/>. I gave a brute force solution first, to which he asked TC and SC. He then asked to optimize it. I then explained \xc2\xab0Moore\xe2\x80\x99s Voting Algorithm. He was satisfied with my approach but didn\xe2\x80\x99t ask me to code it.\xc2\xab0
- He then moved on to ask questions on sorting algos. He asked about the best case and worst case TC of quick sort. Then he asked me to code it.\xc2\xab0
- Further, he asked me to implement merge sort. During implementation, he changed the data structure from array to linked list, and asked me to write code for it. As we were running short on time, he told me to stop coding, and started rapid firing questions on TC of merge sort in various scenarios. This went on for about 10 mins.\xc2\xab0
- In the end, he asked if I have any questions. We must ask genuine questions, which show our interest in the company. He then wished me luck for further rounds.

**Round 2:** This time too, the interviewer didn\xe2\x80\x99t waste time and straight away gave me a problem.\xc2\xab0

- It was basically a problem of graphs, where each node is a string of a given array. And, we had to use DSU to solve it. I told my approach and coded it efficiently. \xc2\xab0He was really impressed and gave me another problem immediately.\xc2\xab0
- It was <https://www.geeksforgeeks.org/search-in-row-wise-and-column-wise-sorted-matrix/>. I first gave a brute force solution of O(nm). He told me to optimize it, then I gave him a binary search solution of O(nlogn) TC. Still he, told me to further optimize it. I wasn\xe2\x80\x99t able to come up with a solution, so he provided a hint. The optimal solution immediately clicked and I told it to him. He was quite satisfied and wished me luck for next round.

**Round 3:** The interviewer was an experienced guy with over 15 years spent in amazon.\xc2\xab0

- He asked me to introduce myself, and give a brief overview of my projects.\xc2\xab0
- He asked me to share my screen and open the project, as I hadn\xe2\x80\x99t deployed it.\xc2\xab0
- He asked about the implementation of various features and why had I added them. He just wanted to assess how do I handle new projects.\xc2\xab0
- He then moved on to OS questions and started with deadlock. He asked me about various ways to prevent a deadlock, and how does Windows do it. The discussion further went on to scheduling algos.\xc2\xab0

- Post this, he asked me this question <https://www.geeksforgeeks.org/largest-sum-contiguous-subarray/>. I started with brute force, and finally gave the optimal Kadane's algo. He was satisfied with my explanation.
- He then asked if I had any questions for him. I asked about his experience so far with Amazon. He happily explained it for about 5 mins. He then told me that you'll enjoy working at Amazon. This gave me a strong hunch that I selected.

After 1 hour the results were announced and 9 were given the offer including me. I rejected it because I had another offer from Zomato and decided to go with that.

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# Amazon Interview Experience

- Difficulty Level :\n[Easy](#)
- Last Updated :\n14 Dec, 2021

## Round 1(Online Test):

- Debugging: 7 easy debugging questions
- Question-based on the tree. The difficulty level was medium-hard.
- Question-based on sorting. The difficulty level was easy-medium.
- 45-50 workstyle based assessment
- General Aptitude: 24 questions of varying difficulty levels.

## Technical Interview Round 1:

- [Zig-zag traversal of a given binary tree.\xc2\xab0](#)
- [Lowest common ancestor of a given n-ary tree](#)

## Technical Interview Round 2:

- [Check if a given binary tree is a valid BST](#). I was asked not to use inorder traversal. So I told him an approach using INT\_MIN and INT\_MAX which got accepted.
- [Given a stream of integers, find the top K most frequent integers.](#)

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# Amazon 6M Internship Interview Experience | On-Campus 2021

- Difficulty Level :\n[Medium](#)
- Last Updated :\n14 Dec, 2021

There was a total of 3 rounds of interviews. One online test and 2 technical interview rounds\nc2\x00

## Online Coding Round: \xc2\x00

- 7 easy debugging questions related to algorithms to be done in 20 minutes.
- 2 coding questions with varying difficulty of medium to hard be solved in 70 minutes. I was given the following two problems:
- Least Number of Unique Integers after k-removals.
- \xc2\x0A variation of [Minimum cost to connect all cities](#).
- Questions based on behavior and work style. It takes about 20 minutes.
- 24 reasoning questions to be solved in 35 minutes.

**Interview Round 1:** The interview was conducted on the Amazon Chime Platform, and it took about 1hour 20mins. The interview started with a basic self-introduction and then the interviewer gave me 2 DSA problems to solve.

- <https://www.geeksforgeeks.org/find-the-smallest-positive-number-missing-from-an-unsorted-array/>
- Given a shell command to execute print what will be the directory path. [Hint: An easy stack-based implementation ]
- I solved both questions and was selected for Round 2 (around 30 people out of 100 moved to round 2).

**Interview Round 2:** The interview was conducted on the Amazon Chime Platform, and it took about 1hour. The interview started with a basic self-introduction and then the interviewer gave me 2 DSA problems to solve. After that I was asked questions from my resume, projects for about 5 minutes.

- <https://www.geeksforgeeks.org/print-all-pairs-with-given-sum/>
- \xc2\x0A<https://www.geeksforgeeks.org/count-number-of-occurrences-or-frequency-in-a-sorted-array/>
- I was able to solve both questions optimally, however, for the 2nd question the interviewer asked to implement the lower and upper bound functions from scratch. I was unable to implement them, unfortunately.

Finally, **16 people out of 30 from Round 2** were selected for 6M intern and I was unfortunately not among them.\xc2\x00

[**Note:** They often ask to implement algorithms like Sort, Binary Search, Lower/Upper Bound from scratch so make sure you are thorough with all the implementation. ]

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# Amazon Interview Experience for SDE-1 (On-Campus)

- Difficulty Level :\n[Medium](#)
- Last Updated :\n14 Dec, 2021

There were a total of 4 rounds (1 Coding Test+3 Technical Interviews)

**Round 1 (Coding Test):** This round had 4 sections, debugging, coding, Workstyle Assessment, and aptitude. Debugging and aptitude were easy and didn't even require any preparation.

1. Given an expression in the form of a string  $A+B=C$ , where any two of A, B, and C were given, you had to find out the value of the third variable.
2. <https://www.geeksforgeeks.org/find-row-with-maximum-sum-in-a-matrix/>

## Round 2(Technical Interview 1):

1. <https://www.geeksforgeeks.org/rotate-ring-matrix-anticlockwise-k-elements/>
2. <https://www.geeksforgeeks.org/fix-two-swapped-nodes-of-bst/>

## Round 3(Technical Interview 2):

1. Given 2 numbers N and M count the number of set bits in them. He first asked me to make a function that returns the number of set bits of a number, then asked me to code the solution. He wanted the most optimized solution something like this. <https://www.geeksforgeeks.org/count-total-set-bits-in-all-numbers-from-1-to-n-set-2/>
2. <https://www.geeksforgeeks.org/convert-given-binary-tree-doubly-linked-list-set-3/>
3. Then he asked for a few OS and networking questions like the Difference between semaphore and mutex, the Difference between TCP and UDP, and what is Banker's algorithm. Then he jumped to my CV and asked about the Internship I did.

## Round 4(Technical and Managerial):

1. Which sorting algorithm would be appropriate to sort a line of almirahs according to their height so that my effort is minimum. (Selection sort)
2. <https://www.geeksforgeeks.org/check-two-nodes-cousins-binary-tree/> in one single pass.
3. Tell me about a time when you were faced with a complex problem and what solution you came up with? Then he asked if I could have done anything different and better.

In the end, there were 8 students who gave 4 rounds and 6/8 were selected including me

**Note:** I prepared for DSA from Striver's SDE sheet (<https://takeuforward.org/interviews/strivers-sde-sheet-top-coding-interview-problems/>) and from GeeksforGeeks company questions and leetcode.

All the best to everyone who is preparing for amazon.

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# Amazon Interview Experience | Off-Campus 2021

- Last Updated : \n28 Dec, 2021

**Round 1(Coding Assessment):** It has 2 Coding Question of medium-hard level. I gave the test along time back, don't exactly remember the questions but I was able to do only one of them completely.

**Suggestion:** I would suggest doing coding practice from sites like GeeksforGeeks, Leetcode etc as it will give the confidence to solve problems.

**Tips:**

- Don't spend too much time on the first question you pick, if you are not able to do the first one try doing the second.
- I got a call for the interview along time later.
- I wasn't prepared for interviewed at that time, I asked for few weeks of time for preparation and they gave me around 1-2 weeks.

3 rounds of Interviews was scheduled one day.

**Round 2(Technical Interview Round 1):** The interviewer was SDE3, He asked for an introduction.

- Then he asked me a coding question on Complete Binary tree. I didn't know exactly about complete binary tree so he explained me.
- Question: <https://www.geeksforgeeks.org/find-value-k-in-given-complete-binary-tree-with-values-indexed-from-1-to-n/>
- I never did the question before so I took time to understand a complete binary tree and then come with a solution in  $O(\log N)$  time complexity. I started with basics and first gave a solution in  $O(N)$  time complexity then optimized it later.
- Then he asked me another question related to it.
- Question: Determine number of nodes in given Complete Binary Tree with values indexed from 1 to N.
- He asked me to use the 1st question solution and come up with an optimized solution for 2nd question, which I did quickly.
- He seems okay as I did the second question really quick.

**Tips:** Don't bother if you haven't heard about the question before, try to understand the question and the interviewer will also drop some hints, try to pick them.

**Round 3(Technical Interview Round 2):** It was taken by 2 interviewers but only one of them was asking questions.

- Initially they asked for an intro, then about projects I did in my previous company.
- They asked me some leadership principle(LP) questions. I don't exactly remember the LP questions but one of them was like :
- What is the most challenging project you did previously and how did you manage?
- Then he asked me two question:
- Question 1: <https://www.geeksforgeeks.org/lru-cache-implementation/>
- He asked me the approach first and then asked to code, he asked why I used list instead of dequeue? and what is the time complexity of each operation?
- Question 2: <https://www.geeksforgeeks.org/connect-n-ropes-minimum-cost/>
- I did both the question in the most optimized way and wrote the code for both of them.

**Tips:** Just doing the question isn't important, you should also know why you are using certain data structure and not any other.

While practicing question, try to understand the data structure that you are using.

**Round 4(Managerial Round):** It consists of basic questions like

- What is acid properties?
- [What is the difference between http and https.](#)
- Then he asked me leadership questions which I don't exactly remember.

**Tips:**

- In all of the leadership questions, you have to answer using your past experiences and include any of the leadership principles in your answer.
- Try to answer the exact question which is asked from you.

**Round 5(Technical Round):** They asked me 1 coding question and 1-2 LP questions.

- When did you exceed your deadline for a given task? What did your manager said and how did you manage?
- <https://www.geeksforgeeks.org/find-maximum-meetings-in-one-room/>

**Verdict:** Selected, I accepted the offer.

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## Amazon Interview Experience for SDE-1 | On-Campus

- Last Updated : Nov, 2021

It consisted of 2 rounds, first an online round and then later a F2F interview.

**Online Round:** The first round consisted of:

- 7 debugging questions (20 mins)
- 24 MCQs (reasoning based) (35 mins)
- 2 programming questions (70 mins)
- Behavioral questions (10 mins)

Programming Questions:

- Given a 2D array ( $m \times n$ ) in which all the rows and all the columns are sorted separately, you have to find an element (given) in it.

Ex : [ 2 4 8 10 13 ] [ 3 6 11 12 17 ] [ 5 7 12 15 18 ] Find 7 in it.

Approach: I used simple binary search over row and column separately in two loops (just in case anyone of m and n is very large as compared to the other). Time comp.  $O(\min(m, n) * \log(\max(m, n)))$

- You are given an array A of size  $m \times n$  matrix. It contains 1, 0 where 1 means path is allowed and 0 means path is not allowed. One cell contains 989. You have to start with cell (0, 0) and find out whether it is possible to reach at the cell which contains 989.

Ex: A: {1, 1, 0} {9, 1, 0} {0, 0, 1} Ans : 1

Approach: Simple bfs would do while maintaining a visited matrix to see if the cell has not already been visited.

(similar to [rat in a maze](#) problem).

**Technical + HR Round:** This round lasted for around 45-50 mins. The interviewer was pretty cool and exchanged pleasantries with me.

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# Amazon Interview Experience for Intern+SDE-1 (On-Campus)

- Difficulty Level :\n[Easy](#)
- Last Updated :\n30 Nov, 2021

**Round 1(Online Test):** it was the first round with 4 sections.

1. Code Debugging test
2. 2 coding questions(70 min)
3. Personality Questions
4. Logical Reasoning

**Round 2(Technical Interview 60 min):** First, the interviewers introduced themselves and then asked to introduce myself. Then he asked about the projects I did. After an introductory discussion on projects, he gave me 3 coding questions on their personal live code environment.

He asked me to explain the approach first and then code it down. I had to explain the time complexity of each solution and optimal code if possible with lesser time complexity.

1. <https://www.geeksforgeeks.org/find-maximum-number-can-formed-digits-number-reviewed/>
2. <https://www.geeksforgeeks.org/find-the-maximum-element-in-an-array-which-is-first-increasing-and-then-decreasing/>
3. <https://www.geeksforgeeks.org/find-maximum-path-sum-in-a-binary-tree/>

**Round 3(Technical Interview 120 min):** Similar to the first round there was a brief introduction from both sides. This round was coding plus the kind of HR. After 2 coding questions, I was asked to describe a tough situation that I faced while completing any project of mine, what was my target, what I did to overcome it, and what was the end result.

1. <https://www.geeksforgeeks.org/merge-k-sorted-linked-lists-set-2-using-min-heap/>
2. <https://www.geeksforgeeks.org/convert-normal-bst-balanced-bst/>

**Verdict:** Selected

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# Amazon Interview Experience for SDE-II (Frontend)

- Difficulty Level :\nEasy
- Last Updated :\n16 Nov, 2021

There is hardly any interview experience for SDE-2 frontend profile at Amazon, So, I felt it as my responsibility to write this one. I hope it will give you a glimpse of it and help you.

I have 3+ years of experience in frontend development. I got a call through referral program in September from Amazon Hyderabad. The interview process was as below \xe2\x80\x93

**Round 1 (Online Test \xe2\x80\x93 Time: 2 hrs )** \xe2\x80\x93 10 MCQ questions on HTML, JS and CSS. 1 Machine coding question \xe2\x80\x93 Make an image carousel in vanilla JS. \*\*Googling is allowed\*\*

**Round 2 (F2F Technical \xe2\x80\x93 Time: 1 hr)** \xe2\x80\x93 15-20 minutes \xe2\x80\x93 behavioral assessment (2 or 3 behavioral questions). Remaining time \xe2\x80\x93 On a shared text editor (<https://livecode.com/>), asked to make a 5 star rating component using JS, HTML and CSS

**Round 3 (F2F Technical \xe2\x80\x93 Time: 1 hr)** \xe2\x80\x93 15-20 minutes \xe2\x80\x93 behavioral assessment (2 or 3 behavioral questions)  
Remaining time \xe2\x80\x93 On a shared drawing tool (<https://www.invisionapp.com/>), asked to design a frontend system for a newspaper site\x80\x99s home page. The area to work upon are \xe2\x80\x93

1. The design and components of the home page.
2. How to make it mobile friendly? (Ans: PWA)
3. How to make the rendering faster? (Ans: Use of caching, service workers)
4. How to make it highly available in case of heavy load? (Ans: Use of multiple servers)

Make sure you study about all the caching mechanisms and good system design practices.\xc2\xxa0  
Refer: <https://www.youtube.com/watch?v=wXRr9fGCBRM>

**Round 4 (F2F Technical \xe2\x80\x93 Time: 1 hr)** \xe2\x80\x93 15-20 minutes \xe2\x80\x93 behavioral assessment (2 or 3 behavioral questions). Remaining time \xe2\x80\x93 On a shared text editor (<https://livecode.com/>), asked to make a component similar to Whatsapp\x80\x99s last seen. Provided the date, it should show one of the following message-\xc2\xxa0

- last seen just now
- last seen a minute ago
- last seen an hour ago
- last seen a month ago
- last seen an year ago

Other requirements \xe2\x80\x93 Update message dynamically according to the current time.  
After my implementation, we spent rest of the time optimizing it.

**Round 5 (F2F Technical \xe2\x80\x93 Time: 1.5 hr)** \xe2\x80\x93 30 minutes \xe2\x80\x93 behavioral assessment (2 or 3 behavioral questions)\xc2\xxa0

- Remaining time \xe2\x80\x93 On a shared text editor (<https://livecode.com/>), asked to implement a social network system for an organization.\xc2\xxa0
- Working \xe2\x80\x93 The system would allow an employee to log into the application and see

all the employees list. Employees can chat with each other if they are friends.

- Problem statement \xe2\x80\x93 To make someone your friend, you need to have at least one mutual friend. So, a user should be shown the list of minimum employees he/she would have to be friends with to finally make someone his/her friend.
- I told them about finding the shortest path to reach from A to B (did a brute force recursion). After that, he asked me to implement the whole code in HTML and JS. Then a discussion on optimizing the implementation/data-fetching carried on.

**Verdict** \xe2\x80\x93 Not selected

**Tip** \xe2\x80\x93 Prepare behavioral questions as many as possible.

\xc2\xa0

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# Amazon Interview Experience for SDE-1 (Off-Campus)

- Difficulty Level : \n[Medium](#)
- Last Updated : \n10 Nov, 2021

Recruiter reached out to me on LinkedIn in the month of September stating that Amazon is actively recruiting for SDEs and that my profile matches. She sent me the Job Description and asked me if I wanted to proceed. I did. I am no competitive coder and wasn't even actively preparing for a product based company but I was up for the challenge. I wanted to use these as mock rounds and learn from my mistakes and improve. I've never had a coding interview before despite having 1 year work experience and 6 months internship in a startup.

## Round 1: Online Assessment

1. <https://leetcode.com/problems/shortest-path-in-a-grid-with-obstacles-elimination/>
2. <https://blog.fearcat.in/a?ID=01350-4d5bbfc5-11e2-4a88-987c-20cdebfbff2c>
3. Describe approach used and write time complexity of above solutions.

## Phone Interview with Recruiter: [Duration: 45 minutes]

1. Tell me about yourself
2. Willing to relocate?
3. Current Team structure at work and responsibilities.
4. What percentage of my job is dedicated to developing new features, maintenance, testing, code review and architecture?
5. Quick sort, merge sort, radix sort, insertion sort and heap sort. Advantages and disadvantages of each. Suitable for which input types?
6. HashTable, HashSet and HashMap differences. Time complexities in best case and worst case.
7. What are hash collisions and what are some methods to avoid them?
8. When to use BFS and DFS traversals? What are some algorithms?

After 2 weeks my virtual interviews were scheduled. I practiced on GfG Amazon Interview Sets, LeetCode, Educative.io, etc.

There were 4 rounds spanning 2 consecutive days.

## Virtual Interview Round 1: [Duration 1 hour]

1. Favorite principle from Amazon Leadership Principles.
2. Time when I failed after a huge obstacle
3. Time when I succeeded after a huge obstacle
4. When I didn't have sufficient requirements.
5. Design an Office Structure with different classes interactive classes like (Employees, Insurance, Clients) and implement functions for the queries that Interviewer gave.

## Virtual Interview Round 2: [Duration 1 hour]

1. What I like and dislike about my current employer.
2. Time when I worked against deadlines to get a job done.
3. Set a goal to do better and failed.
4. Honest Review of how I prepared for Amazon
5. Given a Pile of Books store it in an efficient data structure and implement retrieval, insertion and deletion functions specific books, random books, set of books. Was asked about

the internal working of Data Structures that I chose and was asked about the time complexity of each. I was asked to write a production ready code which handles edge cases and throws appropriate Exception messages.

(I let some bad inputs slip through which was pointed out by the interviewer and then when I got to solve it \xe2\x80\x93 the time was up. I think this was a bad sign on my end too.)

### **Virtual Interview \xe2\x80\x93 Round 3 [Duration 1 hour]:**

1. Implement an emergency response system with an observer pattern.
2. Time when I couldn't solve a technical problem

(This round was shorter because I was experiencing Internet issues. This negatively impacted my performance \xe2\x80\x93 I was scared and went blank. I think this could be detrimental in my candidacy)

### **Virtual Interview \xe2\x80\x93 Round 4: [Duration 1 hour]**

1. Time when I stepped up and led a team
2. Time when I went above and beyond the said job description
3. Implement code for the Given Venn Diagram of 2 objects and write functions for some properties of intersections like A \xe2\x88\x9a B and A \xe2\x88\x9a B \xe2\x8a\x86 A.

(This was actually a fun round and it got easier once I had an example given to me.)

**Verdict:** Unsuccessful. But I\xe2\x80\x99m happy I made it this far with moderate prep.

### **Overall Suggestions: \xc2\xab**

- They spend about 30 minutes on behavioral questions and want to get to the depth of it. So get to all the nitty gritty stuff.
- Stay confident with your answer and try to defend it to the best ability. If there\xe2\x80\x99s an error, or edge case the interviewer will let you know. Acknowledge it and work it from there. They want to know that you\xe2\x80\x99d be coachable too.
- Ask loads of clarifying questions, discuss approaches before and if the interviewer asks to proceed \xe2\x80\x93 only then code. I made the mistake of diving code first in one of the rounds and the interviewer asked me to start from the beginning.
- In the 3 coding rounds, you can mess up in only 1 round as it\xe2\x80\x99s a cumulative offer. You should display consistency so that the other 2 interviewers can defend your skillset for the hard round.

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# Amazon Interview Experience for SDE 1

- Difficulty Level : [Hard](#)
- Last Updated : [10 Nov, 2021](#)

I was reached by a Talent Acquisition Specialist from Amazon via my [Instahyre](#) profile a month ago for the SDE 1 Position.

Fast forward to that , I was informed that as a selection procedure there would be 5 rounds total ( One OA + 4 interviews ).

I cleared the OA round. The further interviews went like this.

## Round 1 : ( Algorithms and DSA )

1. There are N gas stations along a circular route, where the amount of gas at the ith station is  $gas[i]$ . You have a car with an unlimited gas tank and it costs  $cost[i]$  of gas to travel from the ith station to its next ( $i + 1$ ) th station. You begin the journey with an empty tank at one of the gas stations. Given two integer arrays  $gas$  and  $cost$ , return the starting gas station.
2. [Print all the leaves of the binary tree.](#)
3. [Right view of binary tree](#)

## Round 2 : ( Problem Solving, CS fundamentals and Coding )

1. [Bottom view of binary tree](#) in both BFS and DFS.
2. Given a directory , where files are created , stored and deleted as required. You are given each file's creation time and deletion time. You need to find out the number of total files present at any instant in the directory.

**Note:** This is a Greedy problem. It's similar to the question [Minimum Number of Platforms Required for a Railway/Bus Station](#). A little brainstorming helped me land to the solution. The interviewer was satisfied with the optimal time and space complexity.

## Round 3: ( Hiring Manager and Technical )

The interviewer was the Manager and in this round you should expect questions related to HR , Leadership Principles and coding questions as well.

Initially the interviewer asked me for the introduction followed by many situational based questions. They are expecting answers in **STAR Format** (  $S$  Situation ,  $T$  Task ,  $A$  Action ,  $R$  Result ) which should clearly reflect the 14 Leadership Principles followed by Amazon.

Thereafter , some technical questions were asked followed by one designing question.

- [Design a LRU cache](#) with optimal code.

## Round 4 : ( Hiring Manager and Technical )

The interview was taken by a SDE 2 belonging from a different office of Amazon.

I was asked to give my introduction and some situational based questions. Thereafter he asked about my past organizations where I have worked on earlier.

In \xe2\x80\x93 depth details and follow-up questions were asked regarding the projects to test my knowledge.\xc2\xa0

1. [Connect n ropes with minimum cost.](#) I used Heap to solve it , so heap related questions were asked.
2. [Algorithm for implementation of Min \xe2\x80\x93 Heap.](#)

## Takeaway \xf0\x9f\x98\x89

- For every coding question being asked , write the clean and optimal code with explanations.
- Approach to questions confidently and slowly.
- Keep the interview well-communicative.
- Think loudly and have a \xf0\x9f\x99\x82 on your face. All the best !

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# Amazon Wow Interview Experience 2021

- Difficulty Level :\n[Hard](#)
- Last Updated :\n04 Mar, 2022

There are 2 online coding rounds along were there. The first online round has some questions related to pseudo-code also. The second online round has questions related to CN, DBMS, and OS also along with 2 coding questions.

## Round 1: Interview

- Given a matrix n\*m initially having 0. You keep assigning 1 to given coordinates find no of connected components.
- Given a vector of coordinates.\xc2\xad
- I started by giving a DFS based approach which I optimized by using a map such that for every new coordinate we check if any of its adjacent elements is already present then do not increase the count otherwise increase the count.
- Find a minimum no of transactions to settle a debt.
- <https://www.geeksforgeeks.org/minimize-cash-flow-among-given-set-friends-borrowed-money/>

**Verdict:** Rejected

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# Amazon WOW Interview Experience 2021

- Difficulty Level :\nHard
- Last Updated :\n04 Mar, 2022

Amaze wow is a recruitment drive for women conducted every year.

- 6 months and FTE roles for final year students.
- 2 months intern role for pre-final year students

I applied for 2 month SDE intern through Amaze WOW 2021. There were total three rounds for 2 months internship

**Round 1:** 1 coding Questions and 40 MCQ covering topics mentioned below

- Data Structure
- Algorithms
- Linux
- Software Engineering
- DBMS
- Networking
- OS
- OOPS

I was able to pass all test cases. This round was open for 16-17th August and On 23th August I got mail for second round

1 hr 30 minutes was allocated for this round.

**Round 2:** The first section (20 minutes) was the debugging section and consisted of 7 very easy code snippets which had to be debugged to get the desired output. These questions were very easy. You have to try to find out logical error like you should replace `\xe2\x80\x98>\xe2\x80\x99` with `\xe2\x80\x98<\xe2\x80\x99`, one of them was based on selection sort. I was able to debug all 7.

- The second section (70 minutes) was the coding section and consisted of 2 coding questions. The first question was a medium level hashmap problem for me and in the second question, we have to sort list based on different parameters( In this question we have to use comparator interface in java). I was able to solve pass all the test cases of both problems.
- The third section (20 minutes) was Workstyle Assessment.
- Fourth section (35 minutes) consisted of Logical Reasoning questions.

I got mail on 7th September that I was shortlisted for interview.

**Round 3:** My interview was on 11th October. It was one hour interview on Amazon chime.

2 coding questions

1. <https://www.geeksforgeeks.org/sort-an-array-according-to-absolute-difference-with-given-value/>
2. Construct balanced BST from sorted list.

Always remember that interviewers are always there to help you . Think out loud and discuss your approach with them.

## VERDICT: SELECTED

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# Amazon Interview Experience for SDE-1 Intern (On-Campus)

- Difficulty Level : \n[Medium](#)
- Last Updated : \n26 Oct, 2021

## Round 1(Online Coding Round):

### Five components (2.5 hours):

1. **Coding:** 2 LC Medium level story-based problems. One on **Binomial Coefficients** (use DP to avoid TLE) and another on **Heaps**. I passed 10/10 on Q1 and 9/10 on Q2. Practice the past year\xe2\x80\x99s archives extensively to get an overall idea.
2. **Debugging:** 7 questions. Not hard as long as you have a good understanding of any of the OO languages (preferably C++)
3. **Workstyle Assessment (HR)** : 50 questions. You have to move the slider to your inclination for the particular question. Keep in mind the 14 Amazon Leadership Principles while attempting this section. \xc2\x90
4. **Reasoning Ability (Aptitude):** 24 questions. Try to solve as much as you can, as many of the questions are follow-ups of the previous question. \xc2\x90
5. **Feedback Form:** I solved all the questions in the given time frame (and had 20 minutes to spare). Each section has an individual timer, so always check how long a problem is taking to be solved. You have to solve every question to get a chance to clear this round, as the competition was very high. Only **40/1000** candidates were selected from this round. \xc2\x90

In 4 days, I received the invitation for the technical rounds. \xc2\x90

## Round 2(Online Round 1): Amazon Chime \xe2\x80\x93 45 mins

The interviewer was very strict on the timing. He stated that he would give two problems, and I was supposed to provide him with the optimized solution in the first go (unlike the usual method of starting from naive and reaching optimized)

1. <https://www.geeksforgeeks.org/in-place-convert-a-given-binary-tree-to-doubly-linked-list/>
2. Given an array of strings with each string denoting a number, find the second largest number without doing type conversion (as the string value can be extremely high, and converting will not be efficient). \xc2\x90I gave him an answer using the strcmp() method. He gave me an edge case, and I fixed it by checking the string size also in the condition. There were only 5 minutes left, so I typed out the program as fast as I could while explaining the logic on the side. He asked the TC and SC, and I answered it right as well. \xc2\x90

I asked him a question based on the culture at Amazon, and after answering it, he wished me luck on the following round, and the interview ended. After this round, I felt much more confident, and the second round was scheduled just 1 hour later. \xc2\x90

## Round 3(Online Round 2): \xc2\x90Amazon Chime \xe2\x80\x93 45 mins

This time, the interview started with introducing ourselves to each other. The interviewer asked me about my previous projects and internships. As I had done Open-Source in the past, she asked me about my work\xe2\x80\x99s impact. \xc2\x90I then talked about Javascript, Typescript, and React. She then asked in-depth about a project I put on my resume and about my current internship at a startup (responsibilities, progress in my work, etc.). After this discussion, I was given my first problem.

- Given a complex string with characters going up and down, what must be done to print it. For this, I decided to use a char matrix and figured out the standard pattern of the up and down traversals. I coded it up quickly as I talked through the logic and wrote the complexities within 10 minutes. \xc2\xa0
- <https://www.geeksforgeeks.org/a-program-to-check-if-a-binary-tree-is-bst-or-not/>

This problem needed recursion, and I was able to code it up and tell the complexities pretty quickly. \xc2\xa0

Since I had completed both questions quickly, she spent the rest of the time asking about various sorting algorithms and their tradeoffs. She then asked me about my favorite data structure (Queue), and we had a long discussion on it. \xc2\xa0 After this, I asked her a few questions, and we had a small discussion on the 14 Principles of Amazon. The interview ended on a good note.

I was expecting the 3rd round, but thankfully they had decided my candidature with two rounds. \xc2\xa0

### Verdict: Selected

Only 8 out of the final 40 were selected for the internship, and gratefully I was one among them. \xc2\xa0

### Quick Tips:

- Be very strong with your DSA. I had solved around 400 questions in the past year, and 50 questions in the last one week before the interviews.
- You have to solve both questions given in every interview and have enough time to answer follow-up questions as well
- Maintain an aura of calm before your interviews. It can help your mind to think clearly and form connections with your previously solved problems.
- Always keep the interviewer in the loop with your thoughts. Never stay silent. Only then can they help you if you lose track of the problem
- Emphasize clean, modular code with comments. This demonstrates your ability as an engineer. Use appropriately named functions and variables.
- As you code up, think about the edge cases. It will help avoid unexpected issues later on.
- Know your projects, resume, and past experiences. Be ready to tell them in detail about everything.
- Practise DSA with a coding buddy (pair programming). It helps you build the practice of explaining your code, and is a win-win situation.
- If you are preparing for Amazon, the **14 Leadership Principles** are a must.

That will be all. Amazon is not difficult if you are confident in your DSA and development skills. All the Best!

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# Amazon WOW Interview Experience

- Last Updated : \n04 Mar, 2022

Amazon wow is special recruitment drive for women conducted in May every year

- Full time roles for final year student
- Internship for pre-final year students.

One need to apply online on the official site once notification are out. Strong resume and profile plays a strong role. So, I suggest to add all the latest achievement and experience to stand out.

**Round 1:** Has 1 coding question and MCQs 5 from each below mentioned topics.

1. [Data Structure](#)
2. [DBMS](#)
3. OS
4. [Networking](#)
5. [Algorithms](#)

It was time bound round, allocated 1 hour for all in total. Coding question includes 6 test cases, however it was based on array. The question was similar to [this](#).

**Round 2:** Selected candidates will be informed through email and further instructions will be provided. This round had 6 debugging question and provided language is only java and CPP and not Python. Moreover it had 2 coding questions covering concepts from tree and graph. The question were quite logical but I have never found it on any practice site.

Time allocated for the same is 2 hours. The questions were basic focusing on concept building and algorithms.

**Round 3:** It is eliminating round. This is Interview round where selected candidates will be provided schedule as per their convenience. Technical Interview will cover 2 questions.

- Tree based question.
- Stack based.

**Note:** Must follow only behavior of data structure.

**Round 4 (Behavioral Interview):** Selected candidates will proceed for this round. STAR based approach needed to present the solution for specified problem. Basic questions on OS and system design will be asked.

## Tips:

1. Wait and be patient for results
2. Be punctual
3. Don't hesitate to ask question in interview.
4. Be clear and precise.
5. Practice, practice and practice.

All the best \xe2\x80\x99

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## Amazon Interview Experience for SDE-1 (Off-Campus)

- Difficulty Level :[Medium](#)
- Last Updated :17 Oct, 2021

### Round 1: Online Assessment

- Amazon Fresh Deliveries: Given all Locations list of co-ordinates (x,y) you have to find the X closest locations from truck's location which is (0,0). Distance is calculated using the formula  $(x^2 + y^2)$ . If there is a tie then choose the co-ordinate with the least x value. Sample Input :

```
All Locations : [ [1, 2] , [1, -1], [3, 4] ]\r\nnumOfDeliveries : 2\r\nSample Output :\r\n[ [1, -1], [1, 2] ]
```

- The output list can be in any order. This question was basically K closest points to the origin (0,0) with added tie condition.
- Demolition Robot: Given a matrix with values 0 (trenches), 1 (flat), and 9 (obstacle) you have to find the minimum distance to reach 9 (obstacle). If not possible then return -1.
- The demolition robot must start at the top left corner of the matrix, which is always flat and can move on the block up, down, right, left. The demolition robot cannot enter 0 trenches and cannot leave the matrix.

```
Sample Input :\r\n[ [1, 0, 0], [1, 0, 0], [1, 9, 1] ]\r\nSample Output :\r\n3
```

- This question can be solved by using BFS or DFS.

### Round 2: Interviews

Generate the sequence of N magic numbers. A magic number is:

- Consists of digits 4 and 5
- Must be an even palindrome
- [Expression evaluation \(using stacks\). The expression may contain parenthesis or not .](#)

### Round 3:

- [Difference between linear and non linear data structure.](#)
- Internal working of the map, including its implementation.
- First non repeating character in a stream of data in O(1) time complexity.
- [Creation of a binary tree.](#)

### Round 4: Technical Interview

- [Variation of word-ladder problem.](#)

### Tips:

- You must know how to calculate time and space complexities.
- In each round they ask you about the project you recently did/ the project you liked working on most/ most challenging work etc- so you should be prepared well for at least one project with in-depth details.
- Start with the naive approach for each question asked and then proceed with solutions with better space and time complexities.
- Behavioral questions were also asked in each round Some questions asked were :
- Out of amazon leadership principles ,which one you identify yourself with and why ? Give real-life example.
- Was there any situation in which you went out of your designated responsibilities?

All the best !

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# Amazon Interview Experience for SDE-1

- Difficulty Level :\n[Easy](#)
- Last Updated :\n16 Oct, 2021

I had been constantly applying for SDE roles through the amazon jobs portal. Eventually, I got an invite for an Online Assessment in September 2021 for the application I\xe2\x80\x99d applied for in June 2021.

## Round 1: Online Assessment

- There were 2 coding problems followed by an approach with time complexity.
- The first question was Demolition Robot; I don\xe2\x80\x99t remember the second question but I solved using Priority Queue. The first coding solution passed all test cases & the second solution failed for one test case.

After 10 days I got a call and the interview got scheduled for next week.

## Round 2: F2F Technical Interview

- I was asked to introduce myself and about my projects. Then we jumped onto coding problems.
- <https://leetcode.com/problems/meeting-rooms-ii/>
- Given an array of meeting time intervals consisting of start and end times [[s1,e1], [s2,e2],\xe2\x80\x9a] find the minimum number of meeting rooms required.
- <https://leetcode.com/problems/top-k-frequent-elements/> or <https://www.geeksforgeeks.org/find-k-numbers-occurrences-given-array/>
- I was asked for time complexity and to optimize the code. There was not enough time left because I took more time for the first problem so he asked me to stop coding and just explain the further code. I asked him for feedback but he said HR will contact you. It\xe2\x80\x99s was my first coding interview so I was nervous and couldn\xe2\x80\x99t perform very well.

## Round 3: F2F Technical Interview

I had the second coding round on the same day, we had an introduction then jumped onto problems.

- <https://leetcode.com/problems/group-anagrams/> or <https://www.geeksforgeeks.org/given-a-sequence-of-words-print-all-anagrams-together/>
- After discussion, I was asked to write code.
- \xc2\x96 <https://leetcode.com/problems/number-of-islands/> or <https://www.geeksforgeeks.org/find-number-of-islands/>
- After writing coding, I was asked questions on BFS and DFS and time complexity.

This round went so well & the interviewer was happy with me and immediately after Round 2, I got called for the next round after 30 minutes.

## Round 4: F2F Hiring Manager Interview

- After an introduction, I was asked designing question.
- Write a program to design vending machine.
- After getting clarification I was asked to write code.\xc2\x96
- There is a stream of numbers containing 0\xe2\x80\x99s and 1\xe2\x80\x99s. Move all 0\xe2\x80\x99s to left and 1\xe2\x80\x99s to right. Note that size is not given.
- After solving it, I asked what kind of projects does fresher gets.

The next day I got the call and the last round got scheduled after 2 days (on Monday).

#### Round 5: F2F Hiring Manager Interview

- We had little introduction then I was asked 2 coding problems.
- <https://leetcode.com/problems/trapping-rain-water/> or <https://www.geeksforgeeks.org/trapping-rain-water/>
- I explained and wrote code for the Brute-Force approach then I was asked to optimize it.
- It was a new problem to be related to covid but a somewhat modified version of rotten oranges. He told me to take care of all the edge cases, I wrote code then he pointed to read the problem again as `\xe2\x80\x99` missed something, then I took some time and modified the code accordingly.

After 5 days, I got the call saying that I got selected.

**Verdict:** Selected

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# Amazon Internship Interview Experience | On-Campus 2021

- Difficulty Level : \n [Hard](#)
- Last Updated : \n 11 Oct, 2021

Amazon arrived for hiring in the last week of Sept 2021 on our campus for the 6 months Software Development Engineer Role. We had a total of 3 rounds (1 Online Coding on Amazon\xe2\x80\x99s Assessment Portal + 2 Technical Interviews).

## Round 1: Online Assessment Round

The coding round comprised of 4 sections:

- Debugging: We had to choose a language and debug up to 10 questions most probably. Codes were very basic like sorting, etc.
- Coding: There were two medium-hard level questions.
- Work-style Assessment
- Aptitude: 25 aptitude questions (most probably)

## Round 2: Technical Interview Round 1

- [Next Greater Frequency of Element](#): same as next greater element but print greater frequency instead. I was asked to write only the function.

Eg - 1 1 2 1 3 2 → -1 -1 1 -1 1 -1

- [Design a data structure that does insert, delete, max, min deletes max, delete min operations in less time complexity preferred O\(1\)](#) (with duplicate elements),.I answered accordingly as given in GFG using a doubly-linked list and min and max heaps. But he asked for a more optimized delete min/max operation in O(1) but I wasn\xe2\x80\x99t able to come up. He explained to me that we could use one more data structure to store addresses of the elements in the heaps. I was asked only the intuition.

## Round 3: Technical Interview Round 2

1. [Clone a Binary tree having random pointers](#) The structure of the node was already provided.
2. Tell me about any technology that you have started learning or have worked on recently \xe2\x80\x93 Use the STAR method to explain. I was from ECE so I was also allowed to speak about any technology which may be related to ECE too.

## Tips:

- Start from brute force and keep on optimizing when asked.
- Speak while coding or thinking.
- Repeat the question how you have understood it.
- Keep track of edge cases.
- Use STAR method for behavioral questions.

I guess they didn\xe2\x80\x99t ask me any theory as I was from ECE and also not much time was left. Don\xe2\x80\x99t take it for granted, it\xe2\x80\x99s just an assumption of mine.

## Verdict: Selected

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# Amazon WoW Internship Interview Experience 2022

- Difficulty Level :\n[Medium](#)
- Last Updated :\n04 Mar, 2022

I had 2 technical rounds on Amazon Chime. For all DSA questions, I asked about given data types, corner cases, and return type(s).

## Technical Round 1

The interviewer introduced himself, and asked me to do the same, he told me to consider this interview as a discussion session.

- The interviewer asked me about my favorite data structure, my answer was Linked list and tree, maybe, therefore, my first question was:
- Given a binary tree root and a linked list with the head as the first node. Return True if all the elements in the linked list starting from the head correspond to some downward path connected in the binary tree otherwise return False. (also known as \xe2\x80\x9d Linked List in Binary Tree\xe2\x80\x9d)
- I told me brute force solution and time-space complexities. He asked me to write the code, I told him that I can improve the approach and told him an improved approach. During the whole time, the moment I was picking the path towards the correct approach interviewer was acknowledging me by saying \xe2\x80\x9cyes you are going in the right direction\xe2\x80\x9d. He was quite impressed with my code and approach.
- [Next greater element](#)
- <https://www.geeksforgeeks.org/next-greater-element/>
- I told him brute force and then improved his approach.
- He asked me to write pseudo code for this question.

The next day received mail for the next round, round was scheduled for the same day.

## Technical Round 2

The interviewer introduced herself and asked me to do the same.

- Lowest Common Ancestor: <https://www.geeksforgeeks.org/lowest-common-ancestor-binary-tree-set-1/>
- First I explained the brute force solution, she asked for time and space complexity, then I told her the improved solution and wrote the code and time-space complexities.
- Given an n x n grid containing only values 0 and 1, where 0 represents water and 1 represents land, find a water cell such that its distance to the nearest land cell is maximized, and return the distance. (also known as \xe2\x80\x9d As Far from Land as Possible\xe2\x80\x9d)
- I was able to give a brute force solution ( BFS calls for each 0 of the grid)
- She was giving me hints to improve it, but I couldn\xe2\x80\x99t.
- In the end, she asked me to write the code for the approach (brute one) and time-space complexities.

Received positive mail after 8 days.

**Verdict:** Selected

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# Amazon Interview Experience for SDE-1 | Off-Campus 2021

- Difficulty Level :\n[Hard](#)
- Last Updated :\n05 Oct, 2021

**Round 1:** Two questions were discussed.

- <https://www.geeksforgeeks.org/median-of-two-sorted-arrays/>
- Most frequent subtree sum in a binary tree. (Using hashing and postorder traversal)

**Round 2:** Coding question

- <https://www.geeksforgeeks.org/boundary-traversal-of-binary-tree/>
- <https://www.geeksforgeeks.org/find-length-largest-region-boolean-matrix/>

**Round 3:** HM

- Leadership questions, why amazon, etc.
- Design a class Student that can return the percentage of a student.

**Round 4:** BR

- Leadership questions like project under a tight deadline etc.
- Return the sum of all nodes whose Kth ancestor is even.
- For the maximum length of a sequence in a 2D matrix, you are only allowed to move down or right. Also, a sequence between 2 numbers can be formed only if the consecutive numbers have an absolute difference of <https://www.geeksforgeeks.org/longest-increasing-path-matrix/>

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# Amazon Interview Experience for SDE-1

- Difficulty Level :\n[Easy](#)
- Last Updated :\n05 Oct, 2021

I was interviewed for the SDE-1 role at Amazon and I take this opportunity to share my experience.

## Round 1: Coding Assessment:

- Before the technical rounds, I had to complete an online coding assessment (which was relatively easier by Amazon standard).
- Even though I completed this coding round in May, I wasn't scheduled for an interview before the last week of August. I am not quite sure the reason behind such a delay.

## Interview Call:

- I was informed about the dates 10 days prior to the interview and they sent me the meeting links (Amazon Chime and Livecode) 2-3 days before the interview.
- They also sent a mail describing their company principles, their expectation from an SDE, and tips and helpful links to prepare for the interview.
- They also confirmed my availability on the day of the interview over a call.

## Round 2: Technical Round 1:

- The interviewer introduced himself by describing his role at Amazon before asking me something about myself.
- Then he asked a coding question: [Given a sorted dictionary of an alien language, find the order of characters](#). He first wanted to know my approach before asking me to write a pseudo code.
- I did not know the GFG solution so I tried to solve it by myself. I came pretty close to the original solution, but it wasn't fully accurate.
- The interviewer pointed out some cases where my code will not work and while doing so asked some technical questions related to it: mostly graph, tree, linked-list related.

## Round 3: Technical Round 2:

- After one hour of the completion of the first round, the second round began. It started in a similar fashion with both of us introducing ourselves.
- The first coding question I was given was: [Find the Maximum width of a binary tree](#). I was to present a pseudo-code first and once he liked my approach he immediately asked me to write the function.
- I wrote it and he suggested some improvements and then moved on to the next question: [Find Next Greater Element](#).
- I solved it very quickly as I practiced it few days before the interview. He asked me about the time and space complexities of my solution.
- Once both of the coding questions were done, he asked me some behavioral questions as there were some times left.
- He asked if I want to mention any key event as my career highlight. Based on my answer he again asked some questions like what particular issue I found and how I went on to solve it (I probably should have told all the details, but I wanted to keep it short ).
- Finally, he asked me if I had any questions for him.

Unfortunately, I did not make it to the further managerial rounds, but it was a nice experience nonetheless and it boosted my confidence as I was able to answer 2/3 coding questions and I

believe that I can surely improve by practicing more. I hope my experience can help other aspiring candidates in their preparation. Good Luck.

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# Amazon WOW Interview Experience 2021

- Difficulty Level :\n[Medium](#)
- Last Updated :\n04 Mar, 2022

I applied for the **2 months SDE intern** role through Amazon WOW drive 2021. There were a total of 3 rounds for people who applied for 2 months internship program and 4-5 rounds for people applying for 6 months internship program.

**Round 1:** It was an online test on Mettl Platform, consisting of 1 coding question and 40 MCQs covering topics like Data Structures, Algorithms, SQL queries, Linux, Networking, Software Engineering, etc.

- The coding question was a slight variation of <https://www.geeksforgeeks.org/longest-palindromic-substring-set-2/> and there was no negative marking for the multiple-choice questions. This round was of 1 hour 30 minutes.
- I did the coding question with all the test cases passed and also did most of the MCQs. After a few days, I got a mail that I have been shortlisted for the second round.

**Round 2:** It was an online test conducted on AMCAT platform, consisting of 4 sections.

- The first section (20 minutes) was the debugging section and consisted of 7 very easy code snippets which had to be debugged to get the desired output.
- The second section (70 minutes) was the coding section and consisted of 2 coding questions. The first question was a medium level DP problem for me and the second question was a hard level problem based on Disjoint Sets.
- The third section (20 minutes) was Workstyle Assessment. It was kind of a survey and the last section (35 minutes) consisted of Logical Reasoning questions.
- I did the debugging and the Logical Reasoning section completely. And was able to do the first coding problem with all the test cases passed and the second problem partially. After around 15 days, I got a mail that I have been shortlisted for the interview round.

**Round 3(Interview Round):** My interview was scheduled to be on 19th September. It was a 1 hour interview on Amazon Chime.

- The interviewer started with his introduction and then, asked for mine.
- Then, he straight away gave me a coding question. It was a medium-hard level question based on BSTs, Hashing and Heaps. It took me some time to come up with the approach but finally I was able to give an optimized solution.
- The interviewer seemed satisfied with my approach and asked me to code the solution in any desired language.
- Then, he gave me another coding problem which was based on Dynamic Programming. I was able to convince the interviewer with my approach and coded the solution correctly for the second problem also.
- The interview ended there.

I got a selection mail from Amazon on 23rd September.

For the interview round, Communication is the key. The interviewers are very kind and are there to help you out only. Discuss with them whatever approach comes to your mind. I would suggest being patient and calm during the interview. Think out loud. And always hope for the best.

**VERDICT: SELECTED**

I would like to thanks **GeeksforGeeks** for being the one-point destination for my interview preparation. Best of luck everyone!

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# Amazon Interview Experience for SDE-1

- Difficulty Level :\n[Medium](#)
- Last Updated :\n05 Oct, 2021

Online Test, 2 Technical Rounds, 1 Hiring Manager Round, 1 Technical Round.

## Online Test

1. One easy sorting based question
2. Shortest Path problem(BFS)

Both were doable in the given 90 mins time.

2 rounds of technical interviews were scheduled.

## Round 1:

1. K largest Elements of the given array. (Using Heap). As a follow-up was asked to Implement Heap. I was not able to implement the max heap.
2. [\xc2\x0https://www.geeksforgeeks.org/find-the-ordering-of-tasks-from-given-dependencies/](https://www.geeksforgeeks.org/find-the-ordering-of-tasks-from-given-dependencies/). I was able to give the approach but was not able to give the code properly.

Overall the round did not go well. Was my first interview after a very long time, so was kind of nervous. The HR told me the second round had to go really well if I had to move to the next rounds.

## Round 2:

1. Given a file having a timestamp and some log in every line. Retrieve all the logs that depict certain errors. (Basically, the coding style was checked here. if we declared the classes properly, constructors, getter-setter methods and the standard naming conventions, modularity, etc.)
2. <https://www.interviewbit.com/problems/stepping-numbers/>.
  - I was able to answer both questions with great clarity. There were many follow-up questions for the 2nd one, she dug into corner cases and was satisfied with the way they were handled.
  - I was pretty confident that the round went really well and hoped to the interview to proceed further. And yes, I did.\xc2\x0

The hiring Manager Round and another technical round were scheduled.

## Round 3:

- Hiring Manager Round \xe2\x80\x93 All LP questions, reasons for change, expectations, and other common questions.

## Round 4 :

1. Technical Round \xe2\x80\x93 40mins LP questions
2. <https://www.geeksforgeeks.org/total-area-two-overlapping-rectangles/> Easy and done. Have given the approach and coded in 10mins that were left.

Both rounds went well IMO, but it\x80\x99s all subjective. So you are never sure. I was hoping that I\x80\x99d be offered the role, but hard luck, Apparently they had concerns about my

coding(the 1st round that didn't go very well).

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## Amazon Interview Experience for Programmer Analyst

- Difficulty Level : [Medium](#)
  - Last Updated : [04 Oct, 2021](#)

## **Round 1(OA Assessment \xe2\x80\x93 2 hrs):**

- It was conducted in HackerEarth.
  - 3 Programming Questions were asked

## Round 2(Technical Interview \xe2\x80\x93 1 HR)

- Self Intro
  - Directly stepped into coding and 2 coding questions were asked.
  - Next Greater Element with little tweak in the question (Instead of finding the next greater element we need to find the index of the next greater element If no greater element present then -1)
    - Eg: arr = [72,73,74,70,69,70,75,76,73,72]
    - O/p: \xc2\xa0 \xc2\xa0 \xc2\xa0 \xc2\xa0[1, \xc2\xa01, \xc2\xa04, \xc2\xa03, \xc2\xa01, \xc2\xa01, \xc2\xa01, \xc2\xa0-1, -1, -1]
  - Two Sum Problem we need to find whether the Sum present in array or not.If present return True as well as the index of the sum else False.
    - Eg: arr = [1,2,3,4,5], Sum = 8 O/P: True [2,4]
  - What is the Challenging task that you made in your academics or in your project.
  - Any Questions to the interviewer

## **Round 3(Technical Interview \xe2\x80\x93 1 hr):**

- Self Intro
  - Asked me to explain the project in depth.
  - Explained about the role of Programmer Analyst.
  - 2 coding questions were asked.
  - Check Whether the tree is BST or Not

- N<sup>th</sup> last node in the linked list.

\xc2\xa0 \xc2\xa0 \xc2\xa0 \xc2\xa0 \xc2\xa0 Eg \xe2\x80\x93 LinkedList = [1,2,3,4,5], n = 3 O/P:  
3

\xc2\xa0 \xc2\xa0 \xc2\xa0 \xc2\xa0 \xc2\xa0 Eg \xe2\x80\x93 LinkedList = [1,2,3,4,5], n = 5 O/P:  
1

- How have you dived deep into the project you have done?
  - Any Questions to the interviewer.

## **Round 4(Technical + Behavioural Interview \xe2\x80\x93 1 hr):**

- Self Intro
  - Explanation of all the projects done.
  - Questions were based on technology used in project and behavioural questions which includes Leadership Principles.
  - Tell me about the time when you left the task unfinished
  - Tell me about the time when you faced difficulties in the task
  - How did you collect the data for your machine learning project?
  - Any Questions to the interviewer

## Round 5(Final Technical + Behavioural Interview |xe2|x80|x93 1 hr):

- Directly entered into internship experience.
  - Most of the questions were from the project done in the internship.
  - Tell me about a time where you worked with a customer.
  - Tell me about a time where you didn't satisfy the customer requirements.
  - Few questions are from accuracy, precision, recall are the major concepts in ML and DL.
  - Given a Coding question to solve.
    - Given two Binary Trees, check if one tree is a mirror of another tree or not.



- Asked a few questions about the final year Project.
  - Any Questions to the interviewer

## **Verdict: Selected**

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# Amazon Interview Experience for SDE (On-Campus)

- Difficulty Level : \n[Basic](#)
- Last Updated : \n04 Oct, 2021

**Online Test:** There were 4 sections in the online test which was held in the month of August.

- Debugging questions (Easy)
- Coding Questions (Easy-Medium)
- General Aptitude Assessment (Easy)
- Workstyle compatibility test (Read Amazon Leadership Principles to answer accordingly).

I did both questions in the coding round and was hopeful of clearing the online assessment.

## Round 1

- My interview was in the afternoon, I joined earlier than my interviewer. My interviewer was currently a Software Development Manager and an ex-Vice President at Goldman Sachs, I was quite nervous after stalking his LinkedIn profile. Anyways, so he joined and he was very polite while talking. He asked me for an introduction and I told him about myself. I mentioned my interest in sketching and astrophysics and then we had a mini discussion on that. That kind of established a rapport with him.
- Then we jumped to DSA problems and he asked me a problem on finding the first index of the non-repeating characters in a string. I told him an approach using the hash map of time complexity O(N). He seemed satisfied by my approach and asked me to write the code. While writing code, he put a lot of emphasis on clean code and in the end made me change the variable names to improve readability. I learned a lot from that.
- After that, he asked me a variation of rotten oranges which was about finding the time by which all patients in a ward will get COVID infected, given there are three types of cells: [0]-with no patient, [1]-Patient with some disease except COVID, [2]- with COVID patient
- I did it with the approach of multisource BFS. The time complexity of my approach was O(m x n).
- In the end, the interviewer asked me to ask some questions and I asked him about his experience at Amazon and \xe2\x80\x9cHow he start with something new which is a requirement for a project he has been allotted\xe2\x80\x9d. After that, he told me \xe2\x80\x9cit was great interviewing with you\xe2\x80\x9d and ended the meeting on a positive note. I was pretty confident that I will be selected for round 2 but didn\xe2\x80\x9t get any notification regarding it the whole day. The next day, HR called me at noon and asked me to join the meeting immediately.

## Round 2

- My interviewer was already present in the meeting, I introduced myself and she asked me few questions on internships and one of my projects. The questions she asked were based on DBMS (\xe2\x80\x9cWhy did I use MySQL in my project?\xe2\x80\x9d, NoSQL, Scaling). Then she started asking coding problems.
- [Merge K Sorted Linked Lists](#).
- [Find total number of \(i,j\) pairs in array such that i<j and a\[i\]>a\[j\]](#).
- I could only answer the first question and code it. She seemed satisfied. Then she asked me to just explain the approach to the second question but couldn\xe2\x80\x9t come up with an optimal approach for the second one. She asked me to end the interview as no time was left. I asked her some questions on \xe2\x80\x9cWhat she likes best about working at Amazon?\xe2\x80\x9d, \xe2\x80\x9cIf a new technology is a requirement for a project allotted to the

team, how do you guys go about working on it? \xe2\x80\x9d, \xe2\x80\x9c

- Do you have some feedback for me that I can improve upon in the future\xe2\x80\x9d. On the feedback question, her reply was positive but I had doubts since I couldn\xe2\x80\x99t answer the second coding question.

**Verdict:** Selected

**Tips:**

- My final advice would be to believe in yourself and answer with confidence. If at any point you realize your approach is wrong then be honest and humble. Smile, be polite, and try to think out loud.

Also, solve as many previous interview questions as possible.

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# Amazon Interview Experience for SDE-1 (Off-Campus)

- Difficulty Level : \n[Medium](#)
- Last Updated : \n29 Sep, 2021

In the month of April \xe2\x80\x93 May Hackathon named HackOn was held on the HackerEarth platform by Amazon.

## Round 1: Coding Round

Time: 3 questions in 2 hours

- Given a string of 0\xe2\x80\x99s and 1\xe2\x80\x99s. You are allowed to do 2 operations on this string.
- Exor of any 2 consecutive elements and replace them with the result.
- And of any 2 consecutive elements and replace them with the result.
- Our question was to return \xe2\x80\x9cYes\xe2\x80\x9d or \xe2\x80\x9cNo\xe2\x80\x9d. If we can reach 1 after n-1 operations on the string. (Hint-Just check if one is present in the input string)
- Range sum question: <https://leetcode.com/problems/range-sum-query-mutable/>
- I don\xe2\x80\x99t remember but was Leetcode Easy.

Our Idea was not selected but I got a mail-in July regarding the further Interview process. The criteria for selection was all 3 questions must be solved in 1st round.

## Round 2: Interview Round 1

This interview was taken by an SDE-1 and was very friendly. Two questions were asked I was able to solve both in 1 hr.

- <https://www.geeksforgeeks.org/maximize-partitions-such-that-no-two-substrings-have-any-common-character/>
- A simple priority\_queue question. Multiply 2 numbers and put them back in priority\_queue and the answer will be the last standing number in priority\_queue.
- Analyzing time complexity was an important part of the interview.

**Note:** Study heap in detail.

## Round 3: Interview Round 2

This interview was taken by an SDE-1 and was very friendly. One question was asked I was able to solve it in 45 minutes.

- This was a variation of the Job Scheduling problem. The task was to compute the time needed to execute all queries. ith query denoted Jobs that arrive at the time i. There can be multiple jobs entering at a time. Our processor can do n jobs at once.

Queries - [[1, 4], [3], [], [3, 1, 2]]\r\nQuery slot - n (eg 2)

- [The problem was then modified with priorities for jobs.](#)
- One question based on Amazon principles was asked. Tell me about one of your learning experiences. (I told him about my internship experience)

## Round 3: Interview Round 3

This interview was taken by a senior developer with more than 4.5 years of experience at Amazon. He was very friendly and really tried to understand my approach.

- We had a casual discussion at the start followed by a depth discussion about my internship. (15 min approx)
- <https://www.geeksforgeeks.org/recursively-reversing-a-linked-list-a-simple-implementation/>
- <https://www.geeksforgeeks.org/add-two-numbers-represented-by-linked-lists/>
- I told him we can reverse a linked list using pointer manipulation, but he said he wanted a different approach so I had to try and write recursive implementation on spot. These 2 questions took me 30 minutes
- <https://practice.geeksforgeeks.org/problems/detect-cycle-in-a-directed-graph/1>

The interview was over in 1.5 hr.

**Verdict** \xe2\x80\x93 Selected

Note :

- Ask good questions to the interviewer. Asking questions is not about you know more about the company, it's about the interviewer replying and enjoying talking to you. Ask regarding what he does in day-to-day like (In work from home office). Or something related to his current project. The hiring process in Amazon is quite slow it takes time, Took me 1 month for 3 interviews and 4 months from giving tests to getting selected.
- I gave more than 15 interviews and so many tests (GS, Amazon, LinkedIn) Was rejected in all. Didn't even get an internship in any reputed firm. (PS: I interned in a small Pune-based startup).

Keep working hard and all the best.

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# Amazon Interview Experience for SDE Role | 6-Months Internship + PPO (On-Campus)

- Difficulty Level : \nEasy
- Last Updated :\n29 Sep, 2021

Amazon arrived for hiring in the last week of July 2021 on our campus for the **Software Development Engineer Role**. We had a total of 3 rounds (**1 Online Coding on Amazon\xe2\x80\x99s Assessment Portal + 2 Technical Interviews**).

Here is my interview experience for the same.

**Round 1(Online Coding Round):** This round was conducted on Amazon\xe2\x80\x99s own Assessment platform, There were MCQs on Aptitude, Basic Programming, CS fundamentals, English Comprehension, and Decision Making along with 2 coding questions of easy/medium difficulty.

- Suggestion for MCQs: Have a sound Knowledge of CS Fundamentals and Aptitude Solving Practice.
- Coding Questions were based on Implementation only.
- Good practice on Implementation based problems involving **Maps, Vectors, Sets, and other C++ STL components is a must.**

**Round 2(Technical Interview 1):** The platform for the Interview was **Amazon Chime**

The Interviewer asked only 2 Coding Questions in this round:

1. The first problem was, **Given an array of size n having n elements and another array of size n+m having m elements, Sort these two arrays and store the final result in the second array, which should contain the elements of both the arrays.**
  - First I suggested a Brute Force solution by using a third array and then sort them and put them back in the Second array.
  - After that, I suggested a better solution without using a third array, by comparing elements from starting of the first array to the elements at the starting of the second array.
  - After that, he said you are close and then gave me a hint, and I was able to solve the problem successfully.
  - After that, I was asked to code the solution for this problem, which I did as well.
  - And then I was asked to determine the **Time and Space Complexity** of my code.
2. The Second Problem was, **Given a Binary Search Tree, Convert it into a Sorted Doubly Linked List and return the Head Pointer.**
  - This was a **Standard Problem of BST.**
  - I explained my Approach by Traversing from the right to left in the Tree to get the Sorted order of the Linked List.
  - And then I wrote the code for My solution.
  - The interviewer was satisfied with my Code and then asked me to determine the **Time and Space Complexity** of my code.

After this, he asked if I had any questions for him. This round lasted for about 60 Minutes.

**Round 3 (Technical Interview 2):** The platform for the Interview was **Amazon Chime**

The Interviewer asked 2 Coding Questions and some Behavioural Questions in this round :

1. The first problem was, ***Find the first 100 Prime Numbers.***
  - For this Problem first, I suggested a Brute Force Approach by checking numbers starting from 2 whether they are Prime or Not, till we get 100 Prime Numbers.
  - After that, I suggested a better approach, which is using the [\*\*\*Sieve of Eratosthenes Algorithm.\*\*\*](#)
  - He was satisfied with my Approach, after that he made me code the Solution.
  - After that, he asked me the ***Time and Space Complexity*** of my Code.
2. The second problem was, ***Given an array of Strings, find which strings can be combined with other strings in the array so as to make the strings that are present in the array.***
  - For this Problem, First, I suggested a Brute Force Approach using Maps.
  - After that, he asked me for a better approach.
  - After Thinking a while, ***I figured out another Approach using Trie.***
  - He asked me to explain the [\*\*\*Concept of Trie Data Structure\*\*\*](#) and why do we use it.
  - After that he asked me to code the solution using Trie.
  - After I completed the code, he asked me the ***Time and Space Complexity*** of my Code.
  - I was, to give the proper logic and explain my approach to him and he was satisfied with my Solution.

After this, he asked me some ***Behavioural Questions which are the Important Part of all the Amazon Interviews.*** Fortunately, I had already prepared for some of the Most asked Behavioural Questions by Amazon. The behavioral questions were,

1. ***What is the most innovative thing you have done?***
2. ***When is the time when you tried something unique, Did you failed or succeed?***

After this, he asked if I had any questions for him. This round lasted for about 65 Minutes.

After around 1.5 Weeks, the Result was declared and ***I was selected for the role of Software Development Engineer (6-Months Internship + PPO).***

**My suggestion for the Interviews :**

1. Practice all the [\*\*\*Standard Amazon problems from GfG.\*\*\*](#)
2. Have a good understanding of the CS Fundamentals in OS, DBMS, CN, and OOPS.
3. Prepare some ***short notes on CS fundamentals and DSA Problems***, which will be useful for last-minute revision.
4. Prepare and notes down answers to some [\*\*\*Standard Amazon Behavioural round questions :\*\*\*](#)
  - Tell me about Yourself.
  - What are your Strengths and Weaknesses.
  - Tell me about a hard situation for you, and how did you overcome it.
  - Tell me about a time when you took a risk and failed.
  - Why should we hire you.

***At last, always keep calm while giving the Interviews for positive results.***

***All the best for your Interviews.***

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# Amazon Interview Experience for Intern + FTE

- Difficulty Level : \n [Hard](#)
- Last Updated : \n 29 Sep, 2021

Amazon visited our college this year. They currently are on a massive hiring spree, and anyone with decent knowledge can get into it. This is my entire experience.

**Online Test:** It was a 3 hour long online test, which comprised of Code-Output, Debugging, Behavioral, Aptitude and Coding Questions.

- The questions were simple to moderately difficult. Time management was more important than your coding ability.
- There were 2 coding questions, and you needed to solve both of them.

There were a total of 67 interview shortlists. I was one of them.

## Interviews Rounds:

**Round 1:** This was with an SDE 2 at Amazon having more than 6 years of experience.

- The first question she asked was the toughest in all the amazon interviews. The question was: You are given a number, so big that you will need a string to store it. Now, you need to find the next greater palindromic number. I had never seen this question before. I proceeded to tell an approach that would have  $O(n)$  time complexity, where  $n$  will be the length of the string(a hint would be to traverse the string from the middle). She demanded code as well. I tried, but there were a lot of edge cases with my approach. 45 minutes in, still incomplete.
- She moved to the next question. It was a simple \xe2\x80\x9cMinimum steps required by a knight to move from one position to another in a chess board\xe2\x80\x9d question. I was able to answer within a second. She told me to move back to the first question. She was really helpful and was writing down whatever I was thinking to manage my edge cases too. My code was still slightly incomplete, but she acknowledged it was a tough question. I got selected for the 2nd round.

**Round 2:** This too was with an SDE 2. He was really calm and asked me to introduce myself first. After that, he introduced himself and then, we moved to the questions.

- The first question was \xe2\x80\x9cFind the median in a stream of numbers\xe2\x80\x9d.
- The second was \xe2\x80\x9cFind the maximum sum in an array, such that you cannot add alternate elements\xe2\x80\x9d.
- The third was \xe2\x80\x9cFind the maximum profit you can get by buying and selling stocks(no limit on the number of times you can sell/buy)\xe2\x80\x9d. I was able to solve all of them within 15 minutes with optimal time and space complexity, with code.
- He moved to the 4th question: You can make 2 operations on an array: Update any index or find the max in a range of the index. Discuss its time complexity. It was a segment tree solution as I knew Segment Trees helped in ranged queries, but I didn\xe2\x80\x99t know much about them. I still somehow tried to give him the optimal approach as I knew merge sort, we just needed to store all the split-up array states. He was impressed with my solution as it was pretty close to a segment tree, and to be honest so was I. I didn\xe2\x80\x99t think I would be able to think of that solution. He didn\xe2\x80\x99t ask the code for it as he understood I didn\xe2\x80\x99t know much about segment trees and urged me to learn about them as well.
- Then, to my surprise, he moved on to the 5th question. This too was a good one. Given an array, all the numbers in it occur in pairs, and all the duplicate elements are adjacent to each

other. However, one element was 3 in number, they were together too. We needed to find that number. I thought of the XOR approach first, but he was expecting a logarithmic time complexity, and O(1) space complexity. I was able to come up with that solution as well with one hint from him(it was: what would you do to verify if the triplet was present in the array or not). If you want another hint, think binary search. It was a great interview. I had a lot of fun giving it. I was selected for the Managerial round.

**Round 3:** It too was a coding round. It was with an SDE 3.

- He asked me to split a linked list into odd and even halves, without using extra space. I coded it out. Then he asked me to use a function, as now he wanted to split the linked list based on prime and composite. Did that too. Then, he asked me to design a way in which the client can write the condition of splitting the linked list, without affecting the code which I am writing. I used interfaces for it. He was satisfied.
- He then asked me about my projects. My internships. His focus was a lot on STAR paradigms, which thankfully, I had read a day prior to my interview(Situation, Task, Action, and Result). Overall, it was just another Managerial round, with a few easy questions here and there. The final selection list came, and there was my name, along with 8 other students for 6 months internship + FTE. It was one of the happiest days of my life.

For anyone who wants to crack one of these companies, I would recommend you to familiarise yourself with Data Structures and Algorithms. GfG helped me a lot. I remember thinking to myself that the people selected for companies like amazon must be really brilliant, but now that I myself am, I would say it's not that difficult. Just give it your best. A few practical tips would be to get good at writing what you are thinking, debugging your code, and not hesitating to ask for a hint from the interviewer. Good communication skills help too.

Good Luck!

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# Amazon Interview Experience for SDE-1

- Difficulty Level : \n [Hard](#)
- Last Updated : \n 29 Sep, 2021

## Online Assessment:

- 1 leetcode easy question
- 1 medium leetcode graph: finding the shortest path with mines in between the start and end location provided
- Also required to explain the approach in documentation

## F2F Round 1: SDM with huge experience

1. Queue implementation using stacks \xe2\x80\x93 pinpointing on clean code and optimisation/tweaks \xe2\x80\x93 Easy/Med
2. Check symmetry in n-ary(generic) trees- HARD: you can watch a tutorial on Youtube by pepcoding

This round did not go well as I could not figure a full solution to the second question

## F2F Round 2: Taken by an SDE 1

- 2 behavioural questions on amazon LP: When you had tough deadlines, and you had to make compromise what did you do?
- TIP: High standards, think out of the box, no compromises, prioritise tasks
- When you worked out of your designated work?
- TIP: ownership principle, teamwork

2 coding problems :

1. Remove elements from sorted Linked List which occurs more than once
2. Binary search Medium+ question \xe2\x80\x93 Sorted array with some swapping between neighbouring elements, now you are given a key to search

ANS \xe2\x80\x93 these are sorted segments \xe2\x80\x93 use Binary search \xe2\x80\x93 find points where swapping might have been done

I was able to solve all questions and gave good behavioural answers as well

Shortlisted for 2 more rounds

## F2F Round 3: Taken by SDM with high experience

- 4-5 Behavioural Questions Situation based on LP based on Customer obsession and more
- When you did something extra for customers?
- When you and the client had different POV and how did you solve that ?
- Basically how you handle conflicts
- 1 coding question \xe2\x80\x93 validate sudoku

TIP:

- Getting all edge cases is very important over here and in all the problems before you write the code, get those seemingly obvious/vague/tricky cases cleared. ASK, there is nothing that you

can lose in that

- I was able to solve the coding problem and was prepared for behavioural

TIP: for behavioural, <https://interviewgenie.com/blog-1/interviewing-at-amazon-behavioral-interview-questions>

and more, you can check at LinkedIn

#### F2F Round 4:

- Discussion on projects, OS, DBMS, CN
- amazon.com link working in the background \xe2\x80\x93 networking?
- Transactions and deadlocks?
- Bankers Algo?
- Threads and processes in OS
- One Coding problem \xe2\x80\x93 Medium/hard
- CONVERT CAT -> MEN
- all intermediary words should be proper dictionary words( which is already implemented, no worries about that)
- In one iteration you are allowed to only change one letter at any position in the word to form the next word
- CAT -> CAN ->MAN -> MEN

TIP \xe2\x80\x93 Recursion

VERDICT: Selected

#### Few Tips:

- It was an off-campus application, took one month for the process.
- Keep faith in yourself
- Interviewers will guide you to the solution if you get the subtle hints and work in that direction
- Workout with all edge cases
- Do not panic, treat it like a good discussion

Thanks to the YouTubers I followed and GfG

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# Amazon Internship Interview Experience 2021

- Last Updated : \n29 Sep, 2021

Amazon Interview experience for Internship 2021. There was 1 coding exam round and 2 technical interview rounds.

**Coding Exam:** There were 2 coding questions as follows:

- Count the number of distinct pairs in an array that adds up to a given target sum
- A question on linked list modification
- 24 Aptitude Questions, around 80 Psychometric Questions, and 7 debugging questions

**Interview Round 1:** The interviewer asked to explain the logic and code for the following questions right away:

1. In a sorted array having each number repeated, there is one Unique number. List the different approaches with the help of which you could solve this problem. (I said Linear search, hashing, and Binary search \xe2\x80\x93 I was asked a detailed logic for the binary search approach with complete time and space complexity analysis, with proper code.)
2. Print the zig-zag traversal of a binary tree (I explained 2 methods: One, using queue and stack, Another using 2 stacks)
3. I was asked if I had any questions.

**Interview Round 2:**

1. Tell your entire journey, challenges faced during your previous internship. Explain the evaluation metrics for the project during your internship (I had an internship in NLP background). Tell about your experience when you had to learn something new, to get out of your comfort zone to achieve something in your life.
2. Coding Question: Given a 2D Boolean array where each row is sorted, find the row with the maximum number of 1s. (I had to explain code the optimized approach)
3. Do you have any questions from us?

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# Amazon Interview Experience for SDE 1 (On-Campus)

- Difficulty Level : \n [Hard](#)
- Last Updated : \n 28 Sep, 2021

## Round 1: Coding round

- Code Debugging (20 minutes)
- Coding questions (70 minutes): There were 2 coding questions:  
[Maximum of all subarrays of size K](#)  
 Count all substrings with at most K distinct characters
- Workstyle assessment (20 minutes): MCQ to assess your behavior and your attitude
- Reasoning ability section (35 minutes): basic aptitude questions

## Round 2: Technical Interview Round 1

Time: 1hr

I was asked to introduce myself and then he asked me 2 coding problems:

- Given 4 digits, make the largest time in 24 hr format. I initially came up with a greedy solution using backtracking. Although this solution was right, the interviewer asked me to think of another logic as this one was slightly complicated to code with too many conditions. He gave me a hint by saying focus on the number of digits. It then struck me that I can simply find all the permutations of these digits and find the maximum valid time. He was satisfied with this approach and asked me to code it.
- Evaluate division. I was quickly able to come up with a solution using graphs. I was then asked to write a code.

We also discussed the time and space complexities for each of the above problems.

## Round 3: Technical Interview Round 2

Time: 1.5hr

The interviewer asked me to introduce myself. Then he shifted to coding problems:

- Given N people's entry time and exit time to a shop. You will then get Q queries. In each query, there will be a timestamp. You need to tell the number of people present in the shop at that timestamp. He also told me that Q will be pretty large.
- The obvious approach was to do some preprocessing that will help me to answer each query efficiently. So based on this, I told him 2 approaches with space complexity O(N) and each query could be answered in O(1). He then asked me to come up with a solution with O(1) space complexity. After thinking for some time, I came up with the following logic:  
 In the preprocessing step, just sort the entry time and exit time arrays.

Now for each query, we just need to perform a binary search to calculate the answer.

The interviewer was satisfied with this approach and asked me to code it.

- Create a data structure that performs the following operations in O(1):- insertion, deletion, if exists, get random value. I struggled with this problem for some time. He then gave me some hints. After that, I was able to get the solution. He then asked me to quickly code the solution.
- After these two questions, he started asking me about my project. He asked me some basic questions like:
  - Describe your project
  - What challenges did you face?
  - Did you learn anything while developing the project?

- How did you collaborate with other members of the team?
- What technologies were used to develop this project?

#### Round 4: Technical Interview Round 3

Time: 1hr

- I was first asked to introduce myself. After this, we had a 15min discussion on my internship followed by a 15min discussion on my projects. Then he asked me a coding question involving OOPS concepts: Let's say that you are the author of a library `Canvas` that is used to make polygons based on the given coordinates. Assume that you have already implemented the `drawing` function. Now, how will I add extra functionalities that are capable of drawing any N-sided polygon? Also, he wanted this library to be implemented in such a way that the user is able to override some of its functionalities. We discussed this problem for some time and I came up with an approach using normal logic and some OOPS concepts. He was satisfied with my approach.

I was offered FTE+Intern.

#### Tip:

- Make sure that you convey your ideas effectively to the interviewer. Also, listen to the interviewer carefully when he is saying something. There is a high probability that he wants you to think in a particular direction.

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# Amazon Interview Experience for SDE-1 | Off-Campus 2021

- Difficulty Level :\n[Easy](#)
- Last Updated :\n28 Sep, 2021

**Round 1(Online Assessment):** This round was on the HackerEarth platform. Two coding questions of medium level.

**Round 2(Technical Interview 1):** After two months of online assessment, my first and second technical interview was scheduled on the same day.

- This interview was taken by SDE2
- Firstly she introduced herself and asked me to introduce myself.
- After that, she asked three behavioral types of questions.
- And then she gave me a coding question which was something related to this question  
<https://www.geeksforgeeks.org/minimum-number-swaps-required-sort-array/>
- I was able to solve that question and was finally done with this round.

**Round 3(Technical Interview 2):** After two hours, my second interview was scheduled on the same day.

- This interview was also taken by an SDE2
- He introduced himself and asked about me.
- And he jumped into coding questions.
- He asked me two coding questions.
- The first question was related to Lowest Common Ancestor in a Binary Tree and he has added some edge cases.
- The second question was a trie data structure-based question related to finding words in dictionary type.
- On the same day, I got a call from a recruiter that my next round is scheduled for the day after tomorrow.

**Round 4(Technical Interview 3):** In this round, the interviewer is a Software Development Manager at Amazon.

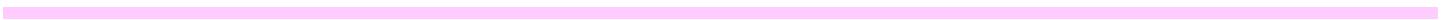
- First, he introduced himself and told me to introduce myself.
- He asked me about the projects which I have done.
- And he jumped into coding question
- The question was: Design a data structure that inserts, deletes the topmost element in O(1) time and also finds, delete middle element in linear time.
- I started solving it using Stack but he suggested me to use Deque, I was not able to solve the delete middle element function in O(1) time using deque.
- After that, he asked me to write a SQL query.
- After that, he asked some behavioral types of questions.
- The interview Ended.

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# Amazon Interview Experience for SDE 1 | On-Campus

- Last Updated : \n28 Sep, 2021

## Round 1: Online round

The test was conducted on amazon\xe2\x80\x99s platform. It has 4 sections:

1. Code Debugging (C, C++, Java ,6 \xe2\x80\x93 7 Questions) 20 minutes
2. Aptitude and Reasoning Ability,35 minutes
3. Workstyles Assessment, 20 minutes
4. Coding Round,70 minutes

The first 3 rounds were fairly easy, but you should be fast enough to solve in given time constraints. There were 2 coding problems that were similar to the below given.

1. <https://leetcode.com/problems/maximum-units-on-a-truck/>
2. <https://practice.geeksforgeeks.org/problems/minimum-platforms-1587115620/1>

## Interview Rounds:

### Round 2: Face to Face Interview

1. Introduce Yourself and asked some questions about what I have said in the Introduction.
2. <https://leetcode.com/problems/palindrome-linked-list/> and also asked some variations of it
3. <https://www.geeksforgeeks.org/minimum-steps-reach-target-knight/> and also asked variations of it which are discussed on below-given link <https://leetcode.com/discuss/interview-question/322837/Google-or-Onsite-interview-or-Knight\xe2\x80\x99s-Shortest-Path-on-an-Infinite-Chessboard>

### Round 2: Face to Face Interview

1. Introduce Yourself.
2. <https://www.geeksforgeeks.org/rearrange-given-array-such-that-each-elements-is-not-equal-to-mean-of-adjacent-elements/>
3. <https://www.geeksforgeeks.org/find-height-of-a-special-binary-tree-whose-leaf-nodes-are-connected/>
4. Standard Managerial / HR question was asked

### Round 3: Face to Face Interview

1. Introduce Yourself.
2. <https://www.geeksforgeeks.org/minimum-cost-to-merge-all-elements-of-lis>
3. <https://www.geeksforgeeks.org/bottom-view-binary-tree>
4. As always One standard Managerial question asked

## Result: Selected for 6 Months Internship

Tips:

- The Interviews were conducted on Amazon Chime(A video calling platform).
- The Interviews were of 45 min -1 hr each.
- Any particular advice: Before the Interview, please refer to the Leadership Principles of Amazon. And for each and every problem you have to write code in your favorite language and

you should also be able to convey your thought process and dry-run through the code. Time complexity and Space Complexity is a must for every problem.

- A big Thank you to GeeksforGeeks for transforming me from a reader to a writer.

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# Amazon Interview Experience for SDE-1

- Difficulty Level :\n[Expert](#)
- Last Updated :\n28 Sep, 2021

I applied to the Amazon Jobs portal. Received a link for Online Assessment on Hackerrank.

## Round 1 :

- Sort a list of prime and non-prime orders(<https://leetcode.com/discuss/interview-question/1261316/amazon-qa-sde-1-new-grad-2021-batch-india>)
- Find the Shortest path from the source to destination on a grid (<https://www.geeksforgeeks.org/shortest-distance-two-cells-matrix-grid/>)
- Write a brief on time, space complexities, and approach used to solve both questions
- Followed by Some 30 Behavioral MCQ questions

## Tips:

- Prepare Amazon Interview experience questions on GeeksForGeeks and Leetcode Amazon tag problems. Will receive notification call/mail if we get Shortlisted
- I had 3 rounds which were conducted on Amazon Chime \xc2\x9a0

## Round 2:\xc2\x9a0Interviewed by an SDM

- Tell me about yourself
- Your favorite project and why it is so?
- Tell me an experience when you have to disagree with your manager
- Tell me an experience when you had to redo the work and how you handled it
- Design an approach for glowing different combinations of LEDs(Red, Blue, and Green) \xe2\x80\x93 Focused on OOPS concept and SOLID principles

## Round 3 :

- Tell me about yourself
- Behavioral question
- Given a pair of Northern and Southern cities which are separated by a river. Find the number of bridges possible to connect the pairs without Intersection- based on Longest Increasing Subsequence

## Round 4 :

- Introduce yourself
- Behavioral questions \xe2\x80\x93 When you helped others in your team voluntarily
- Find the number of eligible cities that can be covered with the given budget \xe2\x80\x93 where eligible cities are the leaf nodes of a tree \xc2\x9a0
- First Non-repeating character in a data stream \xc2\x9a0

## Tips : \xc2\x9a0

- Relax and answer confidently
- Prepare on LEADERSHIP principles \xe2\x80\x93 Practice STAR method while answering Behavioral questions
- Ask questions \xc2\x9a0

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# Amazon Interview Experience for SDE 1 (Experienced)

- Last Updated : \n28 Sep, 2021

I had applied through Amazon Diversity Hiring Challenge for women at Hacker-earth.

## Round 1: Online Coding Test

- There were two coding questions that had to be solved in 3 hours. I was able to solve one completely and one partially. After around a month, I received a mail from Amazon that I was shortlisted for the interview. My first two rounds of technical interviews were then scheduled after a week.

## Round 2: Technical Interview 1

- The interviewer was SDE-2 at Amazon. The interview lasted for an hour.
- It started with a brief introduction. Then she directly moved to the coding questions:
- <https://www.geeksforgeeks.org/print-all-subarrays-with-0-sum/>
- I solved this question using hashing.
- <https://www.geeksforgeeks.org/rearrange-characters-string-no-two-adjacent/>
- I solved this question using a priority queue.
- Then she asked me two leadership questions:
- Tell me about a time when you had to make a decision under pressure to meet a deadline.
- Tell me about a time when something unexpected came up. How did you deal with the situation?

## Round 3: Technical Interview 2

The interviewer was SDE-2 at Amazon. The interview lasted for an hour.

- It started with an introduction and then he asked me two coding questions. Given a set of mapping A->B, where A is getting infected with covid-19 through B. I had to tell who was the first person to start the infection. Eg, 2->3, 3->4, 5->6, 7->6, 6->1. So here 1 will be the answer. I solved this question using a set.
- <https://www.geeksforgeeks.org/maximum-product-subarray/> I solved it in TC O(n) and SC O(1). Then he asked me to send him a write-up of any one project that I've worked on in my organization.
- Both the rounds were held on the same day and on the basis of the combined results of both the rounds, I was shortlisted for the third round that was scheduled after a week.

## Round 4: Hiring Manager 1

- The interviewer was Senior SDM at Amazon. The interview lasted for an hour.
- It started with a brief introduction of the interviewer and then he discussed the project that he was working on. He then asked me to tell him something about myself. After that, he asked me to choose any one project that I have worked on at my current firm, and then we had a discussion on that for around 30 min.
- He then asked me to tell about a time when I had to choose between different options available and then decide which one works the best. I discussed one of the projects I did in college and the discussion lasted for around 20 minutes.
- Then, he asked some questions on core subjects: asked me to write one SQL query, OOPS concepts, and the difference between interface and abstraction.

After around 10 days, I got a call for the last round of interviews.

## Round 5: Hiring Manager 2

The interviewer was SDM at Amazon. The interview lasted for an hour.

- The first coding question was: Given a chessboard where you are at the bottom left corner. Tell me the number of different ways to reach the top right corner. We had a discussion on edge cases. Then I gave a solution using BFS and he asked me to write the code for it, but that was best suited to find the smallest path. He told that the question will be solved using a greedy approach. Since I was not able to solve it completely, he switched to the next question.
- <https://www.geeksforgeeks.org/search-an-element-in-a-sorted-and-pivoted-array/> I solved this question using binary search and he was satisfied.

Then he asked one leadership question.

**Verdict: Selected!** After two days, I got a mail that I was selected.

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# Amazon Interview Experience for Programmer Analyst 2021

- Difficulty Level :\n[Basic](#)
- Last Updated :\n14 Sep, 2021

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# Amazon Internship Interview Experience | On-Campus 2021

- Difficulty Level :\n[Easy](#)
- Last Updated :\n06 Sep, 2021

## Round 1: Online Assessment:

1. **Debugging:** Solved 7/7, time limit was 20 minutes.
2. **Coding:** [xc2\xxa0](#)
  - <https://leetcode.com/discuss/interview-question/241808/Google-Two-sum-closest>
  - Problem-based on binary search.
3. **Worklife assessment:** Don't know the time limit, was sufficient. (The mail mentioned it would be 20 minutes but there was no timer in this section).
4. Aptitude: 24 questions in 30 minutes.

## Round 2: Interview

There was only 1 round of interviews for Summer Internships, duration ranged from 30 minutes to 80 minutes. Most were over around 50 minutes.

- The interviewer introduced himself and then asked me to introduce myself.
- My interview lasted for only 30 minutes
- He told me that my interview was going to test me on my coding and problem-solving skills.
- First, he asked me what a Linked List is.

## 3 Coding questions followed:

- Swap Nodes in pairs <https://leetcode.com/problems/swap-nodes-in-pairs/>, He asked me to write the structure of the Node class for the Linked List first. Then I gave him an iterative approach. He told me to code it. As I started writing the code, I thought recursive would be cleaner, I said the same to him, and he told me to code whatever approach I want. I coded the recursive implementation. Once I was done, I told him that the code is done, just let me dry run it once. He said, let us do it together, he gave me input, and I took him through every line of the code, what value was being stored in each variable after each line, I wrote all of this down in the comments, he was satisfied with it and moved on to the next question.
- Print all subsets of the given array <https://leetcode.com/problems/subsets/>. I gave him a backtracking approach and told him how my code would execute on a given set of 3 elements, once he was satisfied, he asked me to code it. Once I was done with the code, I had to again take him through the dry run of the code on the same set of 3 elements, the recursion went very deep during the dry run, I got a little confused after 3 subsets were printed but I was able to go through till 4 or 5 subsets, he was satisfied then.
- Level Order Traversal of Binary Tree <https://www.geeksforgeeks.org/level-order-tree-traversal/> Since my first 2 questions were on the easier side of the medium questions, I figured he might give me a harder question now, but to my surprise, he gave me the easiest question possible. I told him the queue implementation, he gave me a binary tree, I showed him by writing down the queue state in each iteration and printing the output. Once the complete level order traversal was done he told me to code it.

**Tip:** If you're explaining the dry run of a recursive code, maintain a call stack, and keep pushing all the function calls onto the stack, I didn't do this so I got confused when I backtracked as I forgot what the last call was after 4 levels.

After the code was done he said that will be it, do you have any questions for me? I asked him

about the tech stack used at amazon and at his team.

**Verdict:** Selected

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# Amazon Interview Experience for SDE 1 | Off-Campus

- Difficulty Level :\n[Medium](#)
- Last Updated :\n06 Sep, 2021

I applied at Amazon via their job portal for various positions. I had been applying continuously for various SDE-1 positions for over a year at Amazon before I finally received a link for their Online Assessment. So if you are not receiving a link for the online Assessment then don't be disheartened, keep applying, they will have to give up in front of your determination and perseverance.

## Online Round :

There were two questions:

1. The first one was a simple array question and it could be solved using the brute force method.\xc2\xa0
2. The second question was based on finding the shortest route between two points on a grid. It could be solved using the BFS algorithm.

I got full marks for the first question, and for the second question, I got 16/20.\xc2\xa0

Most of my fellow batch mates who received the OA link got full marks in both questions, so I wasn't expecting an interview call. But guess what? Out of all the students only I received an interview call. So never forget that your resume plays a very important role in you getting selected. So always make your resume very carefully and tailor it according to the job description.\xc2\xa0

I received an interview call from HR after 45 days. I was invited for 2 interview rounds. These were purely technical rounds and were taken by SDE-2s. The HR would try to set up the interview in a short time, but take your time and ask for a minimum of a week\xe2\x80\x99s time and a maximum of two weeks\xe2\x80\x99s time for preparation. The interview was conducted over chime and a shared code editor.

## Round 1: Interview Round 1

1. There was only one interviewer and they will first introduce themselves and then ask you to introduce yourself.
2. The first question was \xe2\x80\x93 <https://www.geeksforgeeks.org/find-a-peak-in-a-given-array/>
3. The second question was \xe2\x80\x93 <https://www.geeksforgeeks.org/sort-linked-list-already-sorted-absolute-values/>
4. For both, the questions first tell them the brute force solution and then explain the optimized method.
5. They will ask you to make slight optimizations that won't necessarily change the time complexity but can save computations.
6. Explain to them the time and space complexity.
7. Then he asked me what was a technical challenge I faced in my project. Follow the STAR method for giving your answer.
8. Think out loud. Ask for feedback during the questions and ask for clarification if you didn't understand any part.
9. In the end, he asked me if I had any questions. Be sure to ask some questions that would leave a positive impression on the interviewer.

## Round 2: Interview Round 2

1. This was again taken by an SDE2 and started with a brief introduction.
2. The first question was \xe2\x80\x93 <https://leetcode.com/problems/asteroid-collision/>
3. The second question was \xe2\x80\x93 <https://www.geeksforgeeks.org/find-subarray-with-given-sum-in-array-of-integers/>
4. Always discuss edge cases and be as interactive as possible with the interviewer.
5. Again keep a question ready that you would want to ask the interviewer.
6. Be organic in your conversation with the interviewer.

## Round 3: 3rd and 4th Interview Round

1. Both these rounds were managerial rounds.
2. The interviews started with a brief introduction of what domain the managers were working in. You should pay a lot of attention to these introductions as asking some questions related to their domain at the end would fetch your really good points.
3. Both the managers dived right into my internships, and my projects. These questions should be answered keeping in mind the LEADERSHIP PRINCIPLES using the STAR technique.
4. In the 3rd round, I was even asked to draw the system design of my projects and he asked my very targeted questions regarding the design, something which I had not prepared very well, but luckily I knew the projects well and was able to adapt at the moment. So be sure to have in-depth knowledge about your project and if you are not sure about some project then it\xe2\x80\x99s best to avoid talking about it.
5. I was also asked to design the Tiny URL problem. So it is safe to prepare design questions too for interviews.
6. A few fact-based questions were asked in the 4th round. How are google maps able to show the traffic density at a location.
7. At the end both the managers asked me if I had a question, and I was able to ask a really good question, as the manager answered it for 7-8 minutes and praised me for asking it.
8. We often underestimate the power of a really insightful question asked at the end, this is an opportunity to showcase to the manager that you are more than just another coder and that you think and care deeply about the work and the organization.

After about 5 days I received an offer from Amazon.

In the end, I would say that it took me more than 200 applications to get an interview call at Amazon, so don\xe2\x80\x99t be disheartened by setbacks and failures. Use them to improve yourself and grow as a person.\xc2\xao

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# Amazon Internship Interview Experience | On-Campus

- Difficulty Level :\nHard
- Last Updated :\n03 Sep, 2021

## Round 1: Online Test

This test was conducted on the AMCAT platform. This round was of 2.5 hours and comprised of 4 sections:

### Debugging Round:\xc2\xa0

- This round comprised of 7 debugging questions and we were allotted 20 mins to solve them. The debugging questions were fairly simple. Students could choose whichever language(C++, Java, C) they were comfortable in to attempt the debugging questions. For this round, I would suggest one have a sound knowledge of the very basics of programming. One should know the difference between pre-increment and post-increment operators, various sorting algorithms, conditional statements, and the implementation of basic data structures.

### Coding round:

We were given two coding questions and were allotted a total of 70 mins for this round. There were different sets of questions. Questions in my set were as follows:

- Given an N-ary tree with each node assigned a value, return the reference to the node which has the highest average of all the values included in its subtree and itself. This was a fairly simple problem if you have a good understanding of trees and their traversals.
- I solved this question in a bottom-up manner. I had created a class Pair that had two properties Total value of all the nodes present in a given node\xe2\x80\x99s subtree, Total elements present in the given node\xe2\x80\x99s subtree
- One object of the \xe2\x80\x98Pair\xe2\x80\x99 class was associated with each of the nodes and was passed up to the parent for the required calculations and computations.
- Given a string, find the number of a distinct set of partitions that can be made such that each partition is a prime number <https://www.geeksforgeeks.org/count-of-ways-to-split-a-given-number-into-prime-segments/>
- This was a good question as it involved quite a heavy implementation of sieve, backtracking, and dynamic programming for time optimization.

### Leadership Principles:\xc2\xa0

- This round comprised 60 leadership questions. It is comprised of various situational questions and tests your reactions towards various situations. It also checks your leadership principles, your overall moral values, your priorities, and what you are as a person overall. Each question had a slider where you had to slide the slider to the level you consider to define you the best. This round was of nearly 20-30 mins.

### Aptitude:\xc2\xa0

- There were 24 aptitude questions and was of about 30-40 mins in duration. The questions were fairly simple. Logical Reasoning and conclusion-based questions are one thing I\xe2\x80\x99d suggest the students practice a little bit to gain speed and clarity.

Nearly 250 people had sat for the first round and 55 were shortlisted for the interviews.

## Round 2: Interview Round

This is generally a 50-60 minutes interview round. This is taken on the platform Amazon Chime.

- My interviewer started off by giving a small introduction of himself and asked me for mine. In my introduction, I had explained my growing interests in the field of web development so he asked me a little about my projects and the tech stack(MERN) I used.
- How has the MERN stack resolved the issues you faced earlier.
- Why ReactJs? (Reconciliation, Virtual DOM, Diffing Algorithm, Reusable Components)
- How is ReactJs better than its competitive frameworks?
- Why NodeJs? (Single-threaded, Non-blocking I/O, Event Loop, Asynchronous tasks, JavaScript-based)
- What do you mean by single-threaded, non-blocking I/O?
- What is an event loop?
- Difference between SQL and NoSQL databases
- Why MongoDB?
- The basic idea of my project
- How would you resolve issues faced in Cowin App?

After a 20 minutes long discussion on my project, he moved on to the DSA questions

- Given a stream of infinite characters(not necessarily alphabets) return the first non-repeating character in a stream whenever asked. I explained to him the basic approach using a Queue and HashSet/HashMap. However, he wanted a more optimized approach where both the input and output functions were to be performed in O(1) time. I was stuck in this but the interviewer was very friendly and gave me a lot of hints. The interviewers always see if you are able to reach the approach to follow the hints they give you very rigorously. Finally, I could solve it using a Doubly Linked List using a concept similar to LRU Cache.  
<https://practice.geeksforgeeks.org/problems/first-non-repeating-character-in-a-stream1216/1>
- A very standard Breadth-First Search(BFS) question where I was given good and rotten cells and each rotten cell could rot the nearby good cells in 1 unit of time. Calculate the time taken to rot all the good cells. <https://www.geeksforgeeks.org/minimum-time-required-so-that-all-oranges-become-rotten/>
- He finally asked me If I had any questions for him. I asked him about the work culture at Amazon. The work-life balance at Amazon and feedback if any(don't ask this).

Finally, 25 students were offered the summer internship at Amazon and I was lucky to be one of them.

### Verdict: Selected

### Tips:

- Go through the previous year's Amazon questions. It can easily be found on the GeeksForGeeks portal.
- Go through the Leadership Principles of Amazon. Will help you a lot.
- Keep communicating with the interviewer and let him know about your approach. Ask for edge cases and keep your confidence high.

I would like to thank GeeksForGeeks for helping me through my preparation journey. All these questions are already present on the GFG portal. Go through them thoroughly.

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# Amazon Interview Experience for SDE 1 (6-Months Experienced)

- Difficulty Level : \n [Hard](#)
- Last Updated : \n 01 Sep, 2021

I applied for SDE1 Role in Amazon March 2021. Selection process completed till Mid-June. I will try to give all the details in this Article.

**Apply** \xe2\x80\x93 I visited Amazon career page, there I found some roles for SDE1 (6 months experienced). I messaged 3-5 people working in amazon for referral through linkedIn. I attached my resume and job Id in the message. And one generous person referred me for the same. In 1 week, recruiter contacted me. and I got a coding round link.

**Coding Round** \xe2\x80\x93 Coding round was of 45 min. There were 2 coding questions, both were of customized sort function.\xc2\xa0

- In Interviews, Expectations for every coding question asked was explanation, optimized coded solution, time & space complexity. Take your time, but do every question properly. Show your perfection. There will also be interviews with only 1 coding question asked.\xc2\xa0
- Prepare a professional scenario, instances for questions related to Leadership principles.

**Round 1** \xe2\x80\x93 He started the interview with a small introduction of both of us. He asked about OOP concepts. He asked about my current project, learnings in my current company. He asked about vertical and horizontal scaling, small definitions. Coding questions:

1. <https://www.geeksforgeeks.org/segregate-0s-and-1s-in-an-array-by-traversing-array-once/>. I easily did this question in my first attempt. So, he also asked to solve this problem <https://www.geeksforgeeks.org/sort-an-array-of-0s-1s-and-2s/> I did it completely too.
2. There is a manager who needs to manage tasks and schedule them. Tasks have a dependency on one another. For this, the solution was topological sorting. <https://www.geeksforgeeks.org/topological-sorting/> I wrote the solution. The interviewer caught the edge case. i.e. Topological sorting is only applicable to the acyclic graphs. I missed this case. I wrote the correct code in the end.\xc2\xa0

**Round 2** \xe2\x80\x93 Round 2 happened on the same day. Interview started directly with the coding questions:

1. <https://www.geeksforgeeks.org/length-of-the-longest-substring-without-repeating-characters/>. I gave the most optimized solution in my first attempt. I did two mistakes in my code. It was pointed by the interviewer. I resolved it.
2. <https://www.geeksforgeeks.org/inorder-successor-in-binary-search-tree/>. This question was new to me. We both discussed for the solution. At the end, we developed O(h) time complexity solution. I wrote the solution. He was satisfied.

Leadership Principle questions: How you gained your interest in coding? What you managed the preparation for amazon with company work?

**Round 3** \xe2\x80\x93 Interviewer was hiring manager. He started the interview with small introduction of both of us.\xc2\xa0

- Then, He jumped to coding question: <https://www.geeksforgeeks.org/add-two-numbers-represented-by-linked-lists/>. I wrote the correct code in my first attempt. Then, he discussed

how much the code will change, if there numbers are float. He wanted me to give answer in modular way. Discussion and writing pseudo code went long. So, only 1 coding question was solved.

- Leadership Principle questions: How you handle tight deadlines ? How you handle conflicts in work?\xc2\xa0

I asked about my feedback to the interviewer. He said:

1. I assumed that, every node will have 1 digit. Number is an integer, not a float. Number is always positive, not negative. I should have asked these questions to him.
2. I wrote function named as \xe2\x80\x9ccadd2ll\xe2\x80\x9d. He advised me to write it full as \xe2\x80\x9ccadditionOf2LinkedList\xe2\x80\x9d.
3. He told me the minimal code alterations for float numbers.

**Round 4 \xe2\x80\x93** This was the bar-raiser round, most important round of the interviews. He thoroughly asked me about my work in current company.

- Leadership Principle questions: Situations, where you did more than expected? How you handle tight deadlines?\xc2\xa0

Then, He asked me this coding question:

1. Convert given doubly linked list to spiral ordered binary tree.

eg. 1-2-3-4-5-6-7-8\r\n 1\r\n 2 3 \r\n 7 6 5 4\r\n 8

At first, I was giving confusing solution. Then he asked me which data structure to be used to traverse binary tree in spiral order. From there, I got the correct solution. i.e. Traversal of doubly linked list and the reverse of <https://www.geeksforgeeks.org/level-order-traversal-in-spiral-form-using-deque/>

I wrote the complete, error-free code in one go. Interviewer was impressed with me.

**Result:** Selected for SDE1 profile. Thanks to GeeksforGeeks.\xc2\xa0

#### Tips \xe2\x80\x93\xc2\xa0

1. Study lots of amazon interview experiences. It will help.
2. If you covered all the edge cases in the code, and your code is correct. Then, interviewer will really be impressed with you. Dry run your code, before submitting to interviewer.
3. Give proper, complete names to function and variables.
4. If you have doubts for the question. Do ask it. Interviewers will be happy to answer.
5. Propose a solution to interviewer at first. If he is fine with it, then start coding.\xc2\xa0
6. Think a question before-hand, that you can ask to interviewers at the end.\xc2\xa0
7. Luck plays an important role. So, be consistent in your practice and in applying in jobs. All the dreams, will come to you one day.

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# Amazon Interview Experience for SDE-1 | Off-Campus 2021

- Difficulty Level :\nEasy
- Last Updated :\n02 Sep, 2021

I got this opportunity through my college email, which was sent by Amazon India Campus SDE. I applied and I got the Test link.

## Round 1: Online Assessment

This is a written test, which contains several sections:

- Code Debugging ( Automata Fix) :
  1. This section contains 7 questions and is given 20 minutes of time. We have to find the mistake in the given code and we have to fix and run the code. If all test cases passed. Then it\xe2\x80\x99s correct.
  2. I have done all the given 7 questions in the given time. Most of them are related to sorting and counting frequency type of coding questions.
- Coding Test:
  1. \xc2\xabGiven two coding questions, easy to medium level questions.
  2. The first question asked is: <https://www.geeksforgeeks.org/count-number-of-substrings-with-exactly-k-distinct-characters/>
  3. The second question asked is similar to: <https://leetcode.com/problems/most-frequent-subtree-sum/>, We have to find maximum subtree means, which is the sum of subtree/number of nodes in a subtree.
- Logical Reasoning: This round contains basic Logical reasoning questions.
- Behavioral Questions: In this section, all questions are related to situation questions. Like they\xe2\x80\x99ll give you two situations, we have to select one.

## Round 2: Interview 1\xc2\xab

- There were two interviewers one is SDE-1 and another is SDE-2.
- Firstly they introduced them and asked me to introduce myself.
- They directly jumped into coding questions.
- The first question is: Asteroid Collision, I solved it. I had few mistakes but he made me correct it.
- The second question is 3Sum, I first gave brute force and I gave optimized using sorting. They asked to directly code as we are running out of time.
- And finally done with round \xc2\xab01.

## Round 3: Interview 2\xc2\xab0

- After 15min, I got a call from the coordinator that my second interview will be at 11:30 am, on the same day.
- I joined the interview, he was a bit late, as he didn\xe2\x80\x99t any information that there is an interview for him, he joined 15min late.
- He introduced himself and asked about me.
- And he jumped into coding questions.
- He asked me two coding questions.

- The first question is: Sudoku Solver
- As I have solved this question already, I solved it using backtracking.
- As there is still time remaining, he asked me another question which is related to the graph.
- I misunderstood the question and solved the misunderstood question.
- In the end, he got to know that I didn't understand the question properly.
- He asked for which question, I have solved.
- He said that's ok, you did something.
- I thought I wouldn't go to the next round.
- But I got mail that my 3rd interview is at 5 pm on the same day.

#### Round 4: Interview 3

- In this round, the interviewer is a Software Development Manager at Amazon having work experience of almost 12 years.
- First, he introduced himself and told me to introduce myself.
- He asked me about the projects which I have done.
- He went deep into like technologies, I have used.
- This discussion about the project went around 30 minutes.
- And he jumped into coding question
- The question is Validate Arithmetic Expression, Which is similar to [Balanced Brackets](#).
- I tried to solve it, and I dry run it with few test cases, and it worked with those test cases.
- And he said ok, That's it from my side.
- And asked Any questions??
- I asked about his experience at Amazon and what kind of projects will be given to freshers.
- He really explained it very well and he is very patient.
- We had a very nice conversation at the end, while he was telling about his interview experience which is 12 years ago.
- The interview Ended.

After almost a week I got a call from the recruiter that I got an offer for SDE role at Amazon.  
The offer letter is attached below.

#### VERDICT: ACCEPTED

#### Tips:

1. Do Leetcode and solve as many problems as possible and understand each and every question and try optimizing the solution after doing the brute force.
2. Interviewers are there to see your problem-solving skills, not the output, so understand the approach while solving a question.

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# Amazon Interview Experience for SDE-1 2021

- Difficulty Level : \n [Medium](#)
- Last Updated : \n 25 Aug, 2021

I xe2\x80\x99m a B.Tech CSE graduate from a Tier-1 college (Batch of 2020) with 1 YOE. I recently interviewed for an SDE-1 role at Amazon. The recruitment process included 5 rounds in total as follows:

**Round1(Online Assessment):** I had to solve two questions within a period of 90 minutes along with writing my approach and time complexity of the solutions. The Questions were:

1. This was a variation of <https://www.geeksforgeeks.org/given-sorted-array-number-x-find-pair-array-whose-sum-closest-x/>. I was able to solve it within minutes and took the proper time to explain my approach. (All test cases passed).
2. This was a variation of <https://www.geeksforgeeks.org/given-two-sorted-arrays-number-x-find-pair-whose-sum-closest-x/>. Although the underlying concept was simple, it required some work to bring the input to the required format (e.g. use of custom sort). I was able to solve this as well in 30 mins. but only 70% of my test cases passed and I wasn\xe2\x80\x99t able to fix the bug in my code. I took time to explain my approach properly though which I knew was correct.

The online assessment also included a separate behavioral objective questions round.

**Round 2(Technical Round 1):** Although I got the notification about me passing the online assessment just after 2 days, my interview was not scheduled for about 40-45 days. This happened because the recruiter had somehow missed my name. So, if you\xe2\x80\x99re not getting called up for an interview, please contact the recruiter and let him know about the same.

The duration of this round was 60 minutes. The first 5 minutes were for the introduction and then we jumped on straight to the questions. I was asked two DSA questions in this round:-

1. <https://www.geeksforgeeks.org/find-the-element-that-appears-once-in-a-sorted-array/>. I gave an O(n) solution at first and explained myself really well. Then the interviewer asked me to optimize it further and I said that since I haven\xe2\x80\x99t taken into account that the array is sorted, we could optimize it using binary search if we can figure out the necessary conditions to discard half of the search space. The interviewer gave me a hint and I figured it out. I was asked to write proper code for this.\xc2\xao
2. <https://www.geeksforgeeks.org/remove-duplicates-from-a-sorted-linked-list/>. This was also a straightforward question. I was directly asked to write the code. We did a dry run and rectified one mistake. After that, we tried different edge cases, which all passed.

In the end, the interviewer also asked me -> What is multi-threading ?, Give me an example of where it is used and What are the resources shared b/w multiple threads.

The interviewer was extremely nice and the whole interview felt more like a discussion.

**Round 3(Technical Round 2):** This round was almost extremely identical to the first round. Five minutes of intro followed up by two DSA questions:-

1. <https://www.geeksforgeeks.org/trapping-rain-water/>. The interviewer presented a variation of this question. Although I had done this question before(who hasn\xe2\x80\x99t ?), it took me a long while to understand he was asking for this, because he was extremely vague about the question. He didn\xe2\x80\x99t even give me a question actually, he just gave me input and

output, again the input was vague so I had to ask a lot of questions to get the question clarified. In the end, he shared a pictorial representation with me and I gave him the answer within 5 minutes (coded for it as well). I gave him a  $O(n)$  space complexity answer though and because we had spent too much time on this, I just told him the optimized approach but didn't code for it.

2. <https://www.geeksforgeeks.org/bottom-view-binary-tree/>. I had just 10 minutes to explain this question + write a clean code + clarify the doubts that the interviewer had. I explained to him the approach, the data structure I would use(Used a Hashmap with key as horizontal distance and value as a pair of vertical distance + node value). The interviewer said why do you need to keep track of vertical distance, wouldn't the nodes in a preorder traversal be coming in the order of increasing depth. I explained to him that in a denser tree, or a tree where left and right children are protruding too far, that wouldn't be the case. I wrote the code for this, while he was on a call with his manager. He didn't ask any more questions (but he looked confused, I wasn't too sure if he had understood my approach clearly).

In the end, I asked him one or two questions about his experience with Amazon, and he told me quite a lot of things, we ended up talking like half an hour extra after the interview. He was a pretty chill guy.

**Note-** None of the interviewers till this stage had more than two years of experience (in the industry). I

**Round 4(Hiring Manager Round 1):** The interviewer was a Software Engineering Manager and had experience of almost 20 years. This round was all about my past experience and projects. The duration of this round was 60 minutes too. We started with introducing ourselves and then jumped on to my roles and responsibilities in my current role. As we discussed my project(s), he asked me a lot of behavioral/LP questions in between, here are a few ones I remember:-

- Tell me about an instance when there was a high-risk production issue and you stepped up to resolve it.
- Tell me about an instance when you worked on a code-intensive task and you gave valuable inputs to improve it.
- A few more questions were along the same line but I don't remember them.
- In the end, he asked me one design question, which was to come up with the data structures I would use to create a game like this [https://www.transum.org/software/River\\_Crossing/](https://www.transum.org/software/River_Crossing/)
- I proposed the classes I would create for our character, and how I would store a denylist for each character (ones that can't be together). He was not too satisfied with my approaches but we didn't go too deep into this question anyways because we were overtime already.

In the end, before leaving he asked me the reason I was looking for a change.

**Round 5(Hiring Manager Round 2):** The interviewer was a Software Engineering Manager and had experience of almost 13 years(all at Amazon). The interviewer asked me whether I have had technical rounds, I said yes and then he said that he was not gonna focus on whatever has been covered. This round was all about him being trying to do the LP analysis on me. He asked about 5-7 situational/behavioral/LP questions for me. A few of them are:-

1. Tell me about a time when you over-delivered.
2. Tell me about a time when you disagreed with your team and had an impact.
3. Tell me about the time when you had a hard time doing a task and what did you learn from the experience.
4. Tell me about an instance where you had to compromise on the best practices to deliver

something on a time crunch.

5. Tell me about a time when you did something good for a customer.
6. Tell me about a time when you asked for feedback from a customer and how did you incorporate that.
7. Tell me about a time when the customer disagreed and you had to understand their point of view and work towards finding a solution.

I had a hard time explaining scenarios where there was customer interaction simply because my job didn't directly involve me talking/affecting the customers.

In the end, I asked him about Amazon's culture and what he thinks of one of the newly added leadership principles (no reverse xD).

### **Thoughts:**

- Lately, Amazon interviews have been inconsistent with what they tell you it would be like.
- People who have had experiences, where they were, were asked at least 2 DSA questions in all rounds, and a few minutes of behavioral/LP questions in each round. Then there me who have had just two technical rounds(which is true according to what they tell you since according to the format only first two rounds are technical).
- Additionally, even though for an SDE-1 no one expects you to be answering system design questions, but in one round or the other, you can expect one/two Low-Level Design questions in which they care more about the data structures that you decide to use.
- The emphasis of Amazon with respect to identifying a person's behavior and whether they would be a cultural fit at Amazon or not is tremendous and is growing day by day. Although you could be someone that is very good at problem-solving but might not be a cultural fit in their eyes, and the reverse is true as well. You need to be good in both departments.

### **Results:-**

Result awaited.

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# Amazon Interview Experience for SDE1 | On Campus

## \xe2\x80\x93 Aug 2021

- Difficulty Level :\nHard
- Last Updated :\n24 Aug, 2021

### Round 1:

This was an online test. It consists of 5 sections.

1. **Debugging:** We have to select a language before attempting this section. There were 7 questions. This section was easy and questions were mostly on sorting, removing an element from an array, etc.
2. **Coding:** There were two questions. One was easy (<https://www.geeksforgeeks.org/given-an-array-a-and-a-number-x-check-for-pair-in-a-with-sum-as-x/>) and the other one was <https://leetcode.com/discuss/interview-question/699973/goldman-sachs-qa-turnstile>.
3. **Aptitude**
4. **Behavioral**
5. **Feedback**

### Round 2:

The interviewer was SDE2. He introduced himself and asked me to introduce myself. He then jumped into coding questions.

1. This question was based on topological sorting. Given several courses in a college. Each course may have a prerequisite course that you have to complete in any of the previous semesters if you want to complete the current course in the current semester. The courses which have prerequisites completed or courses that have no prerequisites can be completed in one semester. Return the minimum number of semesters to complete all courses. Discussed the Breadth-First Search approach and coded the same. He then asked about the time complexity ( time and space complexities are very important, learn to calculate them and tradeoffs between them)
2. \xc2\x80<https://www.geeksforgeeks.org/rearrange-characters-string-no-two-adjacent/>\xc2\x80 Haven\xe2\x80\x99t solved this one before. Discussed with him the intuition that the maximum frequency characters are the most important here and we should arrange them apart first. I kept on discussing and finally got the idea to solve it by using heap (take top 2 frequency characters and arrange them side by side. Decrease their frequency and insert them again into the heap). He asked me to code it out and then asked me the time complexity. I said O(N log N) as we are using the heap (It was a blunder). But he asked me to think again. After some time he gave a hint that we can have a maximum of 26 characters in heap. Then I told that the time complexity is O(N) (for getting the frequency of characters) since heap operations are of O(1) time.

Then he asked me whether I had any questions for him. I asked him how would be the work for an SDE1 and workload in the company.

### Round 3:

I introduced myself to the interviewer and then he jumped into the questions.

1. \xc2\x80<https://www.geeksforgeeks.org/decode-string-recursively-encoded-count-followed-substring/>\xc2\x80 discussed the stack approach. He then asked me to code and a dry run for a given

test case. He asked me the time complexity. I told it is  $O(N^*$  maximum k value in the string).

2. This was a hard question. There are N cities, and M roads (bidirectional) connecting them. Given start city, end city, and an initial tank value (V). Traversing each edge would cost one unit of tank value. However, few cities are called fuel cities, we can full the tank to its initial value when we reach them. Return a boolean representing whether we can reach the end city from the target city or not. Haven't solved this kind of problem before, I asked him to give me 2 minutes to think and come with an approach. After that, I discussed the Breadth-First Search approach where I would store the city and tank value in a queue and traverse in a conventional Breadth-First Search manner by maintaining a 2D visited array. He then asked me to code. After that, he showed me a test case where this approach would be failing. Then I discussed with him and told him that we can revisit a city if we have a tank value more than the last time. He asked to modify the code.

\xc2\x0

#### Round 4:

The interviewer was a senior engineer. He was very friendly and he told me this round will consist of coding and behavioral questions.\xc2\x0

He gave me a string which is basically an HTML document and asked me to return a boolean value representing whether the given HTML document is valid or not. I then came up with a valid parenthesis approach ( opening an HTML tag should have a respective closing HTML tag adjacent to it). He then showed a test case where there is a body tag embedded within the head tag and told that even this should return false. Then I asked for some time to think. After that, I told that I construct a tree or a graph that represents the proper DOM structure that is valid. Then I told that whenever I encounter a tag I will check that its parent in the given document is valid or not by looking up the adjacent nodes or parent ( in case of tree). He was impressed with that and asked to code it out. I couldn't complete the code within time. He then asked some questions on my projects and asked what was the most difficult thing I have encountered while doing my project, how did I handle it. And he asked what would I do when I got stuck in a project, whether I ask my mentors/seniors or do it myself.\xc2\x0

\xc2\x0

At last, he asked me whether I had any questions for him. I asked the same questions

\xf0\x9f\x99\x82

( show them how much you are interested in joining the company whenever you got this chance)

**I was offered a 6-month internship and FTE at the end of the hiring process.**

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# Amazon Internship Interview Experience | On-Campus 2021

- Difficulty Level :\nEasy
- Last Updated :\n10 Mar, 2022

## Coding Round:\xc2\xa0

1. 7 easy debugging questions related to algorithms to be done in 20 minutes.
2. 2 coding questions with varying difficulty of easy to medium to be solved in 70 minutes. I was given the following two problems:\xc2\xa0
  - A question on arrays that can be solved greedily.
  - A variation of <https://www.geeksforgeeks.org/value-to-be-subtracted-from-array-elements-to-make-sum-of-all-elements-equals-k/>
  - <https://www.geeksforgeeks.org/sliding-window-maximum-maximum-of-all-subarrays-of-size-k/>
  - An easy question using an implementation of Dijkstra\xe2\x80\x99s Algorithm.
3. Questions based on behavior and work style. It takes about 20 minutes.
4. 24 reasoning questions to be solved in 35 minutes. They\xe2\x80\x99re a bit easier than NTSE Stage II MAT questions.

**Interview:** There was only one round of interviews. The interview started without any formalities. I was given a live code link. The panel consisted of 2-3 individuals joining in and out, but only one of them was interacting with me. Two easy questions were asked during the interview.

**Question 1:** An apparently tricky question that could be solved greedily.

**Question 2:** <https://www.geeksforgeeks.org/find-number-of-islands/>. The interviewer further asked if this could be done by using constant extra space.

The interviewer asked if I had any questions. I asked questions like how algorithms are used in the field they\xe2\x80\x99re working and what teams do what kind of tasks.

Finally, 13 people, including me, were selected out of 41 shortlisted students.

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# Amazon Interview Experience | On-Campus 2021

- Difficulty Level :\n[Medium](#)
- Last Updated :\n22 Aug, 2021

**Screening Round:** The screening round for amazon has a variety of questions:

1. *Debugging questions:* Very very easy, you don't need to prepare for this.
2. *Coding questions:* There was a total of 3 questions, 1 easy and 2 medium-level questions. I don't remember the questions.
3. *Work style assessments:* It's basically an MCQ to assess your behavior and your attitude
4. *Aptitude questions:* Prepare from GeeksForGeeks

**Round 1:** The interviewer was SDE1 and he was friendly. He introduced himself and asked me to introduce myself. After the introduction, we jumped right into coding questions. He asked 2 questions:

1. <https://practice.geeksforgeeks.org/problems/rotten-oranges2536/1>. Initially, I couldn't recognize the problem as Multisource BFS, he gave some hints, then I applied Multisource BFS to solve it. He made me write the code.
2. <https://practice.geeksforgeeks.org/problems/special-stack/1>. I had seen this question before. So I easily solved it. I had to write full code. He seemed satisfied with my code.

Then he asked me if I had any questions for him. Use this opportunity to convey that you are really interested in the company. I had prepared for this question the previous night. So I asked questions like: *how long does it take for SDE1 to get promoted to SDE2* *which office do you work in* *was your experience in the initial days when you joined amazon*. The interview went well. I had managed to establish a connection with the interviewer in that 1 hour of discussion. I knew I will get selected for Round 2.

**Round 2:** In round 2 there were two people both SDE1s. The round started like any typical interview; the interviewers introduced themselves and asked me to introduce myself. Then they asked a behavioral question: *If you want to choose between best-solution (but infeasible-solution) and substandard-solution (but feasible-solution) which one would you choose. Give supporting evidence by narrating an event in your life where you had to make such a decision*

Then we started with programming questions

1. <https://www.geeksforgeeks.org/place-k-elements-such-that-minimum-distance-is-maximized/>. I discussed the approach first. They seemed convinced with the approach so they asked me to code it up. After coding it up, they even made me walk through the code using an example. They were satisfied.
2. *Given a random array what algorithm would you use to sort it?* I said, *there are several sorting algorithms to sort a random list, each has its own pros and cons. We have to choose the right algorithm for the given situation*. Then he asked me the time complexity of some popular sorting algorithms. Then they asked, *which sorting algorithm would you use if all the numbers in the array are in the range [0, 100]*. The answer is counting sort.

After these two questions, the interview was officially over. They asked me if I had any questions for them. I asked questions like: *How workload at amazon*, *If you are not familiar with the technology which is being used in the projects allotted to your team, how do you go about dealing with it*, *Did you notice any flaws in the way I communicated my ideas while solving coding question*. We had a great discussion. They were very happy with me. I knew I will get selected for Round 3.

**Round 3:** This time, the interviewer was a senior software engineer (SDE3). He was very cool. He was actually in Bermuda shorts when he was taking my interview LOL. I felt his conversation was more engaging than the other interviewers from the other rounds. No wonder he is an SDE3.

- The interview started with a casual conversation. He told me about his history, and the team he works for at Amazon, etc. We spent some good 15 minutes talking casually. I could tell that he is enjoying talking to me. Then the actual interview started. He said he is going to assess my behavior and problem-solving abilities. He allowed me to choose whether I wanted behavioral questions or coding questions first.
- I was having an engaging conversation with him and I didn't want to break the streak. So I said, *I would like to have behavioral questions first*. Then he asked some standard questions listed here [https://www.amazon.jobs/en/landing\\_pages/in-person-interview](https://www.amazon.jobs/en/landing_pages/in-person-interview)
- Then he asked a coding question: *Given an html-document check if the hierarchy of tags is valid or not*. I started off with the idea of the stack. But he hinted that Tree could be a better data structure for this. Then I represented the hierarchy of tags in the form of a tree and I explained to him how I might go about solving it. I had solved similar problems before, so I was basically exploring how I could solve them. I wasn't sure how to solve it. I couldn't solve it completely. I was just beating around the bush. After some time the time was up so he interrupted me. I was totally unsatisfied with how I solved the problem. I thought I had made a negative impact. I was doubtful about getting selected. But I guess my answers to behavioral questions saved me.

## VERDICT: SELECTED

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# Amazon Interview Experience for SDE 1 | Off-Campus

- Last Updated : \n20 Aug, 2021

I applied for SDE1 on the Amazon job portal. After few days, I got an exam link from Amazon. In the exam, there were 2 coding questions(DP, Greedy) and 2 descriptive questions in which we have to explain how we approached the above 2 questions and write about their time and space complexities.

After few months, I got an Amazon Interview preparation call, in which they explained the whole interview process.\xc2\xao

**Interview Round 1:** The interviewer was SDE2 and made me comfortable by telling about himself and asking about myself. Then he asked about my projects, it was a long discussion and took 25 mins.

- Then he asked a coding question: <https://www.geeksforgeeks.org/boggle-set-2-using-trie/>. I first told him the DFS approach and then optimized using trie. We discussed all the edge cases and time complexity. He seemed impressed by my approach.

I had the next interview scheduled just after this.

**Interview Round 2:** The interviewer was SDE2 and she directly started with coding questions.

1. The first question was: <https://practice.geeksforgeeks.org/problems/search-in-a-rotated-array4618/1>. I started with brute force and then explained O(nlogn) \xc2\xao solution using Binary search. After some, I told her the O(n) approach.
2. The second question was: <https://practice.geeksforgeeks.org/problems/search-in-a-matrix17201720/1>. I solved it using binary search.

After few weeks my next rounds got scheduled.

**Interview Round 3:** The interviewer started with a briefing about himself and then asked about myself.

- Then he asked, have you ever faced a problem with a deadline?
- Then asked the question: <https://www.geeksforgeeks.org/minimize-cash-flow-among-given-set-friends-borrowed-money/>. I haven\xe2\x80\x99t seen this question before, so I took 4-5 mins to think. Then I explained to him my approach using DFS and bottle-neck. We discussed all the edge cases and time and space complexities. Although its preferred approach is greedy, I was able to do it in the same time complexity using DFS. \xc2\xaoHe was happy with my solution.

Round 4 was scheduled the next day.

**Interview Round 4:**

1. The interview started with the coding question:  
<https://practice.geeksforgeeks.org/problems/add-two-numbers-represented-by-linked-lists/1> He said don\xe2\x80\x99t modify the input, so I used recursion with some conditions. He was impressed with the solution.
2. Then he asked another question: <https://practice.geeksforgeeks.org/problems/print-a-binary-tree-in-vertical-order/1>. I explained the approach using preorder traversal, then he said it will give a wrong answer for some cases so I used level order traversal. He also asked me to tell efficient and optimized data structure for this problem.

3. Have you ever learnt something on your own.
4. On what technology do you want to work.

Then he said we will let you know in 7 days.

After 7 days I got a call from HR that you got selected.

Keep solving problems, gain basic knowledge of all CS Subjects. Go through Amazon Leadership principles and have faith in yourself.

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# Amazon Interview Experience for SDE-I

- Difficulty Level :\nEasy
- Last Updated :\n20 Aug, 2021

## 1st Interview-

- Swap Kth node from beginning with Kth node from end in a Linked List  
<https://practice.geeksforgeeks.org/problems/swap-kth-node-from-beginning-and-kth-node-from-end-in-a-singly-linked-list/1>
- Check if two nodes are cousins in a Binary Tree:  
<https://practice.geeksforgeeks.org/problems/check-if-two-nodes-are-cousins/1>
- Project-related questions

## 2nd Interview(Held on same day)-

- In a binary tree for every node you have to check whether it is even or not. If even then print its kth child.
- OS-related questions like. Thrashing, paging, scheduling algorithm,
- DBMS-related question \xe2\x80\x93 indexing, SQL vs no-SQL.
- Project-related questions

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## Amazon Interview Experience for SDE

- Difficulty Level :[Medium](#)
- Last Updated :[20 Aug, 2021](#)

**Round 1(Online Assessment):** This round usually consists of two coding questions, for which you have to write the code as well as give a proper explanation in a separate window. The time for this round is approx 1 hr

Questions asked were:

1. Sort a list of orders of prime and non-prime orders (<https://leetcode.com/discuss/interview-question/1261316/amazon-qa-sde-1-new-grad-2021-batch-india>). I did this by simply passing my custom comparator to the standard sort function. It is easy but it has some edge cases, that took a bit of my time.
2. Optimize Memory usage (<https://leetcode.com/discuss/interview-question/373202>)

After this, you will have to do some behavioural MCQ type questions.

In all the upcoming rounds I was asked both behavioural and coding questions therefore I will try to include both of them.

**Round 2:** This round started with my introduction and current project. After this interviewer inquired about a time when I have to do some unexpected complex work and how I handled the situation.

Coding questions:

1. [Given a binary tree calculate the sum of all the left leaves](#)
2. [Implement LRU Cache](#). The interviewer purposely left this question vague by just quoting `Implement LRU cache`, therefore I asked many clarifying questions and slowly came to an optimal solution using a doubly-linked list and hash maps.

**Round 3:** This round also started with my introduction and current work.

Coding questions:

1. Evaluate an arithmetic expression that is given as a string, the expression will only contain numbers and the four operations +, -, \*, /

Input: "3\*2+5"\r\nOutput: 11

I decided to solve this question using two stacks, and storing all arithmetic operators and numbers in different stacks with rules:

low precedence operator can be pushed on a high precedence operator

When an operator is popped out then two numbers are also popped out from the other stack

so my algorithm was basically this:

- initiate two stacks as **operatorStack** and **operandStack**
- scan through the expression
- if a number is found push it into **operandStack**
- if an operator is found and the top of **operatorStack** has low precedence than this current operator, push in into **operatorStack**
- if an operator is found and the top of **operatorStack** has high precedence than this current operator, then keep on popping out operators from the **operatorStack** until the top has low or equal precedence than the current operator. With each operator popped, you have to pop two numbers from the **operandStack** and apply the popped operator on these two numbers and push the result back onto the **operandStack**, something like this:

```
op = operatorStack.pop()\r\nnumber2 = operandStack.pop()\r\nnumber1 = operandStack.pop()\r\noperandStack.push(result)
```

notice here the second number is popped first.

- after the scan of expression, pop the remaining operators from **operatorStack** with the same above rules
- Your final answer will be the top of the **operandStack**.

There is one more simple approach, convert the infix expression to postfix and evaluate it simply with one stack.

2. [Calculate the minimum number of jumps required to reach the end of an array](#)

I gave two approaches for this question, one  $O(n^2)$  and the other  $O(n)$

Since there was very little time left (around 15mins), I had some difficulty in explaining the  $O(n)$  approach, but the interviewer was convinced and asked me to code that out.

After this some computer science-related questions were asked like:

1. What type of databases you have used
2. What is the difference between SQL and NoSql Databases and for which type of query both are optimized?
3. Difference between thread and process
4. Why is communication faster in the thread as compared to process (because thread share same memory space)
5. What are locks and semaphores

**Round 4:** In this round for approx 30 mins the interview asked behavioural questions and he really wanted detailed and deep answers for all of them. I am quoting the ones which I can remember:

- A complex feature you have worked upon, what challenges you faced, how did you handle each of those
- A time when you faced close and stringent deadlines, how did you meet them
- How did you learn the technology you were working on, what steps did you take?
- How did you improve on yourself? etc
- In the next 30 mins he asked this coding question: [Find a pair of numbers from an array whose sum is closest to zero](#). For this, I used sorting and two pointers approach

**Round 5:** Again in this round approx 30 mins were consumed by the behavioural questions, and similar to the previous one, he also wanted detailed and deep answers

Coding questions:

1. [Intersection of two linked lists](#): I gave two approaches for this: first one: using two for loops and the second one: using hashmap
2. [Symmetric Binary Tree](#) I solved it by doing a parallel dfs for both the child of the root and comparing the node at each level.

### Some Tips:\xc2\xa0

- Don't try to take too much time in explaining the first question if it was easy because usually the interview also wants to ask a second question and hence you will be left with very little time to explain and code the second question.
- Be honest in all the behavioural questions because they ask many counter questions on your answer, and if you have made it up, it will surely fall apart at some time.\xc2\xa0

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# Amazon Interview Experience for SDE-I (On-Campus)

- Difficulty Level :\nEasy
- Last Updated :\n20 Aug, 2021

The hiring process for Amazon consisted of 1 Online coding assessment + 2(or)3 Virtual Interview rounds. So, in total there were 3(or)4 rounds. There were minimal eligibility criteria of 6 CGPA and no backlogs.

**Online Coding assessment:** This consisted of 4 time-locked sections to complete in 2 hours. Could switch questions within the section.

- **Section 1:** Code debugging \xe2\x80\x93 7 ques, 20 mins
- **Section 2:** Coding \xe2\x80\x93 2 ques, 70 mins
- **Section 3:** Workstyle assessment \xe2\x80\x93 20 mins
- **Section 4:** Reasoning \xe2\x80\x93 24 ques, 35 mins

I solved all 7 debugging questions, passing all the test cases, and I also solved both the coding questions, passing all the test cases. It is better to spend enough time on the Workstyle assessment test, as it carries value too. The reasoning section was solvable in the given time. I got shortlisted for the next round. There were nearly 40 students selected for the next round.

**Round 1(Virtual Interview \xe2\x80\x93 Coding):** The interviewers introduced themselves and asked me to introduce myself too. Then they directly dived into coding questions. The session was on Amazon chime and LiveCode.

1. <https://practice.geeksforgeeks.org/problems/print-anagrams-together/1>
2. <https://practice.geeksforgeeks.org/problems/row-with-max-1s0023/1>

An optimized solution was expected for both the questions. First, the approach had to be discussed with the interviewers and once they were satisfied coding the required function alone was sufficient. Dry running the code will give an edge.

**Round 2 (Virtual Interview- Resume, Coding and behavioral):** The interviewers introduced themselves and asked me to introduce myself too. Then I was asked to pick one project from my resume and explain it in detail. After that, one coding question was asked :

1. <https://practice.geeksforgeeks.org/problems/minimum-cost-of-ropes-1587115620/1>. First, the approach was discussed. After an optimized solution was coded by me, I was asked to do a dry run and explain the code.

Next, two behavioral questions, related to Amazon\xe2\x80\x99s leadership principles were asked. This is an important part of the interview. Experiences from the past have to be narrated, with relevance to the leadership principles. It\xe2\x80\x99s best to follow the STAR approach.

1. Tell us about a time when you felt you needed more expertise to complete a task.
2. Tell us about a time when you went out of your comfort zone to complete a task.

Then, again another coding question was asked.

1. <https://practice.geeksforgeeks.org/problems/add-two-numbers-represented-by-linked-lists/1>. Similarly, an approach had to be explained, and optimised code was expected.

In both rounds, I solved all coding questions with an optimized solution. I also gave detailed

narratives for the behavioral questions. It's best to prepare an answer for standard behavioral questions to save time and create a better impression. Some of the candidates who finished round 2, went on to round 3. But, that was not a decider/qualifier round.

I was offered a 6-month internship at the end of the hiring process.

I practiced coding using the practice questions available in GeeksforGeeks. This was the best resource for me to improve my coding skills. I also prepared CS fundamentals from the various articles available in GeeksforGeeks. Thank you so much GeeksforGeeks.

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# Amazon Internship Interview Experience (On-Campus)

- Difficulty Level : \n[Medium](#)
- Last Updated : \n29 Jul, 2021

Amazon visited our college to pick SDE-Interns for 6 months duration. There were 3 rounds totally which are described below,

**First Round (Online Test):** This round is an online test which consisted of 4 sections namely Coding MCQ, Problem Solving using data structures, Behaviour questions, Logical Reasoning.

1. **Coding MCQ** is really easy if you have knowledge in control statements, logic change in a part of code (Eg. To find sum of digits). \xc2\x0
2. **Problem Solving using data structures** consists of 2 coding questions to be solved in 90 minutes, both problems were of medium difficulty mainly based on binary search, linked list, trees, graphs. Try to cover all the test cases and pass them. Have an eye on the time to complete both problems in 90 minutes. \xc2\x0
3. **Behaviour questions** consists of around 30 behaviour questions with 4 options, you have to pick the appropriate decision you would pick for the given situation. *For Example, If you feel stuck at your work what would you do? a. Reach out to a team member immediately b. Reach out to a team member after trying myself for some time.* Try to answer responsibly for every question.
4. **Logical Reasoning** consists of some aptitude questions. You get enough time to work out and answer the questions.

Don't get nervous at any section, try to utilise each and every minute!!

**Second Round (Technical Interview 1 \xe2\x80\x93 60 mins):** In this round, I was asked 2 Data Structure questions (N-ary tree and binary heap). I couldn't remember the questions but both the questions were of medium difficulty you can search for them in GeeksforGeeks. \xc2\x0

- The interviewer will definitely help wherever you get stuck. \xc2\x0
- Remember to clarify relevant doubts before you approach a problem. \xc2\x0
- Share your thought process continuously on how are you going to approach the problem. \xc2\x0
- Keep your explanation precise and try to optimise the approach by calculating time and space complexities. \xc2\x0
- If interviewer does not get satisfied, try to think alternative approaches. \xc2\x0
- Whichever solution impresses the interviewer, implement that solution and try to cover all possible test cases by doing a dry run for the test cases. No theory questions were asked in this round. \xc2\x0

**Third Round (Technical Interview 2 \xe2\x80\x93 60 mins):** In this round, there were questions from my interests that I have put in my resume(Eg. Explain ACID properties in DBMS). \xc2\x0

- Also, I explained the projects that I have put in my resume and I gave an overview of what I did in the project, what I learned throughout the project development. \xc2\x0
- Then they asked 2 data structure questions (binary search and tree). I got stuck at some places, but the interviewer was so friendly to set me up in the right direction. \xc2\x0
- Discuss with the interviewer at regular intervals. The rest of this interview is similar to Technical Interview 1.

- I couldn't point out the problems that were asked in my interviews because it was completely new and unable to find them in any coding portal. You can look other Amazon interview experiences in GeeksforGeeks to get an idea for the level of problems asked in Amazon. You will find a similar pattern of problems and prepare for them as well.

### Tips to crack the above rounds :

**First Round:** Candidates will be filtered heavily in this round.

- So, utilize the time properly.
- Try to cover most of the test cases in coding questions by optimizing the solution.
- Answer responsibly for the behavior questions.

**Second and Third Rounds:** In the interviews, only if you can able to solve both the coding questions you will be considered.

- Try to give multiple approaches to a problem.
- Know to calculate time and space complexities for the solution especially for the recursive solutions.
- Implement your solution in your preferred language and cover all the possible test cases. Optimization is must!
- Try to give as many data points by discussing with the interviewer. Try to finish of each problem before 30 minutes (Telling approach, Optimising approach, Implementing approach). Finally, show your interest in the company by asking relevant questions at last.

I was able to get selected for the 6-months internship. Hope my experience helps you too!!

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# Amazon Interview Experience for SDE-1

- Difficulty Level :\n[Medium](#)
- Last Updated :\n20 Aug, 2021

Got an offer from Amazon! Here is my experience.

I do not have a degree in CS and learned on my own (no Bootcamp). You can achieve anything you want to if you work really hard. I had several portfolio projects on my resume and was contacted by a recruiter.

## Technical screen (online):

- Find the two smallest numbers in an array  
<https://practice.geeksforgeeks.org/problems/find-the-smallest-and-second-smallest-element-in-an-array3226/1>
- Given a max distance, find the two numbers that added together are closest to the max distance

I must have done well because I skipped the phone screen and went on to the final interview round. I had an option of scheduling two weeks later and 5 weeks later. I didn't know data structures/algorithms prior to this and chose the slot 5 weeks later so I could have time to learn them.

## Final interview questions:

- <https://practice.geeksforgeeks.org/problems/longest-common-prefix-in-an-array5129/1>
- Maze traversal
- System design: What kind of classes and object-oriented design would you create to take in CSV, tsv, and JSON objects, parse them, and enter them into a database? (This was a very hard question for me, but I didn't researched system design a ton because I knew it wasn't a deal-breaker for an SDE-1).
- Behavioral: they will grill you about your projects. Research the LPs and come up with a list of ~10-12 situations that fit them. Rehearse them. Look up common amazon LP questions and make sure you can answer them. They will grill you about your projects too. What would you have done differently? Be prepared to dive deep into them.

I did well on most questions (I was able to answer them) and struggled on the last one.

*Advice (especially helpful for self-taught programmers who don't know DS/Algo well):*

- I studied ~9 hours every single day. Make sure you know all the data structures on the cheat sheet they send you. Start watching youtube videos, and when you see related topics, write those down. Have a running list of all the topics you need to know. Have a running list of all of your questions. Make sure you go through them ALL.
- Do several Leetcode problems a day. Spend 45 min trying to solve it before you look up the solution. Make sure you actually understand the solution even if takes a few days. Ask your friends to help you. Come back to those questions a week later and see if you can solve them.
- Figure out the biggest priority topics by looking at recent interview experiences on GeekforGeeks/elsewhere. I saw that trie questions had been recently asked and knew this was a priority. I also knew it was hard for me to solve maze problems, and that they do get asked, so that was a priority too.
- Take notes on EVERYTHING. Go through your notes and write a review. What are a few bullet

points of how you solve each problem? That way when it comes time to interview, you can remember \xe2\x80\x9cl create a recursive function for this that takes in \_\_\xe2\x80\x9d.

- Do NOT get discouraged. I thought for sure I wouldn\x9t get it because I couldn\x9t get any of the problems on the first try, and though they were very hard to learn and understand. The difference is, in the interview, they give you hints along the way. So if you get stuck, you\x9ll be able to keep moving forward. You can do this!!!
- Don\x9t be defensive in the interview. Check your ego. Let them give you suggestions and *take* them. It\x99s a dialogue with your interviewer.
- Try to learn as much as possible while being able to retain that knowledge. Take care of yourself, but push yourself up to that limit, and know that your interview experience can dictate your salary too.
- You. Can. Do. This. It will be so frustrating at times along the path but that\x99s no indicator of the final result. Good luck!!!

#### My Personal Notes\narrow\_drop\_up

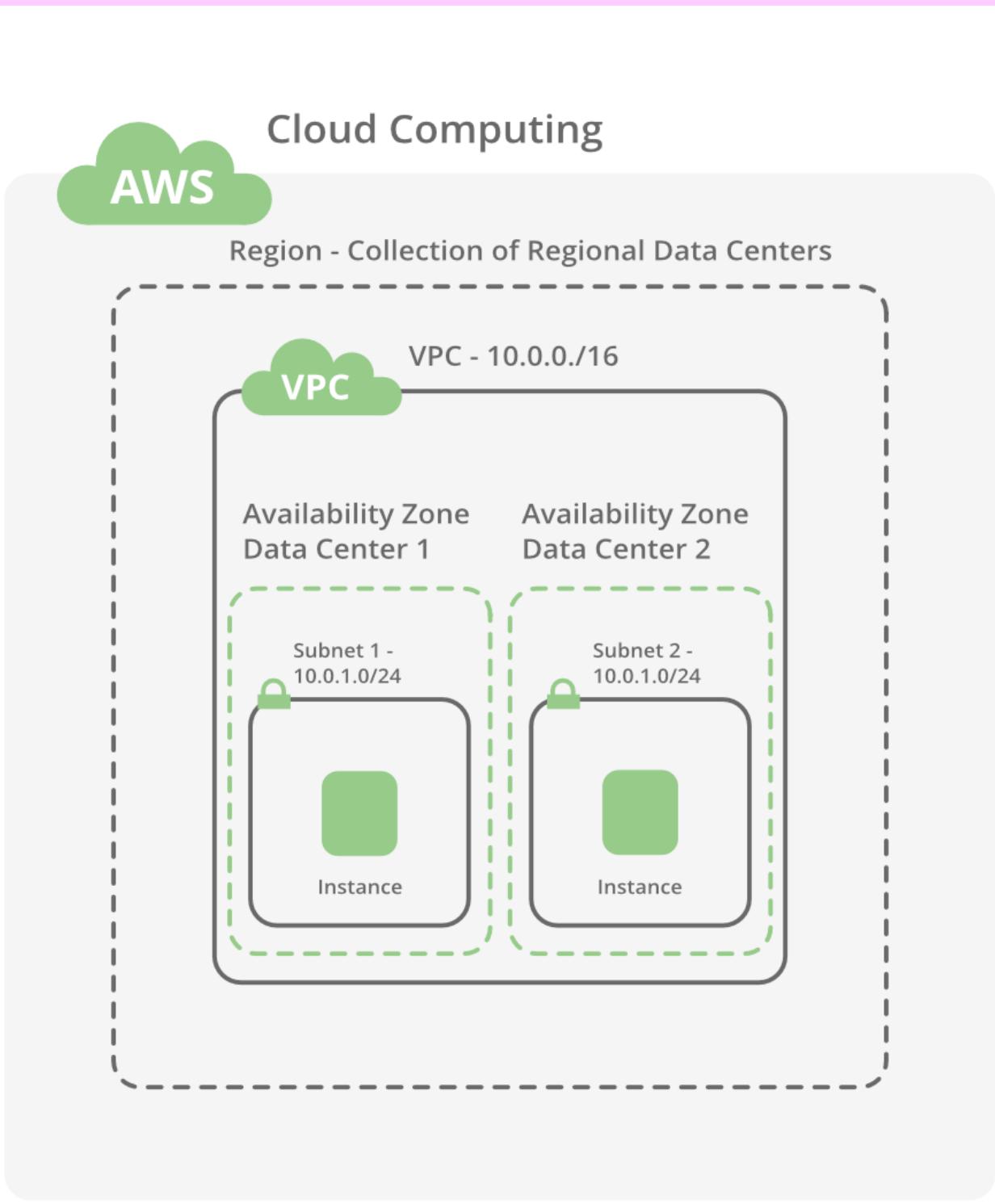
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# Amazon VPC |x80|x93 Security in Amazon Virtual Private Cloud

- Difficulty Level :[Medium](#)
- Last Updated :[28 Jul, 2021](#)

This article revolves around all the security services available under Amazon [VPC](#). Along with the basic security infrastructure of AWS cloud, VPC also comes with several advanced security services embedded in it. All these services are incorporated with VPC to ensure the maximum attainable security on AWS premise. Let us have a deeper vision of **Security in the Amazon Virtual Private Cloud.**



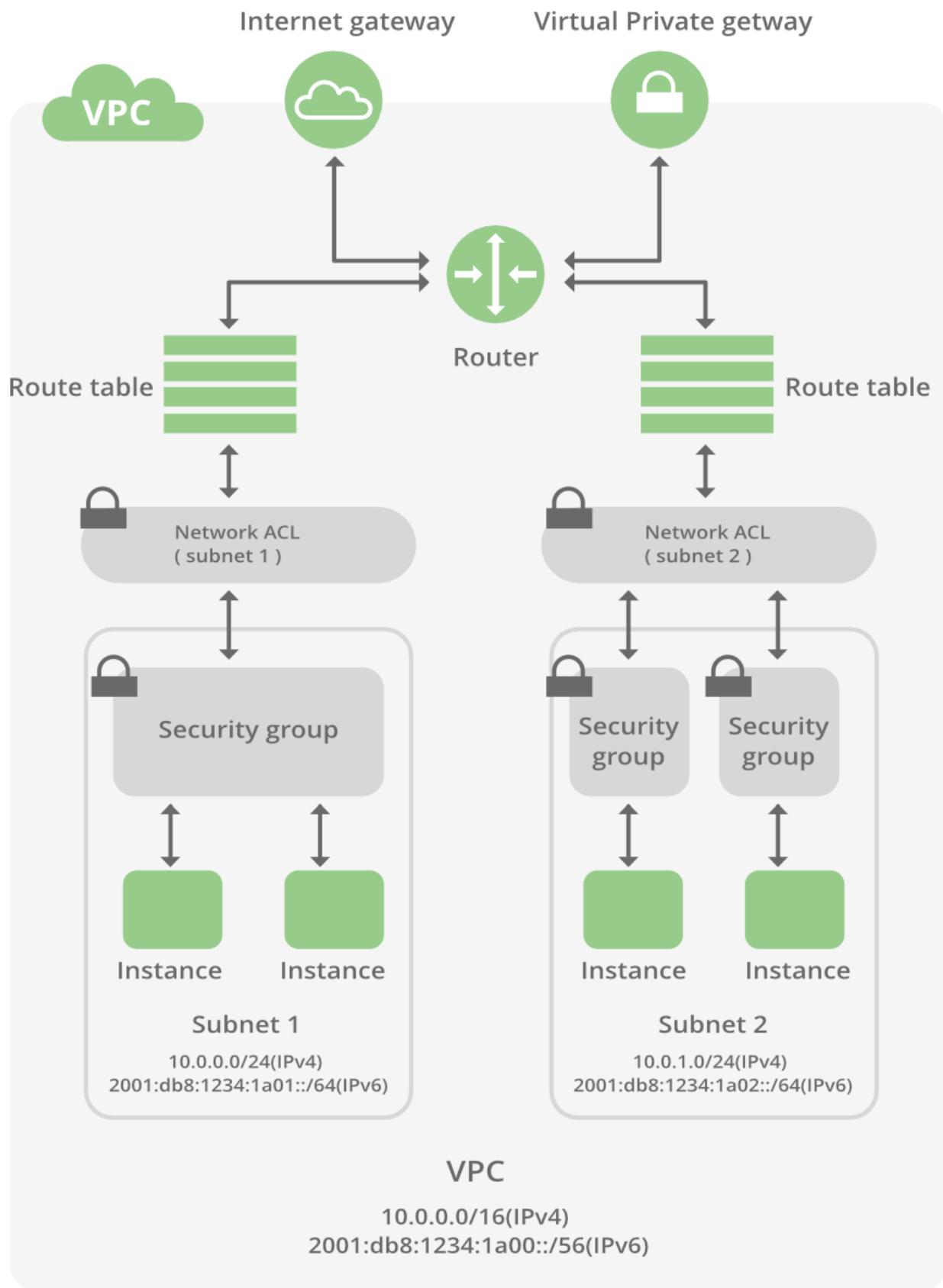
Observe the attached image and refer to the points written ahead.

## Multiple levels of security:

It is clearly stated in the given diagram that, a VPC secures its components on various different levels. This increases the overall security of the [VPC](#). For instance, refer to the attached image and understand the pointers.

- A private IP address has been temporarily dedicated to the VPC (**1st level of security**) no other organization or individual can access this particular range of IP addresses unless it has been reallocated to them.
- Each subnet (**in case of private subnets**) lying inside the VPC has its own unique IP address in between VPC\xe2\x80\x99s IP address range allotted to it by the user. (**2nd level of security**) Thus, none of the subnets can be accessed by any other unauthorized user in the word. Only the public subnets are accessible to the audience.
- The launched EC2 instances and S3 buckets inside these subnets come with their default security constraints as well. (**3rd level of security**)

These were the various security levels inside the VPC.



To increase the total reliability of the VPC, **security groups** are created.

**Security Groups** are nothing but virtual firewalls designed for protecting all the EC2 instances residing under different subnets. We can assign one or more security groups to an instance launched in the VPC depending upon the user\xe2\x80\x99s requirement. Even if you forget to assign a security group to the instance you have launched, Amazon VPC itself associates the new instance with the default security group.

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## Amazon VPC |x80|x93 Launching an EC2 Instance into a VPC

- Difficulty Level :[Medium](#)
- Last Updated :[28 Jul, 2021](#)

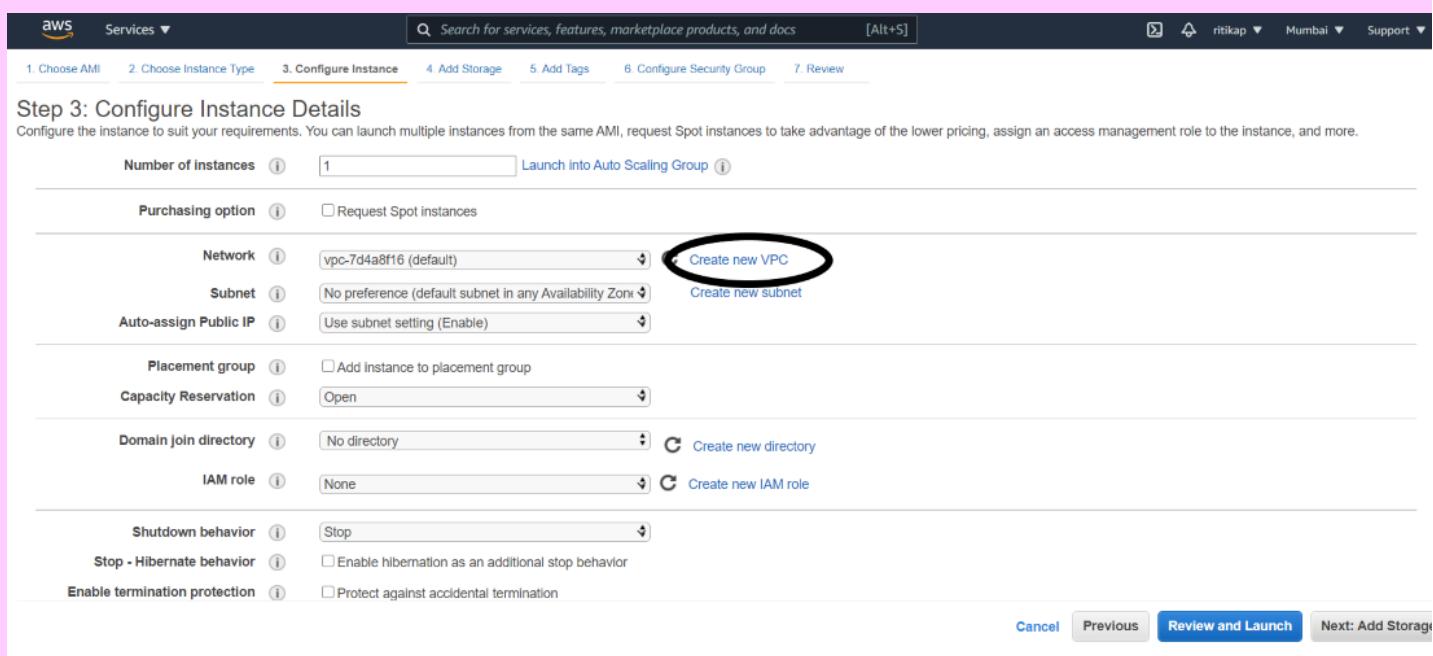
This article will cover all the aspects of **Launching an EC2 Instance into a VPC**. As we are already aware of the basic process of launching an EC2 instance on AWS, launching it into VPC is almost the same. Every EC2 instance launched on AWS is by default launched inside the default VPC of that particular user. To know more about the basic protocol for launching an [EC2](#) follow the linked article.[xc2|xa0](#)

We know the process of launching an EC2 instance via the management console.[xc2|xa0](#)

Now, let us look at the process of launching an EC2 instance into another VPC rather than launching it in the default one.

Start by the same process of creating a new EC2 instance, and if there is any confusion while doing that refer to [this](#) article.

Follow the steps until **STEP 3 |xe2|x80|x9cConfigure Instance Details|xe2|x80|x9d** occurs. Before proceeding to the next step either select [|xe2|x80|x9cCreate a new VPC|xe2|x80|x9d](#) or from the list of existing VPCs, select the VPC for your new EC2 instance. Please refer to the image attached ahead for a better understanding of the concepts.

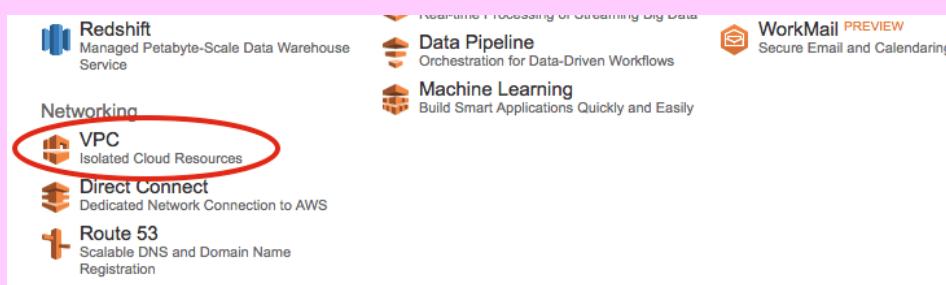


Once you are redirected to the next window. Simply change all other configurations as per your requirement and launch the EC2 instance.

And if you choose [|xe2|x80|x9cCreate a new VPC|xe2|x80|x9d](#), after getting redirected. Create a new [VPC](#) with all your desired configurations. And follow a similar process while launching the EC2 instance.[xc2|xa0](#)

The process of **creating a VPC** is discussed ahead.

**Step1:** From the AWS management console, select **VPC**. Refer to the attached screenshot.



**Step 2:** After getting directed, click on [|xe2|x80|x9cStart VPC|xe2|x80|x9d](#). Like this

VPC Dashboard

Resources

Start VPC Wizard

Launch EC2 Instances

Note: Your instances will launch in the US West (N. California) region.

**Step 3:** Now, you will be given multiple options to choose from in the navigation pane. From them select the **VPC with a single subnet** option to go with. And finally, click **Select**.

### Step 1: Select a VPC Configuration

**VPC with a Single Public Subnet**

Your instances run in a private, isolated section of the AWS cloud with direct access to the Internet. Network access control lists and security groups can be used to provide strict control over inbound and outbound network traffic to your instances.

**Creates:**

A /16 network with a /24 subnet. Public subnet instances use Elastic IPs or Public IPs to access the Internet.

**Select**

**Step 4:** After this, complete the final step. From the next window, cross-check all the details of the subnet and give a **name** to your VPC. And finally, click on **create VPC**.

### Step 2: VPC with a Single Public Subnet

IP CIDR block\*: 10.0.0.0/16 (65531 IP addresses available)

VPC name:

Public subnet\*: 10.0.0.0/24 (251 IP addresses available)

Availability Zone\*: No Preference

Subnet name: Public subnet

You can add more subnets after AWS creates the VPC.

Add endpoints for S3 to your subnets

Subnet: None

Enable DNS hostnames\*: Yes

Hardware tenancy\*: Default

**Create VPC**

In a while, your new VPC will be successfully created. You can verify it by tapping on **Your VPC** in the VPC dashboard.

VPC Dashboard

Filter by VPC: None

Virtual Private Cloud

**Your VPCs**

Subnets

**VPC Successfully Created**

Your VPC has been successfully created.

You can launch instances into the subnets of your VPC. For more information, see [Launching an Instance into Your Subnet](#).

**OK**

In this way, you can simply create a VPC and launch instances in it. If you are also a free tier account holder, make sure you delete all the instances before logging out of your AWS account. This will help you in reducing the bill amount.

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# Amazon Interview Experience for SDE-1

- Difficulty Level :\n[Medium](#)
- Last Updated :\n19 Aug, 2021

Hi everyone,

Hope everything is well with you. Today I'm going to share my amazon interview experience for the role of SDE-1. Hope it'll help you in preparing for your next coding interview. So without further ado let's get started.

I applied for the role of SDE-1 through amazon jobs portal. Next I got an invite for Online Assessment (OA).

**Online Assessment:** There are two parts of online assessment.

First part consisted of couple of questions based on data structures & algorithms

1. First question https://leetcode.com/problems/maximum-units-on-a-truck/
2. Second question https://practice.geeksforgeeks.org/preview-problems/701942

Second part consisted mainly on behavioral aspects.

**Round 1:** This round was mostly a discussion on previous company project that I worked on, some behavioral questions based on Amazon leadership principles, some technical questions.

Some of the questions that I could recall are as follows :-

- Difference between process & thread?
- What are deadlocks and what are the necessary conditions for deadlocks to happen?
- Some real life applications of thread & process
- Tell me about a time when the requirement was not clear to you? What you did and what was the final outcome?
- Let's discuss about a complex project that you worked on. What was the final outcome and what you learned? There were some follow up questions on web sockets based on my answer.
- Difference between synchronous I/O and asynchronous I/O?
- Some questions based on Node JS non blocking I/O

**Round 2:** This round was mixture of coding questions and behavioral questions.

1. The behavioral question was: Have you experienced pressure at work? Describe such situation
2. Lowest common ancestor in binary tree and then lowest common ancestor in binary search tree.

<https://practice.geeksforgeeks.org/problem-page.php?pid=700236>

<https://practice.geeksforgeeks.org/problem-page.php?pid=700221>

We discussed on edge cases like

- What if the input node values are not present in the tree
- one of the input node or both are null
- root node is null

### 3. Shortest unique prefix of all words in an array

<https://practice.geeksforgeeks.org/problem-page.php?pid=706447/>

We discussed on edge cases like:

- If input array is empty
- If any word is empty
- what if there are duplicate words in the input array ( the interviewer told that all words are distinct )

**Round 3:** This round was mixture of coding questions and behavioral questions.

1. The behavioral question was: Tell us about a time when you missed a deadline or productivity target? What was the business impact and what you learned from it?
2. Given an increasing series first and then decreasing find the first element which starts decreasing

Let's say there is an array [0, 10, 20, 30, 40, 10, 5, 1] -> answer is 40 since from 40 it starts decreasing

We discussed on many edge cases like

- series is increasing only
- series is decreasing only
- decreasing series first and then increasing
- series where increasing first then decreasing and then increasing again and then decreasing

Let's say an array [0, 10, 20, 30, 25, 20, 40, 60, 50, 30] -> firstly it increases, then decreases and then same repeats, so answer in this case will be 30

3. Given an array of integers, find maximal product triplet

<https://practice.geeksforgeeks.org/problems/three-great-candidates0515/1>

Let's take an array [1, -4, 3, -6, 7, 0] -> answer will be 168 (-6 x -4 x 7)

We discussed on edge cases like

- If input array contains less than three numbers
- input array containing only negative numbers
- input array containing both positive and negative numbers

**Round 4:** This round consisted of coding questions, behavioral questions and some technical questions

1. The behavioral question was: Tell us about a time when you had to solve a complex task under strict timeline? What was your approach and how you solved it?
2. Given two strings s and t of lengths m and n respectively, return the minimum window substring of s such that every character in t (including duplicates) is included in the window. If there is no such substring, return the empty string.

<https://leetcode.com/problems/minimum-window-substring/>

Clarified on some questions like

- If length of string s is less than length of string t

- If either string s or t is empty
3. Find a triplet in an array whose sum is closest to a given number.

<https://practice.geeksforgeeks.org/problem-page.php?pid=702023>

Let's take an array say [-1, 2, 1, -4] and sum = 1 -> the triplet will (-1, 2, 1)

We discussed on edge cases like

- What will be the output if triplet is not present
- If there are multiple triplets, then which triplet to print (interviewer confirmed you can return any triplet)
- what will be the output if input contains less than 3 numbers

Technical questions:-

- Difference between child process & thread process
- What are the different transport layer protocols?
- Difference between TCP & UDP
- Real life application of binary search tree

### **Final Verdict: Selected**

So here are few tips to share which are as follows:-

- Recall your previous work experience, your graduation days, achievements. This is required especially to answer behavioral based questions
- While answering behavioral questions use STAR method to answer.
  - S ( Situation ) ( What was the situation )
  - T ( Task ) ( What was the task undertaken )
  - A ( Action ) ( What you did or what was your approach to solve the task )
  - R ( Result ) ( What is the end result )
- Always discuss brute force approach first and then work your way up towards optimal solution
- Discuss time and space complexity of both brute force and optimal solution
- Discuss about the edge cases as well
- Having solid and excellent understanding of data structures will help you a lot in coding interviews
- Please practice 1 coding problem daily. Leetcode and Geeksforgeeks are really great platforms to practice coding problems
- Do not forget to add your achievements as well while in the interview
- Believe in yourself and you're half way there.
- Set short term goals as small step taken today yields to bigger step for tomorrow.

Finally I wish you all the best. Good luck. Thanks and take care.

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## Amazon Interview Experience for SDE-1

- Difficulty Level :[Medium](#)
- Last Updated :[20 Aug, 2021](#)

Hi All, Initially, I have found the Amazon SDE job requirement on LinkedIn then I applied on the Amazon job portal for the same. I got an email for round one after two weeks.

**Round 1:** It was conducted online and needs to implement the coding on the HackerRank platform. There are 3 sections of the assessment.

1. Coding challenge (2 scenarios) and Coding approach (elaborate why you code the way you do) 105 minutes
2. Workstyle survey 15 minutes
3. Feedback survey 5 minutes

Questions asked were:

1. [Given n number of sorted files, the task is to find the minimum computations done to reach the Optimal Merge Pattern.](#)

**Sample Input:** nn = 6, size = {2, 3, 4, 5, 6, 7}  
**Sample Output :** 68  
**Approach:** This

2. Given a matrix with values 0 (trenches), 1 (flat), and 9 (obstacle) you have to find the minimum distance to reach 9 (obstacle). If not possible then return -1. The demolition robot must start at the top left corner of the matrix, which is always flat and can move on the block up, down, right, left. The demolition robot cannot enter 0 trenches and cannot leave the matrix.

**Sample Input :** [1, 0, 0], [1, 0, 0], [1, 9, 1]  
**Sample Output :** 3

All test cases passed for both so that I expected for the second round. After 15-20 days I got a mail from HR for an Amazon Chime Interview. There will be 2 rounds on that day only.

### Round 2:

- Question 1: [Search a Word in a 2D Grid of characters it can be possible in 8 directions](#)

Here I took more time to solve this problem and approached the brute force approach. The interviewer didn't ask for an efficient approach since I have crossed the time limit.

### Round 3:

In this round questions asked all about arrays and string

- Question 1: [Reverse words in a given String](#)
- Question 2: [Print all pairs with given sum](#)
- Question 3: [Count pairs in an array whose sum is divisible by K](#)

Here The Interviewer expects an efficient solution for all the questions but I gave the efficient solution for question 1 alone.

Next week I got a call from HR, badly I am not shortlisted for the upcoming rounds anyway I got an experience. It could suggest everyone should try to work on problems for efficient approach.

All the best!

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## Amazon Interview Experience

- Difficulty Level :[Medium](#)
- Last Updated :[01 Sep, 2021](#)

I have applied to Amazon via LinkedIn. Finally, I got a mail stating that I can give my online test on Hacker-rank platform.

**Round 1:** It is an online round on hacker-rank. Two coding questions were asked. We need to write time complexity and space complexity as well.

### 1. Optimizing Alexa Suggestions

In this question 1 list is given with x and y coordinates and an integer X is given. We need to find X restaurants near the customer from location (0,0).

Example 1 : \r\nlocation: [[1,2], [3,4], [1,-1]], \r\nX=2 \r\nnO/P: [[1,-1], [1,2]]

### 2. Device Application Pairs

In this question device capacity, foregroundAppList and backgroundAppList is given. We need to find the foreground and background pair which optimally utilizes the device capacity. List has set of pair where first integer represents id and second integer represents amount of memory required.

Example 1 :\r\ncapacity = 7, \r\nforegroundAppList: [[1,2], [2,4], [3,6]], \r\nbackgroundAppList: [[1,2]] \r\nnO/P: [[2,

After 15-20 days I got call from HR for amazon Chime Interview. There will be 3 rounds on that day only. The rounds were held in next week.

**Round 2:** It is taken by Manager.\xc2\xab0

- There is discussion on project, leadership principles and Java concepts.
- Incident when you deep dive, etc
- Process and threads
- How google.com works when we type it in URL.
- Multiprocessing, multitasking, multithreading, etc

**Round 3:** It is taken by SDE-1. Two codes were asked. I was able to solve both.

1. <https://www.geeksforgeeks.org/iterative-letter-combinations-of-a-phone-number/>
2. <https://www.geeksforgeeks.org/minimum-steps-reach-target-knight/>

**Round 4:** It was taken by SDE-2. Two codes were asked. I was able to solve both.

1. A question similar to: <https://practice.geeksforgeeks.org/problems/kth-largest-element-in-a-stream2220/>
2. <https://www.geeksforgeeks.org/unique-paths-in-a-grid-with-obstacles/>
3. A question based on dp to find ways to move from one cell to another.

After 3 weeks I got reply that I will have bar raiser round after 1 week.

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# Amazon Interview Experience for SDE-1

- Difficulty Level :\n[Medium](#)
- Last Updated :\n18 Jun, 2021

Hi Guys, sharing my Amazon drive experience for SDE 1 role 2021.

**Round 1(Online Test):** Online test containing 4 parts:

- A. Error correction: A code will be given, and you need to correct the errors so that it gives the desired output.
- B. Coding: 2-3 codes from medium to hard level.
- C. Workstyle assessment: This will contain situational questions.
- D. Reasoning.

**Round 2(Interview 1):** 2 questions, 1 hour. The interviewer was very cool and comfortable, was SDE1.

Questions asked were:

1. There are cars on the x-axis of different sizes. Cars are represented by an array of integers where the direction is represented by the sign of the integer and the size is represented by the absolute value. If the cars collide, the smaller car gets destroyed. All the cars move with equal velocity. Find the final set of cars that will remain. (Soln: Use stack)
2. Given a binary tree, find the maximum sum of the elements such that no two node elements are taken from consecutive adjacent layers. After I solved this, the question was modified to find the maximum sum such that no two adjacent node elements are taken in the sum.\xc2\xad

**Round 3(Interview 2):** 2 questions, 1 hour. Interviewer was not a very good one, probably SDE2.

Questions asked were:

1. Given a binary search tree, replace all the node elements with the sum of the elements greater than it.
2. Given a linked list, sorted according to the absolute value of the nodes, sort it by actual values.

**Round 3(Interview 3):** 1 hours. Interviewer was 6 years of experience in Amazon and SDE 3. He was very friendly.

1. Started with a light discussion about the interviewer, and then about me.\xc2\xad
2. Discussed the projects.\xc2\xad
3. Asked me a situation where I faced technical problems and how I managed them.\xc2\xad
4. Asked me a technical question for implementing a database with key value pairs that can be stored efficiently where the key and value pairs are only valid for a specific time. Modified the version of the question every time to make it more efficient. It includes implementation of hashing, dictionary, garbage collection, and heap.
5. N. B. In all the interviews, you are required to tell the approach first and if the interviewer is satisfied, then only you will be able to write code. All the interviews were on the amazon chime platform for audio-video and shared whitespace for writing code. No language bar.

**Tips:** All the interviews were based on data structures. You can always ask the interviewer for clarification.

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# Amazon Interview Experience for Programmer Analyst 2021

- Last Updated : \n16 Jun, 2021

I appeared for the Amazon Programmer Analyst Hiring process in Pool-Campus 2021 with no previous work or internship experience. There were a total of 5 rounds (1 Online Coding + 4 Technical Interviews). The interviews were virtual due to the pandemic.

## Round 1 (Online Coding): \xc2\xab0

This round was conducted on the HackerEarth platform and contained 10 MCQs based on java and 3 coding questions. The difficulty of these questions was medium and I was able to solve 2 of the coding questions completely.

## Round 2 (Technical Interview):

All the interview rounds were conducted on amazon chime and live code was used to solve the coding question. \xc2\xab0

- The interviewer started with his introduction and asked me the same.
- We had a short discussion on my projects.
- Then he gave me a code snippet and asked me to debug the code. I was able to fix the code pretty easily.
- Then he gave me this question to solve <https://www.geeksforgeeks.org/even-numbers-even-index-odd-numbers-odd-index/>, I initially gave a naive solution but later was able to give an optimized solution with a hint from the interviewer.
- The next question was similar to <https://www.geeksforgeeks.org/stock-buy-sell/> but I was asked to maximize loss due to lack of time he asked me the approach instead of the entire code.
- Few programming languages based questions were asked.
- A couple of behavioral questions.
- At last, he asked if I had any questions for him, I asked few relevant questions.

## Round 3 (Technical Interview):

- The interviewer introduced himself and talked about the work he does then asked me to do the same.
- He was interested in one of my projects and asked few related questions.
- Then he gave me two coding questions to solve
- Similar to <https://www.geeksforgeeks.org/find-expression-duplicate-parenthesis-not/> but I had to remove the duplicate parenthesis from the string.
- and <https://leetcode.com/problems/binary-tree-zigzag-level-order-traversal/>
- I asked a couple of relevant questions at the end.

## Round 4 (Technical + Behavioral Interview):

- The interviewer started with his introduction and asked me the same.
- A brief discussion on my projects. He was interested in every minor detail from technologies to algorithms used.
- Behavioral questions like
- What changes did you fight for?
- What is something you are proud of?
- What mistakes did you make?

- How do you see yourself in 5 years?
- and few I can't remember.
- I asked few position-related questions at the end.

### **Round 5 (Technical + Behavioral Interview):**

- This round was similar to the previous, Introduction followed by project discussion.
- Few questions related to basic Computer Science concepts.
- A lot of behavioral questions and also a few follow-up questions to my answers.

All the Interviews lasted 1 hr and the interviewers were very friendly.

### **Few Tips:**

- Read as many interview experiences as possible.
- During the coding round, keep talking to the interviewer regarding your approach, assumptions, time complexity and ask questions to narrow down the problem.
- Write clean production-ready code by considering edge cases.
- When asked about projects try to explain every small detail as possible.
- Go through Amazon's leadership principles most of the behavioral questions are related to those.
- Answer behavioral questions using the STAR (Situation, Task, Action, Result) method.
- Don't panic whenever you get stuck, Interviewers are there to help you.

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## Amazon Interview Experience

- Difficulty Level :[Hard](#)
- Last Updated :[01 Jul, 2021](#)

### Round 1(Coding Round):

1. Given a binary tree, where every node points to its parent node and the parent of root is null. You have given two nodes to find the distance between them.
2. Given a matrix of m\*n find the maximum path sum from any node.

\xc2\xab0

e.g.\n 10 20 30 40\n20 50 60 100\nSo, ans is \n10 + 20 + 50 + 60 +100 = 240\nne.g.\n10 30 50\n0 40 30\n20 70 80\nSo, th

1. Some behavioural questions were asked.

### Round 2(Design Round):

1. Design flight booking system.

They are more focusing on LLD in this round.

Some cross-questions were asked like how you are handling concurrency for the same ticket etc?

2. Some behavioral questions were asked.

### Round 3(Design Round):

1. Design Tinder :).

They are more focusing on HLD in this round.

2. Some behavioral questions were asked.

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## Amazon RDS |x80|x93 Working with Backups

- Last Updated :n01 Jun, 2021

This article aims to make you aware of |x80|x9cWorking with Backups|x80|x9d on Amazon RDS. The prime objective of backups is to create a copy of our data that can be recovered in situations like data failure, data theft, and so on. As we all know, RDS deals with a lot of crucial data and there can be chances of data loss. To avoid such losses [RDS](#) has incorporated several backup strategies in RDS for the clients as per their requirements. Let us discuss all of them.|xc2|xa0

### Automated Backups :

As the name suggests, it is the default backup strategy by RDS, from the time period you created the database instance till the time it gets deleted, |x80|x9cAutomated Backups|x80|x9d remain in action. This backup facility allows the user to recover data from any point in time i.e. automated backups keep track of data every second and the users can track back it whenever they need it. The backup retention period is specified by the user during creating the instance, they can alter it whenever they want to, by default it is one day. Automated backups are applied to those instances only which are in the |x80|x9cAvailable|x80|x9d state, other states like |x80|x9cStopped|x80|x9d, |x80|x9cStorage Full|x80|x9d do not support automated backups. And when the instances which already have an automated backup running are copied in the same region then automated backups do not apply to these copied instances as this will only increase the bill amount.|xc2|xa0

You can check whether the automated backup is enabled or not, if enabled then what is the retention period. Just select the instance and click on it. And under |x80|x9cAvailability & Durability|x80|x9d you will find the details. Here is the image attached to refer to.

The screenshot shows the 'Instance and IOPS' and 'Encryption Details' sections at the top. Below them is the 'Availability and Durability' section, which includes 'DB Instance Status' (available), 'Multi AZ' (Yes), and the 'Automated Backups' field, which is highlighted with a red box and shows 'Enabled (7 Days)'. Further down are 'Maintenance Details' with fields for 'Auto Minor Version Upgrade' (Yes), 'Maintenance Window' (sat:09:15-sat:09:45), 'Backup Window' (07:34-08:04), and 'Pending Maintenance' (None). A small '(b)' is located to the left of the screenshot.

Now, let us look at the steps involved in |x80|x9cEnabling|x80|x9d automated backups for any desired DB instance.

After logging into your account go to the RDS management console. From the navigation pane, select |x80|x9cDatabases|x80|x9d and then choose the database you want to enable automated backups for. And click on |x80|x9cModify|x80|x9d. Here is the image to refer to for any confusion.

The screenshot shows the 'Amazon RDS' navigation pane with 'Databases' selected. The main area is titled 'Databases' and shows a table with a single row for 'database-1'. The table includes columns for 'DB identifier', 'Instance', and 'Engine'. At the top right of the main area are buttons for 'Group resources', 'Modify' (which is circled in red), and 'Delete'. The 'Modify' button is intended to be clicked to change the backup retention period.

After a while |x80|x9cModify DB Instance|x80|x9d page appears, for the backup retention period select a value

other than zero (0). Choose to continue and select **Apply Immediately**. The image is attached ahead for reference.

## Modify DB Instance: tporainst

**Instance specifications**

**Backup**

**Backup retention period**  
The number of days for which automated backups are retained. Setting this parameter to a positive number enables backups. Setting this parameter to 0 disables automated backups.

7 days

**Backup window**  
The daily time range (in UTC) during which automated backups are created if automated backups are enabled.

Start Time: 20 : 06 UTC      Duration: 0.5 hours

**Copy tags to snapshots**

Yes  
 No

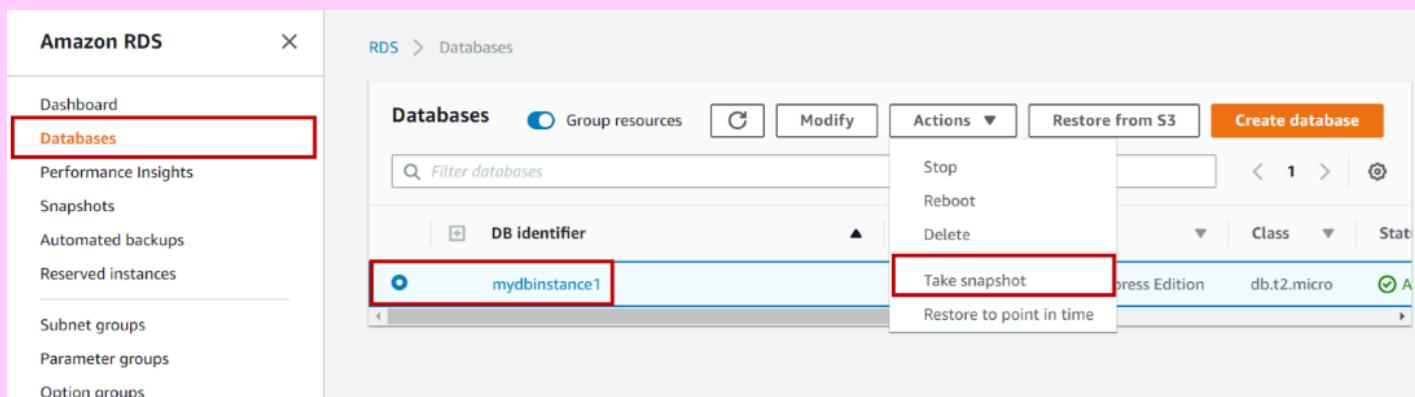
Let us look at another backup strategy in Amazon RDS.

### Snapshots:

Snapshots are another backing-up privilege by Amazon RDS for their users. Snapshots are **non-editable** backups of entire database instances, not individual databases. It is not automatic, but the final snapshot is created automatically without the user's permission while deleting that instance. A snapshot does not come with a retention period, and they never expire. Snapshots are an efficient method for storing backups within the same region or a different region. We can export the snapshot's data to **Amazon S3** for storing. Snapshots come with multiple sub-services like [creating](#), [deleting](#), [exporting](#), and so on. For knowing about all these services follow these articles.

For creating a DB Snapshot follow this process.

After logging into your account go to the RDS management console. From the navigation pane select **Databases** and then choose the database you want to take snapshot for. And click on **Actions** from the listed options choose **Take Snapshot**. Please refer to the image attached ahead.



In a while, you will see the **Take DB Snapshot** window. Fill in the name you wish to give to the snapshot and then finally click on **Take Snapshot**. The image is attached ahead for better understanding.



Services ▾

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RDS &gt; Databases &gt; Take snapshot

## Take DB snapshot

This feature is currently supported for InnoDB storage engine only. If you are using MyISAM, refer to details [here](#).

### Settings

To take a snapshot of this DB instance you must provide a name for the snapshot.

#### DB instance

The unique key that identifies a DB instance. This parameter isn't case-sensitive.

database-1

#### Snapshot name

The identifier for the DB snapshot.

[Cancel](#)[Take snapshot](#)

In this way, we can easily take a snapshot of any DB instance in RDS. Both the backup strategies are distinctive to each other in terms of their architecture. And if you also use a free tier account then make sure you delete all the services and instances before logging out of your AWS account.

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# Amazon Interview Experience for SDE-I (On-Campus)

- Difficulty Level :\n[Medium](#)
- Last Updated :\n20 Aug, 2021

March-April, 2021

I appeared for Amazon SDE-I FTE(Full Time Equivalent) hiring process through my college campus, in March 2021. First, there was an Online Coding Round and it was followed by three rounds of virtual interview process.

**Online Coding Round:** From the Online Coding Round, about 40 candidates were shortlisted for the interview process which was held in the next week.\xc2\xao

- In the online coding round, two questions (different questions to different candidates) were asked, one a bit tricky and the other one easier. I actually ended up doing neither with complete success (:3).
- In my first question, I remember I passed about 8 out of the 13 total test cases and passed only 2 out of the 9 in the other one. I thought I had no chances for qualifying through but when the shortlist was published, I ended up being quite high up in the list. I was surprised but later what I learned was, the developers who make those questions, actually go through your code thoroughly and find out whether you used the correct logic (or at least close to it) or not.
- If your logic seems fine, and you miss a few edge cases and end up not passing every test case, you\xe2\x80\x99ll still have decent chances of going through (like me!). So, do focus on your logic as well!

## Interview Round 1:\xc2\xao

- Coming to the first round of the interview process, I was asked to brief myself and how I developed my interest for such a software role.
- Then the interviewer moved on to a few coding questions after providing me with a live coding link where I had to write my code (just the required functions/classes/structures not the whole code from top to bottom).
- He asked me to find an element in a rotated array that was otherwise sorted(<https://practice.geeksforgeeks.org/problems/search-in-a-rotated-array4618/1>). I told him I can provide him with a binary search solution which will take O(log n) time.
- Learning that I already know the approach, he moved on and asked me to write a function to find the Lowest Common Ancestor in a Binary Tree(<https://practice.geeksforgeeks.org/problem-page.php?pid=700221>). I wrote the code successfully and ran a few manual test cases on it. After that, he modified the LCA question a bit and asked my approach. I shared what I thought but it was not 100% correct so he told me the correct approach to that.
- Then he asked me another question: <https://practice.geeksforgeeks.org/problems/maximum-gap3845/1>
- He asked me to solve it in O(n) time complexity and after thinking for sometime, I told him what approach I thought of. I didn\xe2\x80\x99t know Pigeonhole Sorting technique, and tried to solve it using stacks but couldn\xe2\x80\x99t arrive at a proper solution in that limited time. But the interviewer was happy with my approach and told me \xe2\x80\x9cQuite close\xe2\x80\x9d.
- Within a couple of hours, I received a call and got notified that my second round of interviews was scheduled in an hour.

## Interview Round 2:

- After briefing myself just like the previous round, the interviewer asked me about my Machine

Learning Project and then moved on to a coding question.

- He asked me about the Circular Tour problem (<https://practice.geeksforgeeks.org/problems/circular-tour/1>) which was actually new to me because I didn't solve it before. When the interviewer asked me what extra data structure I would like to use, he was quite surprised when I told him that I wouldn't need any of it (not even a queue since its solution is quite popular, as I have learned after my interview). I solved it in O(n) time complexity and O(1) space complexity and took about 15-20 minutes to think of the approach.
- We later went on to check a few test cases manually and inside my code, I found out a couple of mistakes and corrected them. In the end, he was actually quite happy with my approach, and we had a little discussion about the Big O, theta, Omega notations before the interview ended.
- After the second round, I was quite confident that I shall get shortlisted for the third round which was indeed true after I received the mail which said the final and third round was scheduled for the next morning.
- Now some tension started creeping in my mind as I could actually see the finishing line inside my head. I didn't sleep well at all and was ready for the interview quite early in the morning.

### Interview Round 3:

- After talking about my past, the interviewer thoroughly asked me about my project and the concepts I used in it.
- He actually worked on those concepts beforehand, so he asked me every detail of it and I actually enjoyed having that conversation because for the first time one was truly interested in what I did (:3).
- Then he asked me a few behavioral questions based on their leadership principles (very important!).
- Next, he asked me to implement any cache and write the get() and set() function. I had no idea of cache as it wasn't in my curriculum since am from an Electrical Engineering background. But I had a little idea about how LRU cache works and tried to implement it using an array list and a hashmap.
- Those of you who have already solved this question can realize that I couldn't arrive at an optimal solution, actually, I was far from it :(. But I tried and tried and implemented every bit of idea which clicked inside my head within that stipulated time of 1 hour. In the end, he told me that he will look at my approach offline and wished me good luck.
- I was actually very disappointed that I wasn't able to solve the cache problem which quite a few of my friends knew already. It's actually difficult if one doesn't have any idea how it works, so I didn't blame myself for it, rather was quite happy about how everything went. But within a week, I was ecstatic to find out that I was selected and my name along with 7 other students from my university! Surely they did like my thought process and attitude in the last round because otherwise, my working solution was nowhere near the optimal one. The feeling was unreal and can be never replaced by anything else \xf0\x9f\x99\x82

### Few important tips:

1. Work on your logic and focus more on how you approach a problem and less on the result.
2. Go through the leadership principles of Amazon thoroughly and pay great importance to any kind of behavioral questions that might come your way. Also, give importance to the STAR format of solving a given situation since Amazon stresses extremely on these things.
3. Whenever you write a code, always try to deduce the Time and Space Complexity of your code because it is extremely vital for qualifying the rounds of any coding interview process.
4. Don't get tensed at all before your interviews unnecessarily because trust me Amazon interviews are interactive, not interrogative. So it's actually a discussion you have with your interviewer to try and reach a solution to a given situation. Be careful about

the time at hand because Amazon interviews are strictly about 45-60 minutes.

Lastly, if I can get into Amazon, trust me ANYONE can. Without inflating myself at all, I will say that I was extremely focused and dedicated to what I want to achieve and worked smartly towards it. Enjoy the feeling of your code running successfully and work on what's at hand today by keeping an eye on the bigger goal. Always take a break when necessary and make sure the whole process doesn't stress you out. I am sure you'll all do great! Best of luck!

This interview experience is contributed by Supratik Mitra.

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## Amazon Interview Experience

- Difficulty Level :[Hard](#)
- Last Updated :In 20 Aug, 2021

### Round 1(Coding on Hacker Rank platform):

- Given an array of Strings, Each string has an id and version associated with it. string with alphabetic versions are the older versions and the string with numerical versions are the new version. We need to line up the strings for renovation such that older version strings (strings with alphabetic version) need to be put first in lexicographical order. If any clashes in arrange, then arrange them as per the lexicographical order of the id. The renovated strings need to be kept as in the input order.

Example: \r\nInput:{a a , c b , b b , a 1, b 2}\r\nOutput:{a a , b b , c b, a 1, b 2}

Expected time complexity O(N\* log(N)). I was able to solve it with Heap (priority queue in c++).

- Given a 2 D array with each cell having values 1, 0, 9 where 1-> land , 0-> sea , 9->obstacle, we can only traverse in land (1).

Need to find the Minimum number of steps required to reach the obstacle (9).we are allowed to traverse only to right, left, down and up.

Expected Time Complexity: O(M \* N) . I was able to solve it with BFS (Breadth-First Search)

### Round 2(Amazon chime paired Coding F2F):

- Given a list of contacts containing name and phone number , we need to group the contacts which either have the same name or same phone number together.

Example:\r\nInput :{{abc ,9987},{xyz,9986},{dfg,9987}}\r\nOutput :{{{abc ,9987},{dfg ,9987}},{{xyz,9986}}}

Union Find Algorithm or Depth First search Algorithm was applicable

- Given a Sorted array, such that each number repeats exactly twice except one number, we need to find that number

<https://practice.geeksforgeeks.org/problems/find-the-element-that-appears-once-in-sorted-array0624/1#>

Example:\r\nInput:{1,1,2,2,3,4,4,5,5} \r\nOutput: 3

Expected Time Complexity :O(log(N)) Binary search was applicable

- Difference between thread and Process
- DNS Server mechanism

### Round 3(Amazon chime paired Coding F2F):

- Given the Process ids in array and the parent of these Process ids in separate array, and the process id we need to kill. Find the List of the process which would get killed on killing the given process.

Example:

pid{1,2,3,4,5,6,7,8,9} \r\nparentpid{2,0,2,3,3,3,4,5} \r\nKilling Process: 3\r\nOutput :{4,5,6,7,8,9}

Create a Directed Graph between the parent and Child process and perform BFS (Breadth First search)

- Given a Linked Link, Alter the Linked list as the below

Input:11->12->.. ln-2->ln-1->ln\r\nOutput: 11->ln->13->ln-2...

Separate out the Linked List by alternate nodes, we get two linked lists, reverse the second list and then join them.

<https://practice.geeksforgeeks.org/problems/reorder-list/1>

- Discussion on LRU Cache Implementation. (Double Linked List and HashMap)
- Amazon Leadership Principles Questions. <https://www.amazon.jobs/en/principles>

### Round 4(Bar Raiser Round F2F-Amazon chime):

- Few Questions on Amazon leadership principles
- Given a string that represents covid patients we need to isolate(remove) each character in string in lexicographical order

Cost of each isolation is equal to the index value of the character

Example 1: \r\nInput : aacb \r\nOutput : 1+1+2+1=5

Use Double linked list for altering and the hashmap for character frequency.

### Round 5(Hiring Manager-Amzon Chime):

- Few Questions on Amazon leadership principles
- Given an array of Integers find the pair whose sum is farthest from zero.
- some variations on the above question

**Finally, After 5 Rounds I got a Mail from HR stating my Selection.**

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# Amazon Internship Interview Experience

- Difficulty Level : \nHard
- Last Updated : \n20 Aug, 2021

I applied to Amazon for an SDE internship role -Berlin and received a test invitation(although I was later moved to Edinburgh, UK). The process included two sections, the test, and the interviews. There were three-phased coding tests and two personal interviews.\xc2\x90

## Coding Tests

### Part I:\xc2\x90

- This was a simple debugging round.
- It basically checks your command over general programming.\xc2\x90
- If you are quick and clear on your concepts, this won\xe2\x80\x99t be a hard nut to crack.\xc2\x90

### Part II:\xc2\x90

- This one is a coding test, with medium to hard level coding questions.\xc2\x90
- There were two questions to be solved in 45 minutes.\xc2\x90
- One was to find the largest square in a grid, similar to <https://practice.geeksforgeeks.org/problems/largest-square-formed-in-a-matrix0806/1>
- In the second question, a log of strings was given and it was required to append strings with their frequency. For example, if the word orange appears twice, the first time would remain as such but the second one has to be made \xe2\x80\x9corange(2)\xe2\x80\x9d. A simple hashmap-based approach would suffice for this solution, but there are other approaches you can come up with.\xc2\x90
- My suggestion for this round would be to practice as many questions as you can, available on **GeeksforGeeks** and **Leetcode**.

### Part III:\xc2\x90

- This was an Amazon SDE simulation.
- It basically is a simulation of how you actually work under pressure and as a developer, in general, and checks your technical capability and decision-making skills as an SDE intern.\xc2\x90
- If you\xe2\x80\x99ve met the criteria of selection after this phase, you\xe2\x80\x99ll receive an invitation for the interview. However, it could take a while. (I received mine after about two weeks \xf0\x9f\x98\x89 )

## Interviews\xc2\x90

There were two personal interviews with technical as well as behavioral parts, both having a good amount of importance. Both interviews are about 45-60 minutes, with one coding question each.\xc2\x90

1. Given a maze with paths and walls, represented by strings, print whether or not there is a path from the topmost line to the bottommost line(row). This problem can be solved using a BFS approach, similar to [This GFG article](#). \xc2\x90
2. Given customer logs and page transition logs as a list of class objects, identify the most common/frequent page transitions. This was a complex question to look at but could be solved

using hashmaps if considered carefully.\xc2\x80

Behavioral:

- For the behavioral part of the interviews, I would suggest taking the proper time to understand each of the 14 Leadership Principles of Amazon.
- \xc2\x80Quickly catch up on your previous projects so you don\xe2\x80\x99t get stuck if the interviewer asks about any.\xc2\x80

Apart from that, some of the questions you could prepare for are

- Tell me about a time you helped someone.
- Tell me about a time you faced a group conflict.
- When was the time you faced a failure and what did you do to overcome it?

Lastly, \xe2\x80\x9d say no matter what the outcome is, you should give yourself a little treat for working so hard:)

***Every challenge has only two things in its satchel \xe2\x80\x93 success or a lesson.  
Not everyone grabs the second, but those who do- WIN!***

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# Amazon Interview Experience 2021 | 3+ Years Experienced

- Difficulty Level :\n[Expert](#)
- Last Updated :\n20 Aug, 2021

The first step was to get the profile short-listed. Referrals can be a better way to apply for a profile.

**Round 1(Coding Round):** The first round comprised of 2 coding questions on the hackerrank platform

1. Algorithm Swap. The question was a variation of <https://practice.geeksforgeeks.org/problems/minimum-swaps/1>
2. Robot Move. The second was a variation of <https://practice.geeksforgeeks.org/problems/does-robot-moves-circular0414/1>

We also have to write the approach used for both these coding questions.

The coding round was cleared, and I got an email for further rounds which were on Amazon Chime.

**Round 2(Technical Interview):** There was a brief discussion on the projects and technical challenges faced till now and two coding questions were asked for which I had to provide the working code. It can be in any language but I used Java for it.

1. h<https://practice.geeksforgeeks.org/problems/level-order-traversal-in-spiral-form/1>
2. <https://practice.geeksforgeeks.org/problems/find-median-in-a-stream-1587115620/1>

Along with them, Amazon leaderships related questions were asked while solving the problems.

**Round 3(System Design Round):**

1. The problem statement was to give an HLD for \xe2\x80\x9cVoting Management System\xe2\x80\x9c. Along with it, LLD was taken up for some of the modules present in the design, handling race conditions, etc. Leadership questions were present in all the rounds.

**Round 4(Technical Interview):**

1. Was asked to write an extensible cache management library, something like Redis. Few modules were written completely like LRU.
2. The library should be extensible was the main requirement to be met.

**Round 5(System Design Round):**

1. Design an **Instagram** was the problem statement we tried solving in this round. Some queries/scales/db/API was taken up in detail.

After few days, Received a call from HR confirming the selection.

Hope it helps!!

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# Amazon Interview Experience for SDE-1

- Difficulty Level : \n [Hard](#)
- Last Updated : \n 20 Aug, 2021

## Round 1(Online): \xc2\xd0

The online round comprised of two DS and Algo-based problem where two things are required for each problem.

1. Executable, Bug-free, and clean code (As the code will be tested on public and private testcases).
2. Explanation of your solution and the complexity of the solution.

Duration: 2 hours

- Both the problems were leetcode medium level (BFS/DFS in 2d matrix and sorting based problems).
- Suggestion:- STL functions are used extensively for those problems and traversing algorithm is also a must. Try writing clean and well-documented code.

## Round 2(F2F Technical Interview Round-1)

1. First, the interviewer discussed previous work experience and college projects. Also asked some counter questions on it.
2. Questions on leadership principles.
3. DS-Algo medium level question: <https://practice.geeksforgeeks.org/problems/boundary-traversal-of-binary-tree/1>
4. DS-Algo medium level question: <https://practice.geeksforgeeks.org/problems/reorder-list/1>

Suggestion:- \xc2\xd0

- Don't directly jump to code, first explain brute force approach and after discussing how you can optimize it, you can start coding.

**Round 3(F2F Managerial Round):** This round is taken by software development manager at amazon. \xc2\xd0

1. As usual, interview started with my previous work experience and projects I worked on previously. Around 20 minutes discussed previous work and project. Some counter questions like why you implemented x thing in your project, what are some tradeoffs were asked.
2. Another 15/20 minutes revolved around answering questions on leadership principles. (Prepare for these questions before hand so that you don't take much time in thinking about the story which you want to plot).
3. For rest of the interview questions revolved around CS fundamentals based questions. (Mostly about multithreading, deadlocks, OOP concepts, shared memory etc). Also some questions are asked where code snippet is given and output is asked (code was in java).

**Round 4(F2F Technical Interview Round-2):** This round is pretty much similar to first technical interview. The only difference is questions asked less on previous work and more on CS fundamentals, but rest is same.

1. Interviewer asked questions on my work at previous organisation and projects.
2. Some questions on hashing, BFS/DFS tradeoffs and sorting.

3. Questions on leadership principles.
4. DS-Algo easy-medium level question: <https://practice.geeksforgeeks.org/problem-page.php?pid=701884>
5. DS-Algo easy-medium level question: <https://practice.geeksforgeeks.org/problems/multiply-two-strings/1>

**Round 5(F2F Bar raiser):** This round was also similar to other technical interviews only the difference is interviewer was more interested in knowing my previous experience, projects and leadership principle. Plenty of leadership principle-based questions were asked in this round and once he got satisfied we moved on to a DS algo based problem.\xc2\xa0

1. Problem:- <https://www.geeksforgeeks.org/multiply-large-integers-under-large-modulo/>  
(Logarithmic approach was expected)

Suggestion:-\xc2\xa0

- Don't panic in bar raiser because if you have come to this round then there must be some potential they have seen in your previous rounds.
- Take this as another technical interview with more focus on leadership principles. Also I think bar raiser has more weightage than any other rounds so if you can do well in this round you will probably get the offer.

Be calm & answer politely.

All the best!

**Verdict:** Accepted.

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# Amazon Interview Experience for SDE (Off-Campus)

- Difficulty Level :\n[Easy](#)
- Last Updated :\n20 Aug, 2021

I recently got a chance to interview with **Amazon**. I had three rounds.\xc2\xab0

**Round 1:** It started with my introduction and then the interviewer quickly jumped to the coding part. I was asked two questions.\xc2\xab0

1. The first question was finding sliding window maximum.  
<https://practice.geeksforgeeks.org/problems/maximum-of-all-subarrays-of-size-k3101/1>
2. The second one was to find the distance between two nodes of the Binary tree.  
<https://practice.geeksforgeeks.org/problems/min-distance-between-two-given-nodes-of-a-binary-tree/1>

Then the interviewer slightly modified the question \xe2\x80\x93 what if the node structure of that binary tree defines \xe2\x80\x93 value, parent. Given the two nodes. Find the distance between them.

**Round 2:** This round was also a technical round wherein I was asked two coding problems.

1. <https://practice.geeksforgeeks.org/problems/k-largest-elements3736/1>
2. <https://practice.geeksforgeeks.org/problems/excel-sheet5448/1>

**Round 3:** This was the last round. We had a discussion related to my internships and projects. Then he asked me a couple of behavioral questions.

1. Then he asked me DP problem. <https://practice.geeksforgeeks.org/problems/longest-increasing-subsequence-1587115620/1>

The interviewers were very friendly. Overall the level was medium. One needs to be very calm during solving the problems. Be very clear about the time and space complexities and always speak while you are thinking. Discuss your solution with the interviewer and then only move onto writing the code. Always ask your interviewer if you are stuck or if you have any doubts.\xc2\xab0

**Verdict:** Selected

GeeksforGeeks is a great place to learn Data structures and Algorithms, which is the most important part of the interviews.

All the best!

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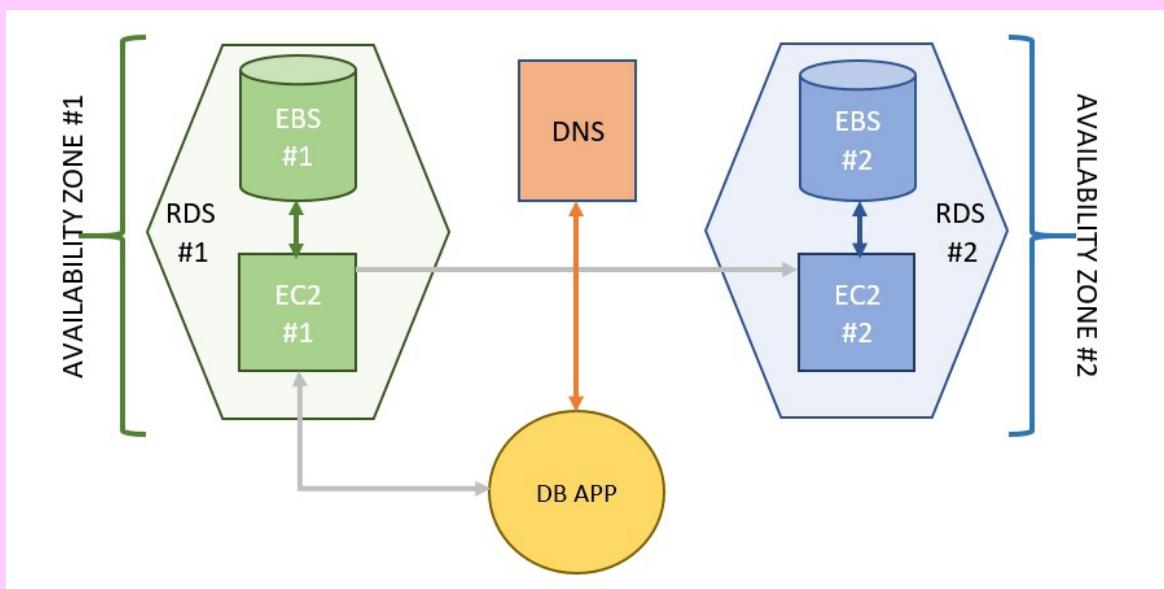
# Amazon RDS |x80|x93 Introduction to Amazon Relational Database System

- Difficulty Level :[Medium](#)
- Last Updated :[25 May, 2021](#)

This article intends to make you aware of **Amazon RDS or Amazon Relational Database System**. Amazon RDS is nothing but a relational database management system along with the facilities of the AWS cloud platform. It facilitates us in creating database instances as per our requirements, i.e. resizable, variety of database type, etc.

## AWS Relational Database Service (RDS) Architecture

Traditionally, database management used to be a very scattered service, from the webserver to the application server and then finally to the database. For maintenance of such a vast system a team was required, to shrink this workforce, AWS came across with an amazing all-in-one service, RDS. The whole architecture of RDS includes every aspect of the traditional management system, all at a place. Thus, it includes everything from **EC2 (Elastic Compute Cloud)** to **DNS (Domain Name System)**. Every part of the RDS architecture has its own separate set of features completely different from each other. A diagrammatical representation of RDS has attached ahead.



A small brief of some top features is discussed ahead.

- **Availability:** The [Automated Backup](#) feature of RDS makes the recovery of the database instance much easier and makes it available for access quickly. Other than that, [Database Snapshots](#) are user-driven backup features initiated by Amazon RDS, which makes it easier for the user to monitor all the alterations made on the Database Instance. These snapshots can be [shared](#) among multiple AWS accounts in order to expand the availability of the DB instance, along with maintaining the security of the confidential data.
- **Security:** While [creating](#) a new database, you have to create a password that is totally restricted and known to you only. And by default, you are given the [Admin role](#) which has the maximum authority on that particular database. Amazon RDS also allows its users to encrypt the databases using [AWS KMS](#) (Key Management Service) under Amazon RDS.
- **Backups:** RDS provides us the facility to have backups. We can have backups in multiple forms. [Snapshots](#) are basically non-editable backups used for maintaining records. We also can create [Automated Backups](#) simply by altering the configurations during creating the database. [Reserved instances](#) are also another type of backup facility available here.
- **Scalability:** RDS enables us to automatically scale up or scale down depending upon the number of transactions happening on your database per minute. We can do both [Horizontal Scaling](#) and [Vertical Scaling](#). Let us go through the difference between both of them.
  - **Horizontal Scaling** deals with the scenarios where the amount of traffic is increased on your database exponentially, in such cases, this scaling comes into the picture. This simply creates multiple hardware & software which are look-alike of the previously existing ones on the cloud in order to tackle the traffic.
  - **Vertical Scaling** deals with situations, where the traffic is not very much increased but the current configurations of the hardware & software are not able to handle the demands of the client anymore. Using this scaling method, we are capable of adding additional storage and processors to our pre-existing resources.

\xc2\x9a0

- **Performance:** RDS gives two SSD-backed storage options for its users, i.e. **General Purpose & Provisioned**. All these variants directly impact the level of performance of the resource and its attached services. The general SSD is very cost-effective and is used at places where a broad workforce is required. Provisioned, as the name suggests are designed for temporary or lower workloads purposes.
- **Pricing:** RDS only asks you to pay for what you use, once you are done with a certain resource delete it and don't pay for it anymore. There is no compulsory minimal charge decided for using RDS. Depending upon **Database Engines** and type of database, a bill is calculated and sent to you at the end of the month. For free tier accounts, special configurations are bound to choose and you won't get any bills if you delete all the resources you used before logging out.

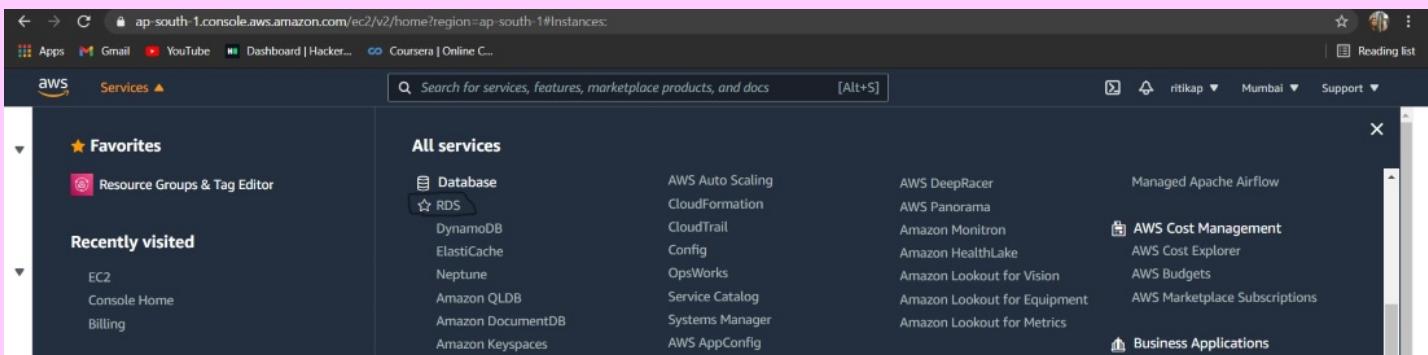
## Some popular alternatives of RDS:

1. **MySQL** It is the 2nd most preferred open-source RDBMS in the world. It is developed by [Oracle](#). It is not typically cloud-based in nature like Amazon RDS, i.e. it can be used on PC as well. It is also offered as one of the options on RDS to choose as Database Engine. It supports five server operating systems. The main application of MySQL is in the e-commerce domain, data warehouse, and logging application.
2. **PostgreSQL** It is one of the oldest RDBMS. It is also one of the popularly used open-source RDBMS. It was developed by [PostgreSQL Global Development Group](#) in 1989. It is a cross-platform software, and it supports more operating systems as compared to others. Its primary focus is maintaining the security of the data and it is a vast kingdom of user-defined functions.
3. **MariaDB** It is the most compatible RDBMS, and it supports both secondary database models, i.e. **Spatial & Graph**. It was released in 2009, by [MariaDB Corporation Ab](#) (MariaDB Enterprise). It supports a wide range of programming languages and also allows the users to introduce server-side scripts. One of the best features of MariaDB is that it focuses on high-level security the community of MariaDB continuously finding and fixing the issues for MariaDB.

All these alternatives are found useful for users to meet their requirements at a certain level. AWS introduced, RDS to ensure that the ultimate control resides in the hands of the users. RDS is not of query-driven structure rather it is more like a console in its structure.

Now, let us look at the AWS Relational Database Service management console.\xc2\x9a0

To reach, to the RDS management console. First login into your AWS account. Once you are directed on the primary screen, at the leftmost part of it, click on **Services**. From the long list, look for the sub-heading **Databases** and under it, you will find **RDS**. Click on it. Here is the image to refer to.



Once you tap on RDS, in a while, you will be able to see the RDS management console. Refer to the image attached ahead for better understanding.

The screenshot shows the AWS RDS Dashboard for the Asia Pacific (Mumbai) region. On the left, a navigation pane lists various RDS services: Dashboard, Databases, Query Editor, Performance Insights, Snapshots, Automated backups, Reserved instances, Proxies, Subnet groups, Parameter groups, Option groups, Events, Event subscriptions, Recommendations, and Certificate update. The main content area features a section for 'Amazon Aurora' with a brief description and a 'Create database' button. Below this, there's a 'Resources' summary table:

	Count	Description
DB Instances	0/20	Parameter groups (1)
Allocated storage	0 TB/100 TB	Default (1)
DB Clusters	0/40	Custom (0/40)
Reserved instances	0/20	Option groups (1)
Snapshots	0	Default (1)
Subnets	0/100	Custom (0/20)
Automated	0	Subnet groups (1/20)
Recent events	0	Supported platforms VPC
Event subscriptions	0/20	Default network vpc-7d4a8f16

On the right, there are 'Recommended for you' links: 'Build RDS Operational Tasks', 'Backup and Restore Using AWS Backup', 'Time-Series Tables in PostgreSQL', and 'Test Your DR Strategy in Minutes'. The bottom of the page includes standard AWS footer links and a status bar showing the date and time.

This is how the RDS dashboard looks like. On the left, there is the navigation pane to direct you about all the services under RDS. You can create your database from here, by tapping on the orange box saying, **Create database**. For [creating](#) a database in RDS follow the linked article.

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# Amazon Interview Experience for SDE-1

- Difficulty Level :\n[Medium](#)
- Last Updated :\n18 May, 2021

I was contacted by a recruiter at the start of April for the Bangalore location

She asked me to give a coding test on Hackerrank. The test had 2 questions. I was able to solve both questions completely. After 1 week I got a call for a telephonic round.

There were total 5 Rounds of the interview \xe2\x80\x93

**Technical phone screen (1 hour):** The interviewer was SDE-2 at amazon.

- Asked 2 questions about work done from my resume
- Asked 1 heap-based question
- Question \xe2\x80\x93 Given M managers with priority as  $M_1 > M_2 > \dots > M_n$ , each manager has some n number of reporters working under him.
- There are x jobs with different priorities, your job is to assign the task to employees, such that  $M_{i+1}$  can not be assigned a task until all the reporters of  $M_i$  have been assigned.
- I gave him a heap-based approach, he asked me the time complexity.
- He was satisfied with my approach and asked me to write working code.

After 1 week I received a call for the next set of rounds i.e. onsite rounds.

**First Onsite Round (1 hour):** The interviewer was SDE2 at amazon.

- Asked 2 questions based on DS Algorithms, one question was based on BST and the other was based on Graph, I gave an approach of using dfs
- She asked me approach and time, space complexity first, I was able to solve both problems without any hint.
- Next, She asked me 2 Behavioral questions
- Question1 \xe2\x80\x93 Tell me a time when you had a conflict with the product team over some requirement and how did you handle it
- Question 2 \xe2\x80\x93 Tell me about a time when you had to work out of your comfort zone

**Second Onsite Round (1 hour):** The interviewer was SDE-3 at Amazon.

- He asked me one question on BST- <https://www.geeksforgeeks.org/print-binary-tree-vertical-order-set-2/>. I took 1 hint and around 30 minutes to write working code for this. He asked me to optimize the code more for space complexity.
- He asked some behavioral questions
- Question1 \xe2\x80\x93 Tell me about a time you have to face some unfamiliar requirement.
- Question2 \xe2\x80\x93 Tell me about a time when you faced a crisis at work

**Third Onsite Round (1 hour):** This was Hiring Manager\x80\x99s round.

- He gave a simple problem based on the array and sliding window concept.
- Next, he asked about the work done in the previous company.
- He gave me 1 question on MYSQL(mentioned in cv).
- We discussed some OOPs concepts like deadlock, semaphores, etc.
- After 2 days I got a call from the recruiter for the next round i.e. Bar raiser round

**Bar Raiser Round (1 hour):**

- The interviewer was in a very senior position at Amazon.
- He asked 2 questions based on DS also.
- Question 1 \xe2\x80\x93 DP based
- Question 2 \xe2\x80\x93 Something like a balanced parenthesis problem
- I was able to solve question 1 completely, he seemed satisfied with it.
- Due to lack of time, there were some bugs in the code of question 2.
- And also, all the interviewers asked me to explain the space and time complexity of my approaches.

## Tips \xe2\x80\x93

- Prepare well for Amazon leadership principle.
- Make sure you remember all the projects from your resume.
- Prepare DS Algorithms well.

**Result:** Selected

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# Amazon Interview Experience

- Last Updated : \n18 May, 2021

April 2021(1 Year Experienced)

**Round 1:** First round comprised of 2 coding questions on the hackerrank platform

1. Optimal file merge (solved by using priority queue /heaps).  
<https://www.geeksforgeeks.org/optimal-file-merge-patterns/>
2. Second question used the concept of BFS in a matrix. <https://www.geeksforgeeks.org/shortest-distance-two-cells-matrix-grid/>

We also have to write the approach used for both these coding questions.

The written round was cleared, and I got an email for a telephonic round which was on Google meet

**Round 2:** The interviewer gave me one question and a shared file to do any rough work or write code there

1. The question was: <https://www.geeksforgeeks.org/find-next-greater-number-set-digits/>. I gave the brute force approach but could not properly figure out the optimised solution for this question so was not selected for further rounds.
2. And other questions he asked were around the leadership principles of Amazon.

Tips- Practice Data structure and algorithms questions a lot and also go through the Amazon leadership principles properly, as they focus on them a lot. All the Best!

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## Amazon Interview Experience (On-Campus)

- Difficulty Level :[Medium](#)
- Last Updated :[11 May, 2021](#)

**Round 1:** In the first round I was asked 2 coding questions

1. <https://www.geeksforgeeks.org/maximum-size-sub-matrix-with-all-1s-in-a-binary-matrix/>
2. <https://www.geeksforgeeks.org/find-the-next-lexicographically-greater-word-than-a-given-word/>

I was able to solve both problems. The interviewer was a very chill kind of person, first, we discussed brute force approaches, and then he asked me to optimize the solution further, and finally, I was able to give him an efficient approach. He was satisfied and then asked me to implement the code in whichever language I want. So I implemented both solutions in C++.

**Round 2:** Again they asked me 2 coding questions

1. Given an infinite stream of integers and K, find the sum of K largest elements from stream at any point of time. This problem is similar to this one: <https://www.geeksforgeeks.org/kth-largest-element-in-a-stream/>

I first gave him an approach that was of  $O(n^k)$  time complexity, the idea was to keep an array of k elements in sorted order, and whenever a new integer greater than min element came drop min element and place new element in the array. But the interviewer asked me can I optimise it further, after thinking for few minutes I gave him another approach of time complexity  $O(n \log(k))$ . The idea is to maintain a min-heap of size k and if new integer is greater than min integer then simply replace the min with new integer and update the sum. The interviewer was satisfied and asked me to implement the code for the min-heap and the actual problem statement.

2. Given n machines and their start time and end time to finish their work and K production line, find the minimum number of extra production lines needed to maximize the production.

Constraints: only one machine can work at a production line at a time. It is similar to this problem: <https://www.geeksforgeeks.org/maximum-number-of-overlapping-intervals/>.

Solution: let m be a maximum number of overlapping intervals then if  $m \leq k$  ans will be 0. Otherwise, ans will be  $m - k$ . The interviewer also gave me hints if I was stuck anywhere.

Then at the end, they ask me behavioral/situational questions based on their Leadership Principles.

- Tell about any project you did in which you have used new technology that was not known to you. So, this question basically talks about Amazon's Leadership Principles: Dive Deep, Learn and be Curious

At Amazon they mainly aiming to know your thought process, the way you approach a problem, and how quickly you came to an optimized solution. So, always discuss or tell them your approach first, then try to optimise it and also do not forget about edge cases they are very important, do ask clarification questions if needed and tell them your assumption if any and then discuss your final approach, its time complexity and space complexity and do compare with other algorithms and then if interviewer will be satisfied go for implementation.

**Note:** Do not implement solution without discussing it with the interviewer because it will be definitely a Red Card and you will be out

**Round 3:** This was final round and was taken by a Manager. First, he introduced himself and then asks me to introduce myself. After that, he directly jump to problem-solving and asks me 2 coding questions

1. Give a 2D array of 1s and 0s, where 1 denotes a person and 0 denotes an empty cell, find the minimum number of persons needs to be evacuated such that we can stop the spread of covid and maintain social distancing. If two 1s are adjacent to each other column-wise or row-wise remove one of them and diagonally adjacent 1s need not to be removed

Example: 1 1 0  
1 1 1  
1 1 1  
Output: 0 1 0  
1 0 1  
0 1 0

2. Given a page of a book, cursor position, and a keyword, return top k words near to the cursor which contains keyword as a substring. I was able to solve only 2nd problem.

Then we discuss the projects that I have mentioned in my resume.

So, be always prepared with whichever thing you have written on your resume, read about Amazon's Leadership Principles, and do practice coding problems as much as you can.

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## Amazon Interview Experience for SDE-1 (Off-Campus)

- Difficulty Level :[Medium](#)
- Last Updated :11 May, 2021

I appeared for the amazon\xe2\x80\x99s interview for SDE full-time role, and here is my experience

### Technical Interview Round-1

1. First question was there are given n ropes of different lengths, we need to connect these ropes into one rope. The cost to connect two ropes is equal to the sum of their lengths. We need to connect the ropes at a minimum cost. <https://www.geeksforgeeks.org/connect-n-ropes-minimum-cost/>

For example, if we are given 4 ropes of lengths 8, 5, 1, and 2. We can connect the ropes in the following ways.

- First, connect ropes of lengths 1 and 2. Now we have three ropes of lengths 3(1+2), 5, and 8.
- Now connect ropes of lengths 3 and 5. Now we have two ropes of lengths 8(5+3) and 8.
- Finally connect the two ropes 8+8 and all ropes have connected.

Total cost for connecting all ropes is  $3+8+16 = 27$ .

I told him solution using a priority queue, and also we can implement using the minimum heap, so he asked me to write code by implementing the whole heap function then he asked me about the time complexity of code, all the function of heap, why the time complexity of heap is  $\log(n)$  and to explain them each and every function of code. I was able to write the code and to explain the time complexity but he was asking why the time complexity of insertion, deletion is  $\log(n)$ , I told him because the maximum height of heap will be  $\log(n)$  ( where n is the size of the heap) and each level will have a count of element double then next so first level will have 1 element then next atmost 2 then 4 like this so last element will have  $2^h$  element

$$2^h=n$$

$$h=\log(n)$$

in this way, maximum height will be  $\log(n)$  but he did not seem to be satisfied, and maybe I was not getting his question so he told me we will move to the next question then later we will discuss this.

2. Next question was robber is planning to rob houses and all houses are connected in form of a tree. Each house has a certain amount of money stashed, the only constraint stopping the robber from robbing each of them is that connected houses have security systems connected and it will automatically contact the police if two connected houses were robbed. you have to find the maximum amount of money robber can collect without calling the police

I was thinking solution, and also I was discussing my solution with the interviewer I was going off track, but the interviewer was helpful he gave me test cases where my logic will fail and gave me some hint, so I come up with a recursive solution, and he was also satisfied with the solution. He asked me about the time and space complexity.

### Technical Interview Round-2

1. Discussion on the project.
  2. Then He asked me coding question Given a binary tree, a target node in the binary tree, and an integer value k, print all the nodes that are at distance k from the given target node. No parent pointers are available. <https://www.geeksforgeeks.org/print-nodes-distance-k-given-node-binary-tree/> <https://media.geeksforgeeks.org/wp-content/uploads/20210506121359/BinaryTree4-300xc3lx97258.png>
- Consider the tree shown in diagram\r\nInput: target = pointer to node with data 8. \r\nroot = pointer to node with
- I told him the logic  $O(n)$  solution.
3. Then a discussion on internship project why using this method only and so on.
  4. You have given a list of songs, and you have to play songs randomly how will you implement them.

I told him I will use a random function to find a random number then mod it with the size of the list to find an index from 0 to size then I will play the song corresponding to that index.

Then he told me that songs should not repeat then I told him to move the current song to the end of the list and then I will decrease the size so that we will not consider the last element we can use vectors for this.

### Technical Interview Round-3

1. It was both technical and behavioral round
2. Have You Faced Any Tight Deadline How Did You Handled It
3. Any difficult situation
4. How Do You Handle Conflict in the Workplace (with team or manager)
5. The time when you received negative feedback from your manager
6. Tell me about the biggest risk you have taken
7. Given the structure of the train, and given arrival and departure time of the train and initially, each train will have green color now if two train overlap color will change to blue to implement the function. variation of this problem <https://www.geeksforgeeks.org/minimum-number-platforms-required-railwaybus-station/>

Structure of train

**C++**

```
struct train
{
    string color;
    int arrival_time;
    int departure_time;
}
```

First I told him the basic  $O(n^2)$  solution then I told him  $O(n)$  solution and he asked me to write the code for  $O(n)$  solution.

#### Tips:-

- Keep asking for the clarifications of question and edge cases.
- Try to discuss your approach with the interviewer and think out loud, The interviewer is there to help you out.
- Keep track of all edged cases and ask your interviewer about them.
- If the interviewer is not able to understand your approach try to explain with help of pseudo code.
- Don't make your own assumptions, tell them that you are making these assumptions, and if they are good with that then only proceed with your solution.
- Hope this helps, Best of Luck!

#### Verdict:

Selected!

Thanks, GeeksforGeeks for helping me throughout my preparation journey, I did my complete preparation from GeeksforGeeks.

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# Amazon RDS |x80|x93 Copying a DB Snapshot

- Difficulty Level :[Medium](#)
- Last Updated :[13 May, 2021](#)

This article will include all the steps required and related to **copying a DB Snapshot**. Before, getting straight into the process, let us be familiar with the concept of DB Snapshot.

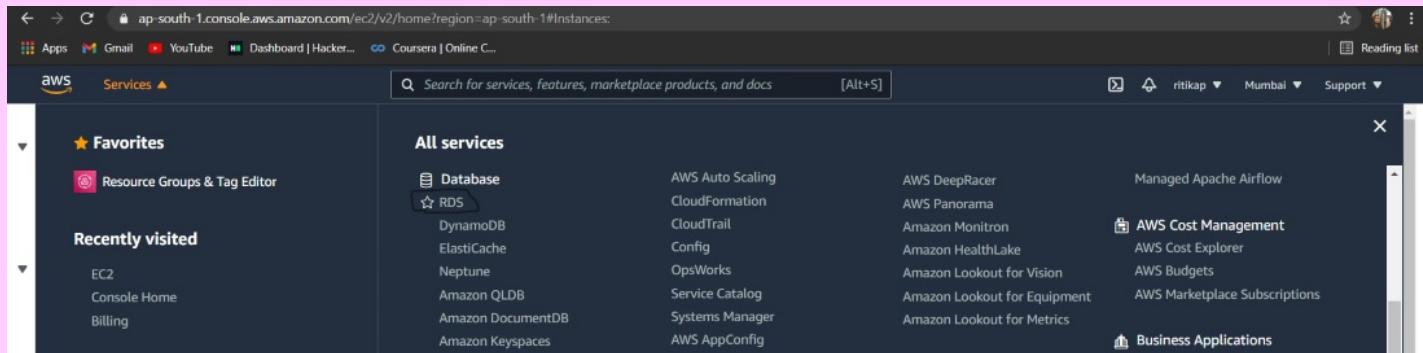
A DB [Snapshot](#) or database snapshot is a **non-editable backup** of any desired database instance at any point of time, protected and saved securely in **Amazon S3** for any user-defined period of time. DB Snapshots can be categorized into two types, namely, they are-

- **Automated**
- **Manual**

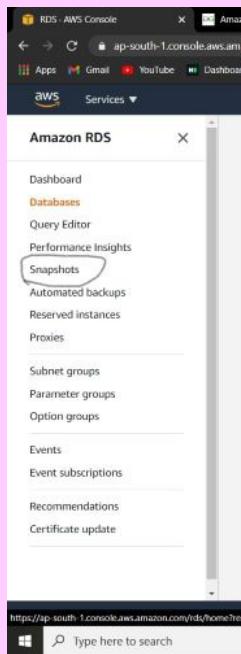
As the names suggest, automated snapshots are made by the cloud itself and manual snapshots are created by users only.

Now, let us jump straight into the process of copying a DB Snapshot.

**Step 1:** Login into your AWS account, as your main screen appears, then you have to go to the **services** section present on the extreme left, click on that. A bunch of services will be listed ahead of you. Among them, there is an option of the **database**, here we have the **RDS** (amazon relation database service) click on it. The image is attached ahead to refer to.



**Step 2:** Once the RDS console is completely loaded on the screen, from the navigation pane of the left choose **Snapshots**. An image is attached for better understanding.



**Step 3:** In a while, the list of existing snapshots will appear on the screen. Refer to both lists i.e. Manual & Automated and then select the snapshot you are willing to copy. And from the menu bar, click on **Actions** and choose **Copy Snapshot**. Here is the image to refer to.

Dashboard
Databases
Query Editor
Performance Insights
<b>Snapshots</b>
Automated backups
Reserved instances
Proxies
Subnet groups
Parameter groups
Option groups

## Snapshots

Manual    System    Shared with me    Public    Backup service    Exports in Amazon S3

### Manual snapshots (1)

Filter manual snapshots

Snapshot name    DB instance or cluster

[REDACTED]    [REDACTED]

Actions	Take snapshot
Restore Snapshot	1 > @
Copy Snapshot	time
Share Snapshot	
Migrate snapshot	
Export to Amazon S3	:25:35 GMT+010
Delete Snapshot	

**Step 4:** Further, the copying page appears. Here, you can choose the region wherever you want to copy the snapshot and give a name to this new snapshot. Here is the image attached to refer to.

RDS > Snapshots > Copy Snapshot

### Make Copy of DB Snapshot?

**Settings**

Source DB Snapshot  
DB Snapshot Identifier for the automated snapshot being copied.  
my-source-snapshot

Destination Region info  
US West (Oregon)

New DB Snapshot Identifier  
DB Snapshot Identifier for the new snapshot  
target-snapshot-1

Target Option Group (Optional) info  
No preference

Copy Tags info

Please note that depending on the amount of data to be copied and the Region you choose, this operation could take several hours to complete and the display on the progress bar could be delayed until setup is complete.

**Step 5:** After checking all the details of your new snapshot, finally, click on **Copy Snapshot**. Refer to the image attached ahead.

## Encryption

**Encryption info**

Enable Encryption  
Select to encrypt the given instance. Master key ids and aliases appear in the list after they have been created using the Key Management Service(KMS) console. [Learn More](#).

Disable Encryption

**Cancel** **Copy Snapshot**

In this way, you can easily copy a DB Snapshot using the console. Copying an existing snapshot is helpful to users in multiple ways. As it helps us to maintain records and securely copy them in a similar or different region as per our choices. For security concerns, we can copy an encrypted snapshot as well and can maintain the same security level at every region.

If you also use a free tier AWS account, then don't forget to [delete](#) all the resources and snapshots before logging out.

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## Amazon RDS |x80|x93 Sharing a DB Snapshot

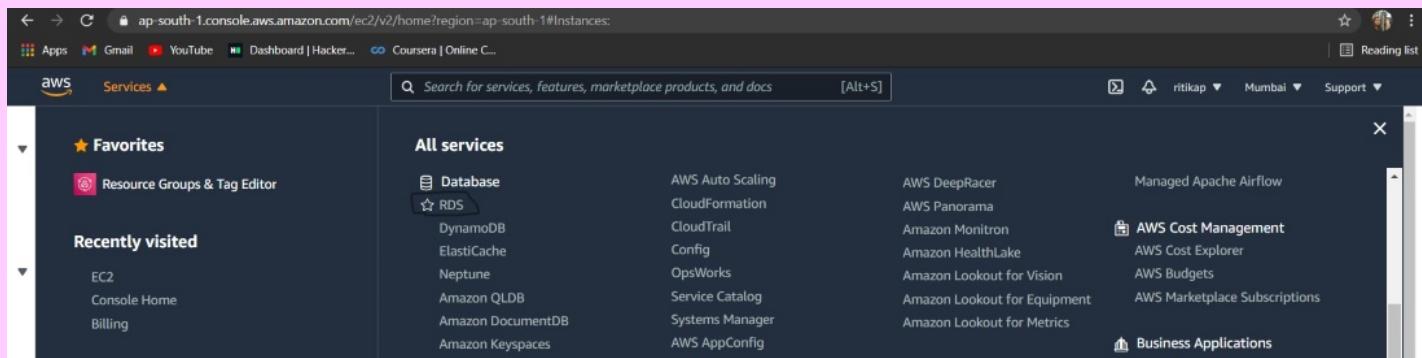
- Difficulty Level :[Medium](#)
- Last Updated :[13 May, 2021](#)

This article is composed of all the steps involved in **sharing a DB Snapshot** with other AWS accounts. Since sharing such a confidential entity like a snapshot is meant to be secured and protected. Thus, we should be very much concerned about the security of the snapshot.

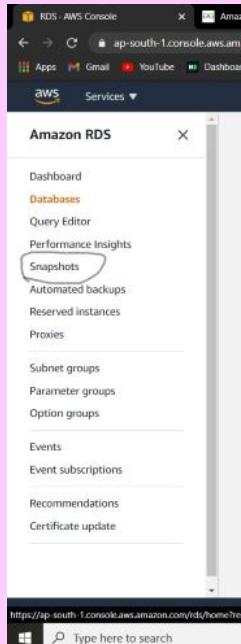
Shared DB [Snapshots](#) are used for keeping track of the databases over different AWS accounts or regions. Organizations use this method to store their databases on both the premises i.e. respective availability zone and as well as the particular region. This flexibility enables the organizations in maintaining their data security on regional as well as organizational levels.

Now, let's jump to the step-by-step process of **Sharing a DB Snapshot**.

**Step 1:** First login into your **AWS** account and once your AWS management console screen is loaded. Click on [services](#) which is written on the left and from the drop-down menu under **Database section** there is an option **RDS**. Click on that and wait for the page to be loaded. Here is the image for better understanding.



**Step 2:** Once the RDS management console appears, check out the navigation pane and click on [Schemas](#). Refer to the image for better understanding.



**Step 3:** On the right, you will find the list of all the pre-existing snapshots (both manual and automated) on the cloud. Select the snapshot you want to share. Refer to the image for understanding better.

The screenshot shows the Amazon RDS management console. The left sidebar has a navigation menu with options: Dashboard, Databases (which is selected and highlighted in orange), Query Editor, Performance Insights, Snapshots, Automated backups, Reserved instances, and Proxies. The main content area is titled "Databases". It includes a search bar labeled "Filter databases" and a table header with columns: DB identifier, Role, and Engine. A single database entry, "database-1", is listed under the "MySQL Community" engine.

**Step 4:** Now, click on **Actions** and from the drop-down list choose **Share Snapshot**. Here is the image for better understanding.

The screenshot shows the Amazon RDS management console on the "Snapshots" page. The left sidebar includes "Schemas" and "Tables" under the "Databases" section. The main area displays a table of "Manual snapshots" with one entry. An "Actions" dropdown menu is open next to the snapshot, listing options: Restore Snapshot, Copy Snapshot, Share Snapshot, Migrate snapshot, Export to Amazon S3, and Delete Snapshot.

**Step 5:** After this, a new screen with a **snapshot permission** dialog box will load in a while. Choose the visibility configurations as per your data security requirements i.e. **Public or Private**. And further, add all the AWS accounts you wish to share the snapshot with. You can add or delete the AWS accounts per your requirements at any point in time. Here is the image to refer to.

This is a screenshot of the "Snapshot permissions" dialog box. It starts with a "Preferences" section stating: "You are sharing an unencrypted DB snapshot. When you share an unencrypted DB snapshot, you give the other account permission to make a copy of the DB snapshot and to restore a database from your DB snapshot." Below this, there are sections for "DB snapshot" (listing "testoracletags-snap") and "DB snapshot visibility" (radio buttons for "Private" and "Public", with "Private" selected). There is also a "AWS account ID" input field with an "Add" button. A "AWS account ID" list table is shown with a "Delete" button and a note "Please add AWS account ID". At the bottom are "Cancel" and "Save" buttons.

This is a simple method to share a DB Snapshot with desired AWS accounts using the RDS management console. And if you also have a free tier AWS account, then make sure you delete every snapshot you have created. You can also refer to these articles to learn about [creating](#) or [deleting](#) a DB Snapshot.

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# Amazon RDS |x80|x93 Exporting DB Snapshot Data to Amazon S3

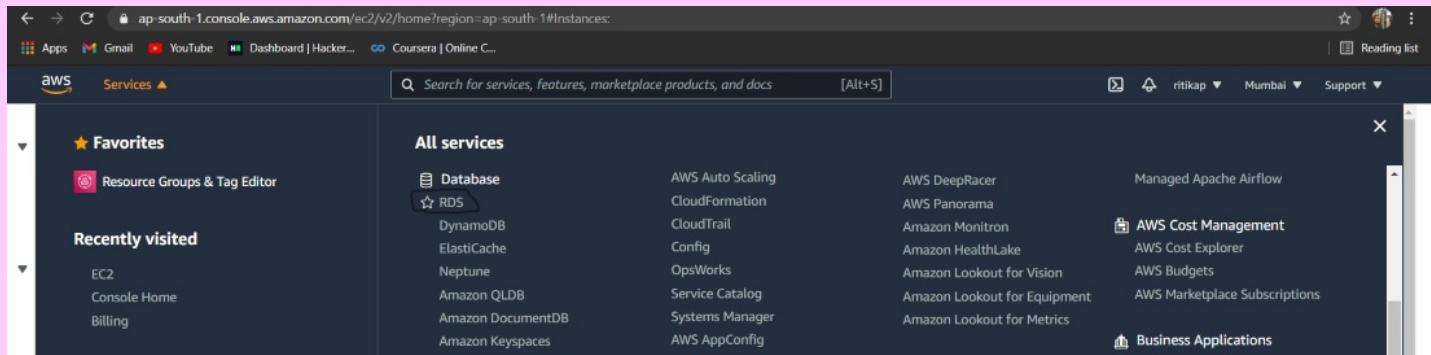
- Difficulty Level :[Medium](#)
- Last Updated :[13 May, 2021](#)

This article will cover all the steps involved in **exporting DB Snapshot data to Amazon S3**. For this process, we primarily need a pre-existing **Snapshot** and an **Amazon S3** bucket. We can even create the S3 bucket during the exporting process, but an existing one will sort the task and make it quicker. Exporting a DB [Snapshot](#) extracts the data from the database snapshot and stores it on your desired S3 bucket to analyze further.

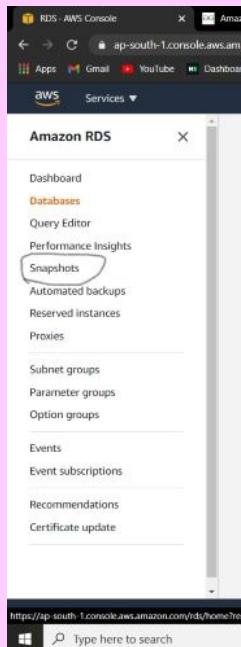
**Amazon S3 or Simple Storage Service** is a cloud storage resource of object storing. A basic example of this storage type is Google drive. We can store different types of files here like images, documents, applications, etc. S3 is much more flexible and loaded with several features along with the facilities of a cloud platform.

Now let's get to the task of **exporting DB Snapshot data to the Amazon S3 bucket**

**Step 1:** First, login into your AWS account, and once your primary screen is loaded. Click on **services** which is written on the left and then from the drop-down menu under the **Database** section there is an option **RDS**. Click on that and wait for the page to be loaded. Here is the image for better understanding.



**Step 2:** Once the next page loads, a list of options will appear on the left navigation pane. From the list click on **snapshots**. Here is the image to refer to.



**Step 3:** After a while, an array of snapshots along with their names and other details are visible on the screen. Select the snapshot you wish to export. Please refer to the image attached ahead.

The screenshot shows the Amazon RDS console with the 'Databases' section selected. A single database entry, 'database-1', is displayed. The details show it's an 'Instance' of 'MySQL Community'. There are buttons for 'Group resources', 'Copy', and 'Modify' at the top right.

**Step 4:** Now, click on **Actions**. From the given drop-down list of options, select the **Export to S3** option. Take reference from the image attached ahead.

The screenshot shows the 'Snapshots' page in the RDS console. A specific snapshot named 'snapshotforexport' is selected. The 'Actions' dropdown menu is open, and the 'Export to Amazon S3' option is highlighted with a red box.

**Step 5:** Now, comes the configuration time. When the export to the S3 window appears. First, give a name to the task for the identification process. Scroll down and fill in other details like the **bucket name**, amount to export i.e. **Partial** or **All**. Refer to the image for understanding better.

The screenshot shows the 'Export to Amazon S3' configuration dialog. Key settings include:

- Export identifier:** bank-demo
- Exported data:** Exported data format is Parquet.
- Amount of data to be exported:** All (20 GB) is selected.
- S3 destination:** An S3 bucket is selected, and an optional S3 prefix is provided.

**Step 6:** Once everything is configured as per your demands. Click on **Export to S3**. Here is the image to refer to.

## Pricing details

For snapshot data export to Amazon S3, the cost of exporting snapshot data is based on the snapshot size. [Learn more](#)

Additional charges apply for storing exported data in Amazon S3. [Learn more](#)

Cancel

Export To Amazon S3

In this way, we can simply **Export a DB Snapshot to S3** using the AWS console. We can also encrypt the snapshots in cases where the data security is at a higher stake. And if you are also a free tier account user like me, then make sure you delete all the instances, snapshots, and all other services you have used before logging out from your account. For any confusion while [deleting](#) the snapshot consult this article.

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# Amazon Interview Experience for SDE-2 | 4 Years Experienced

- Difficulty Level :\nMedium
- Last Updated :\n06 May, 2021

## Virtual Interviews

I got a call from an Amazon recruiter via LinkedIn. She sent me the coding test link which I had to complete within a week. Once I completed the test, I got a call to schedule the interviews. All interviews were held on Amazon Chime as per schedule.\xc2\x90

Overall process took 1 month to complete the test and interviews.

Following are the questions that were asked:

### HackerRank Test (90 Minutes online test)

**1. Shopping Options:** We are given the costs of a list of pants, shirts, shoes, skirts. We have a certain amount of cash with us, we need to determine the total number of possible combinations which we can buy given that we must buy one and only one of each type.

Eg: pants=[3, 5, 7], shirts = [4, 7, 8],\r\nskirts = [5, 8], shoes = [3], budget = 25

So in the above e.g., apart from the combination [7, 8, 8, 3], all others are possible.

Hint: Since we have to buy all, we can combine the first two lists and the last two lists, so we would have cost lists like pants\_shirts = [\xe2\x80\x9a6] and

skirts\_shoes = [\xe2\x80\x9a6], now we can just iterate over one list and binary search the remaining amount over the other list and add accordingly.

**2. Storage Optimization:** Amazon is experimenting with a flexible storage system for their warehouses. The storage unit consists of a shelving system that is one meter deep with removable vertical and horizontal separators. When all separators are installed each storage space is one cubic meter(1\*1\*1). Determine the volume of the largest space when a series of horizontal and vertical separators are removed.\xc2\x90  
\xc2\x90

n = 6\r\nm = 6; \r\nh = [4]\r\nv = [2]

## Round 1(Problem Solving): 50 Minutes

First round was taken by a Software Engineer Manager who was residing in US. He introduced himself and then asked about some question related to Amazon leadership Principle.

Then asked one problem solving question. Given a list of words return a Map of words which can be formed by using other words which exist in the same list. He asked only one problem solving question. Most focus was on leadership Principle.

```
input = [\xe2\x80\x9chappy\xe2\x80\x9d, \xe2\x80\x9ccrise\xe2\x80\x9d, \xe2\x80\x9cfor\xe2\x80\x9d,\r\n\xe2\x80\x9ccset\xe2\x80\x9d, \xe2\x80\x9ccsunrise\xe2\x80\x9d, \xe2\x80\x9ccsul\xe2\x80\x9d,\r\n\xe2\x80\x9ccnset\xe2\x80\x9d, \xe2\x80\x9ccunset\xe2\x80\x9d, \xe2\x80\x9cmind\xe2\x80\x9d,\r\n\xe2\x80\x9chappymind\xe2\x80\x9d, \xe2\x80\x9ccnl\xe2\x80\x9d, \xe2\x80\x9ccrise\xe2\x80\x9d,\r\n\xe2\x80\x9chappysunrise\xe2\x80\x9d]
```

```
output = {\r\n\xc2\x9a0 \xc2\x9a0 \xc2\x9a0 \xe2\x80\x9chappymind\xe2\x80\x9d : [[\xe2\x80\x9chappy\xe2\x80\x9d,\r\n\xe2\x80\x9cmind]],\r\n\xc2\x9a0 \xc2\x9a0 \xc2\x9a0 \xe2\x80\x9ccsunrise\xe2\x80\x9d : [[\xe2\x80\x9ccsul\xe2\x80\x9d,\r\n\xe2\x80\x9ccn\xe2\x80\x9d, \xe2\x80\x9ccrise\xe2\x80\x9d], [\xe2\x80\x9ccun\xe2\x80\x9d,\r\n\xe2\x80\x9ccrise\xe2\x80\x9d]],\r\n\xc2\x9a0 \xc2\x9a0 \xc2\x9a0 \xe2\x80\x9ccunset\xe2\x80\x9d : [[\xe2\x80\x9ccsun\xe2\x80\x9d,\r\n\xe2\x80\x9ccset\xe2\x80\x9d], [\xe2\x80\x9ccsul\xe2\x80\x9d, \xe2\x80\x9ccnl\xe2\x80\x9d, \xe2\x80\x9ccrise\xe2\x80\x9d, \xe2\x80\x9ccset]],\r\n\xc2\x9a0\r\n\xc2\x9a0 \xc2\x9a0 \xe2\x80\x9chappysunrise\xe2\x80\x9d : [[\xe2\x80\x9chappy\xe2\x80\x9d,\r\n\xe2\x80\x9ccsunrise\xe2\x80\x9d], [\xe2\x80\x9chappymind\xe2\x80\x9d, \xe2\x80\x9ccnl\xe2\x80\x9d, \xe2\x80\x9ccrise\xe2\x80\x9d,\r\n\xe2\x80\x9ccset\xe2\x80\x9d], [\xe2\x80\x9chappy\xe2\x80\x9d, \xe2\x80\x9ccrise\xe2\x80\x9d, \xe2\x80\x9ccset\xe2\x80\x9d], [\xe2\x80\x9chappymind\xe2\x80\x9d, \xe2\x80\x9ccrise\xe2\x80\x9d, \xe2\x80\x9ccset\xe2\x80\x9d, \xe2\x80\x9ccset\xe2\x80\x9d]]]
```

```
\xe2\x80\x9cn\xe2\x80\x9d, \xe2\x80\x9crise\xe2\x80\x9d]]  
}
```

## Round 2(Problem Solving): 50 Minutes

Second round was taken by a SDE3 guy who was also in US. He introduced himself and then asked some questions related to Amazon leadership Principle.

He also asked me only one Problem Solving question.

Given an array of integers, return a new array such that each element at index i of the new array is the product of all the numbers in the original array except the one at i.

\xc2\x0

For example, if our input was [1, 2, 3, 4, 5], the expected output would be [120, 60, 40, 30, 24]. If our input was [3, 2, 1], the expected output would be [2, 3, 6].

I solved it by multiplying the complete array then divide each index item to the complete sum.

Then he asked me not to use division. Was able to do in O(n) time complexity

<https://www.geeksforgeeks.org/a-product-array-puzzle/>

## Round 3(System Design): 1 hr 10 minutes

Third round was a system design round which is taken by Senior engineer manager.

He introduced himself and the team he was hiring for.\xc2\x0 He asked some question related Amazon leaderShip principles. \xc2\x0

He asked me to design a Distributed Scheduler which should work for all kinds of clients (Human, Machines {APIs}).\xc2\x0

Main functionality he asked me to implement was to schedule a job and remind the client about the job at set time. \xc2\x0

- Mostly High level design,\xc2\x0
- More questions on scalability, availability, fault tolerance, and resilience.
- Ensure all jobs will work.\xc2\x0
- How system will work in peak time.
- What should be the time frame in which user will notify?  
\xc2\x0

## Round 4(Bar-Raiser): 1 hr 25 minutes

Fourth round was the bar raiser round. In this round 2 interviewers were there. One of them was Senior Software Dev Manager and another was Technical Program Manager. (One of them was shadowing)

Started with the introduction.

He asked some question related Amazon leaderShip principles.

Design an Online Book Store.

Expectations :

1. Function Requirements (Explanation)
2. Non \xe2\x80\x93 Function Requirements (Explanation)
3. Domain Objects
4. High Level Components (Complete Services, Caches, Search, Message Broker, Data Base, Service Interactions)
5. Services Dependency with responsibility
6. Data Flows
7. APIs
8. Entity Relations
9. DB Schema

10. Scalability
11. Distribution and management  
↳

He asked me some more Amazon Leadership principle questions with STAR(Situation, Task, Action, Result) process.

**Note:**

In every round amazon leadership principle questions were asked. So don't forget to prepare for them too.

HR called before every interview and told about how this round goes and principles on which focus will be the most.

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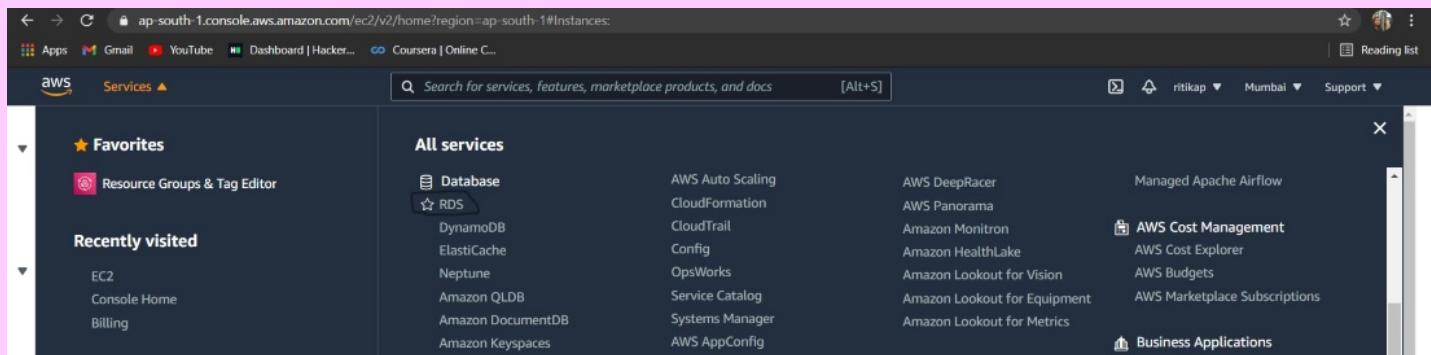
# Amazon RDS | Renaming a DB Instance

- Difficulty Level : [Medium](#)
- Last Updated : 09 May, 2021

This article will cover the steps involved in **Renaming a DB Instance**. A DB Instance is nothing but a database which includes a bunch of memory structures for managing data files. For more detailed information on the topic give the linked article a read.

For **renaming** an existing DB Instance,

**Step 1:** Login to your AWS account. Click on **services** from the leftmost side of the AWS management console. And click on **RDS**. Here is the image for better understanding.



**Step 2:** From the navigation pane, click **databases**. Here is the image for better understanding.

The screenshot shows the AWS RDS console interface. The left sidebar menu is titled "Amazon RDS" and includes the following options:

- Dashboard
- Databases**
- Query Editor
- Performance Insights
- Snapshots
- Automated backups
- Reserved instances
- Proxies
- Subnet groups
- Parameter groups
- Option groups
- Events
- Event subscriptions
- Recommendations
- Certificate update

The main content area is currently displaying the "Databases" section. At the top of this section, there is a toolbar with a "Group resources" button, a "C" icon, and a "Modify" button. Below the toolbar, there is a search bar labeled "Filter databases". A table lists a single database entry:

DB identifier	Role	Engine
database-1	Instance	MySQL Community

At the bottom of the browser window, the URL is visible: <https://ap-south-1.console.aws.amazon.com/rds/home?region=ap-south-1#databases>.

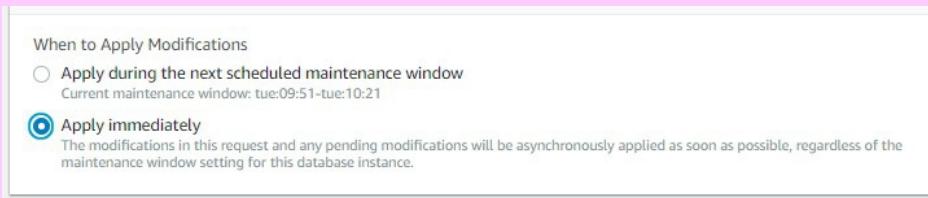
**Step 3:** Select the **instance** you are willing to rename. Here is the image for better understanding.

This screenshot is identical to the one above, showing the "Databases" section of the AWS RDS console. The "Modify" button in the toolbar is circled in red, indicating it is the target for the next step.

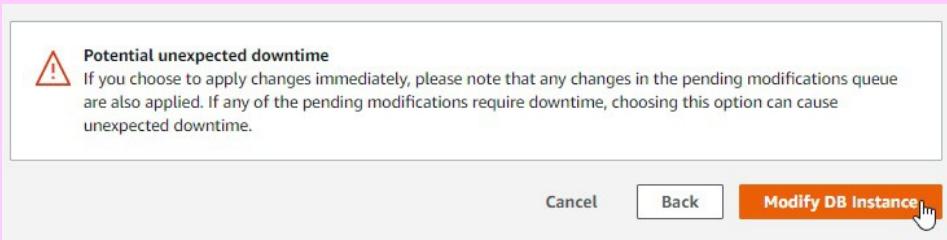
**Step 4:** Click on **modify**.

**Step 5:** Under settings, enter a new name for the **DB Instance identifier**. Here is the image for better understanding.

**Step 6:** For making the changes immediately, choose **Apply Immediately**. Here is the image for better understanding.



**Step 7:** Finally after reviewing the changes click on **Modify DB Instance** for saving the changes made. You can select **back** if something is still wrong in the setting. Here is the image for better understanding.



In this way, we can simply rename a pre-existing instance.

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# Amazon RDS |x80|x93 Restoring From a DB Snapshot

- Difficulty Level :[Medium](#)
- Last Updated :[09 May, 2021](#)

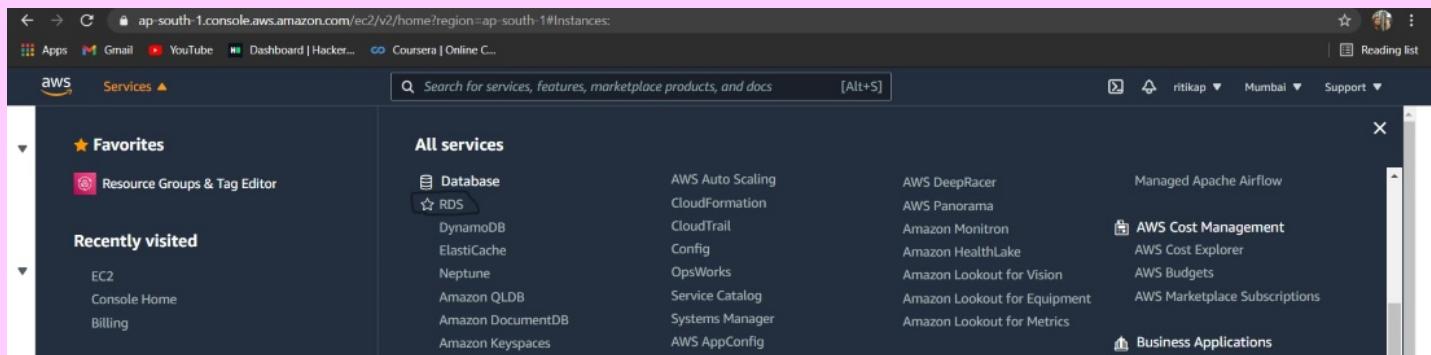
This article covers the whole process of **restoring from a DB Snapshot** for a DB Instance identifier.

As we all know, a **Snapshot** is nothing but a **read-only type backup** of any database instance, securely protected and saved in Amazon S3 for any specific period time. Snapshots make it easier to create a new database with similar configurations and properties. It is useful at places where the client needs multiple databases with almost similar properties. Rather than creating a new database from the scratch, we prefer restoring it from a snapshot. As it is easier and faster than the traditional approach.

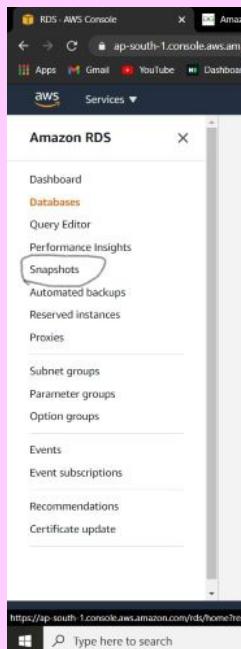
Before diving deep into the restoring process. First let us learn [how to create a database](#) and for that follow this linked article.

Now, let's look at the restoring process step-by-step.

**Step 1:** First, login into your AWS account. And from the leftmost, click on the **services** tab, then from the drop-down list click on **RDS** service. The image is attached ahead for a much better understanding.



**Step 2:** From the navigation pane, choose the option **Snapshots**. Here is the image to refer to.



**Step 3:** Once the snapshot page is loaded on the screen. It looks like this somewhat.

The screenshot shows the 'Amazon RDS' service dashboard with the 'Schemas' section selected. On the left, a sidebar lists various options like Dashboard, Databases, Query Editor, etc. The main content area is titled 'Snapshots' and shows a table for 'Manual snapshots (1)'. The table has columns for Snapshot name, DB instance or cluster, Snapshot creation time, and DB Instance created. The single entry is 'manual-screenshots' under 'database-1' created on 'April 21, 2021'.

**Step 4:** Now, choose the **DB snapshot**, from which you wish to restore. After selecting the snapshot tap on **Actions** and from the list of options select the **Restore Snapshot** option. Here is the image to refer to.

This screenshot is similar to the previous one but shows the 'Actions' dropdown menu for the selected snapshot 'database-1-final-snapshot'. The menu includes options like 'Restore snapshot', 'Copy snapshot', 'Share snapshot', 'Migrate snapshot', 'Export to Amazon S3', and 'Delete snapshot'.

**Step 5:** Now, on the restore snapshot page, look at all the details attached to the snapshot you are restoring from. The image is attached ahead for a much better understanding.\xc2\x90

This screenshot shows the 'Restore snapshot' page. The left sidebar is identical to the previous screenshots. The main content area is titled 'Restore snapshot' and contains a 'DB specifications' section. It includes fields for 'Engine' (set to 'Amazon Aurora with MySQL compatibility'), 'Capacity type' (set to 'Provisioned'), and 'Replication features' (set to 'Single-master replication is currently selected'). There are also sections for 'Engine version' and 'Show versions that support the global database feature'.

**Step 6:** Keep scrolling, under the **settings** section, give a unique name to the **DB instance identifier**. Use the image to understand better.

The screenshot shows the AWS RDS Settings page. On the left, there's a sidebar with various navigation links. The main area is titled 'Settings' and contains sections for 'DB snapshot ID', 'DB instance identifier', and 'Connectivity'. The 'DB instance identifier' section includes a note about case-insensitivity and character constraints. The 'Connectivity' section shows a dropdown for 'Virtual private cloud (VPC)' set to 'Default VPC (vpc-7d4a8f16)'. A note at the bottom says 'After a database is created, you can't change the VPC selection.'

**Step 7:** Once everything is as per your choice, click on **Restore DB Instance**. Here is the final image.

The screenshot shows the 'Restore DB Instance' configuration page. It features a sidebar with navigation links. The main area has sections for 'Allocated storage' (set to 20 GiB), 'Microsoft SQL Server Windows Authentication' (with an unchecked checkbox for enabling it), 'Encryption' (with an unchecked checkbox for enabling it), and 'Additional configuration'. At the bottom right are 'Cancel' and 'Restore DB Instance' buttons.

In this way, we can simply, **restore from a DB Snapshot**. And if you are also a free tier account user, then make sure you delete all the instances and snapshots before logging out from your account. For a detailed article about [deleting a DB Snapshot](#) follow the linked article.

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## Amazon RDS |xe2|x80|x93 Creating a DB Snapshot

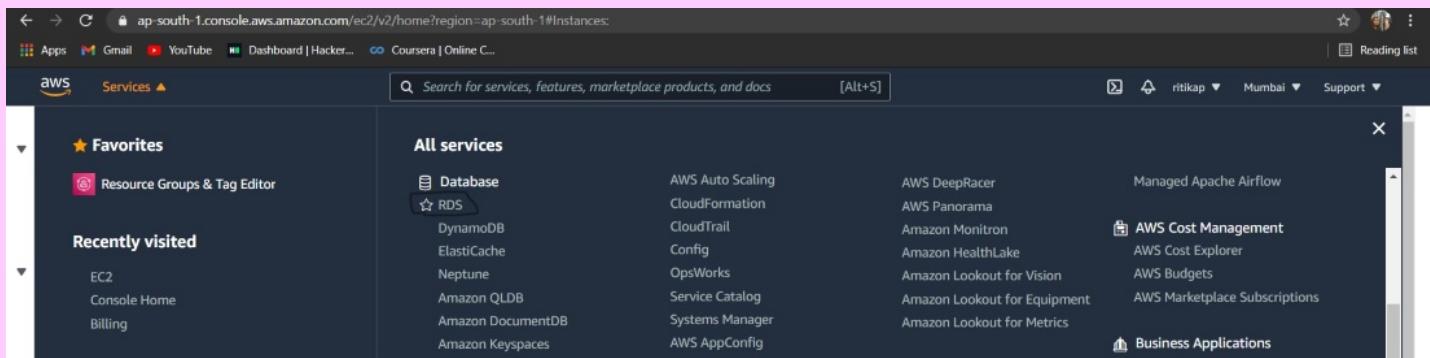
- Difficulty Level : \nMedium
  - Last Updated : \n09 May, 2021

**Amazon RDS or Amazon Relational Database Service** makes the manipulation of databases much easier and handy for its users. It is very much similar to the traditional relational databases along with numerous facilities of the cloud as a platform. Due to these extra advantages, people prefer AWS for managing their data. For more detailed information about Amazon RDS, read this [article](#).

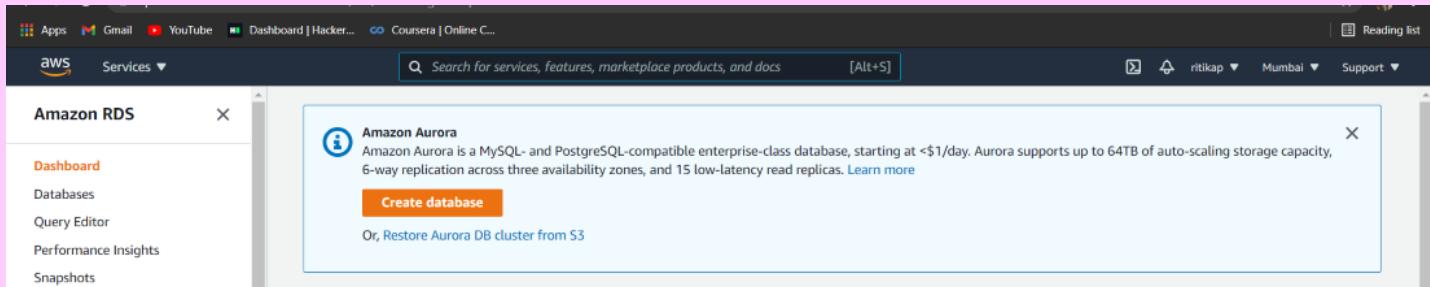
A **DB Snapshot** is a **non-editable backup** of database instances protected and saved in Amazon S3 for a desired period of time which is specified by the user. By default, this period is set as 7 days. And as per the time period decided by the user, this backup remains the same and increases the value of the total bill.

Now let's get to the task of **creating a DB Snapshot**

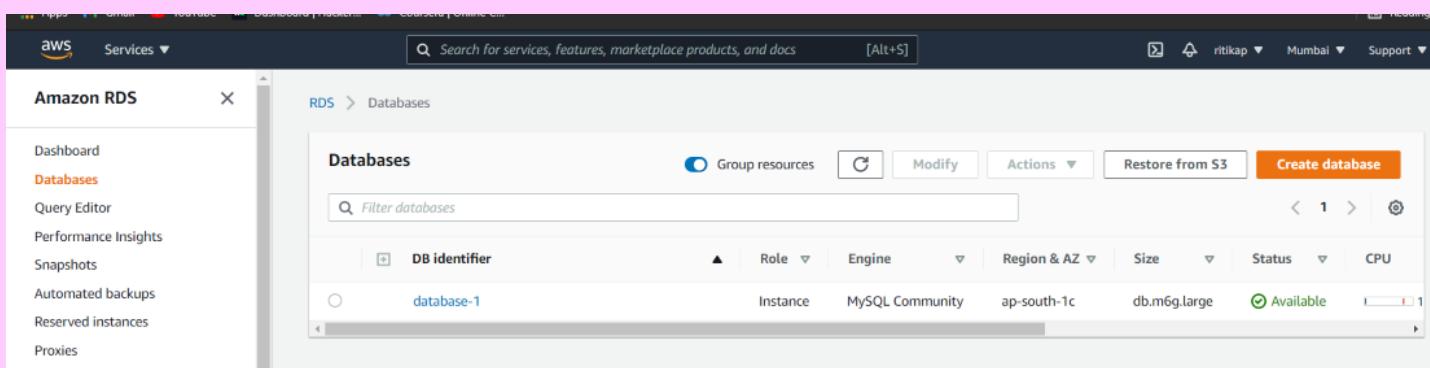
**Step 1:** First login into your AWS account and once your primary screen is loaded. Click on **services** which is written on the left and from the drop-down menu under **Database** there is an option **RDS**. Click on that and wait for the page to be loaded. Here is the image for better understanding.



**Step 2:** Once the screen is available click on **create database**. And create your database as per your choice. The image to refer to is attached ahead.



**Step 3:** After your database is successfully created. Now you are all set for creating a DB Snapshot. But make sure it\xe2\x80\x99s successfully created because without successfully creating a database we cannot generate a snapshot for that particular database. It may take a while to create don\xe2\x80\x99t bother. The status must say **Available**. Here is the image to know whether your database is successfully created or not, please refer to it.



**Step 4:** Now, select the database for which you wish to create the **snapshot**. Select the database and click on **Actions** and select the option **Take Snapshot** from the list. Please refer to the image for better understanding.

The screenshot shows the AWS RDS Databases page. On the left, there's a sidebar with options like Dashboard, Databases, Query Editor, etc. The main area is titled 'Databases' and shows a table with one row for 'database-1'. The table columns include 'DB identifier', 'Instance', and 'Engine'. To the right of the table are buttons for Actions (Stop, Reboot, Delete, Create read replica, Promote, Take snapshot, Restore to point in time) and Restore from S3, along with a 'Create database' button.

**Step 5:** Click on **Snapshots**. And write the name of the database for which you are willing to create the snapshot. And finally, click on **Take Snapshot**. Refer to the image attached ahead.

The screenshot shows the 'Take DB snapshot' configuration page. It has a 'Settings' section where you can provide a name for the snapshot. Under 'DB instance', it shows 'database-1'. Under 'Snapshot name', there's a text input field containing 'database-1'. At the bottom, there are 'Cancel' and 'Take snapshot' buttons.

**Step 6:** Now, from the left drop-down list click on **Snapshots**. And once the fresh screen will be loaded, you'll be able to see the snapshot. The snapshot will have the same name as that of the database. Refer to the image for a much better understanding.

The screenshot shows the AWS RDS Snapshots page. The sidebar includes 'Schemas' under the 'Snapshots' category. The main area is titled 'Manual snapshots (1)' and lists a single entry: 'database-1' created on April 27, 2021. There are buttons for Actions (Edit, Delete, Take snapshot) and a 'Create new snapshot' button.

In this way, your DB Snapshot is successfully created. If you also have a free tier AWS account. Then make sure you delete all the database instances and snapshots too. As keeping them will increase your bill amount. And for [deleting a DB Snapshot](#) take help from this article.

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# Amazon RDS |x80|x93 Modifying an Amazon RDS DB instance

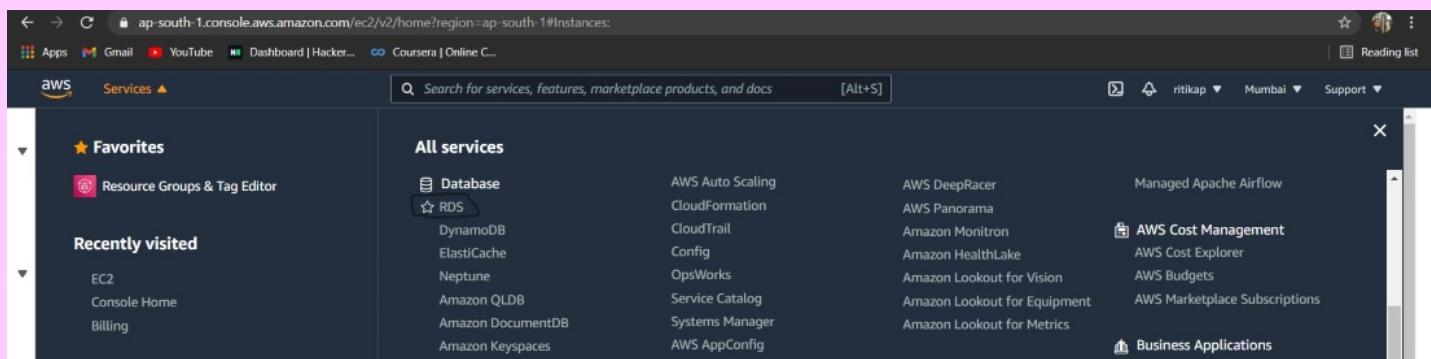
- Difficulty Level :[Hard](#)
- Last Updated :[09 May, 2021](#)

This article will cover all the steps involved in **modifying an existing amazon RDS DB instance.**

AWS provides liberty to modify an existing DB Instance as per the dynamic demands of the user. This feature adds another layer of flexibility to the overall infrastructure of the AWS cloud computing platform. A pre-existing DB Instance can be altered at any point of time by the user as per their requirements and then back to normal after the motive is fulfilled.

Before diving deep into the modification and its process. Please refer to this [article](#) if you have any kind of difficulty in creating a DB Instance. Now, let's look at the step-by-step guide to modify an existing AWS RDS DB Instance.

**Step 1:** First of all, login into your AWS account, and then from the leftmost, click on the **services** tab, then from the drop-down list click on **RDS** service. The image is attached ahead for a much better understanding.



**Step 2:** Wait for the next screen to load, once it is done. From the navigation pane select the option **Database**. Refer to the image attached ahead.

The screenshot shows the AWS RDS console interface. The top navigation bar includes links for 'RDS · AWS Console', 'Amazon CloudWatch Metrics', and 'ap-south-1.console.aws.amazon.com'. Below the bar, there are links for 'Apps', 'Gmail', 'YouTube', and 'Dashboard'. The main menu on the left is titled 'Amazon RDS' and contains the following items:

- Dashboard
- Databases**
- Query Editor
- Performance Insights
- Snapshots
- Automated backups
- Reserved instances
- Proxies
- Subnet groups
- Parameter groups
- Option groups
- Events
- Event subscriptions
- Recommendations
- Certificate update

The 'Databases' item is currently selected, indicated by an orange color. At the bottom of the screen, there is a search bar with the placeholder 'Type here to search' and a Windows icon.

https://ap-south-1.console.aws.amazon.com/rds/home?region=ap-south-1

**Step 3:** In a while, the database console will load on the screen. Now, from the given list of pre-existing instances. Choose the instance you are willing to modify. The image to refer to is attached ahead.

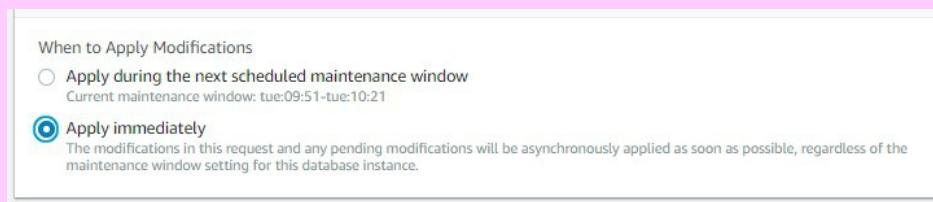
The screenshot shows the 'Databases' page within the AWS RDS console. The top navigation bar includes the 'Amazon RDS' logo, 'Services ▾', a search bar with placeholder 'Search for services, features, marketplace products, and docs [Alt+S]', and a 'Group resources' button. The main content area is titled 'Databases' and shows a table with one row:

DB identifier	Role	Engine
database-1	Instance	MySQL Community

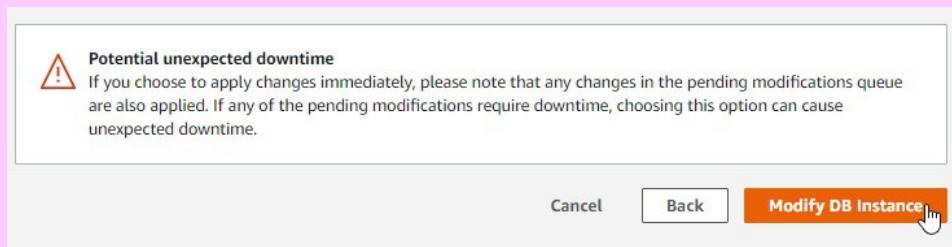
**Step 4:** Now, click on the 'Modify' tab present on the top right. Refer to the for any query.

The screenshot shows the AWS RDS console. On the left, a sidebar menu includes options like Dashboard, Databases (which is selected), Query Editor, Performance Insights, Snapshots, Automated backups, Reserved instances, and Proxies. The main content area is titled 'Databases' and shows a list of databases. A single database, 'database-1', is listed with its details: Instance and Engine (MySQL Community). There are buttons for 'Group resources', 'Edit', and 'Modify' (the latter is circled in red).

**Step 5:** After the modification screen is loaded, alter everything you wanted to change as per your requirement. Once it is all according to you, then click on **Apply Immediately**. As allowing this will apply all the changes made you immediate. The image is attached ahead for reference.



**Step 6:** Once it's all done and you are sure about everything. Then click on **Modify DB Instance**. Refer to the image attached ahead.



In this way, we can simply **modify a pre-existing DB Instance** using the console. But if you are also an **AWS free tier account user**, then make sure you deleted all the instances you have created to ensure that you don't receive a bill. And if you just want your current instance to [reboot](#), follow the linked article.

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# Amazon RDS Security & Compliance

- Difficulty Level : [Medium](#)
- Last Updated : [09 May, 2021](#)

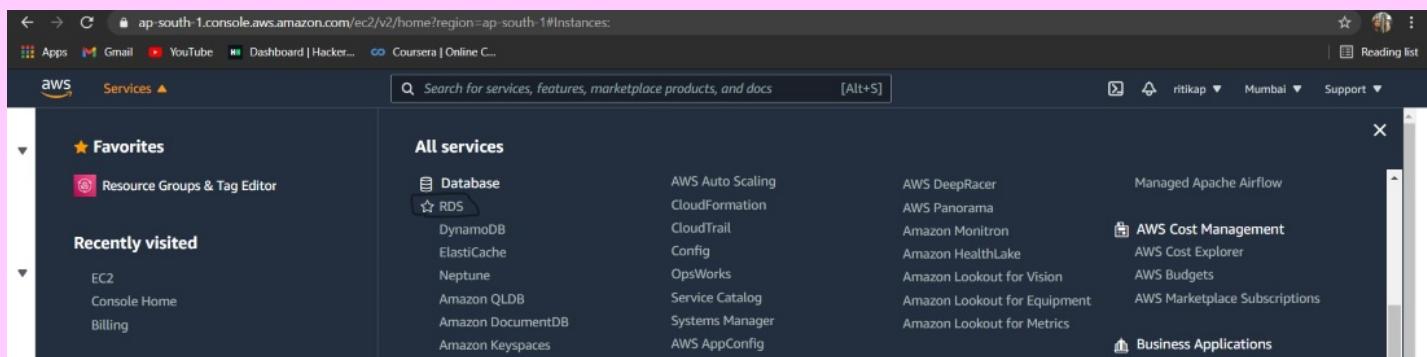
In this article, we will discover **Amazon RDS** or **Amazon Relational Database Service**. Amazon RDS is nothing but a cloud database, that typically runs on AWS or Amazon Web Services platform and access to the database is provided as-a-service. In simpler words we can state that RDS comes under PaaS i.e. (Platform as a service).

## Benefits or Advantages

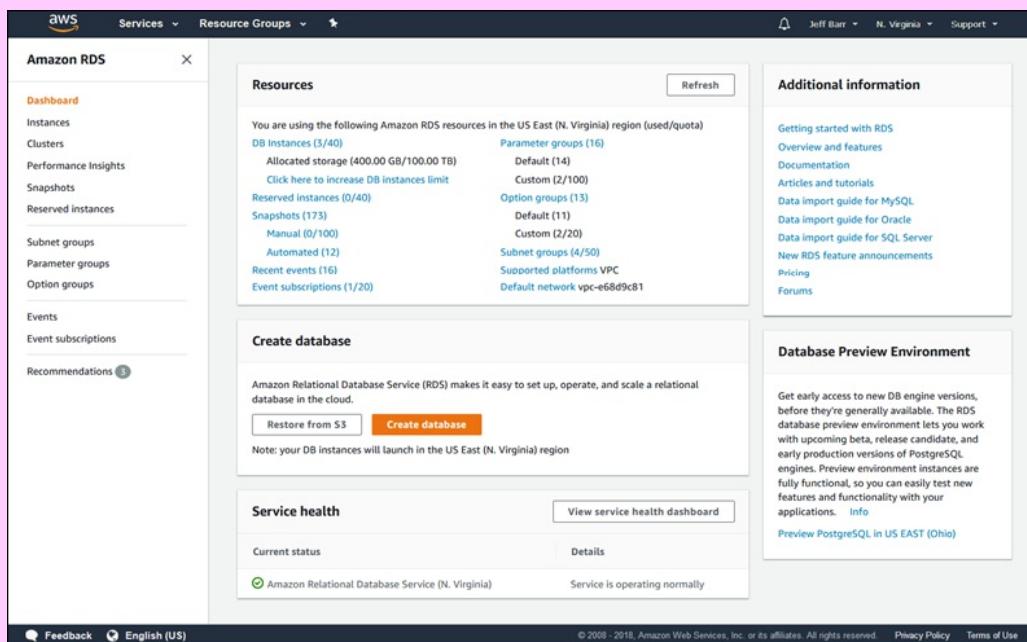
- Easier Management
- Higher scalability
- Available and durable in nature
- Faster and Securer
- Inexpensive

## How to reach to amazon RDS management console?

**Step 1:** Login to your aws account and then on the left corner click services. There will be a bunch of options like this:



**Step 2:** After clicking on RDS a page like this will load on your screen.



In this way, one can easily create a database along with the numerous liberties of cloud database. For knowing more about [creating](#) a database on Amazon RDS, do give the linked article a read.

## Amazon RDS- Compliance & Security

Managing such a humongous cloud platform is very difficult for AWS service providers. So, to simplify their command and control. They have also included **compliance programs** in the AWS platform.

basically refers to the process of learning from the feedback given by the users. These programs help the AWS service providers in meeting the demands of their users. There are multiple compliance programs initiated by AWS in different regions of the country. And these new discoveries are further tested by third party auditors in order to get an unbiased opinion, then based on this result it is decided whether the discovery should be certified and attested or not.

Huge companies like Netflix, LinkedIn are using multiple services of aws for their network of millions of users all over the globe. Thus, another major concern of AWS service providers is it\xe2\x80\x99s users **data security**. Since, everything is present online, data security is at a very high stake. As, we know AWS is a platform as a service. Hence, we are getting this extra layer of security (the platform itself) for protecting our data. But wait, what if the platform is not secure enough? In order to resolve this why, AWS has divided it\xe2\x80\x99s security setup into two sub categories. And these are discussed ahead.

## 1. Security of the platform (AWS CLOUD PLATFORM)

Ensuring the security of the whole platform is entirely AWS service provider\xe2\x80\x99s duty. In other words we can say that, ultimately AWS manages as well as protects the platform, so that all the services can run on it securely without any interruption. Also for periodical health checks of the cloud platform along with the services running on it, AWS hires third party auditors which regularly test and verify the productivity of our security model as it is the part of the AWS compliance program. These tests provide us a regular report about how secure our platform is. If something is found inappropriate, the security model alarms the service providers about it.

## 2. Security in the cloud (Your account)

Now, comes the part where the responsibility of security belongs to the users. Basically the users can be categorized into two types.

- **Root user**
- **IAM user or Identity and Access Management user.**

There can only be a single root user of any particular AWS account and IAM user can be multiple in numbers. By default, all the security concerns of an account reside in the hands of the root user. It depends on the root user whether to assign security related authorities to an IAM user or not. Root users can restrict access of any IAM user at any point of time as per their choices. We can use Amazon RDS encryption to make our Database Instances and [Snapshots](#) i.e. backups more secured. This encryption algorithm simply convert your data into an inaccessible format when other unauthorized users are trying to access it.

Amazon RDS- Security & Compliance gives us another firm reason to opt AWS as our go-to cloud platform for using all the desired services and databases flexibilities.

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# Amazon Interview Experience for SDE-I | 1+ Years Experienced

- Difficulty Level :\nEasy
- Last Updated :\n20 Aug, 2021

I have applied through referral and I got an online coding test invite link after few days

**Round 1(Online Coding Round):** This happened on hackerrank platform and two questions were asked and questions were of medium leetcode range.

**Round 2(Technical Round 1):** This round happened on amazon chime platform and interviewer was SDE-II. In this round 2 coding questions were asked and you are expected to solve both of them with an optimal solution. They mostly focus on your problem-solving skills in this round. Below are the questions asked

1. Some linkedlist question of medium leetcode range
2. <https://practice.geeksforgeeks.org/problems/sort-an-array-of-0s-1s-and-2s4231/1>

**Round 3(Technical Round 2):** This round happened on amazon chime platform and interviewer was SDE-II. In this round 2 coding questions and few CS fundamentals were asked. They mostly focus on your problem-solving skills in this round. Below are the questions asked:

1. <https://practice.geeksforgeeks.org/problems/max-sum-without-adjacents2430/1>
2. <https://practice.geeksforgeeks.org/problems/next-permutation5226/1>

CS Fundamental Questions:

1. What is process?
2. Difference between process and thread?
3. What is thrashing?
4. What is normalization in database?\xc2\xab0
5. What is the best normal form?
6. What are procedures in database?
7. What are indexing?

**Round 4(Hiring Manager):** This round happened on amazon chime platform and interviewer was Sr. Software Development Manager. They focus on your leadership skills and problem-solving skills. It has happened as mentioned below

1. Asked few behavioral questions as below to check amazon leadership principles
  - Time when you went above and beyond your job responsibilities?
  - Received negative feedback from manager and how you responded?
  - Time when you failed to meet your commitment?
  - Tell me about a time when you innovated and exceeded the expectation?
  - Time when you went above and beyond your job responsibilities?
2. One DSA questions as below (<https://practice.geeksforgeeks.org/problems/missing-number-in-array1416/1>)

**Round 5(Bar raiser round):** This round happened on amazon chime platform with software development manager. They focus on your leadership principles and problem-solving skills. It has

happened as mentioned below.

1. Asked few behavioral questions\xc2\xa0

- Tell me how you learn a new technology?
- Time when you didn\xe2\x80\x99t meet a deadline?
- Tell me a time you took some risk?

2. A DSA questions as mentioned below (<https://www.geeksforgeeks.org/find-itinerary-from-a-given-list-of-tickets/>)

**Finally, I got selected \xf0\x9f\x99\x82**

**My tips for behavioral questions:**

1. <https://leetcode.com/discuss/interview-question/437082/Amazon-Behavioral-questions-or-Leadership-Principles-or-LP>
2. Above is the link where you can get all the list of the behavioral questions
3. Before hiring manager round go through all these questions and prepare answers well for the questions so that you wouldn\xe2\x80\x99t need to think regarding same during the interview. It helped me a lot\xc2\xxa0

All the best for your interviews.

**Jao ab Phodo!( ichi padesi!)**

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Add your personal notes here

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# Amazon RDS |x80|x93 Rebooting a DB Instance

- Difficulty Level :[Medium](#)
- Last Updated :[01 May, 2021](#)

This article is a step by step guide for **Rebooting a DB Instance**. But before learning the process of rebooting an instance, we need to know about DB Instances and how to create one on AWS.

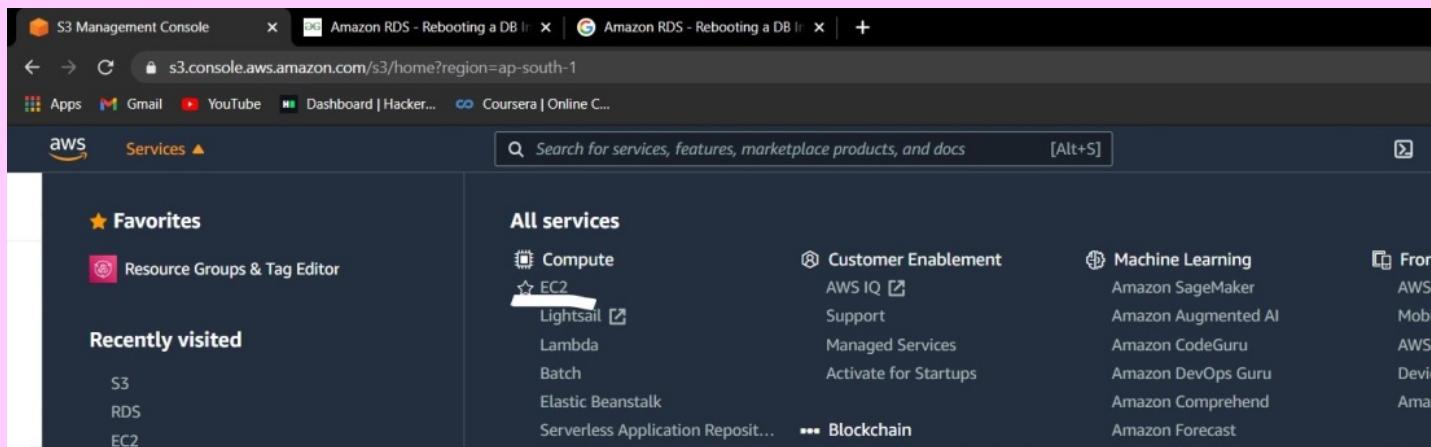
## DB Instance or Database Instance

DB Instance is an obscure database dominion running on a cloud platform, here that platform is AWS. It is a cellular block of [Amazon RDS](#), it can also contain databases which are created by multiple users, and can be retrieved using the same tools, features and applications you usually use while accessing a standalone database instance. It is one of the simplest services present on the AWS cloud platform.

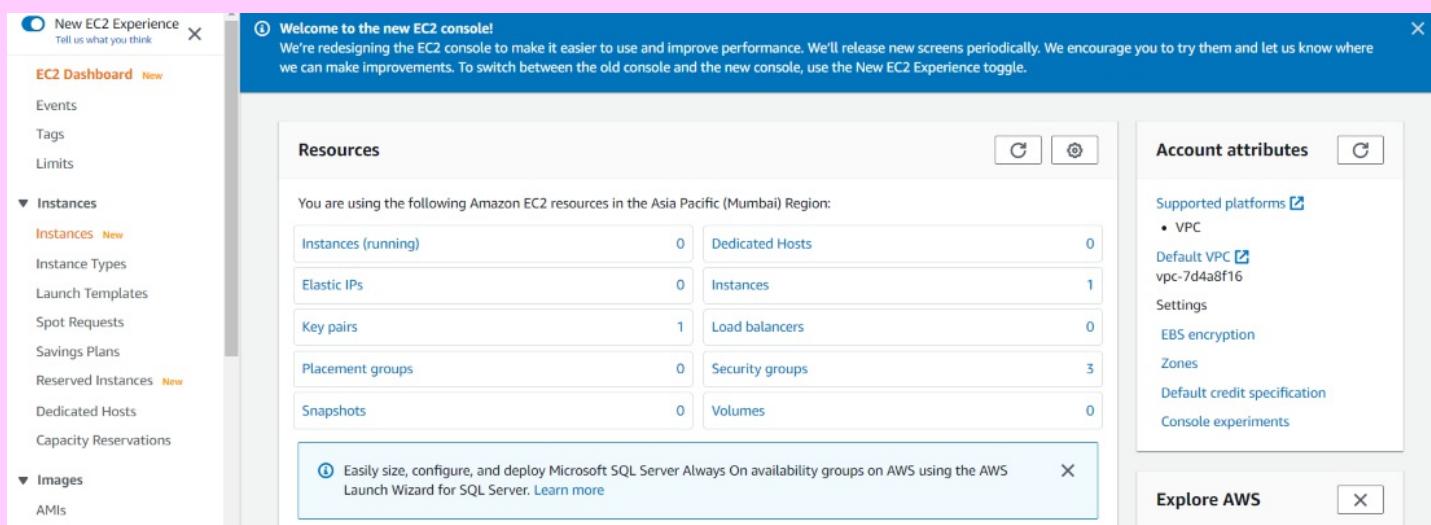
**Note:** DB Instances are region specific, i.e. if you wish to create an instance in a different region other than your default region. Then you must switch to your desired region first. And then proceed with the process of creating an instance.

Let's start with the process of creating an instance followed by rebooting it.

**Step 1:** Login to your aws account and click on `services` present on the leftmost part of aws management console. And from the drop down menu tap on `EC2`.



**Step 2:** EC2 console will be loaded on your screen. Once it is done, from the list of options on the left, click on `Instances`. Please refer to the image for better understanding.



**Step 3:** A fresh screen will be loaded. On which at the right corner there will be an orange box named as `Launch Instance`. Click on that.

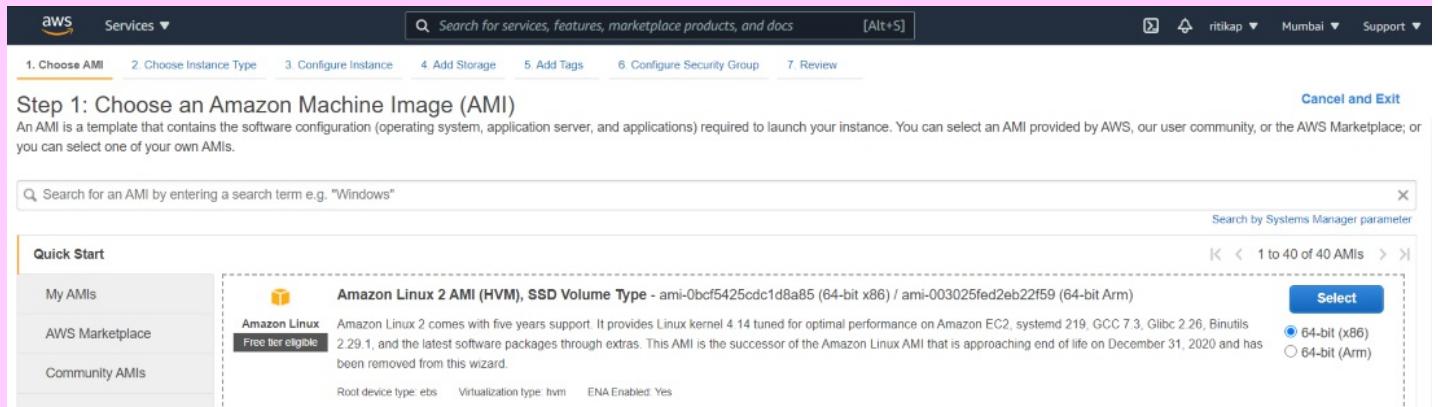
## Launch instance

To get started, launch an Amazon EC2 instance, which is a virtual server in the cloud.

**Launch instance ▾**

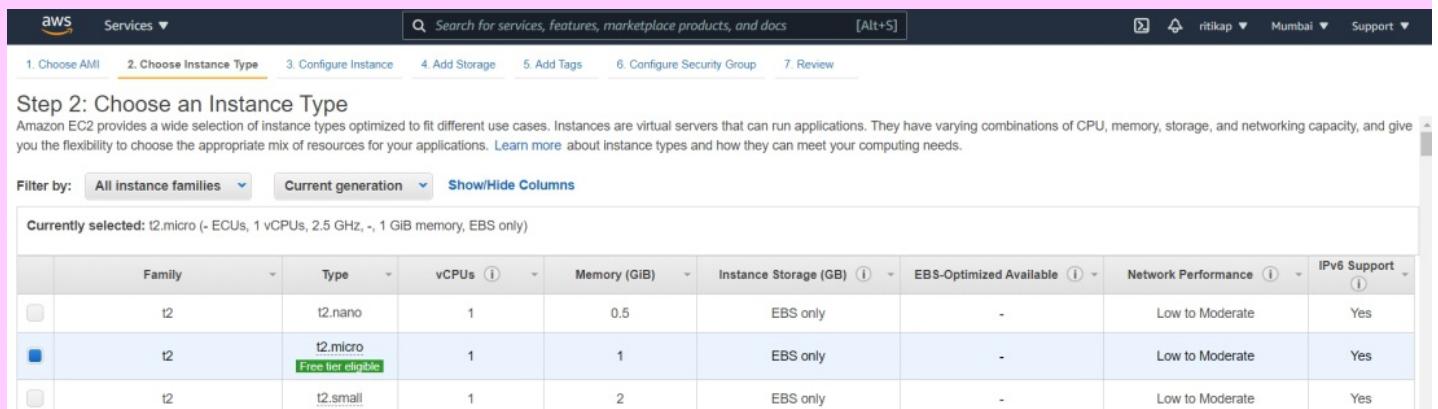
Note: Your instances will launch in the US West (Oregon) Region

**Step 4:** The next screen will contain a bunch of options to choose your **AMI(Amazon Machine Image)** from. And horizontally, there is a 7-step procedure written to be followed for successfully launching an instance. I have chosen **Amazon Linux 2 AMI** as my AMI. And then Go ahead click **Next**. Refer to the image for resolving any confusions.



The screenshot shows the 'Choose an Amazon Machine Image (AMI)' step of the AWS Launch instance wizard. The 'Amazon Linux 2 AMI (HVM), SSD Volume Type' is selected and highlighted with a red circle. The wizard has 7 steps: 1. Choose AMI, 2. Choose Instance Type, 3. Configure Instance, 4. Add Storage, 5. Add Tags, 6. Configure Security Group, 7. Review. A note at the bottom says 'Note: Your instances will launch in the US West (Oregon) Region'.

**Step 5:** Now comes the sub step 2 of creating the instance i.e. **Choose Instance Type**. I have chosen **t2.micro** as my instance type and then click **Next**. Refer to the image for better understanding.



The screenshot shows the 'Choose an Instance Type' step of the AWS Launch instance wizard. The 't2.micro' instance type is selected and highlighted with a red circle. The wizard has 7 steps: 1. Choose AMI, 2. Choose Instance Type, 3. Configure Instance, 4. Add Storage, 5. Add Tags, 6. Configure Security Group, 7. Review. A note at the bottom says 'Amazon EC2 provides a wide selection of instance types optimized to fit different use cases. Instances are virtual servers that can run applications. They have varying combinations of CPU, memory, storage, and networking capacity, and give you the flexibility to choose the appropriate mix of resources for your applications. Learn more about instance types and how they can meet your computing needs.'

**Step 6:** Next comes the sub step 3 of creating the instance, i.e. **Configure Instance**. Here we will confirm the configurations we need for our AMI. By default the configurations are filled, we just confirm them and click **Next** to proceed. Here's the image for better understanding.

**Step 3: Configure Instance Details**

Configure the instance to suit your requirements. You can launch multiple instances from the same AMI, request Spot instances to take advantage of the lower pricing, assign an access management role to the instance, and more.

Number of Instances	<input type="text" value="1"/>	Launch into Auto Scaling Group
Purchasing option	<input type="checkbox"/> Request Spot instances	
Network	vpc-7d4a8f16 (default)	<input type="button" value="Create new VPC"/>
Subnet	No preference (default subnet in any Availability Zone)	<input type="button" value="Create new subnet"/>
Auto-assign Public IP	<input type="button" value="Use subnet setting (Enable)"/>	
Placement group	<input type="checkbox"/> Add instance to placement group	
Capacity Reservation	<input type="button" value="Open"/>	
Domain join directory	No directory	<input type="button" value="Create new directory"/>
IAM role	<input type="button" value="None"/>	
Shutdown behavior	<input type="button" value="Stop"/>	
Stop - Hibernate behavior	<input type="checkbox"/> Enable hibernation as an additional stop behavior	
Enable termination protection	<input type="checkbox"/> Protect against accidental termination	

[Cancel](#) [Previous](#) [Review and Launch](#) [Next: Add Storage](#)

**Step 7:** Next comes the sub step 4 of creating the instance, i.e. **Add Storage**. Here we will look at the storage configurations and modify them as per our requirements. Then click **Next**.

**Step 4: Add Storage**

Your instance will be launched with the following storage device settings. You can attach additional EBS volumes and Instance store volumes to your instance, or edit the settings of the root volume. You can also attach additional EBS volumes after launching an instance, but not Instance store volumes. [Learn more](#) about storage options in Amazon EC2.

Volume Type	Device	Snapshot	Size (GiB)	Volume Type	IOPS	Throughput (MB/s)	Delete on Termination	Encryption
Root	/dev/xvda	snap-0b55bb79acf67ade6	<input type="text" value="8"/>	General Purpose SSD (gp2)	100 / 3000	N/A	<input checked="" type="checkbox"/>	<input type="button" value="Not Encrypted"/>

**Add New Volume**

Free tier eligible customers can get up to 30 GB of EBS General Purpose (SSD) or Magnetic storage. [Learn more](#) about free usage tier eligibility and usage restrictions.

[Cancel](#) [Previous](#) [Review and Launch](#) [Next: Add Tags](#)

**Step 8:** Next comes the sub step 5 of creating the instance, i.e. **Add Tags**. Here we will just click **Next** and proceed. Here's the image.

**Step 5: Add Tags**

A tag consists of a case-sensitive key-value pair. For example, you could define a tag with key = Name and value = Webserver.

A copy of a tag can be applied to volumes, instances or both.

Tags will be applied to all instances and volumes. [Learn more](#) about tagging your Amazon EC2 resources.

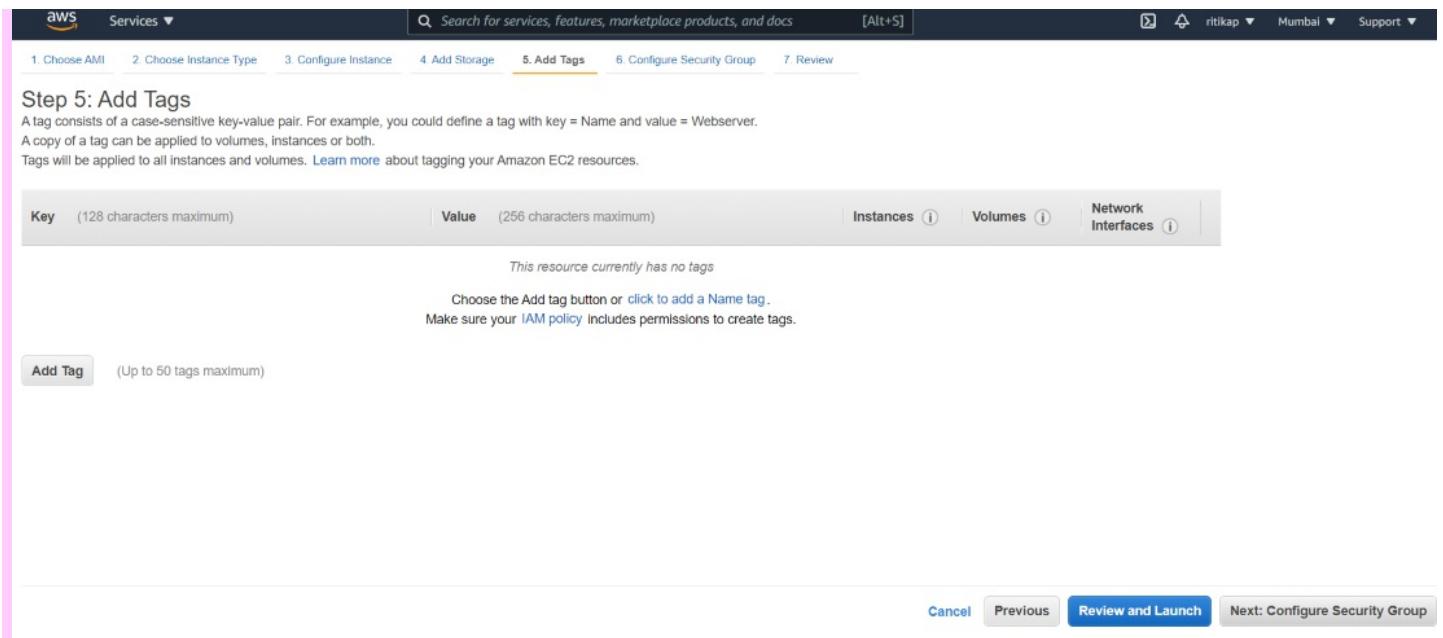
Key (128 characters maximum) | Value (256 characters maximum) | Instances (i) | Volumes (i) | Network Interfaces (i)

This resource currently has no tags

Choose the Add tag button or [click](#) to add a Name tag.  
Make sure your IAM policy includes permissions to create tags.

Add Tag (Up to 50 tags maximum)

Cancel Previous Review and Launch Next: Configure Security Group



**Step 9:** Now we will complete next two sub steps which are **Configure Security Group** and **Review and Launch** together.

In Security Group, we have to give group name and description followed by ports to open and source.

In review, we will launch the instance and then a dialog box will appear to ask about **Key Pair**. We have two options to choose from, whether choosing an existing key pair or creating a new one and downloading it to launch.

Here are the images attached.

**Step 6: Configure Security Group**

A security group is a set of firewall rules that control the traffic for your instance. On this page, you can add rules to allow specific traffic to reach your instance. For example, if you want to set up a web server and allow Internet traffic to reach your instance, add rules that allow unrestricted access to the HTTP and HTTPS ports. You can create a new security group or select from an existing one below. [Learn more](#) about Amazon EC2 security groups.

Assign a security group:  Create a new security group  Select an existing security group

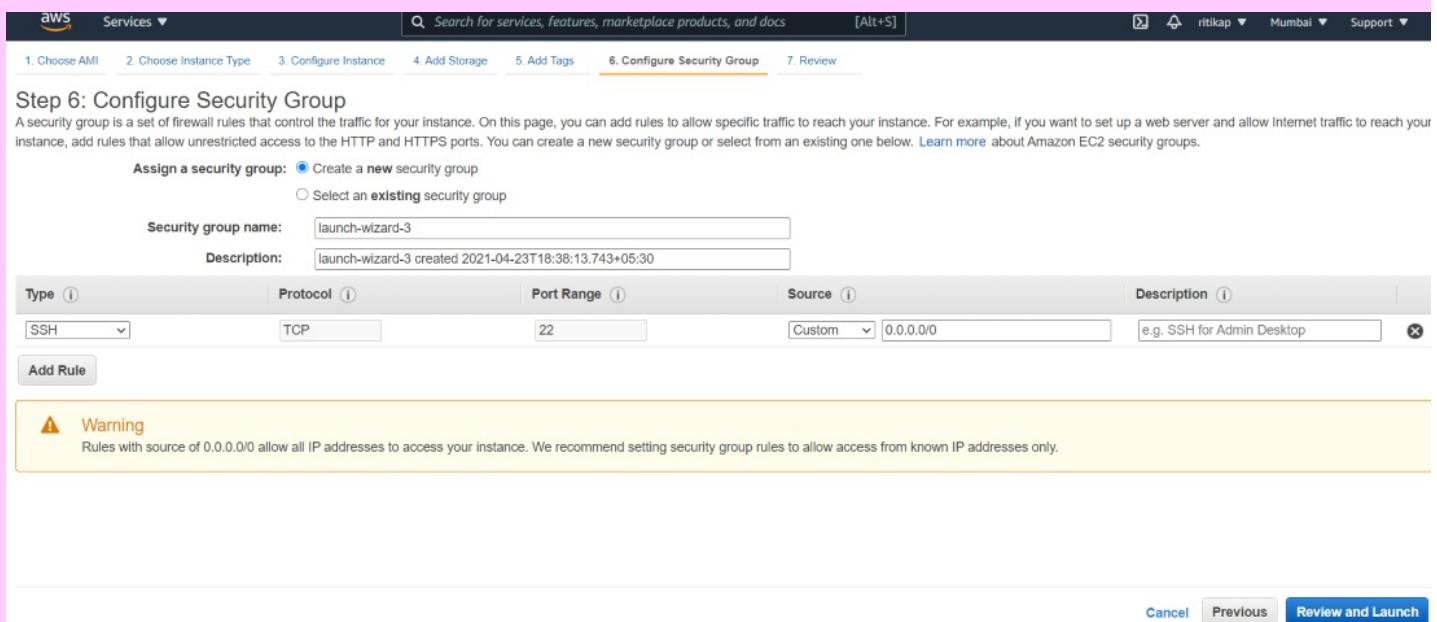
Security group name: launch-wizard-3

Description: launch-wizard-3 created 2021-04-23T18:38:13.743+05:30

Type (i)	Protocol (i)	Port Range (i)	Source (i)	Description (i)
SSH	TCP	22	Custom 0.0.0.0/0	e.g. SSH for Admin Desktop

**Warning**  
Rules with source of 0.0.0.0/0 allow all IP addresses to access your instance. We recommend setting security group rules to allow access from known IP addresses only.

Cancel Previous Review and Launch



**IMAGE OF SECURITY GROUP**

**Step 7: Review Instance Launch**

Please review your instance launch details. You can go back to edit changes for each section. Click **Launch** to assign a key pair to your instance and complete the launch process.

**Select an existing key pair or create a new key pair**

A key pair consists of a **public key** that AWS stores, and a **private key file** that you store. Together, they allow you to connect to your instance securely. For Windows AMIs, the private key file is required to obtain the password used to log into your instance. For Linux AMIs, the private key file allows you to securely SSH into your instance.

Note: The selected key pair will be added to the set of keys authorized for this instance. Learn more about [removing existing key pairs from a public AMI](#).

**Choose an existing key pair**  
**Select a key pair**  
  
 I acknowledge that I have access to the selected private key file (fkeyp21.pem), and that without this file, I won't be able to log into my instance.

**Launch Instances**

## IMAGE OF REVIEW

Now, finally the instance has been created from our end. In a while the instance will be appearing on the instances page.

Let's **Reboot the instance** we have created.

First select the instance you want to reboot. Then click on **Actions** and select **Reboot instance**. Image to understand more.

**Instances (1/2) Info**

Name	Instance ID	Instance state	Instance type	Status	Actions
m1	i-068fde72765630890	Terminated	t2.micro	-	Stop instance Start instance Reboot instance Hibernate instance Terminate instance
<b>mymachine</b>	<b>i-099f0526e89f78875</b>	<b>Running</b>	<b>t2.micro</b>	<b>2</b>	<b>Actions</b>

**Instance: i-099f0526e89f78875 (mymachine)**

**Details** Security Networking Storage Status checks Monitoring Tags

**Instance summary** Info

Instance ID	Public IPv4 address	Private IPv4 addresses
i-099f0526e89f78875 (mymachine)	15.207.106.228   <a href="#">open address</a>	172.31.36.139

Again confirm that you are sure you want to reboot and wait.

After a while the instance state will change to **Rebooting** from **Running**

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# Amazon Interview Experience for SDE-1 | Off-Campus 2021

- Difficulty Level :\n[Medium](#)
- Last Updated :\n28 Jul, 2021

**Content Removed**

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**Save**

# Amazon RDS |x2|x80|x93 Creating an Amazon RDS DB Instance

- Last Updated :n01 May, 2021

Amazon Relational Database Service (Amazon RDS) is a relational database that is easier to set up, operate, and scale in the Cloud. It is cost-efficient, have resizable capacity for relational database and manages common database administration tasks. DB instance is the basic building block of Amazon RDS where we create our own databases. A DB instance is an isolated database environment in the AWS Cloud. Multiple user-created databases can be stored in a single DB instance. We can create and modify the DB instance by using the AWS CLI (Command Line Interface) , the Amazon RDS API, or the AWS Management Console.

Each DB instance requires a DB engine. Amazon RDS currently supports 5 engines which are MySQL, MariaDB, PostgreSQL, Oracle, and Microsoft SQL Server DB engines. Each DB engine has its own supported features and properties. Additionally, each DB engine has a set of parameters in a DB parameter group that control the behavior of the databases that it manages.

## Steps to Create a Amazon RDS DB instance

**AWS Console:** Login into Amazon AWS Console and navigate to RDS Dashboard. Click on **create database** to create a database. See below image.

The screenshot shows the 'Databases' section of the RDS console. At the top, there are buttons for 'Group resources', 'Modify', 'Actions', 'Restore from S3', and a prominent orange 'Create database' button. Below this is a search bar labeled 'Filter databases'. The main area displays a table with columns for 'DB identifier', 'Role', 'Engine', 'Region & AZ', 'Size', and 'Status'. A message at the bottom center says 'No instances found'.

### Creating Amazon RDS DB Instance :

- Chose the standard database creation method.

The screenshot shows the 'Create database' wizard. At the top, it says 'RDS > Create database'. Below that is the title 'Create database'. Underneath, it says 'Choose a database creation method' with an 'Info' link. Two options are shown in boxes: 'Standard create' (selected) and 'Easy create'. The 'Standard create' box contains the text: 'You set all of the configuration options, including ones for availability, security, backups, and maintenance.' The 'Easy create' box contains the text: 'Use recommended best-practice configurations. Some configuration options can be changed after the database is created.'

## Creation Method

- Select any one of the given engine types. In this case we will select *MySQL* engine.

### Engine options

Engine type [Info](#)

- Amazon Aurora  

- MySQL  

- PostgreSQL  

- Oracle  

- Microsoft SQL Server  


- Select the version of the MySQL that you want to use.

Edition

MySQL Community

**Known issues/limitations**  
Review the [Known issues/limitations](#)  to learn about potential compatibility issues with specific database versions.

Version

MySQL 8.0.20

## Version of DB Engine

- Under templates section, we have three options :
  - Production
  - Dev/Test
  - Free Tier

### Templates

Choose a sample template to meet your use case.

- Production  
Use defaults for high availability and fast, consistent performance.
- Dev/Test  
This instance is intended for development use outside of a production environment.
- Free tier  
Use RDS Free Tier to develop new applications, test existing applications, or gain hands-on experience with Amazon RDS.  
[Info](#)

## Template Types

We will opt for free tier.

- Under the settings section of the database, provide instance name, say, geeksDemo and provide master username as admin and a password of your choice.

**Settings**

**DB instance identifier** [Info](#)  
 Type a name for your DB instance. The name must be unique across all DB instances owned by your AWS account in the current AWS Region.

geeksDemo

The DB instance identifier is case-insensitive, but is stored as all lowercase (as in "mydbinstance"). Constraints: 1 to 60 alphanumeric characters or hyphens (1 to 15 for SQL Server). First character must be a letter. Can't contain two consecutive hyphens. Can't end with a hyphen.

**Credentials Settings**

**Master username** [Info](#)  
 Type a login ID for the master user of your DB instance.

admin

1 to 16 alphanumeric characters. First character must be a letter

**Auto generate a password**  
 Amazon RDS can generate a password for you, or you can specify your own password

**Master password** [Info](#)  
 .....

## Settings

- Select DB instance according to your needs. In free tier, by default, db.t2.micro will be chosen.

**DB instance class**

**DB instance class** [Info](#)  
 Choose a DB instance class that meets your processing power and memory requirements. The DB instance class options below are limited to those supported by the engine you selected above.

Standard classes (includes m classes)  
 Memory optimized classes (includes r and x classes)  
 **Burstable classes (includes t classes)**

db.t2.micro  
 1 vCPUs 1 GiB RAM Not EBS Optimized

**Include previous generation classes**

## DB Instance

- Rest leave everything as default, and click on create databases. See below images:

## Estimated monthly costs

The Amazon RDS Free Tier is available to you for 12 months. Each calendar month, the free tier will allow you to use the Amazon RDS resources listed below for free:

- 750 hrs of Amazon RDS in a Single-AZ db.t2.micro Instance.
- 20 GB of General Purpose Storage (SSD).
- 20 GB for automated backup storage and any user-initiated DB Snapshots.

[Learn more about AWS Free Tier.](#)

When your free usage expires or if your application use exceeds the free usage tiers, you simply pay standard, pay-as-you-go service rates as described in the [Amazon RDS Pricing page](#).

 You are responsible for ensuring that you have all of the necessary rights for any third-party products or services that you use with AWS services.

Cancel

Create database

 Successfully created database [geeksdemo](#)

RDS > Databases

Databases		<input checked="" type="checkbox"/> Group resources		Modify	Action
	DB identifier	▲	Role ▾	Engine ▾	
	geeksdemo			Instance MySQL Community	

In the above image, we see that a MySQL database named geeksdemo has been created.

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# Amazon RDS |x80|x93 Deleting a DB Snapshot

- Difficulty Level :[Medium](#)
- Last Updated :[23 Apr, 2021](#)

As we all are aware of this new branch of [cloud computing](#) in the information technology(IT) sector. **AWS or Amazon Web Services** is one of the leading companies in this domain. AWS basically provides users on-demand cloud computing platforms to individuals, companies, and governments, on a paid subscription basis. There are unlimited resources available for the clients based on their run time demands. The best thing about this platform is that, the user has the maximum liberty.

For more detailed information about AWS and its architecture [read](#) here.

## What is Amazon RDS?

**Amazon RDS or Amazon Relational Database Service** makes it easier to set up, operate, and scale a relational database in the cloud. It is nothing but a standard database along with some extra versatility due to the flexible architecture of the cloud.

It provides cost-efficient and resizable capacity while automating time-consuming administration tasks such as hardware provisioning, database setup, patching, and backups. It frees you to focus on your applications so you can give them the fast performance, high availability, security, and compatibility they need.

Now, let's head towards the process of **Deleting a DB Snapshot**

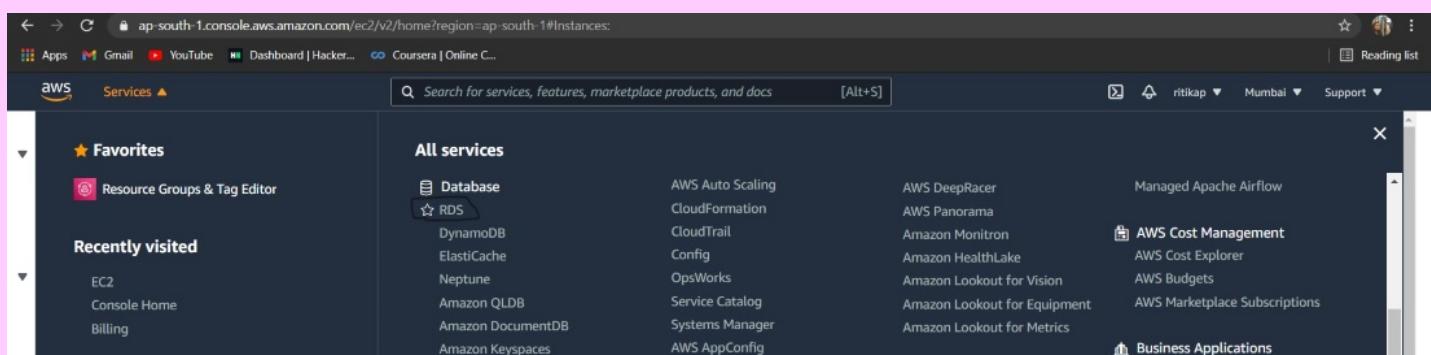
## What is a DB Snapshot?

A database snapshot is an **automated read-only type backup** of database instance securely saved in amazon S3 for a user-specified period of time or by default it stays in the memory for 7 days.

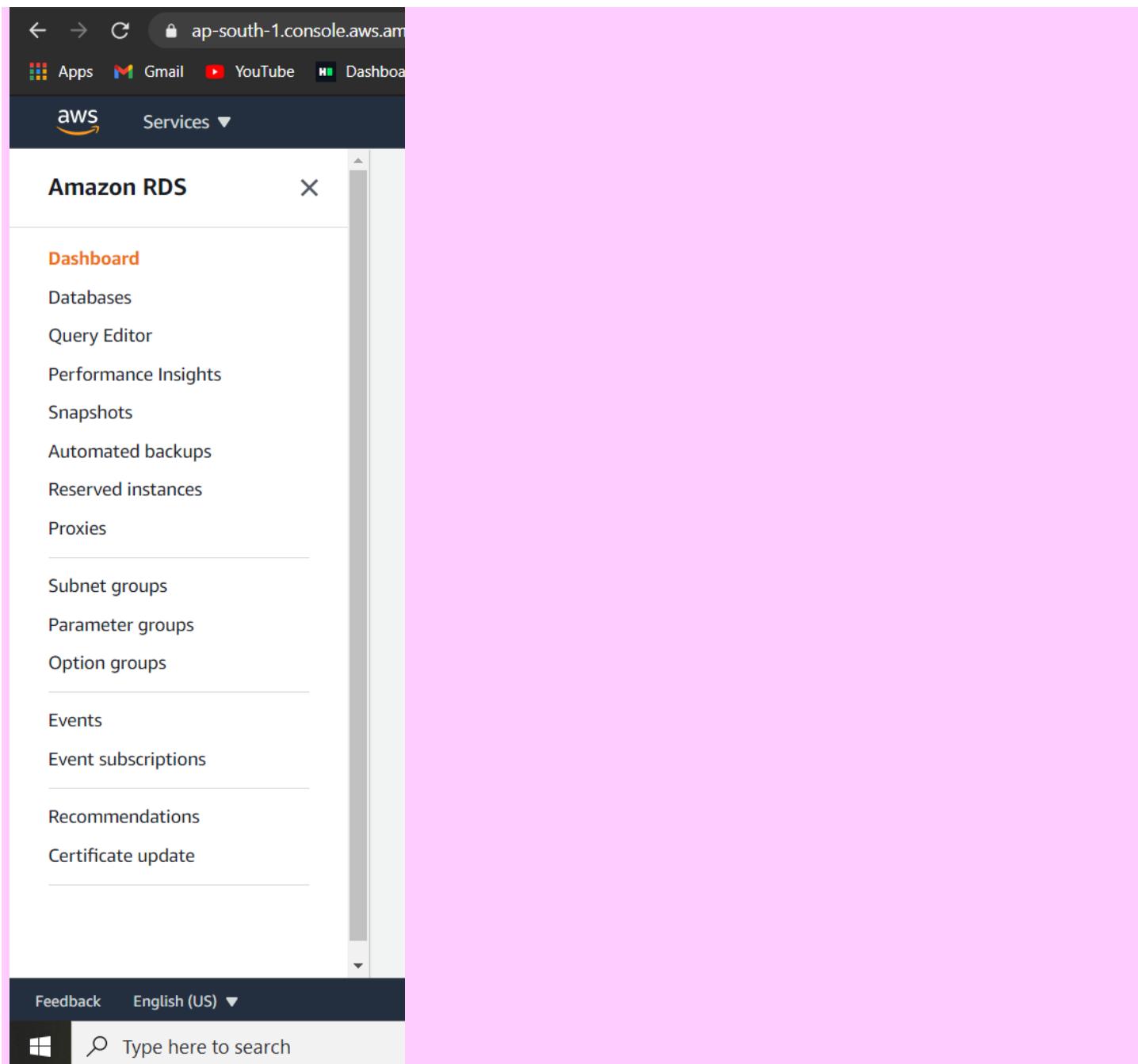
Let's look at the step-by-step procedure of deleting a DB Snapshot.

This article is directly jumping to the concept of deletion of snapshots, assuming that you already have databases created on your AWS account.

**Step 1:** First login to your account on the AWS (Amazon Web Service), as your main screen appears, then you have to go to the **services** section, and at the bottom, there is an option of the **database**, here we have the RDS amazon relation database services and then click on the **RDS**.



**Step 2:** Once the next page is loaded you'll see a list of options on the left as follows. Click on **snapshots**.



**NOTE:** Our ultimate goal is to delete a but we need to understand the difference between deleting a **snapshot** and an **instance**.

There are major two differences between deleting a snapshot and an instance.

1. We can delete multiple snapshots at a time by selecting them all together but multiple instances cannot be deleted like this. Each instance is deleted one by one.
2. While deleting an instance at the last step it asks the user whether to create the final snapshot or not? But while deleting a snapshot no such issue occurs. Thus, for deleting the final snapshot you need to delete the database and give permission to create the final snapshot.

**Step 3:** After clicking on snapshot an array of snapshots along with their names and other details are visible on the screen. Please refer to the image attached ahead.

Amazon RDS

RDS > Snapshots

Snapshots

Manual System Shared with me Public Backup service Exports in Amazon S3

Manual snapshots (1)

Filter manual snapshots

Snapshot name DB instance or cluster Snapshot creation time DB Instance cre

<input type="checkbox"/> manual-screenshots	database-1	-	April 21, 2021,
---	------------	---	-----------------

Actions Take snapshot

The screenshot shows the 'Snapshots' section of the Amazon RDS console. It lists one manual snapshot named 'manual-screenshots' for the database 'database-1'. The creation time is April 21, 2021, at 1:24:30 PM UTC. There are buttons for 'Actions' and 'Take snapshot'.

**Step 4:** Now, select the snapshot you want to delete and click on actions. From the drop-down list select Delete Snapshot option. Take reference from the image attached ahead.

Manual snapshots (2)

Filter manual snapshots

Snapshot name DB instance or cluster Snapshot creation time

<input type="checkbox"/> database-1-final-snapshot	database-1	-
<input checked="" type="checkbox"/> manual-screenshots	database-1	April 21, 2021, 1:24:30 PM UTC

Actions Take snapshot

Restore snapshot  
Copy snapshot  
Share snapshot  
Migrate snapshot  
Export to Amazon S3  
Delete snapshot

The screenshot shows the 'Snapshots' section with two entries. The second entry, 'manual-screenshots', has a checked checkbox. The 'Actions' dropdown menu is open, and the 'Delete snapshot' option is highlighted.

**Step 5:** Wait for the next page to be loaded. Once loading is completed select delete option again. Please refer to the image for better understanding.

Manual snapshots

Filter manual snapshots

Snapshot name DB instance or cluster Snapshot creation time

<input type="checkbox"/> database-1	database-1	-
<input checked="" type="checkbox"/> manual-screenshots	database-1	April 21, 2021, 1:24:30 PM UTC

Delete manual-screenshots snapshot?

Are you sure you want to delete these DB snapshots

- manual-screenshots

Cancel Delete

The screenshot shows a confirmation dialog box titled 'Delete manual-screenshots snapshot?'. It asks if you're sure you want to delete the DB snapshots and lists the selected one: 'manual-screenshots'. There are 'Cancel' and 'Delete' buttons.

**Step 6:** Your desired snapshot has been deleted. You can go back and verify whether it's present or not.

It may take a while in deleting the snapshot, depending upon the network and other simultaneously running processes on the cloud at that particular frame of time.

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# Amazon Interview Experience for SDE-I (6 months Experienced)

- Difficulty Level :\n[Medium](#)
- Last Updated :\n22 Aug, 2021

I got a mail from amazon as I was referred by someone( linkedIn connection) for SDE-1 role. It was totally unexpected referral for me. Me with my friends have already booked tickets to goa because I was not expecting any referral.\xc2\x00

Recruiter sent me the coding test just one week before goa trip, where I have to write code as well as approach and time and space complexity :

1. <https://practice.geeksforgeeks.org/problems/minimum-cost-of-ropes-1587115620/1>. Solved using min heap.
2. <https://aonecode.com/amazon-online-assessment-qa2-optimize-memory-usage> . Solved using 2 pointer approach, and mentioned binary search approach also.

After passing all the test cases for both of the questions, I was expecting an interview call so I took laptop also with me to goa. I enjoyed first 4 days in goa, on 5th day, Friday , there were three rounds on Amazon Chime

**Interview Round 1(Hiring Manager Round):** First 40 minutes, we discussed my current company work, university projects, some behavioral questions like conflict with manager, conflict with colleagues etc.

Then he asked some tech questions

1. Difference between REST and SOAP APIs
2. Producer consumer problem
3. What is virtual memory
4. What is garbage collector, thread vs process.

I answered all the questions.

After First round Lan/WiFi of my Villa stopped working, so I went to the nearest Bar+Restaurant because Bar\xe2\x80\x99s Wi-Fi was working fine.

## Interview Round 2(DS/Algo Round): Taken by SDE-1

In first 10-15 minutes He asked my current company\xe2\x80\x99s work and some behavioral questions. Then he jumped to coding problems

1. <https://practice.geeksforgeeks.org/problems/level-order-traversal-in-spiral-form/1> .I gave two approaches one is using 2 stacks and another is using one deque. I was asked to write code for 2 stack approach.
2. <https://www.geeksforgeeks.org/value-to-be-subtracted-from-array-elements-to-make-sum-of-all-elements-equals-k/> \xc2\x00.I was told to write a production ready code for all scenarios, solved this problem using binary search approach

## Interview Round 3(DS/Algo round): Taken by SDE-2

My villa\xe2\x80\x99s wifi started working fine for this round.

Interviewer asked me about my day, I told him that I gave second round sitting in a bar, he started laughing and appreciated my spirit. After a short introduction he jumped straight to the coding questions:

1. <https://www.geeksforgeeks.org/check-if-array-can-be-sorted-with-one-swap/>. First I gave a  $O(n \times c^2 \times b^2)$  approach he told me to do it in  $O(n)$ . I gave a quick approach, but it was failing for some cases, after 5-6 minutes of interactive discussion, I finally gave an approach, and it was working fine for all the cases. He told me to write a production ready code with meaningful variable and function names.
2. <https://practice.geeksforgeeks.org/problems/snake-and-ladder-problem4816/1>. First I told him that it can be solved using DFS or BFS. He told me to solve it using DFS. After trying for sometime I realized using DFS it is falling in  $\infty$  loop, I tried for 10 minutes but couldn't solve this using DFS. Then after 5 minutes of interactive discussion he told me that it can be solved using BFS.

Next day I returned to my home from goa. after not able to solve snake and ladder problem completely in last round ,I was not expecting next round interview call, but fortunately I was contacted by a recruiter that there is a final round after 5 days.

### Interview Round 4(DS/Algo Round): Taken by SDE-2

1. Interviewer was 10 min late, and He was the same guy who referred me for this role. After a small discussion he asked me some behavioral questions related to my university projects and current company work, I tried to explain him my current company work that how I am working on **Single Sign On /OIDC protocol** . But couldn't explain him perfectly.
2. Then he went through my resume and as I am 5\* on Codechef, He asked me the most challenging problem I have solved on Codechef, at the time I was completely blank, then I told him about this(<https://practice.geeksforgeeks.org/problems/allocate-minimum-number-of-pages0937/1>) problem that because of the Codechef I came to know that this can be solved using binary search instead of DP.
3. Then He asked me to Write code for following problem:  
<https://www.geeksforgeeks.org/palindrome-partitioning-dp-17/>
4. I wrote the code using this (<https://practice.geeksforgeeks.org/problems/palindromic-partitioning4845/1>) $O(n \times c^2 \times b^2)$  approach.

**Result : Not Selected????** , technically I was good but was not best fit according to amazon leadership principles.

Hope this will help others. All the best !!! be Prepared for Leadership Principles.

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## Amazon Interview Experience for SDE-II (Virtual Rounds)

- Difficulty Level :[Hard](#)
- Last Updated :[22 Aug, 2021](#)

I got a call from an Amazon recruiter as I was referred by one of my friends for the role. She sent me the coding test link which I had to complete within a week. Once I completed the test, I got a call to schedule the interviews in two weeks. 3 interviews were held on Amazon Chime as per schedule. Post that after 4-5 days, the hr informed me that they would like to proceed with the final bar raiser round, which happened in a couple of days. Following are the questions that were asked:

### Online Round (Coding Test |x80|x93 90 mins)

1. We are given the costs of a list of pants, shirts, shoes, skirts. We have a certain amount of cash with us, we need to determine the total number of possible combinations which we can buy given that we must buy **one and only one** of each type.

Eg: pants=[3, 5, 7], shirts = [4, 7, 8],   
 skirts = [5, 8], shoes = [3], budget = 25

So in the above e.g., apart from the combination [7, 8, 8, 3], all others are possible.

Hint: Since we have to buy all, we can combine the first two lists and the last two lists, so we would have cost lists like pants\_shirts = [|x80|xa6] and |xc2|xa0

skirts\_shoes = [|x80|xa6], now we can just iterate over one list and binary search the remaining amount over the other list and add accordingly.

2. It was quite trivial so don't remember exactly.

### Round 1:

The interviewer gave his introduction, asked me a bit on the kind of projects I've worked on. Then he started with a data structure problem.

1. Given a binary tree with the following TreeNode, create a copy of the tree without using any extra space.

```
TreeNode{ \r\n        left*, right*, random*, val \r\n    }
```

**My solution:** I first told a hashmap solution where I would maintain a mapping from the original node to the copy node in the new tree, and in the second traversal, I would be able to assign the random pointers as well. The interviewer agreed that this would work, but he wanted me to do this without the hashmap. It took me around 15-20 more mins to come up with the final code. I first appended the duplicate node to the left child of the original node something like:

```
A           A\r\n          B           C   ->   A\'     C   \r\n
```

This way on iterating over the original nodes, we can assign the left and right pointers, and we need one more traversal to assign the random pointer.

2. We are given N solar systems, each solar system with M planets. We can move to any other planet of the same solar system in 1 light year. We can move from Mth planet of Kth solar system to 1st planet of (K + 1)th solar system in 1 light year. Apart from this we are also given a list of wormholes, where each wormhole specifies the entry planet and exit planet. Passing through a wormhole would also take 1 light year.

Now given the X-starting planet, and Y-destination planet, we need to find the minimum number of light-years that we would take to travel.

**My Solution:** I told him that I would create a graph(which was quite a ridiculous suggestion tbh :p) and then do bfs. He asked the time complexity of creating a graph and then applying my approach. Complexity was pretty bad, so I moved to a new solution. I suggested starting from X, add all the neighbouring planets at a distance 1 and if any wormholes are present from the planet and do bfs on the fly without creating graph. Since the time was less(as I had spent around 35-40 mins in the first question), I just coded a level-wise bfs and the interviewer seemed convinced.

### Round 2:

1. This was taken by an engineering manager who asked me regarding my projects for around 10-15 mins and then we moved to a system design problem. He asked me to design Slack messenger.

I started by listing the functional and non-functional requirements(on which he questioned me a bit), then I moved to draw the high-level architecture. The components which I drew were the clients, gateway service(LB + authentication, etc), Messaging Service, User Service, Web Socket Manager service, Fan Out service(I added this for the group messages thing, but he didn't interrogate much on that).

He asked me what would be the schema of my messages table and the scenarios in which the recipient user is online/offline. Also asked about the partitioning key and primary key of the 2-3 tables which I had made.

### Round 3:

1. This was taken by an SDE III guy, who again asked me about my projects for like 10 mins and then moved on to a low level design question. He asked me to design the HackerRank platform.

Again I started with listing down the usecases which I would cover, the interviewer asked me to write all the APIs which I would need to expose.

I made various classes like Question(subclassed into MCQ and CodingQuestion), Answer, Candidate, Test, QuestionBank, etc.

Surprisingly(since this was an LLD round) he asked me the schema of the tables and which SQL/NoSQL would I choose and why. Then he asked me the case when the question gets changed, I couldn't answer that, later he mentioned that he was expecting something like and EditHistory inside each Test Entity.

### Round 4(Bar Raiser):

This was again taken by an engineering manager who discussed my projects in depth for around 20-25 mins. In the remaining time he asked me 2 dsa questions. (Yes I too was surprised that he didn't ask anything regarding design).

1. Given a list of strings, group the anagrams together. (<https://practice.geeksforgeeks.org/problems/print-anagrams-together/1>)
2. Given two linked list L1 and L2 where head of the linked list points to the most significant digit, return a the linked list creating after subtracting these two lists. (<https://practice.geeksforgeeks.org/problems/subtraction-in-linked-list/1>)

### NOTE:

1. In almost all the rounds, I was asked questions related to Amazon Leadership principles, so do make sure you go through those before sitting for the interview process. You can refer to this link(<https://kraftshala.com/what-questions-to-expect-in-amazon-interview/>) for practicing the same, I found it useful.
2. In the design rounds, interviewer doesn't expect the most ideal answer from you and unless your choice of technology is outrageously wrong, he won't pinpoint that.

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# Amazon Interview Experience for Programmer Analyst

- Last Updated : \n25 Mar, 2021

I recently gave an interview for a programmer analyst role at Amazon. \xc2\x9a0

**Round 1(Online Test):** Two questions I cannot recollect exactly what they were, but they were surely in medium to the hard range.

All the rounds from the 2nd-4th round were conducted on Amazon Chime. Each round was about 1 hour. \xc2\x9a0

## Round 2(Technical Interview):

1. The interviewer gave me a piece of code with switch statements and asked me to discuss what the code was intended for and fix the bugs.
2. Tell me about your project.
3. Write a logic to see if you can accommodate all the even numbers in the array at even indices. Print Yes/No accordingly.

## Round 3(Technical + Behavioral):

1. Tell me about a time when you were given feedback, and you did something to improve on it.
2. Left View of a binary tree.
3. Tell me about a time when you convinced someone to make something that only you\xe2\x80\x99ve wanted to do.
4. Paint fill problem, I gave DFS approach, but the interviewer was looking for an optimized approach. He gave me several hints to use BFS but I couldn\xe2\x80\x99t catch them :/ But finally when I said we can use a queue the time was up:)

## Round 4(Technical):

1. The interviewer asked me about my projects. Please explain everything in detail, as much as you can during that time.
2. Find the second largest element in an array(sorting not allowed).
3. Check if one string is a rotation of another.

## Tips:

1. Be calm and do not rush during the interview, take time and ask more questions for clarity, the interviewers are very happy to help.
2. Please explain your approach clearly (Do it with confidence) and then move on to code.
3. And at the end of the interview, when the interviewer finally asks do you have any questions for me? \xc2\x9a0I would say go ahead and ask a few appropriate questions, this creates a conversation and interviewers will feel good that you\xe2\x80\x99re curious about things.

Overall, it was a great experience and I would like to thank GeeksforGeeks for providing a platform to share my experience. Hope this article helped you with your preparation. Good Luck \xf0\x9f\x99\x82

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# Amazon Interview Experience for SDE-2

- Difficulty Level :\nHard
- Last Updated :\n22 Mar, 2021

Recently I was interviewed by Amazon for SDE-2, here is my experience.\xc2\xab0

Current Status: 3.5 YOE with the product-based company.

## Online Assessment:

105 minutes including 2 coding questions and a section to explain the approach and time and space complexity.

1. Similar to <https://leetcode.com/problems/maximum-area-of-a-piece-of-cake-after-horizontal-and-vertical-cuts/>
2. Similar to <https://aonecode.com/amazon-online-assessment-algorithm-swap>.

After the coding section, there was a section for behavioral questions.

## Onsite:

### Round 1: (1.5 hours)

Two LP questions.

1. Based on Have Backbone; Disagree and Commit principle
2. Based on Are Right, A Lot of principles.

System Design.

1. Design a bulk update records/files kind of API for a client.

### Round 2 (1.5 hours)

Two LP questions.

1. Based on Customer Obsession.
2. Did not remember exactly.

Two Coding questions:

1. Similar to <https://www.geeksforgeeks.org/minimum-cost-to-merge-all-elements-of-list/>
2. Based on the Interval tree.

The further rounds were based on the performance of the first two rounds. I was not able to clear those, so didn't have any more rounds.

\xc2\xab0Hope this will help others. All the best !!!

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Amazon Interview Experience for SDE-1 | 7 Months Experienced

- Difficulty Level : \nHard
  - Last Updated : \n22 Aug, 2021

## **Online Round:**

1. Question-related to the priority queue
  2. Simple Ad Hoc question

### **Round 1(Chime Interview): Taken by SDE 2 (1 hour, 15 mins)**

1. There are N bubbles in an array. A bubble with a positive value means it's moving towards the right and has a mass of absolute value of  $A[i]$ . Similar to a negative value, it's moving towards the left with a mass of absolute  $A[i]$ . On the collision of any two bubbles, the bubble with lesser mass vanishes. If the mass of colliding bubble is the same, both of them vanish.  
Given an array, print the resultant array after all the collision happens.
  2. [Find an element in rotated sorted array](#).
  3. Theoretical questions from OS, OOPS, and Computer Networks.
  4. Why do you prefer C++, which is faster, C++ or Java?

## **Round 2(Chime Interview): Taken by SDE 2 (1 hour)**

- Given a string as an input perform Q queries of the following type:
    - 1 char  $\backslash x e2\backslash x 80\backslash x 93$  Insert char at the front of the string
    - 2 char  $\backslash x e2\backslash x 80\backslash x 93$  Insert char at the end of the string
    - 2  $\backslash x e2\backslash x 80\backslash x 93$  Reverse the stringHad to print the final string after Q queries.
  - <https://practice.geeksforgeeks.org/problems/next-permutation5226/1>
  - Discussion about my past projects

### **Round 3(Chime Interview): Taken by Software Manager (1 hour)**

1. <https://practice.geeksforgeeks.org/problems/generate-all-possible-parentheses/1>
  2. <https://practice.geeksforgeeks.org/problems/length-of-the-longest-substring3036/1>
  3. Why Amazon, Why leaving current organization in 6 months, What do you bring to the table?
  4. Discussion about my projects.

Round 4(Chime Interview): Taken by Software Manager (45 mins)

1. Discussion about my projects.
  2. Leadership/Behavioral questions.
  3. Given N queries of type :

C  $\backslash xe2\backslash x80\backslash x93$  Create a folder with the smallest missing positive integer starting from 1.

While answering any coding question, firstly you need to tell your approach. Support your approach with some test cases so that it's easy to convey.

Secondly, they want to code for all questions. Make your code is free from all the bugs, and you have covered all the corner cases. Try to convey what you are writing, why particular Data Structure etc while you write your code. If time permits, dry run your code in your head first then explain it to them. If stuck, don't be nervous, they will provide you with hints.

**Verdict:** Selected \xf0\x9f\x99\x82\xc2\xa0

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## Amazon Interview Experience for SDE-2

- Difficulty Level :\nBasic
- Last Updated :\n22 Mar, 2021

Two Coding Rounds were held.

### Round 1:

1. Given a 2D integer matrix of size ( $m \times n$ ). Calculate the sum of the submatrix of size ( $a \times b$ ), where  $a < m$  and  $b < n$ .  
 $\backslash xc2\xa0$

Now you are given  $n$ -queries for the same. Solve it in  $O(N)$ .

**Solution:** <https://www.geeksforgeeks.org/submatrix-sum-queries/>

After this, some project-related questions were asked.

### Round 2:

1. Project Description.
2. Some behavioral questions.
3. Calculate max area of Island.

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## Amazon Interview Experience (Onsite)

- Difficulty Level :\nExpert
- Last Updated :\n09 Mar, 2021

I had 4 interviews in Amazon Chime. Each one was 55 mins, the first 30 mins were about behavior questions(2-3) and only 25 mins for technical.

### Technical:\xc2\xa0

1. Given pattern (ex: \xe2\x80\x9cShC\xe2\x80\x9d ) and dictionary:

```
"ShipClass", "SchoolClass", "Traeler", "Class"\r\nReturn list of strings matching this patern like:\r\nShC -> "ShipClas
```

2. Design Twitter
3. Oop: design FileFinder
4. Given a social network and 2 people, find the shortest friends path between them

### Behaviors:

1. The time when you fail commitment,
2. The time when measuring customer experience
3. The time when you got bad feedback from your manager
4. The time when you help a teammate
5. The time when you innovate something
6. The time when you pushing your idea
7. The time when your idea was rejected

### Tips:\xc2\xa0

1. Behavior questions take lots of time, and it\x99s very important to have different prepared stories for them. You can use same story for different questions if you can show the required aspect.
2. On the technical part, the most important thing is the idea, because you have only 25 mins.\xc2\xa0
3. You will not have a compiler, so small mistakes in syntax are not so important.
4. You should write clean code, but always ask the recruiter if he wants you to implement methods or not. It will help you to save time and focus on important parts.

Good luck!

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## Amazon Interview Experience

- Difficulty Level :[nEasy](#)
- Last Updated :[n22 Aug, 2021](#)

Hello Coders, This is my Interview Experience for the position of SDE1 at Amazon (2019).

**Round 1 (Online Round):** 2 Coding Questions and 28 MCQ\xe2\x80\x99s

1. Let 1 represent \xe2\x80\x98A\xe2\x80\x99, 2 represents \xe2\x80\x98B\xe2\x80\x99, etc. Given a digit sequence, count the number of possible decodings of the given digit sequence. (<https://practice.geeksforgeeks.org/problems/total-decoding-messages1235/1>)
2. Given Equation for num1, num2, and X in the form of a string, and you have to find the value of X in the string.

Ex- String is 100000+200000=X\r\nX will be 300000\r\nString is 100000+X=500000\r\nX will be 400000

I Solved both the coding Questions.

Be prepared with all pointer concepts and how to return the char string, etc.

**Round 2 (Algorithm Round):** I was told to introduce myself. Then he directly went on to the question. The question was :

1. Given a square chessboard of N \xc3\x97 N size, the position of the Knight and the destination are given. You need to find out the minimum steps a Knight will take to reach the Destination and print the path for the same. (<https://practice.geeksforgeeks.org/problems/steps-by-knight5927/1>)

Initially, they give me a basic BFS solution that looks at all 8 K Knight modes that will take O (N \xc3\x97 N) Time.

I was told that I had done well in the code as a wise decision-maker. I don\xe2\x80\x99t know what the interviewer was expecting. I was thinking of the A \* Search Algorithm that discarded a particular combination but lost the solution (meaning it comes close to the solution in a very short time, used by Google Maps).

I did not expect to qualify for this cycle. But luckily I was called to the next round.

**Round 3 (Algorithm Round):** The interviewer was very chill. In the beginning, I introduced myself to her, and then she introduced herself. I was supposed to give a brief description of any one of my Project(10 min).

1. Given a linked list, write a function to reverse every k node. (<https://practice.geeksforgeeks.org/problems/reverse-a-linked-list-in-groups-of-given-size/1>)
2. Given a Binary Tree, find the deepest leaf node that is left child of its parent. (<https://www.geeksforgeeks.org/deepest-left-leaf-node-in-a-binary-tree/>)

**Round 4 (Fundamental + Algorithm):** Initially, I introduced myself. The interviewer was very calm. He asked me about my Subjects. Then the fundamental knowledge was checked in depth. Ex-

- Paging / Virtual Memory
- CPU Scheduling Algorithm
- Deadlock / Semaphore / Critical Section
- Working of OSI Layers(CN)
- What happens if I type \xe2\x80\x98google.com\xe2\x80\x99 as URL. Explain the whole process.

**Round 5 (Tech Round):** The person you were interviewing was very knowledgeable. First I introduced myself. I was told to describe any of my projects, and he told me how he would improve the project now.

He then asked me one question of the tree \xe2\x80\x93 I was shaking my head, and I was just smiling, my interviewer thought I knew the question and asked me if I knew the question or not, and I said yes (even the question was unfamiliar but don\xe2\x80\x99t do this I was lucky at the time

Then he swapped the question. And asked this \xe2\x80\x93

1. <https://www.geeksforgeeks.org/check-whether-the-two-binary-search-trees-are-identical-or-not/>

I was supposed to just tell the Algorithm orally. Then he asked me about my interests.

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## Amazon Interview Experience

- Difficulty Level :[nEasy](#)
- Last Updated :[n08 Mar, 2021](#)

Hello Coders, This is my Interview Experience for the position of SDE1 at Amazon (2019).

**Round 1(Online Round):** 2 Coding Questions and 28 MCQ\xe2\x80\x99s

1. Let 1 represent \xe2\x80\x98A\xe2\x80\x99, 2 represents \xe2\x80\x98B\xe2\x80\x99, etc. Given a digit sequence, count the number of possible decodings of the given digit sequence. (<https://www.geeksforgeeks.org/count-possible-decodings-given-digit-sequence/>)
2. Given Equation for num1, num2, and X in the form of a string, and you have to find the value of X in the string.

Ex: String is 100000+200000=X\r\nX will be 300000\r\nString is 100000+X=500000\r\nX will be 400000

I Solved both the coding Questions.

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1. Given a square chessboard of N x N size, the position of Knight and the destination is given. you need to find out the minimum steps a Knight will take to reach the Destination and print the path for the same. (<https://www.geeksforgeeks.org/minimum-steps-reach-target-knight/>)

Initially, they give me a basic BFS solution that looks at all 8 K Knight modes that will take O (N \* N) Time.

I was told that I had done well in the code as a wise decision maker. I don\xe2\x80\x99t know what the interviewer was expecting. I was thinking of the A \* Search Algorithm that discarded a particular combination but lost the solution (meaning it comes close to the solution in a very short time, used by Google Maps).

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- CPU Scheduling Algorithm
- Deadlock / Semaphore / Critical Section
- Working of OSI Layers(CN)
- What happens if I type \xe2\x80\x98google.com\xe2\x80\x99 as URL. Explain the whole process.

**Round 5(Tech Round):** The interviewer was a highly experienced person. Firstly I introduced myself. I was told to explain any one of my projects, and he told me that how will you improve the same project now.

Then he asked one tree question \xe2\x80\x94 I was feeling headache, and I was just smiling, the interviewer thought that I was familiar with this question and asked me that whether I am familiar with the question or not, and I said yes(even the question was not familiar to me but don\xe2\x80\x99t this I was lucky at that time)

Then he swapped the question. And asked this \xe2\x80\x94

1. <https://www.geeksforgeeks.org/check-whether-the-two-binary-search-trees-are-identical-or-not/>

I was supposed to just tell the Algorithm orally. Then he asked me about my interests.

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# Amazon Interview Experience for SDE Internship (Pool-Campus)

- Difficulty Level :\nMedium
- Last Updated :\n18 Feb, 2021

Amazon conducted a recruitment drive for a group of Colleges.

The process consisted of 3 rounds: One Online Test followed by 2 Technical Interview Rounds.

## Online Test:

It consisted of 4 sections:

- **Debugging:** It consisted of 7 Questions, having small code snippets, provided with a problem statement and expected output. One should modify the minimum number of statements possible so that the code solves the given problem and passes all the test cases.
  - **Coding:** Consisted of 2 medium level questions. One based on Maps, and other on Graphs.
1. <https://leetcode.com/discuss/interview-question/373006>
  2. <https://leetcode.com/discuss/interview-question/868371/amazon-oa-critical-connections>
- **Behavioral Section:** This section consists of questions that majorly focus on your personality and behavior.
  - **Logical Reasoning:** Aptitude questions, also focusing on Verbal ability.

I received the test results after a month. The interviews were then scheduled.

## Technical Interview 1: (60 mins)

Generally, they ask 2 coding questions in this interview, but based on the question and time allotted, they can also ask you just a single question. So give your best shot right from the beginning.

The interviewer firstly introduced himself, and then asked me to do the same. After introduction we directly jumped into coding. They provide you with a Live Code platform.

- <https://www.geeksforgeeks.org/boggle-find-possible-words-board-characters/> \xc2\xa0  
\xc2\xa0 (**with minor twists**)

So, this was a traversal based question, that can be solved either using BFS/DFS traversal or Trie Data structure (optimal solution). I initially began with trying out the DFS traversal. The interviewer then asked me to optimize it. Then I discussed the solution using Trie data structure. The interviewer seemed satisfied, and then asked me to code the solution.

The discussion went really well and coding the solution took some time. We had over-shot the allotted time so I didn't get a chance to ask any questions to the Interviewer.\xc2\xa0

After 3-4 hours, I got a call from the HR, stating that I have my 2nd interview scheduled in the next 15-20 mins.

## Technical Interview 2: (60 mins)

The interview began in the same way as the previous one, with introduction from both sides. I was then asked to brief about any one of my projects. After this, we began with the coding part.

- <https://www.geeksforgeeks.org/search-an-element-in-a-sorted-and-pivoted-array/> : This required a slight variation of Binary search algorithm. I, as usual began with a brute force approach. After, that the interviewer wanted an optimized approach. I tried out some recursive solution using modification of binary search but that didn't work well. Later on after many hints from the interviewer I was able to solve the question.

\xa0

- <https://www.geeksforgeeks.org/print-left-view-binary-tree/> : This was also a slight variation of BFS traversal on a tree. To begin with, I discussed the solution first and then the interviewer asked me to code it.

Then the interviewer asked me if I had any questions for him, after which the round ended.

### Final Verdict: REJECTED

I think I took a lot of hints from the interviewer on the first question, that led to me being rejected.\xa0

### Important Take-aways:

Sometimes, if we fail at our first try, we should look at problems from a wider perspective, as a fresh problem. That would surely help.

Keep on conversing with the interviewer. He'll surely help you in finding the right way. Just listen to them carefully.

Try tracing out sample inputs before confirming the solution.

And lastly, All the Best for your interviews. Stay calm and composed. Give your Best Shot right from the beginning.

Always remember, **What defines us is how well we RISE after Falling.** Everything else, is just a part of our LIFE.

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## Amazon Interview Experience for Devops/Support Engineer (5 Years Experienced)

- Last Updated :n17 Feb, 2021

Applied through Referral for Bangalore location. All rounds happened over amazon chime(virtually) due to covid-19. The entire process took 2months-1month to get a call and then next month interviews+offer rollout. Was interviewed in December 2020.

**Round 1(Hiring Manager round):** Supposed to be second round but was rescheduled. Brief introduction followed by behavioral questions(on leadership principles).

1. Tell me a situation where you had to convince your client and how did you persuade him to agree to you.
2. What do you think of operational excellence?
3. What would you do if the delivery cannot be done before the deadline due to incomplete features?
4. Tell me a situation where you had a conflict of interests with your co-worker and how you dealt with it
5. Tell me of a situation where you achieved a way beyond your bar. How you can improve that task further?

And few more scenario-based questions.

**Tip for this Round:** Don't bluff. Relate each leadership principle to your past work and answer. Think of how your work could impact the company/customer and answer from that perspective. Only if you have really worked/shown those leadership principles in the past, you can crack this round.

**Round 2 (Mostly on Linux fundamentals):** Brief introduction followed by a question on one of my previous tasks

1. Explain your latest automation. Entire task and how you contributed to it from scratch.
2. How can you improve that automation now?
3. Few Linux questions-processing a log file and fetching for few error codes from debugging prints. Can be solved using cat and sed.
4. Write a shell script for tasks performed in (c) I wrote a simple for loop command. The interviewer was impressed.
5. Discussion on how to debug disk space issue in Linux
6. Write a shell script to generate a report on 10 top space-consuming workspaces (folders) with consumption details again a simple for loop with df & du commands.

**Round 3 (Python coding- Any language you can choose):** Brief introduction followed by questions

Array of numbers could be either in increasing order or decreasing order or increasing then decreasing order or vice-versa. Print the type of array based on this order.

Example-if array is [1,2,3,4,3,2,1] output should be \r\n"increasing-decreasing"\r\nExpected time complexity-O(1)

**Solution:** Compare first and second elements. The same way compares the last 2 numbers in an array. Then decide what type of array it is based on these 2 results.

Few leadership questions like what were previous achievements and how it impacted business etc.

**Round 4 (Debugging Round Mostly on Linux):** Brief introduction followed by questions

Questions on file processing, solutions involved a cat, sed, awk, tail, head, grep -B, sort, unique, etc

How would you debug if there is an issue with API output -> Discuss all the scenarios ranging from network connectivity to data in DB from where API fetches its data.

**Round 5 (Bar Raiser round):** Final round which will be scheduled only if you clear the previous 4 rounds. Brief introduction followed by following behavioral questions

How have you dealt with ambiguous data in your tasks.

Failure in your task and what you have learned out of it. How can you improve it now

Task where u showed your ownership and how you could have improved in your WoW now.

A Task where you improved the lives of your colleagues/team

And few more behavioral questions which were similar to what was asked in the hiring manager round(Both of them were stressing different leadership principles)

**By God's grace, next day got a call from the recruiter that I am selected** and package negotiation had started. Within a week, the offer was rolled out.

**Tip for Amazon interview:** Each round is based on 2-3 Leadership principles, and you are expected to raise the bar in a few of them. They will not ask on what technology you have worked for but any behavioral question should be answered technically highlighting how efficiently you have contributed to the team/customer. Be ready to explain how you have crossed your responsibilities to work across teams for your tasks. You cannot bluff. You cannot crack if you don't have those 14 leadership principles(at least a few of them). Your programming question also will be actually evaluated against any of the leadership principles, so don't concentrate on getting the solution but how efficiently you arrive at the optimized solution. And speak throughout the interview.

I hope this helps the reader and pray that God bless you with your interview at Amazon.

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# Amazon Interview Experience for SWE Summer Internship 2021

- Difficulty Level : \nMedium
- Last Updated : \n27 Jan, 2021

I applied in the AmazeWow program in April 2020 and the process started in late May, consisting of 1 online assessment and 1 interview.

## Online Assessment

Date : window open from 22 May \xe2\x80\x93 24 May 2020

- Code Debug : Find the bugs in 7 pieces of codes. (Time : 20 minutes)
- Coding Test : 1 question on DP, 1 question on DFS (Time : 70 minutes)
- Work Styles Assessment : This is built around Amazon\xe2\x80\x99s Leadership Principles, they ask us to choose what extent a provided statement represents our work style. (Time : 10-15 minutes)
- Logical Ability : Questions based on language comprehension, mental ability and Maths (Time : 35 minutes)

## Interview

Date : 18 June 2020

Mode : Video call through Amazon Chime, live coding on a shared doc

Time : 1 hour

The interview started with brief introduction of the interviewer, followed by mine.\xc2\xad

Then he started the discussion with basic questions on data structures like comparison of Stack and Queue.\xc2\xad

## Coding Questions :

- Insertion and Search in Trie : I was asked to only write the functions, assuming the structure of trie-node to be given.

\xc2\xad \xc2\xad \xc2\xad \xc2\xad \xc2\xad Similar article : <https://www.geeksforgeeks.org/trie-insert-and-search/>

- Sum of nodes at lowest level of Binary Tree : Given a binary tree, find the sum of values of nodes present at the last level.
  - I first coded an approach similar to level order traversal. At last level, find the sum of elements present in the queue.
  - He then asked me to provide a solution without using extra space. I did it by writing a function to find the height of the tree and then finding the sum of nodes at last level.
  - Then I was asked to provide a solution without writing a separate function for finding height. I used an approach similar to this : <https://www.geeksforgeeks.org/sum-nodes-maximum-depth-binary-tree/>

Then he asked me 2 question related to OOPS.

1. Polymorphism and its types
2. Encapsulation

Similar article : <https://www.geeksforgeeks.org/object-oriented-programming-in-cpp/>

The interview ended with a discussion about the company.

I got the result on 7th August 2020 and I got selected for the internship.

Most useful resources based on my experience : GeeksForGeeks, InterviewBit, Codeforces.

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## Amazon WOW Interview Experience

- Difficulty Level :[Hard](#)
- Last Updated :[04 Mar, 2022](#)

I applied for the role of SDE I through Amazon WOW drive 2020. There were a total of 5 rounds (1 coding test + 4 interviews). Originally interviews were supposed to be offline but because of the coronavirus pandemic, I gave my interviews online.

**Round 1:** Round 1 was an online coding round consisting of 2 coding questions and 28 MCQs based on C, C++, Java, data structures, algorithms, and core subjects. The first coding question was to convert the infix expression to postfix <https://www.geeksforgeeks.org/stack-set-2-infix-to-postfix> and the second was to find the mean, median, and mode of the given array. This round was for 1 hour 30 minutes.

I solved both the coding questions completely. After getting shortlisted, a total of 4 interviews were to take place, each being eliminative in nature. The time for each was fixed to 60 minutes each and each of them involved writing the complete code on an IDE link shared by the interviewer. For each question, time complexity has to be told.

### Interviews:

**Interview 1:** The interviewer started directly by giving coding questions.

1. Alternate reversal of linked list in a group of size k. Like the first group should be reversed, the second group should be the same, the third should be reversed, the fourth should be the same, etc.

**Example :**[xc2xa0](#)

**Input :** 1->2->3->4->5->6->7->8, k=2  
**Output :** 2->1->3->4->6->5->7->8

2. There are two strings given to find the matching and non-matching characters.

**Example :**

**Input :** s1 = abc s2 = abd  
**Output :** matching = 2 non-matching = 1

I was able to solve both the questions in around 55 minutes. The interviewer seemed satisfied. I got a mail for the second interview after 2 days and the interview was scheduled after 2 days.

**Interview 2:** Started with the interviewer's introduction and then my introduction and then 2 coding questions.

1. Reach from one start string to the destination string in a minimum number of steps provided some set of intermediate strings cannot be reached. The string consists of numbers starting from 0 to 9 and it works like a suitcase lock where from 0 there can be two options 1 or 9, similarly, from 1 we can go to 2 or 0.[xc2xa0](#)

**Hint:** Use BFS constructing graphs of strings.

**Example:**[xc2xa0](#)

**Input :** [r\nSource = 123r\nDestination = 456r\nsteps = 9](#)

2. Find a maximum of the difference between maximum and minimum of all subarrays of size k. In this interview, I was able to write code for both questions in just 25 minutes(Good luck maybe :-). Got mail for the third round the same day and the interview was on the next day.

### Interview 3:[xc2xa0](#)

1. Given a family of ants, in which female and male ants are there, interactions b/w family members are given i.e., it is given who interacts with whom, find if it is a good family and a family is good if only two different genders interact.[xc2xa0](#)

**Example :**[xc2xa0](#)

**Input:** number of ants = 6, Interactions = { 1-2, 3-4, 5-6}  
**Output -** Good family  
**Input :** number of ants = 6 Int

2. Next greater element

And questions on os(Explain Banker's algorithm with an example, Thrashing, Deadlock, Semaphore, etc), DBMS(ACID properties), oops, and projects.

The first question seemed very new to me. After thinking a lot I was able to get that there shouldn't be any odd cycle in the graph formed from interactions. I tried writing code but the interview wasn't very much satisfactory. Then he moved to the next question. As the second question is a very common question, I instantly started telling the solution, by which the interviewer asked do you know this question and I said yes. He asked me to write code in just 2 minutes without any bugs, And I wrote it, but he could find one bug out of it [f0x9fx98x90](#)

After this interview, I didn't expect a call for the next interview. But luckily I got the mail after 6 days for the next round to be scheduled the next day.

**Final Interview:** Started with the introduction, project questions, and behavioural questions. Like, Give an example where you spent some time and figured out something on your own.

1. Given two arrays move an element from one array to another only if the average of both the arrays become greater than the previous average find which element can be moved
2. Some BFS related questions don't remember exactly
3. Minimum element in the stack without using another stack

In the first question, I got nervous and couldn't come up with an approach. The interviewer was very friendly and helped me to understand the approach and then asked me to write the code. The next two questions I was able to solve.

After around 15-20 days, I got mail that I have been selected as a SDE at Amazon. I would suggest being patient and calm during the interview. Think out loud. The interviewer is there to help you out.

Best of luck!!

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# Amazon Interview Experience for SDE Internship (On-Campus)

- Difficulty Level :\nMedium
- Last Updated :\n22 Jan, 2021

Amazon Visited our campus, and they had put a cutoff of 7 CGPA on the basis of which they shortlisted students. After 2 days all the shortlisted students received an online test link.

**Online Assessment Test:** The round had four sections.

1. **Debugging:** There was a total of 7 questions in which a piece of code was written and you had to find any error so that all the test cases can pass. All the questions were very easy.
2. **Coding Section:** There were two questions, one was based on a linked list and the other was a logical question based on hashing, I would say both the questions were of medium level. The time allotted was 70 mins total.
3. **Behavioral Analysis:** This section consisted of questions that focused on your personality and behavior.
4. **Reasoning Ability:** This section was based on aptitude and verbal ability. The difficulty level was easy.

After this, I waited for many weeks as I knew my test went well, and then finally I received the mail for the online interview. It was scheduled just one day later.

\xc2\x0Round 1(Personal Interview): The round began and first the interviewer introduced himself and later asked me to introduce myself which I did. After that he walked me through how the interview is going to proceed from there. He then gave me two coding questions, firstly you have to tell them your approach, and if they are satisfied enough or if your approach is the optimum approach then they will ask you to write that code in their code space which is not an editor btw. So, the two questions were:-

1. [Find the square root of a number up to three decimal places of precision.](#) So, this was a binary search question and there was an easier version of this question in which you had to find only the integer which is closest to the square root of that number, so here you had to only change your code a bit, but the logic was a bit tricky to find, but eventually, I came up with the solution and then the interviewer was quite impressed. I also had to tell the time and space complexity and also explained to them why was this the most optimal approach.
2. [Given a generic tree you have to do an anti-clockwise spiral traversal of the tree.](#) Initially, I thought that this was a tricky problem but I kept thinking out loud, and they were also able to see where and how was I thinking, later I came up with the solution and it was the optimum one, the interviewer again asked me to write how will you represent the generic tree, and then I wrote the code for the tree using a class, the interviewer was again happy to see that, later I wrote the code for the problem and also told him the time and space complexities.

I knew for sure that I was going to clear this round. After these two questions, he also asked me if I had some questions regarding the culture on amazon and I asked him a few and after that, the round was over.

After half an hour I got a call from HR that my interview is scheduled an hour later.\xc2\xxa0

**Round 2(Personal Interview):** The round began with the interviewer\xe2\x80\x99s introduction and then I introduced myself He gave me two questions based on data structures.

- Given a binary tree where each node has a value and a sequence of numbers, you have to find that does the tree contain any path that has that particular sequence of numbers in that order: Since I was quite comfortable with tree data structure, after some time I was able to come up with the solution and also told him space and time complexity. The interviewer was content with my answer.
- [Connect N ropes with minimum cost](#). I was able to come with the optimal solution and also walked them through my solution. Later I told the time and space complexity.\xc2\xa0

The interviewer was happy with all the answers. Then, since enough time was left, He asked me some HR questions, like what are strengths and weaknesses, etc.\xc2\xa0

After all this, he told me in the interview itself \xe2\x80\x9cSee you soon and enjoy your day \xe2\x80\x9c, after which I was quite sure that I\xe2\x80\x99m going to go to the next round.

**Final Verdict:** SELECTED

I had to wait for 10 days, then I got the mail from Amazon.

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# Amazon Interview Experience for SDE-1 (Amazon Wow drive)

- Difficulty Level :\nEasy
- Last Updated :\n04 Mar, 2022

I applied for role of SDE I through Amazon WOW drive 2020. There were a total of 5 rounds (1 coding test + 4 interviews). Originally interviews were supposed to be offline but because of coronavirus pandemic, I gave my interviews online.

**Round 1:** Round 1 was online coding round consisting of 2 coding questions and 28 MCQs based on C, C++, Java, data structures, algorithms and core subjects. The first coding question was to convert infix expression to postfix (<https://www.geeksforgeeks.org/stack-set-2-infix-to-postfix>) and the second was to find the mean, median and mode of the given array. This round was for 1 hour 30 minutes.

After getting shortlisted, a total of 4 interviews were to take place, each being eliminative in nature. The time for each was fixed to 60 minutes each and each of them involved writing the complete code on IDE link shared by interviewer. For each question, time complexity has to be told.

## Interviews:

**Interview 1:** Interviewer started directly with giving coding questions.

**Question 1:** Alternate reversal of linked list in group of size k. Like first group should be reversed, second group should be same, third should be reversed, fourth should be same, etc.

**Example :**\xc2\xd0

**Input :** 1->2->3->4->5->6->7->8, \xc2\xd0k=2

**Output :** 2->1->3->4->6->5->7->8

**Question 2:** There are two strings given find matching and non-matching characters.

**Example :**

**Input :** s1 = abc s2 = abd\xc2\xd0

**Output :** matching = 2 non-matching = 1

I was able to solve both the questions in around 55 minutes. Interviewer seemed satisfied. I got a mail for second interview after 2 days and the interview was scheduled after 2 days.

**Interview 2:** Started with the interviewer\xe2\x80\x99s introduction and then my introduction and then 2 coding questions.

**Question 1:** Reach from one start string to destination string in minimum number of steps provided some set of intermediate strings cannot be reached. String consists of numbers starting from 0 to 9 and it works like a suitcase lock where from 0 there can be two options 1 or 9, similarly from 1 we can go to 2 or 0. Hint : Use bfs constructing graph of strings.

**Example:**\xc2\xd0

**Input :**\xc2\xd0

Source = 123

Destination = 456

steps = 9

**Question 2.** Find maximum of difference between maximum and minimum of all subarrays of size k

In this interview, I was able to write code for both questions in just 25 minutes(Good luck may be????)

Got mail for third round same day and the interview was on next day.

**Interview 3:**\xc2\xa0

**Question 1:** Given a family of ants, in which female and male ants are there, interactions b/w family members is given i.e., it is given who interacts with whom, find if it is a good family and a family is good if only two different genders interact.\xc2\xa0

**Example :**\xc2\xa0

**Input:** number of ants = 6, Interactions = { 1-2, 3-4, 5-6}

**Output** \xe2\x80\x93 Good family

**Input :** number of ants = 6 Interaction = {1-3, 3-5, 1-5}

**Output** \xe2\x80\x93 Bad family

**Question 3:** Next greater element

And questions on os(Explain Banker\xe2\x80\x99s algorithm with example, Thrashing, Deadlock, Semaphore, etc), DBMS(ACID properties), oops and projects.

First question seemed very new to me. After thinking a lot I was able to get that there shouldn't be any odd cycle in graph formed from interactions. I tried writing code but interview wasn't very much satisfied with code. Then he moved to next question. As second question is a very common question, I instantly started telling solution, by which interviewer asked do you know this question and I said yes. He asked me to write code in just 2 minutes without any bug, And I wrote it but he could find one bug out of it????.

After this interview, I didn't expect a call for next interview. But luckily I got a mail after 6 days for next round to be scheduled next day.

**Final Interview:** Started with introduction, project questions and behavioural questions. Like Give an example where you spent some time and figured out something on your own.

**Question 1:** Given two arrays move element from one array to other only if average of both the arrays become greater than the previous average find which element can be moved

**Question 2:** Some bfs related questions don't remember exactly

**Question 3:** Minimum element in stack without using another stack

In first question I got nervous and couldn't come up with the approach. Interviewer was very friendly and helped me to understand the approach and then asked me to write the code. Next two questions I was able to solve.

After around 15-20 days, I got mail that I have been selected as a SDE at Amazon. I would suggests to be patient and calm during interview. Think out loud. Interviewer is there to help you out.

Best of luck!!

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# Amazon Interview Experience for SDE Intern (Off-Campus)

- Difficulty Level :\n[Medium](#)
- Last Updated :\n18 Jan, 2021

**Online Assessment Test:** The round consisted of four sections.

1. **Debugging (time constraint):** There were 7 questions to be debugged.
2. **Coding Section (time constraint):** There were 2 coding questions, one from trees and the second one from array. The difficulty level of the question was **medium \xe2\x80\x93 easy.**
3. **Behavioural Analysis:** This section consisted of questions about work and behavioural related ones.
4. **Reasoning Ability (time constraint):** This section consists of some verbal reasoning questions and some aptitude questions. The question level was easy.

After the online assessment, I received a mail that I have been shortlisted for interviews, there were basically **2 rounds** to be held and all were elimination one, this detail was given in the shortlisting email itself.

**Round 1(Personal Interview):** The round started with little greetings and then I was given my problems.

1. Find the bottom and top view of the tree.

1. [Bottom View of a Binary Tree.](#)
2. [Print Nodes in Top View of Binary Tree.](#)

Basically, I needed to tell the approach of both of them and then I was asked to code the bottom view of the tree, I was able to tell the approach and code it.

2. Find the [Maximum sum such that no two elements are adjacent](#). The problem I received was not exactly the same instead of array I have to take the level order sum of a tree, I was able to solve this problem and was able to code the problem.\xc2\xab0

The interview ended with the introduction and some questions that I asked them regarding amazon and its work culture.

After this round, I received a call from hr regarding the second round.

**Round 2(Personal Interview):** The round started with an introduction and then I was given my problems:-

1. Find the first non-repeating character in [Queue based approach for first non-repeating character in a stream](#). I was not clear with the problem, so I asked a lot of clarification questions regarding the problem then I told him my approach, and he was satisfied with the one, then I was asked to code it which I was able to code.
2. Find the minimum time which would take the gas to reach all the cells if the explosion happened at a point in the matrix. [Check if all enemies are killed with bombs placed in a matrix](#). The problem was simpler than the given link, it was a simple BFS problem, but I was asked why we are not able to use DFS here, then I was asked to code the problem.

Then the interview was over, and after a few days, I received a mail regarding the selection. My overall experience was really great the interviewers were really cool and helping people, really

excited to start working there.

Thank you for reading!

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## Amazon Interview Experience for 6-months Internship | On-Campus 2020

- Difficulty Level :[Hard](#)
- Last Updated :18 Jan, 2021

There were no eligibility criteria. But, only CSE, ECE, and EEE branches were allowed to sit for this.

**First Round (Online Assessment:)** This was held in AMCAT environment. The assessment consisted of four sections. You couldn't switch between different sections. After the end of any section, you can take your time to move to the next section. Also, you have to do these in order. Even if you complete any round earlier, the leftover time won't be added to the next round.

1. First, a code debugging section (20 minutes) which consists of 6 codes with some logical or syntactical errors, you have to make sure all the test cases pass for each of these 6 questions.
2. Secondly, there was a coding test (70 minutes) which had two problems:
  - [Clone a linked list with next and random pointer.](#)
  - [Find Critical connections in the given graph](#)

You can switch between these two questions. You will have the option to run and test the code before submitting it. I don't know if there were more sets than two, but some of my friends also got this question:

- [Merge two sorted linked lists](#)

A workstyles assessment (20 minutes) and a reasoning ability section (35 minutes).

Browser usage was logged, so do not open new tabs or switch to any existing one. During the reasoning section, I wasn't able to skip and return to questions. The exam wasn't proctored with webcam/microphone access.

A total of 20 students were selected for the next round. Most of the students completed both of the coding questions, so don't take the other sections lightly.

**Second Round (Video interview):** This was a video interview round. I had to install Amazon Chime software for the call and I had to share my screen. I was also given a link where the interviewers would type in the questions and I could edit the code. There were two interviewers in this round for me.

First, they said how the interview would go and started with their own introduction first. They said I would be given 2 questions and I would have to explain my approach before coding. I was asked to introduce myself and some questions were related to my introduction.

**Then I was given 2 questions:**

1. [Find the first non-repeating character from a stream of characters.](#)
2. [Minimum time required to rot all oranges](#), and just a little change in the 2nd question, there were also obstacles in the 2D grid.

For the first question, I asked what to return if there would be no nonrepeating characters. For the second, I asked if the obstacles blocked the smell of orange entirely from leaving, what should I return.

This round took 1 hrs and 30 mins. I spoke out my approach and if they were satisfied, I was asked to code it. During my explanation, he also gave me hints where I was stuck. But left me to arrive at the answer myself. I was allowed to work with pen and paper. Before coding, I was asked about the time complexity of my approach. Both the questions went almost similarly. I was also reminded of the remaining time allotted for the given question. The code wasn't being run against any test cases, but he verified my code manually.

I don't exactly know how many students qualified for the next round as the meeting link for the next round were mailed personally.

**Third Round:** Happened in the evening same day. This round went pretty much the same as the second round except I had to solve 1 coding question this round and the next half was about the project. The interviewer introduced himself and asked me to introduce myself. He was interested in one of the activities I did as a member of a technical team.

We then moved on to my coding question.

1. [Previous greater element](#). Just instead of the previous greater element, it was a previous greatest element.

In this question, I was given two cases, one where the queries were run offline and one where the queries were online. For the

offline queries, the fastest method would be to sort the queries and return the answer for each query as and when I went up the height of the beam.

And in the case of online test cases, we have to examine each query individually. So, my logic was to traverse the heights of the building array from left to right and keep on saving the max height of the beam corresponding to the indices of the building where the beam would hit before processing any query.

#### For e.g.

```
building height array - 5, 2, 5, 7, 5, 8, 10\r\nmy array will be - {5,0}, {7,3}, {8,5}, {10,7}
```

So for every query from 0-5 answers will be 0, 5-7 answers will be 3, 7-8 answers will be 5, 8-10 answers will be 7, etc.

Now, for every query, I will just use the binary search (as the resultant array will be sorted a/c to the 1st element) to find a number from the array's first number which is greater than or equal to the query and return the corresponding second number.

I asked what will happen if the beam's height will be exactly a building's height.

We then moved on to the project, I was free to describe any recent project that I took up. I explained to him about the one I did in my internship. The sir asked no questions related to Machine Learning instead of the approach that I took for the project if I could've used something else. I very briefly described the whole project and along with it the problems I faced, the change I did in my approach, some already existing systems, and the disadvantages, and some others with better advantages but why I didn't use that. What libraries I used and any alternatives to those. If the project you described was made solely by you, you will find it really easy to answer.

The same night results came in and I along with 2 others were selected for the six months internship (PPO based on performance).

My advice would be to remain calm and confident, interact with the interviewers well.

#### And these points will be really helpful as far as Amazon is concerned:

- Never assume anything from the question, always ask him for any condition you find not covered in the question. The interviewer will definitely say That is a good question and answer it.
- Write clean code, which the interviewer can read and understand easily without you even explaining it.
- Take appropriate variable names
- Always speak out what you are thinking regarding the approach.
- Time complexity will be one of the most considered factors in your approach.
- In your introduction, be very confident, don't just mug up the script, and don't keep it too technical.
- If you have done the project yourself, you will go through the project related questions pretty easily.

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# Amazon Interview Experience For Software Developer Intern

- Difficulty Level :\n[Medium](#)
- Last Updated :\n12 Jan, 2021

Amazon visited our campus around late September to hire for the role of Software Developer Intern. There were 3 rounds involved in the process.

- **An online test**
- **Two technical interviews.**

The online test was organized on Mettl Platform and consisted of the following parts :

- **Debugging:** Had to apply some changes to a given code snippet to make it logically and syntactically correct.
- **Psychometric Test:** Situational questions.
- **Reasoning:** Was relatively easier than you would usually find in other placement tests.
- **Two coding questions :\xc2\xa0**
  1. Rewrite of **Search in a matrix:** <https://www.geeksforgeeks.org/search-in-row-wise-and-column-wise-sorted-matrix/>
  2. Rewrite of **Bridges in a graph:** <https://www.geeksforgeeks.org/bridge-in-a-graph/>

## Technical Round 1:

- Started with the introduction.
- Then two coding questions were asked :
- Given the data of n buses in a bus station with their arrival and departure time, find the minimum number of platforms required so that none of the buses overlap:  
<https://www.geeksforgeeks.org/minimum-number-platforms-required-railwaybus-station/>
- Gave an O(nlogn) solution by sorting all the timings.
- Given a binary matrix, find the number of shapes and their parameter (length) present in the matrix. A shape is a sequence of consecutive ones, and we can move in all eight directions:  
<https://www.geeksforgeeks.org/find-number-of-islands/>
- Solved using BFS.
- Discussion on time and space complexities of each problem.

## Technical Round 2 :

- Again started with the introduction and simple questions related to one of my projects.
- Then 2 coding questions :
- Given the prices of n stocks find the maximum profit that can be made by doing at most k transactions: <https://www.geeksforgeeks.org/maximum-profit-by-buying-and-selling-a-share-at-most-k-times/>
- First I gave an O(n<sup>3</sup>) DP solution, then optimized it to O(n<sup>2</sup>).
- Given the heights of walls arranged from left to right find the volume of water that will be trapped between the walls: <https://www.geeksforgeeks.org/trapping-rain-water/>
- Gave an O(n) solution using the maximum wall to right and left for each wall.
- Discussion on time and space complexities for each problem.

\xc2\xxa0After about a week, I got the news through my college that I have been selected and given an internship offer. A total of 4 students got selected.

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## Amazon WoW Program

- Difficulty Level :[Medium](#)
- Last Updated :[04 Mar, 2022](#)

Are you a female looking for SDE roles in a renowned product-based organization, Amazon? If yes, then there is an opportunity for you to get an interview call from Amazon. Yes, you heard it right. Amazon has the remarkable program called Amazon WoW Program. The main aim of Amazon behind this initiative is to increase the participation of women in the tech industry. Every year Amazon offers internship and full-time software development opportunities to female candidates through the Amazon WoW program. Students from any college across the nation can apply for this opportunity.



**Eligibility Criteria:** Before applying for the Amaze WoW program, you must ensure to satisfy the below-mentioned eligibility criteria:

- Only Female Candidates are allowed to participate.
- BE/B.Tech/Master degree in Computer science or related stream with no backlog and CGPA greater than 6.5.
- Candidate should have coding knowledge of any one programming language such as C, C++ or Java, etc.
- Understanding of Design Patterns, Data Structure & Algorithm, and relational databases.
- Should have better problem-solving skills

**Note:** If you have been interviewed by Amazon in the last 6 months then you can't participate.

**Selection Process:** Below is the selection process of Amazon for this program.

### Round 1: Online Test

It will have coding and MCQ questions that will be testing your knowledge of Data Structure and algorithms, Programming concepts, etc. Some of the crucial insights of this round, based on the candidates' feedback, are mentioned below:

- The online round consists of 28 MCQs based on programming language and Data-Structures and 2 coding questions that need to be solved within a duration of 90 minutes.

- However, there is not any sectional time limit and you can also switch the sections at any time during the test. To perform well in the MCQ section, you're required to have your fundamentals strong and have better speed and accuracy.

## Round 2: Technical Interview

This will be a usual SDE level interview and consists of multiple rounds such as Technical Interview Round-1, Technical Interview Round-2, etc. Some of the most-important topics based on candidates interview experiences are Operating System, Standard Array, and String problems, Bit Manipulation, Tree traversals, graph problems, basics topics of computer networks like OSI model, DNS, Deadlocks, Processors, etc.

### How to Register?

You can register yourself for the Amazon WoW Program conveniently by following the below-mentioned steps:

- Visit the official website of AmazeWiT.
- On the official website, you're required to sign in with your Google account.
- Then you'll be redirected to a dashboard page where you need to click on 'Amazon Internship and Full-time Opportunity' under the section 'Upcoming Job Opportunities'.
- Now you need to click on the 'Proceed' button and after entering the required details, click on the 'Save' button.
- At last, choose your preferred location and click on the 'Apply' button.

For the coding interview round of the Amazon WoW program, you all are advised to write short comments to make it more convenient for the interviewer to assess. Also, you can ask the interviewer to repeat the question in case you don't get it correctly the first time.

**Benefits of Participation:** Some of the advantages of participating in the Amazon WoW Program are:

- Competition is reduced to half as only females can apply.
- Higher package than average industry package.
- Optional Telecommute / Work from Home.
- Better Career growth.

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# Amazon Interview Experience for 6-Months SDE Internship (Nov 2020)

- Difficulty Level :\nBasic
- Last Updated :\n31 Dec, 2020

**Online Assessment:** The online round consisted of a total of **3 sections** and behavioral sections. The Online round was conducted on the AMCAT platform.

**Section 1 (Code Debugging | 20 mins):** There were 7 code debugging questions in which we have to debug the code or logic to pass all the test cases. Overall the difficulty of debugging questions was easy.

**Section 2 (Coding Round | 70 mins):** It had 2 questions first one was Easy second one was Medium.

1. [Count pairs with the given sum](#)
2. [Clone a Linked List with next and random pointer](#)

**Section 3 (Logical Reasoning | 35 mins):** This section consists of some verbal reasoning questions and some aptitude questions. The question level was easy.

**Section 4 (Workstyles Assessment | 20 mins):** This section was made to test the student's behavioral and workstyle compatibility.

Overall the Assessment was easy. Read the past interview experiences before taking up an Amazon assessment.

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# Amazon Interview Experience for SDE-1 | 6 Months Experienced (Off-Campus)

- Difficulty Level : \n[Hard](#)
- Last Updated : \n25 Dec, 2020

I appeared for Amazon\xe2\x80\x99s recruitment process in December 2020. I got a call from a recruiter at Amazon for the SDE-1 role.

There was a total of 5 rounds (1 online coding test + 4 interviews).

**Round 1(Online coding test):** The test contains two coding questions which you have to solve within 2 hours. You also have to submit the approach used for solving in words along with the time and space complexity of your algorithm.

1. It was based on the priority queue.
2. [Find the closest pair from two sorted arrays](#)

I solved both the problems easily and got this round cleared easily.

The recruiter then contacted me for interviews. She told me that there will be 4 rounds of interviews and every round will be an elimination round. All interviews were conducted on amazon chime. Every interview round was of 1 hour.

**Interview round 1:** There were two interviewers in that round. In the starting, everyone gave their introduction and then the interviewer directly jumped on to coding. 2 coding questions were asked in this round. I had to discuss the approach clearly and write a neat and clean code for this. The code should cover all the edge cases.

1. [Sorted Array to Balanced BST.](#)
2. [Given a matrix of \xe2\x80\x99s and \xe2\x80\x98s, replace \xe2\x80\x99s with \xe2\x80\x98s if surrounded by \xe2\x80\x99s.](#)

I solved both the problems and wrote a clear code for both of them. He asked me about the complexities of both the solutions.

**Interview round 2:** We had an introduction in the starting then the interviewer started with a coding question. The question was: There is a scientist, and he has to perform experiments on some virus. But he can perform the experiment if there is only 1 virus. Given number of virus between [1,10^18], find the minimum number of steps to reduce the number of viruses using the below steps:-

1. Add or subtract 1 to the virus count.
2. May reduce the size by half if the count is even.

I solved the problem using recursion very easily and use memoization to optimize the code. The interviewer asked me to write the code and he was impressed by the approach I used.\xc2\xab0

He then asked about the complexity of the code, and we had a very good discussion on this. The interviewer then asked me about the DNS resolution process, the difference between MAC address and IP address, what are class A/class B/ class C IP addresses.

He then asked me about thrashing, virtual memory, caching, and real-life example of caching. I

answered all of them properly and then at the end the interviewer asked some behavioral questions based on my past work experiences.

**Interview round 3 (Hiring Manager round):** For the starting 45 min, we discussed my work in my previous company. We had a detailed discussion about my projects in the previous company. He asked some behavioral questions in between based on those experiences. He was very much impressed by my previous work and then in the last 15 min, he asked me a coding problem.

The problem was a variation of Stock Buy and Sell to maximize profit. I initially gave him a brute force approach, and then he asked me to optimize it. I optimized it, and then he asked me to write code for it and at the end, we discussed the complexity of the algorithm.

**Interview round 4 (Bar raiser round):** A senior engineering manager at Amazon took this round. For the starting 30 mins, he asked about my previous works and again some behavioral questions. After this, he gave me a coding question. The question was:

1. Given a graph, I had to find whether the given graph is a tree or not.

I discussed the approach clearly and then wrote a clean code for it.

**Result:** Selected

**Tip:** Prepare DSA well for the coding rounds from GFG or leetcode. You should be able to write neat and clean code. Also, Amazon looks for leadership skills in its employees, so be prepared for behavioral problems as well. They ask a lot of behavioral questions too.\xc2\xab

Be prepared with CS subjects like DBMS, Computer Networks, and OS.

Good luck!

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# Amazon Interview Experience for SDE-1 | Off-Campus 2020

- Difficulty Level :\n[Easy](#)
- Last Updated :\n23 Dec, 2020

A recruiter contacted me through email if I was interested in applying for the SDE-1 role, I sent my resume and waited for further notice. I received an email to take up a Hackerrank Test within a week.

**Online Coding Test:** Coding challenge (2 scenarios) and Coding approach (elaborate why you code the way you do) \xe2\x80\x93 105 minutes: One question based on Two-pointer approach with extra use of hashmap, one was simple iteration with finding min in every loop. ( Tip: Solve all coding questions from interview experiences of GFG and LeetCode.)

1. **Workstyle survey 15 minutes:** Remember the answers you choose, questions do get repeated
2. **Feedback survey 5 minutes:** The Toughest of all (PS: Just Kidding!)

## Technical round 1:

**Preparation:** Watched a lot of DP youtube videos, solved questions from Amazon Interview Experiences in GFG.

1. 2 Coding questions:
  - Easy Graph application problem, Optimise it using DP, further optimise space by removing unnecessary data.
  - Easy Data Structures problem using hashmap and a counter.

**Tip:** Use sensible variable names, talk it out aloud. Modularise code into functions if needed.

## Technical round 2:

**Preparation:** Watched a lot of Mock interview YouTube videos of FAANG companies, solved questions from Amazon Interview Experiences in LeetCode.

1. 2 Coding questions:
  - Find the kth the smallest element in an array.
  - Binary Search tree problem(GFG medium level)
2. 2 Behavioural Questions

**Tip:** Give as many approaches as possible, explaining which do you prefer and why.

## Technical round 3:

**Preparation:** Nothing Much

1. 1 Coding question: LRU Cache Implementation
2. 3-4 Behavioural Questions on Amazon\xe2\x80\x93 LP: Google It!

## Technical round 4 (Hiring Manager Round):

1. 1 Coding question: Implement Hashmap with a function that returns the order of insertion of <key, value> pairs into it.
2. 3-4 Behavioural Questions on Amazon\xe2\x80\x93 LP

### 3. Few Basic Questions on OS, DBMS

**Result:** Selected \xf0\x9f\x98\x89

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# Amazon Interview Experience for System Development Engineer (On-Campus Dec 2020)

- Last Updated :\\n19 Dec, 2020

**Round 1(Mettl 1 Hr 30 Mins):** The assessment consisted of 9 components like software testing, SQL/database, algorithms, Linux, pseudo code, data structures, coding, and networks.\xc2\xxa0

1. **The coding section had a single question:**\xc2\xxa0Count Derangements (Permutation such that no element appears in its original position)

32 students were shortlisted out of 804 students, of which 8 were selected for the system development engineer role.\xc2\xxa0

**Round 2(Amazon Chime and Live code 1 Hr 10 mins):**\xc2\xxa0I was really nervous when the interview began, but the interviewer was a very nice person he started with his introduction, and then we moved on to mine, I was totally comfortable with this time.\xc2\xxa0

He started discussing one of my projects (A safe file sharing system based on Linux) and asked a few questions where ever he felt like.\xc2\xxa0

**Then we moved on to live code, questions asked:**

1. \xc2\xxa0<https://leetcode.com/problems/two-sum/>. I solved it using an unordered map, in which I traversed the array two times he asked if can do it in one traversal, I was able to provide an efficient solution then he asked about space and time complexity, at the end he was satisfied by my approach.\xc2\xxa0
2. In order traversal of a tree without recursion. I solved it using recursion first, he asked me to explain the concept of recursion and function call stack then he asked me to do it without recursion, I was not able to code it but I explained a two-stack approach to him which again I was not able to finish, he was really nice about this and told me not to worry and moved on to the next question.\xc2\xxa0
3. **Scenario-based question:** One of my projects involved managing a site, so he asked me, how would I handle if my site got huge traffic and I had to manage a lot of data, I told him how I\xe2\x80\x99ll manage the database using indexing and database sharding if database sharding is implemented will the data be at a single server or distributed servers, which I was able to explain to him, and he was satisfied by my answer.\xc2\xxa0
4. **OS questions:** spooling and a few others I can\xe2\x80\x99t recall.\xc2\xxa0
5. **Networking questions:** Explain the OSI model\xe2\x80\x99s all layers with protocols of each layer, what are protocols of the transport layer, explain what is TCP and UDP, explain how the TCP mechanism works.\xc2\xxa0

How would you find network errors in transmission, and what type of errors are there, I told him we could analyze ICMP packets in pcap files in Wireshark , and told him about various errors like zero window, dup ack etc.\xc2\xxa0

Linux: He asked me all the Linux commands I could think of and explain their use, I was able to give him 10-15 commands with their use, he then asked about chmod, read and write permission, how they look and what denotes what in read and write permission structure, I was able to explain everything, and he was satisfied by my answer.\xc2\xxa0

**Other questions:\xc2\xxa0**

1. What are immutable objects, the difference between overriding and overloading, what is operator

overloading, the difference between run time and compile-time polymorphism, except immutability I was able to explain everything else with an example? [xc2\xa0](#)

- He then explained what immutability meant.\xc2\xao
  - First-round ended he asked if I had any questions for him, to which I asked a few, after a wait of 2 hrs 8 students were selected from 32, and I was one of them.\xc2\xao

**Round 2 : (Amazon Chime and Live code 50 mins):** He started with his introduction and then asked me to give mine, which I did, while I was explaining he stopped me in between and asked a few questions on one of my projects as he was not clear about the practicality of it, I explained it again in a different manner, by the sound of it he was not much satisfied. He then proceeded to live code :\xc2\xa0

## **Coding question:** Given an array list of the

for example (abc,96,24),(cdb,34,23) sort this based on the age of the student.

For this, I was able to provide an  $O(n \log n)$  solution using the map.

He asked me what does an auto variable mean, how map sorts its keys, difference between map and unordered map\x80\x99s working, and write down output for each iteration, then later he asked time complexity and space complexity of the code, I was able to explain everything, and he was satisfied.\xc2\xao

## Other questions:\xc2\xa0

1. How would you check if a site is reachable?\xc2\xa0
  2. What is DNS, explain how it works.\xc2\xa0
  3. What happens when I type amazon.com in the URL
  4. Explain TCP/IP and a 3-way handshake, what is SYN, ACK packets\xc2\xa0
  5. How does an API work, explain how a search query works on espncricinfo website\xc2\xa0

I was able to answer all the questions and explain in a well-structured manner.\xc2\xao

**Scenario-based questions:**\xc2\xa0How will you rectify a broken site or a site that is not reachable? I told him that we\xe2\x80\x99ll get a status code on the broken site and then I explained to him about different status codes like 1xx,2xx,3xx,4xx,5xx what each of these meant, and how we can possibly know what and which side is causing the error, and based on the deduction rectify it. He was pretty satisfied with my approach.\xc2\xa0

Let us say your Linux server is running slow how would you deduce what is causing it and how will you rectify it, I told him about monitoring the resources using htop command in Linux and seeing which resource is being used more, since the server is running slow it is safe to assume that the server is running slow due to high CPU usage and based on this we can make some tweaks in the configuration file, he asked what tweaks exactly to which I was not able to answer as I was not sure, he said it's fine and told me that he's done with my interview and asked if I had any questions for him.

I asked a few questions and that was it.\xc2\xa0Next-Day a partial result was declared 3 students were selected, and I was one of them and the only one for the system development profile.\xc2\xa0

**Verdict: Selected.\xc2\xa0**

**Tips:** \xc2\xa0

1. Always be honest with your interviewer.\xc2\xa0
  2. Feel free to ask the interviewer for any hints or suggestions, interviewers at amazon are extremely helpful and nice.\xc2\xa0
  3. Try not to get overwhelmed by others\xe2\x80\x99 interview experiences, just give your best and

- don't worry about the results.
- 4. Believe in yourself and your abilities even if no one else does.
  - 5. Think and speak, ask for extra time, don't blabber.

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# Amazon Interview Experience for SDE-Intern | On-Campus 2021

- Difficulty Level :\n[Medium](#)
- Last Updated :\n17 Dec, 2020

I am a final year BTech student at USICT, GGSIPU. Amazon visited our university for the role of SDE Intern (6 months).

**ROUND 1 (Online Assessment Test):** Initially, an online assessment test was conducted to shortlist candidates for the interview process.

Online test consists of four sections:

**Debugging:** This section had 7 debugging problems, which consist of code snippets that have some logical error that needs to be rectified. I solved all 7 problems. They were very easy.

**Reasoning Ability:** This section consists of some verbal reasoning questions and some aptitude questions. The question level was easy.

**Coding:** This section consists of 2 coding problems.

- My first question was a simple matrix problem which I solved within 3\xe2\x80\x935 minutes.
- The second question was to determine if a given tree S is a valid subtree of a tree T. I solved this problem as well.

The final section was a kind of survey or behavioural analysis. It consists of various work or behaviour related questions.

Around 30 candidates were shortlisted from my campus and over 150+ candidates were shortlisted from the university, and I was one of them. Then my first round of interviews was scheduled. I was pretty nervous before the interview.

**Round 2 (Technical Interview):** My interviewer introduced himself in the beginning and asked for my introduction.

1. The first question he asked was Product Array Puzzle. It was a simple problem that I was able to solve after a little thinking. <https://www.geeksforgeeks.org/a-product-array-puzzle/>
2. The second problem he asked about was an Asteroid collision problem. I tried to solve this problem. Thought of various approaches but was not able to solve this problem. I told one of my approaches to the interviewer, after discussing my approach, finally, he asked me to code the solution. My approach was not that straight forward as a result I was not able to code it properly, and he was not satisfied with the solution. <https://leetcode.com/problems/asteroid-collision/>

The interview was time-bound and I took most of my time solving the second problem leaving me no time to move forward.

Finally, the interview was over and as I knew already, I was not selected for the second round.

**PS:** I solved my second problem within 5 minutes after the interview was over. Maybe I just got nervous and thought too much. It was a simple problem with a straight forward and easy approach (using stack)

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# Amazon Interview Experience for SDE-2

- Difficulty Level :\n[Expert](#)
- Last Updated :\n14 Dec, 2020

## Round 1 (Problem Solving+Behavioural 1hour):

1. Given a list of employee-manager pairs, count the hierarchy for an employee.  
<https://www.techiedelight.com/find-employees-who-reports-to-manager/>
2. [Return the largest multiple of 3 from the given array.](#)

### Behavioural:

1. Most challenging Project
2. An example where you did something innovative

## Round2(Problem Solving+Behavioural 1hour)

1. Find a path b/w two villages. (Couldn't recall the exact question)
2. [Find the missing number in a sorted array](#)

### Behavioral:

1. You seek customer feedback and it helped
2. Something challenging you took out of your responsibility, what was the outcome
3. An instance where the customer came up with unreasonable demands and you pushed back

## Round 3(System Design + Behavioural 1hour):

Q1. Design a system which receives signals from a set of sensors and display a bitmap on a screen for a given area. An area can have 1000 sensors in 100sq km.\xc2\x9a0

## Round 4(Hiring Manager 1hour):

Discussed past work, some behavioral questions, and low-level design of a bus booking platform (Similar to MakeMyTrip for Buses)

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# Amazon Interview Experience for SDE-1(On Campus)

- Difficulty Level :\n[Easy](#)
- Last Updated :\n10 Dec, 2020

**Round 1 (Online Assessment 2hr 30min):** The assessment consisted of four components, a code debugging section (20 minutes), a coding test (70 minutes), a work styles assessment (20 minutes), and a reasoning ability section (35 minutes).

## Coding test questions:

1. Given a number x, and a row-wise and column-wise sorted matrix, check if x exists in the matrix or not.
2. Given a linked list, create a copy of that linked list and return a pointer to the head of the new linked list.\xc2\xa0

## Round 2 (Online Interview 30 mins):

1. A small discussion on trees and graphs
2. Given a directed graph, check if it is a tree or not. Write complete clean code.

## Round 3 (Online Interview 1 hr):

**Interviewer:** Select any one of your projects, we will then discuss it.

Did a detailed discussion on the project. The interviewer asked many technical details related to approach, implementation, results, etc, and non-technical questions like, \xe2\x80\x9cwhat was the most challenging part\xe2\x80\x9d. This took 30 minutes.

**Design question:** We have a system where logs are continuously being generated. Say, a few logs every minute. Each log will have a timestamp. Log type can be an error, info, etc. We are only interested in error logs. The error can be also of many types.\xc2\xa0

```
Timestamp\xc2\xa0 log type      sublog type noOfInstances
7/12/2020 12:35:00 Error\xc2\xa0 abc\xc2\xa0 2
7/12/2020 12:36:25 Error\xc2\xa0 xyz\xc2\xa0 3
7/12/2020 12:36:25 Info \xc2\xa0 pqr\xc2\xa0 2
7/12/2020 12:37:20 Error\xc2\xa0 xyz\xc2\xa0 1
```

At any time we want to fetch Error types and their number of instances in the last t minutes from the current time. \xc2\xxa0The value of t depends on the query. In addition, you should be able to tell the error name with the highest number of instances in the last t minutes.

Interviewer, then further asked to tell the top k error name with the highest number of instances in the last t minutes.

Few more small questions like \xe2\x80\x9chow will you store data\xe2\x80\x9d, \xe2\x80\x9chow will you do this\xe2\x80\x9d, etc

## Round 4(Online Interview 1 hr):

1. Given a binary tree, Convert it to its mirror tree. I wrote a recursive function whose return type was void. The interviewer further asked to write one more solution, using a non-void return type function. Then a small discussion comparing both approaches, recursion-stack, worst and avg case time complexities, etc

2. Given a BST, a node value, and an integer K. Print all nodes which are at distance K from the given node. Nodes at distance K from a node can be in all 3 directions. The left path, the right path, path via parent. The interviewer further asked to do the same question for the Binary tree.

I was able to answer all questions and write error-free clean code in one go. I got the offer \xf0\x9f\x99\x82

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# Amazon Interview Experience

- Difficulty Level : \n[Medium](#)
- Last Updated : \n04 Dec, 2020

Amazon visited our campus in October 2020. The process consisted of 4 rounds overall. (1 test and 3 interviews)

**Online Round:** The first round is an online test which consisted of aptitude, 2 coding questions(in 1hr), workstyle assessment, and some other sections.

The overall difficulty of this round is easy. Amazon repeats coding questions. So make sure you are familiar with the questions they usually ask. I got the Favorite genre(google it) problem and subtree check problem(given roots of 2 trees, check if one is a subtree of the other).

You need to pass all the test cases to even be considered by amazon.

Out of ~400 students, 51 got shortlisted after this round. Many students who did both the coding questions were not shortlisted. So, do aptitude well just to be on the safe side. Amazon took our interviews on December 1 on Amazon Chime and the code also needs to be written on some amazon platform. The code is written won't be compiled. The interviewer manually checks the code.

There were 3 rounds of online interviews. All rounds started with a 'Tell me about yourself'. The questions are as follows

**First Round(Technical):** LRU Cache implementation with a special focus on edge cases.

**Second Round(Technical):**

1. Projects discussion
2. Given a number, convert it to roman numeric form.
3. Given a binary 2D array whose rows are sorted, find the row with the maximum number of 1s. (Required complexity is  $O(m + n)$ )

**Third Round(Technical + HR):**

1. Given a list of pair of numbers, return a list of pairs which do not have an intersection with any other pair.
2. OOPS
3. Projects discussion
4. HR questions( Why amazon, do you take calculated risks, and other common hr questions)

All the questions were worded differently. I just mentioned the crux of all the questions. Also, make sure to read up on amazon's leadership principles and answer HR questions accordingly.

6 students were given the offer at the end.(including me )

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# Amazon Interview Experience for SDE-1

- Difficulty Level :\n[Hard](#)
- Last Updated :\n02 Dec, 2020

I got this opportunity during the COVID time and hence all the interview rounds were conducted on Amazon Chime (video call) and I had to write the code on LiveCode (a shared IDE) which was visible to both me and the interviewer.

**First Round (Online Test):** Online assessment consisting of 4 sections conducted on the AMCAT platform.

1. **Code Debugging:** 7 questions C/C++/Java (20 minutes)
2. **Workstyle Assessment:** (20 minutes)
3. **Reasoning Ability:** 24 questions (35 minutes)
4. **Coding:** 2 questions (70 minutes).
  - [Merge two sorted linked lists.](#)
  - [Clone a linked list with next and random pointer.](#)

**Second Round:** First, the interviewer asked me to introduce myself. Then he directly jumps to coding questions.

1. [Trapping Rainwater.](#) Firstly I gave him a brute force solution then the interviewer asked me to write an optimized solution.
2. [Reverse a Linked list.](#)

This round went for around 1.25 hours and I solved both the questions.

**Third Round:** After a formal introduction, the interviewer directly jumps to coding questions.

1. Given a matrix consists of 0 and 1, find the distance of the nearest 0 for each cell.
2. The distance between two adjacent cells is 1. <https://leetcode.com/problems/01-matrix/>

At the end, the Interviewer asked some questions on Projects and this round went for around 65 minutes, and I was successful in solving this question with the optimized approach.

**Fourth Round (Technical + Behavioral):** Started with an introduction and then moved on to a detailed discussion about the project.

1. What was my role?
2. What Problems I had faced while making the project?

## Behavioral Questions:

1. Tell me a situation where you worked on a tight deadline
2. Tell me a situation where you took a decision

And then he asked me one coding question:

1. Find the closest pair from two unsorted arrays having equal or unequal size.

**Question is similar to this:** <https://www.geeksforgeeks.org/given-two-sorted-arrays-number/>

## x-find-pair-whose-sum-closest-x/

This round went for around 1 hour and for the behavioral questions you need to follow the STAR (S \xe2\x80\x93 situation, T \xe2\x80\x93 task, A \xe2\x80\x93 action, R \xe2\x80\x93 result) method.

Verdict: Selected \xf0\x9f\x99\x82

### **Tips:**

1. For coding interviews, you will first need to explain your approach verbally and then if the interviewer is satisfied with the runtime complexity, he will ask you to write the code with proper syntax. You will not have to take input, just take the input as function parameters, and write the complete logic in the function). Practice explaining your approach.
2. For behavioral questions, find the set of questions [https://leetcode.com/discuss/interview-question/437631/Amazon-Leadership-Principle-\(Behavioral\)-Questions](https://leetcode.com/discuss/interview-question/437631/Amazon-Leadership-Principle-(Behavioral)-Questions). Here is a nice simple blog explaining the process of behavioral interviews at amazon (<https://interviewgenie.com/blog-1/interviewing-at-amazon-behavioral-interview-questions>)
3. Make a list of tasks that you did
4. For every question try to fit those tasks into the situation
5. For every question be ready with at least two tasks.

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## Amazon Interview Experience for SDE Internship(On-Campus)

- Difficulty Level :[Hard](#)
- Last Updated :[27 Nov, 2020](#)

**Amazon Online assessment.** So this round was held on the platform called AMCAT. The questions were repetitive and most of the things that were asked were available on the Internet.

So this round had 4 Parts:

1. Debugging
2. Aptitude
3. Behavioral
4. Coding

The coding round was pretty simple, some questions that I encountered were:-

1. [Create a copy of the Linked List containing Random Pointers.](#)
2. [Search in a matrix that is sorted Row -Column wise.](#)
3. [Bridge in a graph.](#)
4. <https://leetcode.com/discuss/interview-question/373006>

All the questions were easily available on the Internet. \xc2\x80

**Technical Interview 1:** Approx 2500 people gave the first online round and only 161 students got the opportunity for the interview. So my interview was held after a week of the declaration of the online round result.

I joined the meeting on Amazon chime, interviewer directly asked me to join the live coding platform on which he gave me my first coding question.

He told me to tell him an optimal approach, and only if he will be satisfied with my approach, I will be allowed to write the code. I told him my approach, although he gave some hints to get me to the right approach.

**Question 1:** [Given array nums of n integers and an integer target, are there elements a, b, c, and d in nums such that a + b + c + d = target? Find all unique quadruplets in the array which gives the sum of the target.](#) \xc2\x80

Notice that the solution set must not contain duplicate quadruplets.

**Input:** nums = {1,0,-1,0,-2,2}, target = 0\r\n**Output:** [[-2,-1,1,2],[-2,0,0,2],[-1,0,0,1]]

It was based on DP on trees, the first approach that I told him was a brute force approach, He wanted me to do this in O(N) so within 4-5 mins, I was able to figure out a solution. So I had to code these in 45 \xe2\x80\x93 60 mins including the discussion on the approach and time complexity. \xc2\x80

It was an amazing experience overall I faced these problems for the first time, and I was almost able to get it right. It was an amazing feeling, Super Satisfactory.

**Question 2:** [Given the root of a binary tree, find the maximum value V for which there exist different nodes A and B where V = |A.val \xe2\x80\x93 B.val| and A is an ancestor of B.](#)

8\r\n / \\\r\n 3 10\r\n / \\\r\n 6 14\r\n / \\\r\n 4 7 13

**Technical Interview 2:** This was a great round though I was not able to perform well. The interviewer was very friendly and was just observing what I was thinking while approaching the question.

So in this round too he directly asked me to join the live coding platform. Then he gave me one question to solve, I asked him whether he wants to hear my approach to which his reply was NO, \xc2\x80

He told me that he is excited to see how I will approach the problem. In this round he wasn't even expecting a proper code without bugs he was only interested in knowing my thought process and how I approach the problem.

**Question 1:** [You are given a string of numbers. You have to return a partitioned String Array in which substring \(i-1\)th +\(i-2\)th = ith substring.](#) \xc2\x80

If not possible return an empty string array.

**For example:**

**Input:** \r\n111122335\r\n**Output:** \r\n1 1 1 1 2 2 3 3 5\r\n**Input:** \r\n\r\n**Output:** \r\n

So I gave a Backtracking solution for the first question. The time complexity was high and I wasn't able to reduce it(Though I coded the backtracking solution correctly).

**Question 2:**

B, C, D reports to A\r\nE, F, G reports to B\r\nH, I report to C\r\nJ, K, L reports to H\r\nM, N reports to K\r\nO, P reports to M\r\n

**Input:** \r\nEmp1: O\r\nEmp2: M\r\n**Output:** \r\nC

This was the second question nothing else was given. I had to figure out what I have to do with this.

He told me that I have to design a Data structure to hold all this information and make a proper program to show how I was going to store values in the Data Structure.

After that solve the question for the given input.

In place of A, B, C, D etc there can be a Unique ID for each employee and there can be unlimited people reporting to one person. For the second question, I build an N-Ary Tree for the solution, basically, the output was the Least Common Ancestor of the input values.

So I made a program for the whole structure with whole Input and Output (Including how I will put the given data into the Data Structure). \xc2\x80

I wasn't able to reduce to time complexity of the solution he asked me to solve this in O(1) or O(N).

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# Amazon Interview Experience for FTE | On-Campus 2020(Virtual)

- Difficulty Level :\nHard
- Last Updated :\n27 Nov, 2020

**Online Coding Round:** 2 Coding questions based on tree and graph.

## Round \xe2\x80\x93 1 (60 Minutes):

1. In a range of m and n print all the numbers having consecutive difference 1 between digits. (3 Approach)
2. Arrival and Departure of the train is given, you have to calculate the minimum number of Stations(2 Approach)

## Round \xe2\x80\x93 2 (60 Minutes):

1. Given an array of candidates of a marathon, such that for every a[i], a[i] comes before i+1.(2 Approach)  
If a[i]= -1, that means a[i] is the winner.\xc2\xa0  
Output the array with the ranking of candidates
2. Minimum number of Steps Knight will require reaching x,y position in infinite size Chess Board(2 Approach)

## Round 3 \xe2\x80\x93 (1 hr 45 Minutes):

1. Tell me About Yourself
2. Given a String having 0 and 1. Have to convert that string such that all 0 comes first and all 1 comes after 0 in a minimum number of flips

\xc2\xa0Ex.\xc2\xa0

00001000110111 output->2

3. Symmetric Tree(2 Approach)
4. \xc2\xa0kth largest element in running stream.(2 Approach)
5. Sorting(merge, Heap)
6. Heap sort Implementation
7. Thrashing
8. Deadlock
9. Polymorphism
10. Run-Time Polymorphism vs Compile Time Polymorphism (Example)

11. Inheritance vs Composition (Example)

12. TCP vs UDP

13. SQL vs NO SQL

14. Reason for Deadlock to occur

15. What happens when you type www.facebook.com

**They took only 1 student and I can't make it.**

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# Amazon Interview Experience for SDE-1 Internship

- Difficulty Level : \n[Medium](#)
- Last Updated : \n26 Nov, 2020

Amazon came for On Campus Recruitment for SDE Internship in September 2020 to our university.

Students of B.Tech CSE, IT, ICT, MCA, and M.Tech CSE with CGPA 6 and above and no standing arrears were allowed. Totally 546 students wrote the online test which was on the AMCAT platform.

## Online Test:

The online test consisted of 4 sections:

1. Debugging (C, C++, Java, Python in any of the language \xe2\x80\x93 20 mins time and it was pretty straight forward)
2. Coding (2 questions) \xe2\x80\x93 90 minutes -These were the questions I got:
  1. [Given an array A\[\] and a number x, check for pair in A\[\] with sum as x.](#)
  2. [Check if a binary tree is subtree of another binary tree](#)
3. Psychometric test \xe2\x80\x93 not timed \xe2\x80\x93 had some behavioral questions
4. Aptitude and logical reasoning

From this 48 students got selected for the 1st F2F interview and 1(that was me) got selected for both the 1st and 2nd F2F interview.

**1st F2F interview:** The interview happened in the Amazon Chimes app. So first the interviewer gave an introduction of himself and asked for my introduction.

Then he asked to solve 2 coding questions

1. [Level order traversal in spiral form.](#) I failed to give optimal solutions using a double-ended queue and I lost my hopes here.
2. [Connect n ropes with minimum cost.](#) I solved this question with the normal and optimal solution, and then discussed the complexities. The interviewer was satisfied with the solution to this question.

**2nd F2F interview:** The interviewer asked for an introduction and discussed the projects and technologies used from my Resume.

Then 2 problems were asked for coding.

1. Given a matrix filled with 0 and 1, 0 representing empty land and 1 representing an office building, find the optimal position to build a house such that the sum of the distance to all the offices is minimum.
2. [Count ways to reach the n\xe2\x80\x99th stair.](#) I solved both the questions, and we discussed the complexity and solutions.

After this, he asked some situation based questions and managerial questions.

6 people were offered internships.

**Tips:** Going through the problems in Geeks for Geeks tagged with Amazon is more than enough for cracking this interview. We have to be thorough with different approaches and the optimal approach.

Should know the complexities of the solutions given. If you don't have much time past Amazon interview experiences will help you. Finally stay calm and don't panic, present yourselves with full confidence.

All the best !!!

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# Amazon Interview Experience

- Difficulty Level :\n[Easy](#)
- Last Updated :\n26 Nov, 2020

**Round 1:** Around 10 easy level questions on debugging.

Then 2 coding questions

- Longest Palindromic Substring
- Variation of closest K pair. You just have to identify the question.

3-behavioral type questions around 50

**Round 2(Interview on Amazon Chime):** I had lost all the hopes of an interview? Because there was no notice for further rounds. After the amount the notice came. I was one of the students who was selected for interviews.

At the time of the Interview, my internet connection got cut. HR called me and reschedule my interview. At the time of the interview, there was a problem in earphones. The interviewer was not able to hear me properly. He gave me some time and I took earphones from my friend.

Finally, the interview started First, he asked me about myself. Then told me that we first discuss the approach then move to code.

Then he gave me a question\xc2\xa0

- Implement a LIFO data structure that has Push, POP, Get middle element, Delete middle element functions.

He was very friendly whenever there is a clash he was giving me chance to speak.\xc2\xxa0

I first started with the array approach then he asked Can we use a Linked list? Then I told some the approach with the Linked List and he also asked me the advantage of using LL. In the meanwhile, I realized that we could not get the correct answer after deleting some elements if I use LL. So I told him about DLL. He again asked me about the Time and space complexity of using DLL.

He was verifying each and every step.

The discussion went for around 40-45 minutes. We discussed all the approaches.\xc2\xxa0

Then he asked me to write readable code.

- I wrote then he verified the code. There was a silly error in the delete middle element function. He told me about that.

In the end, he gave me the opportunity to ask questions I asked two. Then the interview ended.

The result came after 15 days.

**Verdict:** Selected

They judge only on the basis of skills. So be calm and confident during the interviews. Tell whatever approach comes to your mind.

All the best.

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## **Amazon Interview Experience for SDE-1 (1 year Experienced)**

- Difficulty Level :\nEasy
  - Last Updated :\n24 Nov, 2020

I got this opportunity during the COVID time and hence all the interview rounds were conducted on Amazon Chime (video call) and I had to write the code on LiveCode (a shared IDE) which was visible to both me and the interviewer.

## **First-round (Online Test)**

- There is a matrix containing 0,1 and 9. You need to start from the top left and reach the cell containing  $\text{\xe2\x80\x98}$ . There is only one such cell containing 9. You can move on to the cell containing  $\text{\xe2\x80\x98}$ . A cell containing  $\text{\xe2\x80\x98}$  is an obstacle and you have one jump which you can use to cross the obstacle. We need to find the minimum number of steps required to reach the cell containing  $\text{\xe2\x80\x98}$  from the top left of the matrix. (I applied BFS and it worked for me)
  - There is a list of Amazon orders, with each of them being represented by a string. Each of the strings was of the format  $\text{\xe2\x80\x98}$ . We need to sort these based on a few priority conditions.

**Solution:** I used the sort function of C++ STL and wrote a custom comparator function)

## **Second Round:**

- Given an input string and q number of operations that need to be performed on it. There are three types of operations.
    - reverse the string
    - insert the input character (here `\xe2\x80\x98a\xe2\x80\x99`) in the front of the current string
    - insert the input character (here `\xe2\x80\x98a\xe2\x80\x99`) in the back of the current string

**Solution:** Firstly I gave the approach using a doubly-linked list, but he wanted to use the same string variable to perform operations instead of making a DLL. As the insertion in the front on the string is a costly operation, so we can keep the front insertions in a vector and when all the operations are completed we can then make a string out of those characters and add a prefix to the current string in which all the reverse operations and insertions at the back has been performed.

Also we need to maintain a `\xe2\x80\x98flag\xe2\x80\x99` which is toggled based on the reverse operation (as soon as there is an operation of type `\xe2\x80\x981\xe2\x80\x99` (reverse), toggle the value of flag)

\* Case 1: flag == false  
\xc2\xa0 \xc2\xa0 \xc2\x0\xe2\x80\x93 front operation: needs to be added to the front\_vector  
\xc2\xa0 \xc2\xa0 \xc2\x0\xe2\x80\x93 back insertions: insert the character at the back of the original string (concatenation)

\* Case 2: flag == true  
 $\backslash xc2\backslash xa0 \backslash xc2\backslash xa0 \backslash xc2\backslash xa0\backslash xe2\backslash x80\backslash x93$  front operation: insert the character at the back of the original string (concatenation)  
 $\backslash xc2\backslash xa0 \backslash xc2\backslash xa0 \backslash xc2\backslash xa0\backslash xe2\backslash x80\backslash x93$  back insertions: needs to be added to the front, vector

Also, before generating the final string, you need to check if the flag is true means the string is reversed, so based on that you need to generate the output string ( I missed this case, when the interviewer pointed out I incorporated this).

### Dry Run Example:

abc -> input string( lets say \xe2\x80\x98s\xe2\x80\x99)

5 -> number of operations \xc2\xa0 \xc2\xa0

1 \xc2\xa0 \xc2\xa0 -> \xc2\xa0 \xc2\xa0 \xc2\xa0s = abc ( front\_vector {}, flag= true) \xc2\xa0  
2 2 a \xc2\xa0 \xc2\xa0 -> \xc2\xa0 \xc2\xa0 \xc2\xa0s = abc ( front\_vector {a}, flag= true)  
2 1 b \xc2\xa0 \xc2\xa0 -> \xc2\xa0 \xc2\xa0 \xc2\xa0s = abcb ( front\_vector {a}, flag= true)  
1 \xc2\xa0 \xc2\xa0 -> \xc2\xa0 \xc2\xa0 \xc2\xa0s = abcb ( front\_vector {a}, flag= false)  
2 1 x \xc2\xa0 \xc2\xa0 -> \xc2\xa0 \xc2\xa0 \xc2\xa0s = abcb ( front\_vector {x,a}, flag= false)

Front insertion string: xa

Output (Final string): xaabcb

\xc2\xa0

- <https://www.geeksforgeeks.org/find-the-farthest-smaller-number-in-the-right-side/>

This round went for around 1.25 hours and I solved both the questions.

### Third Round:

- Merge two sorted linked lists (<https://www.geeksforgeeks.org/merge-two-sorted-linked-lists/>)
- Trapping rainwater problem (<https://www.geeksforgeeks.org/trapping-rain-water/>)

This round went for around 1 hour and I solved both the questions.

### Fourth Round (Hiring Manager):

- Started with an introduction and then moved on to a detailed discussion about the project with my current employer which included
  - What was my role?
  - What components did I work upon?
  - How were the components tested?
  - What was the size of the user base?
  - How were the bugs reported and handled
- Behavioral Questions:
  - Tell me a situation where you worked on a tight deadline
  - Tell me a situation where you took a decision
  - Tell me a situation where you worked for a client requirement and delivered it within the deadline.

This round went for around 1.25 hours and for the behavioral questions you need to follow the STAR (S \xe2\x80\x93 situation, T \xe2\x80\x93 task, A \xe2\x80\x93 action, R \xe2\x80\x93 result) method.

### Fifth Round (Senior Dev Manager):

- Started with an introduction, a brief discussion about the project with the current employer
- Anagram (<https://www.geeksforgeeks.org/check-whether-two-strings-are-anagram-of-each-other/>). \xc2\xa0 solved the question quickly but there were few exceptional \xc2\xa0cases which can be handled and this will reduce the complexity for them. As the interviewer pointed out the cases, I incorporated the changes in the code, and he was satisfied.
- Behavioral Questions:

- Tell me a situation where you worked on a tight deadline
- Tell me a situation where you went out of your comfort zone to learn and delivered something.

This round went for around 45 minutes.

**Verdict:** \xc2\x80Selected \xf0\x9f\x99\x82

### Tips:

- For coding interviews, you will first need to explain your approach verbally and then if the interviewer is satisfied with the runtime complexity, he will ask you to write the code with proper syntax. You will not have to take input, just take the input as function parameters and write the complete logic in the function). Practice on explaining your approach.
- For behavioral questions, find the set of questions [https://leetcode.com/discuss/interview-question/437631/Amazon-Leadership-Principle-\(Behavioral\)-Questions](https://leetcode.com/discuss/interview-question/437631/Amazon-Leadership-Principle-(Behavioral)-Questions). Here is a nice simple blog explaining the process of behavioral interviews at amazon (<https://interviewgenie.com/blog-1/interviewing-at-amazon-behavioral-interview-questions>)
  - Make a list of tasks that you did
  - For every question try to fit those tasks into the situation
  - For every question be ready with at least two tasks.

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# Amazon Interview Experience for SDE-1 (2 Years Experienced)

- Last Updated : \n 23 Nov, 2020

Applied for SDE-1 @Amazon through Jobs Portal for Bangalore Location. Total 5 rounds (all Online) were taken including Written Test. Below is my experience.

## Round 1 (Written Test 1.5 hours):

### 2 coding questions:

1. Don't remember the exact question but it was String-based Custom Sorting.
2. Given an M\*N chessboard find minimum steps for the knight to move from the given source to destination.

## Round 2 (Technical 1 hour):

Introduction + Project Intro + 2 coding questions:

1. Given 2 strings with R, G, B letters calculate hits & pseudo-hits (same letter at same index in both Strings => Hits & same letter at different indexes => pseudo-hits. Hits not to be counted in Pseudo-hits)
2. LRU-Cache

**Round 3 (Behavioral + Technical 50 min):** Introduction + Project Intro + Situation based questions + 1 coding questions:

1. Tell me a time when you had to deliver a feature in less amount of time.
2. Given a chance how would you like to change your project workflow for a Better User Experience?

(2 more situation based questions I don't remember)

### Coding Question:

1. Given an Infinite String of R, G, B letters rearrange string such that all R's come before all G's and B's (We have to do in 1 pass as it is infinite)

**Round 4 (Behavioral + Technical 45 min):** Introduction + Project Intro + Situation based + 2 coding questions:

1. What technologies do you use in your project? Why is that best for the project?
2. Why did you choose that approach for the feature delivery (1 one of the features I had implemented)?

### Coding Questions:

1. Convert Ternary Expression to Binary Tree
2. Distribute Candies

**Round 5 (Behavioral + Technical 1 hour Bar Raiser with Sr. Manager):** Introduction + Project Intro + Situation based + 2 coding questions:

1. Tell me a time when you disagreed with your teammate.
2. Tell me a time when your manager gave you negative feedback. What did you do after that?

### Coding Questions:

1. Given an M\*N matrix consisting of 1 person in every cell, there is Covid Person in between. Find the minimum time it takes for the whole matrix to get infected. Infected Persons can infect persons to their Left, Right, Top & Below.
2. Follow-Up Question: Count the same when there are multiple Covid infected people in the matrix.
3. Reverse Linked List in size of K.

2 days after BR I was informed I have been selected \xf0\x9f\x99\x82\xc2\xa0

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# Amazon Interview Experience for SDE Internship (Off-Campus)

- Difficulty Level :\nBasic
- Last Updated :\n20 Nov, 2020

I applied through Amazewit (collective industry wide initiative looking to shape the talent landscape and help women make better career choices) and the eligibility criteria for the role was CGPA should be above 6.5/10 and no backlogs and it was for girls of session 2021-2022. The students who were eligible got a test link which consists of 4 sections. The test was held on AMCAT platform.

- **Debugging:** This portion of the online assessment was allotted approximately 20 minutes to complete and was asked to find bugs in seven pieces of code.\xc2\xaa0
- **Logical Ability:** There were 24 questions to be completed in 35 minutes. It was all based on qualitative aptitude such as blood relations, complete series, etc.
- **Coding:** There were 2 questions to be completed in a time span of 70 minutes. We were allowed to use Java, Python, C#, or C++. One question falls under Backtracking and another Hashing. The Questions were LeetCode Easy-Medium.
- **Work Styles Assessment:** This was built around Amazon\xe2\x80\x99s Leadership Principles, and typically took 10-15 minutes to complete.\xc2\xaa0

After around 10-15 days, I got a mail stating that I have cleared the online assessment, and they asked me to apply on their amazon. Jobs portal and after the resume shortlisting I got an email that I am selected for the interview. The interview was scheduled after a week and it was the last round to be selected for the internship.

Interview Experience: He asked me 2 questions one on LinkedList and another on Binary Trees and I need to code it up and also some questions around the Operating System.

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# Amazon Interview Experience for 6-Months Internship

- Difficulty Level : \n [Hard](#)
- Last Updated : \n 20 Nov, 2020

**Amazon** visited our campus (MNIT JAIPUR) for 6 months summer internship programs. Eligible branches were CS ,EEand ECE.

**Round 1:** Online assessment consisting of 4 sections conducted on the AMCAT platform.

**Code Debugging:** 7 questions C/C++/Java (20 minutes)

**Coding:** 2 questions (70 minutes)

1. [Merge two sorted linked lists](#)
2. [Check if a binary tree is subtree of another binary tree](#)

**Workstyle Assessment:** (20 minutes)

**Reasoning Ability:** 24 questions (35 minutes)

**Technical Round 1(90 minutes):** First, the interviewer asked me to introduce myself. Then he directly jumps to coding questions.

1.) [Median of Stream of Running Integers using STL](#)

Initially, I told him the brute force approach using insertion sort, explained to him its complexity. Then he told me to optimise it, I gave him solution using min\_heap and max\_heap. He seems to satisfy, and he told me to code it.

2) He gave me a tree and ask me to print its different views. He said u have a fixed time(30 minutes), have to code this approach.

- Left -view
- Right-View
- Top-View
- Reverse-Top View

3) Implementation Details of

- LRU cache
- LFU cache
- Mixture of LRU cache and LFU cache

Then he jumps to the operating system and asked me about paging, cache, and what the advantage of caching.

**Technical Round 2(50 minutes):** After a formal introduction, the interviewer directly jump to coding questions:-

Give me a situation of a company, where a hierarchy of manager. A manager can have a different number of employees who are working under him. Now, this employee can have a different number of workers who are working under that employee. This can be up to any level.

He told me to find the youngest common manager of two workers.

**Solution:** Basically it's a problem of finding a common ancestor in the n-array Tree.

Firstly I created an n array tree then gave him 2 approaches

- Using recursion
- First, find the path from the root to that worker and then compare the path and check the node just before the first mismatching node.

2) [How to find Lexicographically previous permutation?](#)

3) Maximum Profit using at-most k-transaction

<https://leetcode.com/problems/best-time-to-buy-and-sell-stock-iv/>

I gave him 2 solutions first one was using recursion and top-down approach and the 2nd one was using the bottom approach.

Finally, the result declared after 10 days and two students were selected for the internship. I was one of them.

Thank you Geeksforgeeks for helping me prepare for my interview.

This article is contributed by **Deepak Kumar**.

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# Amazon Interview Experience for 6-Months Intern (On-Campus)

- Difficulty Level :\nHard
- Last Updated :\n19 Nov, 2020

Amazon visited our campus(Tier-3) in October and asked us to apply for a job (They provide a Link for the portal). There\xe2\x80\x99s no resume screening for the OA round

**Round 1:** Online Assessment on Amcat (4 \xe2\x80\x99 sections)

- **Debugging Round**
- **Coding Round**
  - <https://leetcode.com/problems/critical-connections-in-a-network/>
  - <https://leetcode.com/problems/search-a-2d-matrix-ii/>
- **Logical Reasoning (easy questions)**
- **Workstyles behavior questions**

Around 40 students were shortlisted after this round

**Round 2 (Technical Interview):** Lasted for one hour. Nothing asked except tell me about yourself followed by 2 coding questions

1. Given an array, we need to do the following operations
  - **Operation 1:** Find the sum from the start index to the end index.
  - **Operation 2:** Update an element at a given index.

Solved using segment tree

2. Given a tree find if that tree is a max-heap or not

**Round 3 (Technical Interview):**

1. <https://leetcode.com/problems/best-time-to-buy-and-sell-stock-iv/>
2. Given a sorted array construct a minimal height BST

**Verdict:** Selected

4 people were selected from our college

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# Amazon Interview Experience for 6 months Intern (On-Campus)

- Difficulty Level :\nMedium
- Last Updated :\n17 Nov, 2020

Amazon conducted 3 rounds.

**Round 1:** An online assessment that consisted of 4 sections.

1. **Code Debug(20 mins):** It consisted of 6 questions. (Cakewalk)
2. **Work Style assessment(25 mins):** Questions based on Amazon leadership principles
3. **Coding(70 mins):** 2 coding questions
  - Count unique pairs in an array that sum to a given target:  
<https://www.geeksforgeeks.org/count-pairs-with-given-sum/>
  - Find if tree S is a subtree of another tree
4. **Logical ability(35 mins):** MCQ based aptitude questions

I was able to solve both the coding questions. 25 students were shortlisted for further rounds.

**Round 2:** Interview was held on Amazon Chime and LiveCode. The interviewer introduced himself and asked me for the same. After that, 2 coding questions were asked.

1. Implement a LIFO data structure that has the following operations: Push, Pop, GetMiddle, DeleteMiddle.  
 I discussed the brute force approach using array along with the time complexities of all functions. Then, he told me to improve the time complexity of DeleteMiddle function. So, I told an approach to use HashMap. The interviewer said to make my own hashmap instead of relying on language. I was not able to come up with a solution. I was asked to code.
2. Pattern-based question:

```
1\r\n11\r\n21\r\n1211\r\n111221\r\nn\r\n
```

I was not able to recognize the pattern.\xc2\xab0

**Round 3:** Interview was held on the same platform. I introduced myself. 3 coding questions were asked in this round.

1. Given an integer array, find all the numbers which don't have a greater element on its right.  
 I explained brute force solution and time complexity(TC: O(n^2), SC: O(1)). The interviewer asked to improve time complexity. I told an O(n) TC solution with O(n) space. We moved on to the next question. I coded the solution.
2. Given an array of stock prices, perform 2 queries.
  - Change the value of the stock at ith index
  - Find minimum stock price within a given range
 I told brute force solution with O(1) and O(n) TC respectively. I was not able to tell the optimal solution for the second query.
3. HOD of your college is supposed to give gifts to students.  
 Input Parameters: n(number of students), List of edges representing friends, k(cost of a gift)  
 If HOD gives gifts to student A, he will also have to give gifts to all the students whom A considers as his/her friend. If A considers B as his/her friend, it's not necessary that B considers A as his/her friend. Find the minimum cost HOD will have to spend.

For example, if A\xe2\x80\x99s friend is B and B\xe2\x80\x99s friend is C, 3 gifts have to be given.

I told a solution based on DFS. I was asked to code. After explaining the code, he said there\xe2\x80\x99s also an optimal approach. But, we were running out of time. So, he asked if I had any questions.

5 students were selected.

**Verdict: Rejected**

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# Amazon AWS Interview Experience for Cloud Support Associate

- Difficulty Level :\nEasy
- Last Updated :\n12 Oct, 2021

\xe2\x80\x9cDuring our hiring meetings, we ask people to consider three questions before making a decision\xe2\x80\x9a Will you admire this person?\xe2\x80\x9a Will this person raise the average level of effectiveness of the group they\xe2\x80\x99re entering?\xe2\x80\x9a. Along what dimension might this person be a superstar?\xe2\x80\x9d  
\xc2\xa0Jeff Bezos

Hello Everyone, I am extremely happy to get selected for the role of **Amazon AWS Cloud Support Associate** in October 2020. The work location was Hyderabad. We had a pool campus drive consisting of some well-reputed Institutions from around Visakhapatnam. I am from Vignan\xe2\x80\x99s Institute of Information Technology. I would love to share my experience and would be glad if it can be of any help to anyone aspiring for the same role in the future. Since we were amidst a pandemic, the entire selection process happened Virtually.

We were given a comprehensive syllabus to prepare from, consisting of topics listed below.

## Computer Networking:

- Difference between router, switch.
- What is a Broadcast Domain?
- DHCP DORA process
- DNS \xe2\x80\x93 detailed explanation. TCP/UDP and why?
- Subnetting
- MSS/MTU
- Complete flow when you trigger\xc2\xa0amazon.com
- OSI model with complete details and protocols on each layer.
- TCP and SSL handshake
- Difference between TCP/UDP, examples
- Flow/error control
- What is a firewall, why do you need it?
- OSI Model

## Operating Systems:

- OS boot process (Win/Linux)
- Memory management, Memory pages, Buffer, and Caches, Basic commands
- System date/time management, network time protocol
- Managing Users and groups
- File permissions
- Managing software \xe2\x80\x93 installation, uninstall, upgrade, etc.
- Managing system services and background processes
- Remote management of a system \xe2\x80\x93 SSH, RDP, etc.
- Network protocols \xe2\x80\x93 FTP, HTTP (web servers), SMTP (mail server)
- System automation \xe2\x80\x93 cron, batch jobs, windows startup tasks

**First Round: Online Examination. ( No web proctoring and No negative marking)**

The round consisted of 4 stages.

- **Stage 1:** Job simulation. We were given various scenarios with simulated customer emails and were asked to rank the effectiveness of various measures we would take in response to such scenarios. In my opinion, the main purpose of this round was to test how the candidate would assess the importance and the response to a given scenario.
- **Stage 2:** Technical MCQs. The major topics were from Computer Networks, CCNA, and Operating Systems.\xc2\xab
- **Stage 3:** Psychometric and Behavioral test. It tests your personality and attitude.
- **Stage 4:** Personal Experience and Interests in various fields. We were given a list of topics like Networking, Databases, Deployment, Backend Support, Data Analytics, etc. and were asked our expertise in them and what topics interest us the most.

### **Second Round: Technical Review 1. ( Online Video Call via Amazon Chime)**

It was a Technical Interview involving mostly Operating Systems concepts. My interviewer was very supportive and had a jovial demeanor. It took 1 hour.

Asked me to introduce myself and if I was comfortable in Windows or Linux Operating Systems. I chose Linux.

1. Booting Process in Detail.
2. Booting Process troubleshooting.
3. Bootable Device not found. Troubleshoot it.
4. SSH connection troubleshooting.
5. How do you check which ports are listening?
6. The device is slowing down, Troubleshoot it.
7. Commands to check for CPU Utilization.
8. TOP and SAR command in detail.
9. Paging Concept.
10. What are System calls?
11. Explain about fork().
12. Explain the Process life cycle or Process States.
13. How to check for Disk Free space.
14. I have disk space available but the file is not getting created. Why?
15. Explain the importance of inodes.
16. The device is Heating up. Troubleshoot it.
17. How do PING and TRACERT commands work?
18. Explain what happens when www.amazon.com is clicked.
19. Explain DHCP DORA Process.
20. Write a program for printing the permutations of a string.

### **\xc2\xabThird Round: Technical Review 2. (Online Video Call via Amazon Chime)**

It was a Technical Interview involving mostly Computer Networks concepts. My interviewer was really helpful in guiding me towards the solutions for the questions whose answers I had trouble arriving at. It took around 1 hour.

1. Introduce yourself.
2. Explain DHCP and DORA processes in detail.
3. What is APIPA?
4. Which messages are Broadcast and Unicast in DORA? Why?
5. Different types of IP Address allocations in DHCP.
6. Will my computer get the same IP address allocated every time?

7. Role of the Router in the separation of Broadcast Domains.
8. DNS Query Process.
9. What happens if we type www.amazon.com. This time, the interview went into depth about the process of questioning various aspects.
10. What are ports and port numbers?
11. Do different tabs making queries in the browser use different port numbers?
12. TCP handshake in detail.
13. Problem on Sequence numbers and Acknowledgement numbers.
14. What is SSL. Explain about Digital Certificates and TLS Handshake.
15. Problem on IP Addressing at the sender, gateway and destination.
16. Packet Tracing.
17. How do we check IP address and Gateway and DNS Server addresses of our device.

#### **Fourth Round: Managerial and Human Resources (HR) Round. \xc2\x80(Online Video Call via Amazon Chime)**

I had a very cool and friendly interviewer who asked me to address her by her name. She was very co-operative and engaged in a very friendly talk. She made sure I was very comfortable.

1. Introduce Yourself.
2. Detailed discussion about Projects.
3. Tell me about a time when you handled a task within tight deadlines.
4. Tell me about a time when you failed a deadline.
5. Tell me about a time when you did something out of your comfort zone.
6. Tell me how you handled non-supportive team members in your team.
7. Tell me about a time when you had to take a decision on the spot.
8. Tell me about a time when you had to take critical feedback.
9. Asked me about my interests in competitive programming.
10. Explain Competitive Programming.
11. Tell me about a time when you spent a lot of time in solving a problem.
12. Tell me about a time when you didn't get the solution even after putting in effort.
13. Did you ever ask your peers for help when you were stuck.
14. How did you develop interest on Competitive Programming.
15. How comfortable are you with learning new concepts.
16. How adaptable are you with entering the Networking sphere.
17. Any Questions for me?

After the long grueling process, I got selected for the role. A total of 9 members got selected from my college which was the highest number for any institution participating in the drive. It was a very innovative, interesting and challenging process.

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# Amazon Interview Experience for SDE Intern+PPO (On-Campus)

- Last Updated : \n16 Nov, 2020

**Amazon** visited our campus in September 2020, for the position of **SDE-Intern** and **PPO**. The eligibility criteria were 70% throughout for 10th, 12th, and B.Tech. Around 500 students were eligible for the online round.

**Round 1 (Online Round):** The online round had 4 sections:

- **Reasoning Ability:** 35 minutes (easy-medium)
- **Workstyle and behavioural assessment:** 20 minutes (easy)
- **Code Debugging:** 7 questions to be debugged in 20 minutes (easy-medium)
- **Coding questions:** There were 2 coding questions.
  1. [Search in a row-wise and column-wise sorted matrix.](#)
  2. [Clone a linked list with next and random pointer.](#)

The analytical questions were easy, and I was able to solve them all. I was able to debug all 7 questions in under 10 minutes. The coding question had 60 minutes allotted. I was able to solve both questions.\xc2\xab0

Only 79 students got selected for the interview rounds.\xc2\xab0

**Round 2 (First Technical Interview Round at Amazon Chime):** The interview directly started with coding questions and no introduction. I was sent a link to an online editor to write the code.

1. [Count distinct elements in every window of size k.](#)
2. [Convert a given tree to its Sum Tree](#)
3. [Trapping Rain Water](#)

The interviewer wanted to discuss the approach before moving to the code. I started with brute force approaches and then gave the most optimal solution. For the first question, I missed an edge case in the code and the interviewer gave me some hints. I was able to fix the code. I was able to write the code for the second question in one attempt. For the third question, it took me some time to figure out the approach and after some discussion, I arrived at a solution with linear time and space. I wrote the clean code in one attempt. Later, I was told to optimize the space. After 5-7 minutes of thinking, she told me we have to hard stop here as we were running out of time. The interview went for around 1 hour 30 minutes.

21 students got selected for the next interview round.

**Round 2 (Second Technical Interview Round at Amazon Chime):** It started with small introductions and discussions on projects. He asked me questions about React and API calls which were implemented in my project. The discussion went for around 20 minutes, and we moved to coding problems.\xc2\xab0

1. [A Product Array Puzzle.](#)
2. [Asteroid Collision](#)
3. A very big random scenario was given. The problem statement was not clear to me but after a lot of discussions, it was a simple question of DFS/BFS.

I discussed all the brute force approaches first for all questions and then proceeded to give

optimized solutions. I was able to solve the first question. I missed an edge case in the second question and the interviewer was not satisfied with my solution. I also thought that my solution is incorrect, and we moved to the next question. I was able to solve the third question after discussion and some hints.

Later after the interview when I checked my solution for 2nd question, it was just 4 more lines of code to be written to handle that edge case.

**Result:** Rejected, 9 students got selected for internship offer of 6 months from January 2021

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## Amazon Interview Experience for SDE-1 | 6-Months Intern (On-Campus)

- Difficulty Level :[Medium](#)
- Last Updated :[17 Sep, 2021](#)

**Round 1:** An online assessment that consisted of four parts:

- **Code Debugging:** 7 questions to be debugged in 20 minutes. (easy-medium)
- **Coding Test:** 2 coding questions to be solved in 70 minutes. (medium)
- **Workstyles assessment:** 20minutes
- **Reasoning ability:** 35 minutes (easy-medium)

38 members were shortlisted for the interviews.

**Round 2:** It was a technical interview for 1 hour. The interviewer gave her an introduction and asked about me. Then I was given the following questions.

1. <https://www.geeksforgeeks.org/word-break-problem-dp-32/>. Asked me to discuss the time and space complexity of my approach and then to code.
2. <https://www.geeksforgeeks.org/trapping-rain-water/>. I was able to solve this easily and discussed the time and space complexity.

Around 12 members were shortlisted for TR-2

**Round 3:** It was a technical interview for 1 hour. After a brief introduction the interviewer asked the following question:

1. Given a binary tree, return the sum of all the nodes whose Kth parent (Kth ancestor) value is even. Where  $0 < K < 10^7$ .

**Example:**

K=2  
8 / \ 2 3 / \ 4 5 7 \ 6 1

- The 2nd ancestor of 4 , 5 ,7 is 8 and 8 is even
- The 2nd ancestor of 6 is 2 and 2 is even
- The 2nd ancestor of 1 is 3 and 3 is odd

Finally, I wrote a code with linear time complexity using post-order traversal.

VERDICT: **SELECTED**

**THANK YOU SO MUCH GFG TEAM!**

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## Amazon Interview Experience for Internship 2021 (On-Campus)

- Difficulty Level :[Medium](#)
- Last Updated :[03 Nov, 2020](#)

Amazon visited our campus (NIT Jamshedpur) in September 2020. Around 120 candidates were shortlisted for round-1.

**Round 1:** This round was an online coding round held on AMCAT. It consisted of 4 sections.

1. **Code Debug (20 mins):** It had 7 questions which were quite easy.
2. **Coding (70 mins):** It consisted of 2 coding questions.
  - **Question 1:** Merge two sorted linked lists.
  - **Question 2:** Given a list of N packing crates in the facility, any of which is a candidate to be moved to the new facility. The truck is initially at the origin of capacity M. Return the list of M locations closest to the truck.
3. **Work Styles Assessment (10-15 mins):** It was based on amazon leadership principles.
4. **Logical ability (35 mins):** 2 MCQs based on aptitude

30 candidates were selected for the next round.

**Round 2(One-to-One Interview)** We were provided an amazon chime link for the meeting. First of all, the interviewer introduced himself and asked me to introduce myself. Then he asked me 2 coding questions.

1. Given 2 strings a and b. a represent the first lane in which vehicles move from left to right. The b represents the second lane in which vehicles move from right to left. Vehicles can be B (bike), C (car), T (truck). collision will occur only between two trucks. Find the probability of collision.

**Example:**

```
a = TCCBCTTB\r\nb = BTCCBBTT\r\ntotal number of collisions=7\r\nProbability of collision = 7/36
```

First I gave the simple solution (time complexity: O(N), space complexity: O(N) ), he told me to write the code and then asked me the optimised approach. So I gave a constant space and linear time complexity algorithm and improved the earlier code.

2. Given a binary tree having unique values and an array arr of integers. Return a list of root nodes of every component of the tree after deleting the nodes which are present in arr. I told the O(N) time complexity approach then he asked me to code it. We discussed the edge cases, and I was able to write the full code. He seemed satisfied at this time and asked me to give the brief intro of the project I mentioned in my resume within 30 seconds.

Then we had a 5-10 minute discussion on the questions I asked him. The interviewer was very friendly.

I was expecting to be shortlisted for round-3, but 10 candidates(including me) were offered an internship after the round-2 itself.

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# Amazon Interview Experience for Internship (On-Campus)

- Difficulty Level : \n[Medium](#)
- Last Updated : \n01 Nov, 2020

I am a 3rd-year B.tech student at NIT Jamshedpur. Amazon visited our campus for Internships.

**ROUND 1:** The first round was an online round, and there were 4 sets in this round.

1st set was the code debugging round and there was approx 6-7 code. 2nd round was the coding round and was also quite easy, 3rd was the aptitude round and the last round was the behavioral questions round.

**The 2 coding questions in the online round were:**

1. [Merge two sorted linked lists](#)
2. There was a 2d matrix with each cell containing a value. we have to consider all paths to reach from the top-left cell of the matrix to the bottom-right cell. We can move in the only bottom or right direction And we have to consider 1 minimum value cell in all paths and then we have to find the maximum all those minimum values.

**Example:**

array a[3][3]

```
7 10 6
8 5 11
3 4 9
```

Here all possible paths is (7->10->6->11->9), (7->10->5->11->9), (7->10->5->4->9), (7->8->5->11->9), (7->8->3->4->9), (7->8->5->4->9). so here minimum cells in these paths were 6, 5, 4, 5, 3, 4. And so the maximum of these is 6. so 6 is the answer. I solved this with the use of a dp table, by observing i got the relation  $dp[i][j] = \max(\min(a[i][j], dp[i+1][j]), \min(a[i][j], dp[i][j+1]))$ .

**ROUND 2 (Face to Face):** This was the final round. there were a total of 2 questions. First, he introduced himself to me and his role in the company, and then he asked me to introduce myself. After that, he jumped straight into the coding questions

1. This question was quite difficult to interpret at first because I think the interviewer was testing that can I implement a data structure here. the question was:- There is an ant colony with n ants. And there will be a total of m interactions between ants. So, ( a colony will be good only if all the interactions were between opposite genders). We have been giving the interactions between ants, and we have to find out whether this colony can be good or not. for eg:-

**Input:** \r\n3 3 \r\n1 2\r\n2 3 \r\n1 3

So there are a total of 3 ants and 3 interactions. ant 1 interact with ant 2, 2 with 3, and 1 with 3. we have to tell whether this colony can be good or not. So here this colony cannot be good, as 1 interact with 2 and 3, so the gender of 2 and 3 should be the same, but 2 and 3 also interact so there is no possible way for this colony to be good

I solved this by implementing a graph in this question and used the concept of bipartite components in this question.

2. [Next Greater Element](#)

**VERDICT: SELECTED**

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## Amazon Interview Experience for SDE | 2-Months Internship(On-Campus)

- Difficulty Level :[Hard](#)
- Last Updated :[01 Nov, 2020](#)

Amazon visited our campus (NIT Jamshedpur) on 3rd October. It consisted of 2 Rounds ( 1 Online Assessment and 1 Technical Interview)

**Round 1:** Round 1 was an online assessment that consisted of four parts:

1. **Code Debugging:** 7 questions to be debugged in 20 minutes.(**Difficulty** [Easy](#))

2. **Coding Test:** 2 coding questions to be solved in 70 minutes.

1. [Longest Common Subsequence](#)

2. Given a matrix with r rows and c columns, find the maximum score of a path starting at [0, 0] and ending at [r-1, c-1]. The score of a path is the minimum value in that path. For example, the score of the path 8 2 86 92 4 2 86 92 5 2 86 92 9 is 4. Don't include the first or final entry. You can only move either down or right at any point in time. (<https://leetcode.com/discuss/interview-question/383669/>)

**Example:** xc2xa0

**Input:** [[1, 2, 3], [4, 5, 1]]  
**Output:** 4

1 -> 2 -> 3 -> 1

3. **Workstyle assessment (Scaling your ability with respect to different situations and characteristics):** 20 minutes

4. **Reasoning ability:** 35 minutes

Out of 150+ students, 30 students were selected for round 2. I was one of them.

**Round 2:** Technical Interview (It was held on 25th of October)

First, the interviewer introduced himself and told me to introduce myself. Then he jumped to coding questions as given.

1. There was a family of ants. We need to find if it is a GOOD or BAD family. (Note: A GOOD family is that in which all the interactions between the ants takes place in opposite gender)

xc2xa0  
**Input :** 3 3 (3 ants, 3 interactions)

1 2 (1 interacts with 2 and vice versa)

2 3

The interviewer just showed me the questions and didn't tell anything else, even though I asked him to explain. I have to find the output of the above test case and code accordingly. xc2xa0After 10 mins of thinking, I told him that if we can divide the graph into two parts then we can say that the family is GOOD else BAD. (<https://www.geeksforgeeks.org/bipartite-graph/>)

He asked me to proceed with the code and I wrote the code on the given text editor then he checked it and didn't say anything and moved to the second question.

xc2xa0

2. The second question was to find the distance between the two farthest nodes in a graph.

I told him the brute force approach, he asked me to optimize my code. I tried to optimize the code, but he told me that we were running out of time and if I have any questions. I asked one question about the scope of Deep Learning on Amazon. And then we left the meeting and the interview was over.

xc2xa0

The result was announced on the very next day. **Among 30 students 10 were selected** for the internship and thankfully I was one of them.

Though I didn't receive any acknowledgment from the interviewer neither he explained the question much but I gave him the best answer I could, and I was pretty confident and satisfied with my given answers in the limited time.

Will suggest you prepare and give your 100% and leave the rest. All the very best!

xc2xa0

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# Amazon Interview Experience for SDE-1 FTE (On-Campus)

- Difficulty Level :\nHard
- Last Updated :\n22 Feb, 2022

Amazon visited our campus for SDE-1 FTE hiring. There were a total of 4 rounds (1 Coding Test+3 Technical Interviews)

**Round 1 (Coding Test):** This round had 4 sections, debugging, coding, Workstyle Assessment, and aptitude. Debugging and aptitude were easy and didn't even require any preparation. You just need to be a little quick in all these rounds.\xc2\xab0

In the coding round, 2 random questions were chosen for everybody from this pool of questions.

- <https://leetcode.com/discuss/interview-question/344650/Amazon-Online-Assessment-Questions/>

Try all the questions in the new and old sections.\xc2\xab0

## Round 2 (Technical Interview 1):

1. [Two nodes of a BST are swapped, correct the BST.](#)
2. Given a number N, count the number of arrays that can be constructed such that the sum of elements is N. One constraint is that each element should be greater than 3.\xc2\xab0

### Example:

**Input:** 6\n**Output:** 2\n**Possible arrays:** [3, 3], [6]

I gave the recursive solution. They wanted the time complexity of that solution. which was something like  $(N-6)^{(N/3)}$ . Then they asked for the optimized solution of the same using DP.

## Round 3(Technical Interview 2):

1. Given 2 numbers N and M count the number of set bits in them. He first asked me to make a function that returns the number of set bits of a number, then asked to code the solution. He wanted the most optimized solution something like this. <https://www.geeksforgeeks.org/count-total-set-bits-in-all-numbers-from-1-to-n-set-2/> Which I was not able to give.
2. Given dependencies like A->B, C, D and B -> D and D -> E. Print the ordering of the tasks. for ex E D B C D A. I came up with the topological sort solution <https://www.geeksforgeeks.org/topological-sorting/>. He wanted to look for all the edge cases and check if the code was perfect. I found the case when there are circular dependencies and changed the code accordingly.
3. Then he asked for a few OS and networking questions like the Difference between semaphore and mutex, the Difference between TCP and UDP, and what is Banker's algorithm. Then he jumped to my CV and asked about the Internship I did.

## Round 4(Technical And Managerial):

For me, the round was only for 45 minutes.\xc2\xab0

1. Given a binary tree find the level with maximum nodes and give the sum of nodes at that level. He wanted me to use just the queue and nothing else, and then he asked to optimize it as the tree is huge. Then he asked for the time complexity of the same. I missed one edge case in this.
2. Tell me about a time when you were faced with a complex problem and what solution you came up with? Then he asked if I could have done anything different and better.

3. Tell me a time when I had to process a lot of data in a small amount of time? Again asked if I could have gone for any different approach.

Check this for more details. [https://www.amazon.jobs/en/landing\\_pages/in-person-interview](https://www.amazon.jobs/en/landing_pages/in-person-interview)

In the end, there were 8 students who gave 4 rounds and 6/8 were selected including me

**Note:** They were very serious about the time complexity of every algorithm. Prepare for the behavioural questions, and read about leadership principles and STAR format, mentioned in the above link.

They wanted the runnable code for every question also covering all the edge cases.

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## Amazon Interview Experience for 6-Months SDE Internship

- Difficulty Level :[Hard](#)
- Last Updated :[27 Oct, 2020](#)

**Round 1: Online assessment** consisting of 4 sections conducted on the AMCAT platform.

1. **Code Debugging:** 7 questions C/C++/Java (20 minutes)
2. **Coding:** 2 questions (70 minutes)
3. **Workstyle Assessment:** (20 minutes)
4. **Reasoning Ability:** 24 questions (35 minutes)

In the coding section, the questions were,

1. [Search in a row-wise and column-wise sorted matrix.](#)
2. [Copy a linked list with a random pointer.](#)

Around 16 students cleared the test out of 185.

**Round 2 (F2F Technical Interview):** This was held on Amazon Chime(A video calling platform) and the interview lasted for 1 hour.

1. First, the interviewer asked to introduce myself, and then he shared about his role and projects he's working on. It was a 2-3 minute formal introduction and went straight to the coding question.
  2. You are tasked to develop a simple search engine that also takes care of correcting the spelling mistakes and shows the words matching the given word in the dictionary. (It is also given that user can make at most one spelling mistake)
- Input:** D = ["abc", "bcd", "ad", "ab"]  
**User:** 1. "bbc"\r\n Return ["abc"]\r\n 2. "bb"\r\n Return
3. He asked me to explain the approach first.
  4. Firstly, I shared a brute force approach and gave time and space complexities. I was asked to optimize.
  5. I shared a little optimized approach. The interviewer was expecting the most optimized solution.
  6. Finally, I told the trie data structure solution, and then I was asked to code it.
  7. I started coding the solution in the live coding environment and had a continuous talk with the interviewer discussing various edge cases and possibilities. He helped me a lot and was very friendly.
  8. I linking a GFG article for reference but the solution needs to be modified: [Trie-Insertion-and-search.](#)
  9. We then made a dry run through the code and found a bug and fixed it and also discussed Complexities.
  10. This took so much time, the interviewer was satisfied with the code and asked me if I have any questions.
  11. I was asked only one question but some of my friends were asked 2-3 questions in total.

**Round 3 (F2F Technical Interview):** This was also held on Amazon Chime (A video calling platform) and the interview lasted for 1 hour. The round started with a brief introduction from both the interviewer and me (after around 15 mins another interviewer joined in). He directly headed towards the coding questions.

1. **Asteroid Collision** (<https://leetcode.com/problems/asteroid-collision/>)

We are given an array of asteroids of integers representing asteroids in a row.

For each asteroid, the absolute value represents its size, and the sign represents its direction (positive meaning right, negative meaning left). Each asteroid moves at the same speed.

Find out the state of the asteroids after all collisions. If two asteroids meet, the smaller one will explode. If both are the same size, both will explode. Two asteroids moving in the same direction will never meet.

- Started asking questions to clarify doubts on constraints.
- In a usual way first I shared a brute force approach and gave time and space complexities. I was asked to optimize.
- I gave an optimal stack solution and was asked to code it.
- I missed out edge cases which were later pointed out and I corrected the code.
- Dry run through the code and discussed Complexities.

2. **Single Element in a Sorted Array** (<https://leetcode.com/problems/single-element-in-a-sorted-array/>)

You are given a sorted array consisting of only integers where every element appears exactly twice, except for one element which appears exactly once.

Find this single element that appears only once.

- I shared the brute force approach and was asked to optimize.
- I gave 2 more approaches that were not the most optimized.
- Later I gave Binary Search Modification but couldn't complete the code and was stuck confused wasn't able to figure out what was going wrong.
- After a while, the interviewer asked me to switch to another question.

3. **Sum of all the numbers that are formed from root to leaf paths**

You are given a binary tree, where every node value is a digit (0-9). Find the sum of all the numbers which are formed from root to leaf paths. For example, consider the following Binary Tree.

```
\r\n      6\r\n      / \r\n      3   5\r\n      / \r\n      2   4\r\n      / \r\n      7   4
```

- I shared a solution and the interviewer asked me to explain the question asked.
- I was tensed for not finishing the previous code and misunderstood the question and gave an approach.
- Later I asked questions to clarify my doubts.

There are 4 leaves, hence 4 roots to leaf paths:\r\nPath

Number\r\n6->3->2

- I shared an approach and coded it which had bugs.
- Time was up and the interviewer asked me to stop and asked if I have any questions.

**Result:** Unfortunately, I did not clear the interview. Only 2 students were selected out of 16.

### Tips:

1. Before jumping into the solution, carefully listen and understand the question properly, and avoid any assumptions regarding the problem. Ask doubts and clarify every detail of the question.
2. Stay calm, positive, and focussed during the interview. (Don't talk with peers before the interview)
3. Be clear with your approach and try to consider all possible edge/corner cases.
4. Try to familiarize yourself with the time and space complexity of every part of your approach.
5. Be confident. If you are stuck somewhere the interviewer usually helps you out to find the right path. Just keep thinking aloud.

6. Interviews have a slight luck factor and kind of day dependency. Just be confident and solve all the problems with a positive attitude.
7. Practice questions from GeeksforGeeks and LeetCode and read recent interview experiences.
8. Don't get demotivated by rejections. Just do your best and improve every day, so you don't regret anything from the preparation side.

Some interviews just don't have a happy ending.

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## Amazon Interview Experience for 6-Months Internship (2020)

- Difficulty Level :[Easy](#)
- Last Updated :[25 Oct, 2020](#)

Recently Amazon visited our college Campus for SLI.

### Selection Process:

- Online Test: Code Debugging 7 questions
- 2 Coding questions
- Workstyle Assessment
- Aptitude

Followed by two Technical interviews on the Amazon Chime Platform.

**Online Round:** Coding questions were from these set of questions-

- Find if a tree is a subtree of another tree.
- Search in a row and column-wise sorted matrix.
- Bridges in a graph.
- Count all two sum pairs.

Around 280 students appeared for Online Assessment and 38 students were shortlisted for further rounds.

**Technical Round 1:** Rearrange an array such that positive and negative numbers are at alternating positions. Starting from a positive integer. If there are extra positive or negative numbers place them at the end.

- [Rearrange positive and negative numbers in O\(n\) time and O\(1\) extra space](#). Discussion about all approaches and time complexity of each.

**Technical Round 2:** Started with introduction and discussion on projects. Then 2 coding questions were asked.

1. [Given a string you have to remove k consecutive occurrences of a character.](#)

Example:`\xc2\xab0`

`string="abbbaa" and k=3. So output will be "" \r\nstring ="abbahjjjddj" and k=2. So output will be "h". \r\n`

2. [Min steps to reach the end.](#)

3. Discussion on time complexities for each problem.

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## Amazon Interview Experience for SDE | Off-Campus (1-1.5 year experienced)

- Difficulty Level :  
**Hard**
- Last Updated :  
22 Oct, 2020

**Round 1 (Online coding Round):** This round was held on Amcat. There were 2 coding questions.

- Given the 2D matrix. Each cell has a value 0 or 1. 1 represents land and 0 represents water. Find the Number of islands.  
**Example:** `\xc2\xa0\xc2\xd0`

**Input:** `1 1 0\r\n 0 1 0\r\n`      **Output:** `2\r\n 0 0 1`

**Approach:** DFS in 2D matrix and take a count of how many times you have to do DFS to cover all  $1 \times 2 \times 80 \times 99s$ .

- You have an array of logs. `\xc2\xd0`Each log is a space-delimited string of words. For each log, the first word in each log is an alphanumeric identifier. Then, either:

Each word after the identifier will consist only of lowercase letters, or;

- Each word after the identifier will consist only of digits.
- We will call these two varieties of logs letter-logs and digit-logs. `\xc2\xd0`It is guaranteed that each log has at least one word after its identifier.

Reorder the logs so that all the letter-logs come before any digit-log. `\xc2\xd0`The letter-logs are ordered lexicographically ignoring identifiers, with the identifier used in case of ties. `\xc2\xd0`The digit-logs should be put in their original order.

`logs = ["dig1 8 1 5 1",\r\n "let1 art can", "dig2 3 6",\r\n "let2 own kit dig",\r\n "let3 art ze`

**Approach:** Separate letter log and numeric log. Then sort letter log using own comparator then merge letter log and numeric log. After solving these questions there is a section where I have to write the approach in words and have to write time and space complexity. After that, there was a work-life survey and feedback survey section. After this round, I got the mail that I cleared the online coding round and wait until further communication.

After some weeks I got the mail and schedule three rounds of interviews in one day.

**Round 2 (online on Amazon Chime):** The first interviewer introduces herself then I introduce myself. Then She asked me two coding questions.

- One array is given with size N each index has one value  $\geq 0$ . This value represents how many maximum steps I `\xc2\xd0`can go further. I have to find a number of ways to reach the end of an array. If not possible then return -1.

**Input:** `1 2 1 4\r\n` **Output:** `2`

**Explanation:** `arr[0] = 1` so, I can only go to index 1  
`arr[1] = 2` so, from here I can go to index 2nd and 3rd.

`arr[2] = 1` from here I can go to index 3rd.

possible paths to reach at the end of the array: `0->1->2->3`

`0->1->3`

**Answer:** `2`

**Approach:** Start from the end and go to the indexes which are possible to go from the current index and take the sum of the number of ways to reach the end from that index. Do it of all indexes from right to left and you will get the number of ways to reach at the end of the array.

**Input:** `1 2 1 4\r\n` **Output:** `2 2 1 1`

**Explanation:** `\xc2\xd0`

- For 3rd index: it already ends so set as 1
- 2nd index: `arr[2] = 1` so, take the sum of index 3 from the answer and update the answer array `ans[2] = 1`
- 1st index: `arr[1] = 2` so, take the sum of the index `\xc2\xd0`and 3 `\xc2\xd0`from answer array `ans[1] = 2`
- 0th index: `arr[0] = 1` so, take the sum of index 1st from answer array. `ans[0] = 2`;
- At the end return `ans[0]`;
- Edge case  $N=1$  return 0.
- Time complexity:  $O(n^2)$ ;

- Given two values l and r. I have to find special numbers between l to r. Special Number: adjacent digit has an exact absolute difference of 1 special number: 10, 12, 21, 23

So, first I gave a brute force approach. Traverse l to r and check number is a special number or not. This approach takes time complexity  $O(n * (\text{number of digits}))$ . So, she asked me to optimize more. So, I gave some different approaches and in the end, I gave her a queue approach to solving this problem.`\xc2\xd0`

**Link:** <https://www.geeksforgeeks.org/stepping-numbers/>

**Round 3 (online on Amazon Chime):** In this round interviewer asked me 3 coding questions and some behavioral questions. It starts with my and interviewer's quick introduction.

- There is a 2d matrix of size NxM. Each cell has a positive value. from each cell, I can go only to diagonally right down or diagonally right up. I have to find the maximum sum path from the first column cell to the last column cell. `\xc2\xd0` gave the  $O(n^2)$  approach and she was satisfied with that.

**C++**

2. One array is given of size  $n$ .  $n$  is always even. There are two players A and B. For each turn, one player can take an element from the start or the end of the array. If a player takes one of the elements then it adds to the sum of that player and removes it from the array. Both players are playing optimally. Have to find the maximum sum achieved by player A.

First I gave to exponential approach using recursion the add memorization in it and make the top-down approach of DP. She was satisfied with my approach.

This is a similar question: <https://www.geeksforgeeks.org/optimal-strategy-for-a-game-dp-31/>

3. There is an array of string. All the string in the array is in camel case. The abbreviation of each string will be the capital letters of that string.\xc2\xa0

I have to make API that where input is as an abbreviation and have to return all strings in which abbreviation has input abbreviation as a prefix.\xc2\xao

## Example:

String array: \r\nGoodMorning\r\nGood\r\nGoodNight\r\nLightHouse\r\nAbbreviation of the above strings will be: \r\nGM

For this question, I gave two approaches. First using a map. Where I store the key as a prefix of an abbreviation and value as a vector of string which has this key as a prefix in its abbreviation.

The second approach I gave to use Trie Data structure. She asked me to implement a map approach and write space and time complexity.

After that, she asked some behavioral questions which are base on amazon leadership principles. This interview lasts around one and a half hours.

**Round 4 (online on Amazon Chime):** This interview was completely based on amazon leadership principles. The interview starts with my and interviewer's quick introduction. He asked about some situations which face in my current company and how I handle it and what was the outcome of that. This round was more interactive round. He asked me 2 small questions. First was what is thread and process and the difference between them. Then he asked me to explain hashmap and hashtable. I know that hashmap and hashtable is a concept of JAVA and my complete experience was C++. So he asked me to explain the difference between a map and an unordered map and its internal working. This interview lasts around 40 min.

After 2 weeks of 3rd round, I got the mail and set 4th round with Software Development Manager.

**Round 5 (Bar Raiser)(online on Amazon Chime):** The interviewer was Software Development Manager, and he had 9 years of experience on amazon. The interview starts with my and interviewer\x80\x99s quick introduction.\x20a0

1. There is one small toy shop which can contain Maximum X toys. The shop owner has contracted with a toy company that gave supply to the owner on a time basis. So, at one time when new toys arrived, it is possible that the total toys increased more than the limit X. So, the owner has to remove those toys which come first in the shop. The owner has the previous year selling data which shows how many time-specific toys were sold.

I have to make a data structure for two queries.

- When new toys arrived and the limit exceeds X then which toys will be removed.
  - Return max sold toy from last year's data. But that toy should be present in the shop.

For the first query, I suggest deque and map data structure and for the second query, I suggest a map and max\_heap data structure. We discuss this approach, and he was satisfied with my answer.

2. He asked me one coding question. There is one binary tree. I have to update the binary tree node value to the sum of the right subtree. Leaf nodes should be as it is.

C++

He asked me some behavioral questions based on amazon's leadership principles. We had a healthy discussion on every question. For each behavioral question, I have to explain the situation and each situation connects with the present company's project. He asked many queries and we discuss that.

After some days I got the mail that I've selected for the SDE-1 profile

#### Tips:

- Be interactive, as much as possible with the interviewer. If you don't know the solution to the question then tell the interviewer in which way you are thinking. Interviewers are very helpful if you interact with them they will guide you to the solution.
- Write clean and production-ready code and cover all edge cases. The interviewer checks your solution with test cases.
- First, give the brute force approach and then move to the optimized approach. For each question, they want an optimized solution

Thanks, GeeksforGeeks. It helped me a lot in preparation.

Best of Luck!

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# Amazon Interview Experience | 6-Months Intern for SDE-1 (On-Campus)

- Difficulty Level :\n[Hard](#)
- Last Updated :\n16 Oct, 2020

**Round 1:** Online Test, it was the first round with 4 sections.

1. Code Debugging test
2. 2 coding questions(70 min)
  - [Given an array A\[\] and a number x, check for pair in A\[\] with sum as x](#)
  - [Clone a linked list with next and random pointer](#)
3. Personality Questions
4. Logical Reasoning

Something which I observed and pointed out in round one was, the solution must be most optimized in the coding round and as questions were not with a higher difficulty level, thus must have been solved in lesser time. In my case, I finished the test half an hour before the allotted time.

**Round 2 (Technical Interview 60 min):** First, the interviewer asked to introduce myself. Then he asked about the projects I did. After an introductory discussion on projects, he gave me 2 coding questions on their personal live code environment.

He asked me to explain the approach first and then code it down. I had to explain the time complexity of each solution and optimal code if possible with lesser time complexity.

1. Given an array, make in-place replacement such that every element is replaced by its greatest element in right.
2. An array with multiple characters(may have more than one occurrences) given with a value K. Makes the minimum number of replacements in the array such that in the resultant array we have only K distinct characters(This question was asked as a word problem with some given conditions.)

**Round 3 (Technical Interview 120 min):** Similar to the first round there was a brief introduction from both sides. This round was coding plus the kind of HR. After 2 coding questions, I was asked to describe a tough situation which I faced while completing any project of mine, what was my target, what I did to overcome it, and what was the end result.

1. A sequence is given as [ T T T T B B B B B B B B B B \xc2\x80 T T ] where T denoted the number of TVs bikes and B denoted Bajaj bikes. Write code to count the number of Bajaj bikes in the garage in the most optimal way.

I solved it in O(log n) using binary search.

The second question was typical to understand. And I initially thought that I won't be able to solve it. But the interviewer was very friendly and cooperative. And he made me reach towards the answer with an optimized solution. I was asked to write a complete working function for this one.

2. You are given a bulk of data of 10Mbs and you have a 1Mb RAM available with you. How would you sort the complete 10 Mb of data using this RAM?

The first approach I explained it using merge sort. But it was not that optimized. I was also asked to explain the complexity of each function of the merge sort in every pass. This was something like merging N arrays.

At last, I gave a solution using heap with lesser time complexity, and the interviewer was satisfied by it in last.

15 students were selected among 38 in the interview rounds and I was one of them.

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# Amazon Interview Experience for SDE-1 | 6-Months Internship (On-Campus)

- Difficulty Level : \n[Medium](#)
- Last Updated : \n16 Oct, 2020

**Round 1 (Online Assessment):** This was conducted on AMCAT. It had 4 sections (total 2.5 hrs)

1. **Code debugging section** \xe2\x80\x93 7 questions, C/C++/Java (20 minutes)
2. **Coding section** \xe2\x80\x93 2 questions (70 minutes)
3. **Workstyle assessment** (20 minutes)
4. **Reasoning ability** \xe2\x80\x93 24 questions (35 minutes) \xe2\x80\x93 we could not skip and return to a question

38 students were selected for online interviews.

**Round 2 (F2F Technical Interview):** This was conducted on their own platform Amazon Chime (1 hr). First I had to give an introduction about myself. Then 2 coding questions were asked.

1. [Clone a binary tree with random pointer](#). I discussed the hashing approach, he then asked me to code it, then we discussed time complexity.
2. [Add all greater values to every node in a given BST](#). First I gave him brute force approach  $O(n^2)$ , then a better approach  $O(n\log n)$ , then reverse order traversal approach  $O(n)$ .

**Round 3 (F2F Technical Interview):** Again a brief introduction about myself. Then 2 coding questions were asked (1 hr).

1. **Rotten oranges** \xe2\x80\x93 [Minimum time required to rot all oranges](#).
2. **Peripheral traversal of binary tree** \xe2\x80\x93 [Boundary Traversal of binary tree](#).

15 students got the offer for an internship, I was one of them. \xc2\xab\xc2\xab

## Note:

1. Even if you are not able to give the correct solution, try to build your solution considering all the cases given by the interviewer. I did the same in one question and it really helped.
2. Amazon focuses only on DS Algo and its leadership principles.
3. They ask questions mostly on Tree, Graph, DP, Stack (in the decreasing order of frequency)\xc2\xab\xc2\xab

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## Amazon Interview Experience for SDE | 6-Months Internship (On-Campus)

- Difficulty Level :[Medium](#)
- Last Updated :15 Oct, 2020

Amazon visited our university (Thapar Institute) for **hiring interns** (6 Months internship) in the month of **September 2020**. The entire process was **virtual** due to the COVID pandemic. There was **no CGPA cut**. Branches allowed were CS, ENC, ECE, EIC, and EE. Around 600 students gave the test.

**1st Round (Online Test):** The test consists of four sections.

1. **Code debugging section (20 minutes):** 7 questions were there. We had to find the logical error in the given code snippet and to correct the same. This section was easy.
2. **Coding test (70 minutes):** 2 coding questions were asked and everyone had a different set of questions.
  - [To find an element in the row-wise and column-wise sorted matrix](#)
  - [To check whether one tree is a subtree of the second one or not](#).
3. **Workstyles assessment (20 minutes):** These were some behavioral questions.
4. **Reasoning ability section (35 minutes):** Around 24-25 MCQs were there Aptitude, Paragraph based Questions, Reasoning Questions.

After the test, **70 students** were shortlisted for interviews.

**2nd Round F2F Interview on Amazon Chime(1 Hour Long):** The interviewer went through my resume. Then, he directly jumped to coding questions. I was asked two questions in this round, and he wants me to write the code for the same on their own coding portal.

1. For an N-ary tree, print its apex. Apex is defined as the first and the last element at each level. Firstly he asked to code the function part only. Then, he asked me to write the full code that is to write the main function also.
2. For a string prints its previous lexicographic permutation. I wrote the code for this, and then he asked me for some optimizations in some parts of the code. In the end, he asked me if I have any questions.

About **60%-65% of the students** made it to the second interview.

**3rd Round F2F Interview on Amazon Chime(40-45 Minutes Long):** The interviewer went through my resume. Then, he directly jumped to coding questions. I was asked two questions in this round.

**Given a tree-like:**

1    \r\n       /       \\\r\n       2       3    \r\n       /       \\\r\n       /       \\\r\n       4       5     6       7    \r\n       / \\\r\n

Where the elements are continuous integers starting from 1. All the levels except the last one are completely filled. I have to check whether a given element exists in the tree or not.

- First I gave the approach for comparing each and every node with the given value using recursion. Time complexity O(n).
- He then asked me to optimize the solution (Expected time complexity O(log n)).
- I came up with the approach that we can check for the left-most node at each level as it is always a power of 2. But this didn't work out.
- Then, I saw there is a relation that **children of a node are 2^i and 2^{i+1}** and for every **node** its parent is  $i/2$ . So, if I want to search for 11, then I will start from 11 -> parent of 11 will be  $5(11/2)$  -> parent of 5 will be  $2(5/2)$  -> parent of 2 will be  $1(2/2)$ . So, I have to just traverse the path 1->2->5->11.
- Then, I wrote the code for this approach and the interviewer was satisfied with the code.

In the above tree, I have to find the maximum value present in the tree.

He asked to use the above approach for this question. So, I came up with this approach-

The maximum value node will always be present in the last level. So, the answer will lie in the range  $2^{\text{level}}$  to  $2^{\text{level}+1}-1$ . So, then apply binary search in this range and check whether the mid-value exists or not. Time complexity  $\log n * \log n$ .

In the end, he asked me if I have any questions. This interview ended.

**Got Selected.**

The results came the next day in the morning. A total of **17 students** were selected for an internship, and I was one of them :-).

I would like to thank Geeksforgeeks which really helped me a lot with the interviews.

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# Amazon Interview Experience for SDE Intern | On-Campus 2020

- Difficulty Level :[Medium](#)
- Last Updated :[14 Oct, 2020](#)

**Round 1:** Round 1 was an online assessment that consisted of four parts:

1. Code Debugging 7 questions to be debugged in 20 minutes.
2. Coding Test 2 coding questions to be solved in 70 minutes.
3. Workstyles assessment 20minutes
4. Reasoning ability 35 minutes

**Round 2:** Shortlisted students from Round 1 went through round 2 which was a technical interview Round.

The interview was held on Amazon Chime. The interviewer was very nice. After 2-3 minutes of introduction, he went straight to Coding questions. I was given a link to the code editor, and he explained to me the problems. The interview lasted approximately 60 minutes.

1. [Check if a binary tree is BST or not.](#) The interviewer asked me to first tell the approach. After I solved it, I was asked about the time and space complexities.
2. Given an array of strings containing only lowercase alphabets, return a string of 26 English lowercase alphabets in which the alphabets are in the same order as in the array of strings. The strings in the array do not contain repeating characters.

**Example:** abcdefghijklmnopqrstuvwxyz

**Input :** {"abc", "def", "qrs", "uvwxyz"}  
**Output :** abcdefghijklmnopqrstuvwxyz

The first round was only about two coding problems to test your knowledge of data structures and algorithms. I was not able to solve the second problem. I couldn't make it to the 2nd technical interview.

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## **Amazon Interview Experience for SDE-1 | 6-Months Internship (On-Campus)**

- Difficulty Level :[Medium](#)
  - Last Updated :[13 Oct, 2020](#)

**Online Test:** It consisted of 4 sections:

1. Debugging Question (Level was quite easy)
  2. Coding Section\xc2\xa0

- Create Music Recommendation System for Amazon Prime(Almost Similar to the below link).

<https://leetcode.com/discuss/interview-question/861432/>

- Find Maximum Average in n-ary Tree.

<https://leetcode.com/discuss/interview-question/349617>

3. Work-Life assessment (Basic Situational Questions)
  4. Aptitude and logical reasoning (You should keep track of time while solving this section)

Out of around 2500 students who participated in the 1st round, 70 were shortlisted for the next round.

**Technical Interviews (On amazon chime):** The Interview was of 60 min (approx). For the first 5 minutes, I gave my introduction and after that, the interviewer gave his introduction and his position and current project at Amazon.

1. The first question was to find the complexity of the following program:

C++

Gave the Answer and formula for the complexity of code. The Interviewer told me that it is Correct.

2. The second question was to find the GCD of numbers between the given range(l,r) in an Array. I came up with the brute force approach and explained it to him. But he asked me to code only in

Optimised Solution. Unfortunately, I was not able to code the Optimised Solution (Segment Tree Approach) but explained it to him.\xc2\xab0

3. [The third question Bitwise XOR of two numbers in an array](#).I asked him for the input constraints and came up with optimised approach, and he was satisfied with the explanation. Then he asked me to code it. I wrote the code, and he pointed out that I have missed an edge case. Corrected the code, and he told me that my solution is correct.

**Note:**

- Ask as many questions as you can.
- Always ask about the input constraints before coding your solution.
- Be Confident and Share your thoughts with the Interviewer during the entire Interview.

Results are expected to be declared for the next round.

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## Amazon Interview Experience for SDE Internship | AmazeWoW 2020

- Difficulty Level :[Medium](#)
- Last Updated :[04 Mar, 2022](#)

**Round 1 (Online Test):** Online test was conducted on Mettl platform. The duration was for 1hr 30 min. It was webcam proctored and consisted of 28 MCQs and 2 coding questions. MCQs were based on data structures, predict output, C++, and algorithms.

**Round 2:** The interview started with tell me about yourself. After that, he asked coding questions.

1. Find the longest substring containing distinct characters.

**Ex:**

**Input:** abbabcd  
**Output:** 4

**Reference:**<https://www.geeksforgeeks.org/length-of-the-longest-substring-without-repeating-characters/>

2. Given preorder and pre\_LN that contains whether the node is leaf nodes or not, construct a binary tree.

**Ex:** 1 2 45 3 5  
N N L L L  
Tree: 1 / 2 / 5 / 45

**Reference:**<https://www.geeksforgeeks.org/construct-a-special-tree-from-given-preorder-traversal/>

The duration was for **1 hour**.

**Round 3:** The interview started with tell me about yourself.

1. A bag contains magic balls. Each ball has a specific weight. Every time, balls with two highest weight are removed (let the balls be X and Y) and collision which may or may not result in a new ball following the given constraints :

- Case 1: If  $X > Y$  then they result in a new ball of weight  $X - Y$
- Case 2: If  $Y > X$  they result in a new ball of weight  $Y - X$
- Case 3:  $X = Y$  No new ball
- Example: [2,4,6,8]
  - Pick 6,8 New ball=2-> Array becomes [2,4,2]
  - Pick 4,2 -> New ball=2-> Array becomes [2,2]
  - Pick 2,2 -> Array is empty -> return 0
  - Example2: [3,10,17]
    - Pick 10,17 New ball=7 -> Array becomes [3,7]
    - Pick 3,7 -> New ball=4-> Array becomes [4]

Since the array contains only 1 ball, return its weight -> return 4

2. There are n workers, each having some capacity. The workers are given rotis based on their capacity, i.e workers with a higher rating will get a more number of rotis. A worker can only know the rotis and capacity of two of his neighbors, one on the left and other on the right. Given an array specifying the capacity of workers, find the minimum rotis that should be given for each worker, so that no worker feels unfair.

**Example:** 1 3 5 4 (ratings for 4 workers)

**Input:** 1 3 5 4 (ratings for 4 workers)  
**Output:** 1+2+3+2 = 7

**Example:** 5 3 4 2 1 6

**Input:** 5 3 4 2 1 6  
**Output:** 2+1+3+2+1+2 = 11.

3. Since there was time left, he asked ACID properties in DBMS and mutex, semaphores, deadlocks (operating system concepts).

The duration was for 1 hour.

**Result:** Selected

GeeksforGeeks has been very helpful for my preparation. Thanks a lot!!

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# Amazon Interview Experience for 6-Months SDE Internship

- Difficulty Level :\n[Hard](#)
- Last Updated :\n12 Oct, 2020

**Round 1 (Written Round):** It consisted of mainly 4 sections.

- **Debugging Round:** 7 codes to debug in 20 minutes
- **Coding Test:** 2 coding questions in 70 mins
- **Personality Assessment:** No time limit given (Ideally takes 15-20 mins)
- **Reasoning Ability Section:** 24 questions in 35mins

In the coding section there were 2 questions:

1. [Given two sorted linked list. Merge them into one and return the head pointer.](#)
2. [Find critical connections \(Bridges\) in a graph.](#)

Those who cleared all the test cases in both questions were further selected for the Interviews.  
(37/200 cleared)

**Round 2 (Technical Interview):** It started with a formal introduction. The interviewer told that this round will last for an hour and 2 questions will be asked. So make sure to complete the code of each question within 30 minutes individually. A codeshare link was given for the writing code.

The interviewer was really friendly and was expecting the most optimized solution for the same. The interviewer also helped a lot in various approaches and was asking for edge cases for the approaches.

**Question 1:** Given, product ID and sales of the particular product, design a data structure to display the top N trending products by sales and also make a function to update the sales value.

**Solution:** Use a modified max-heap. Make the structure and implement the functions like maxHeapify, extractMax, increase/decrease key. In the max Heap, the array should be of pair<int, int> to store both product ID and sales.

**Question 2:** Implement locking in a binary tree. A binary tree node can be locked or unlocked only if all of its descendants or ancestors are not locked. For reaching the optimized solution, you are allowed to change the structure of the tree.

The interviewer helped in the process and gave 1-2 hints, which I could catch.

**Link:** <https://www.dailycodingproblem.com/blog/lockable-binary-trees/>

This round was not an elimination round and everyone proceeded for Round 3.

**Round 3 (Technical Interview):** The interviewer asked me to introduce myself and asked about the projects. A few cross-questioning followed and then the interviewer told that again 2 coding questions will be asked within the time span of 1 hour. Make sure to not exceed the time.

**Question 1:** Given a string and an integer k. A group of k identical characters is to be removed any number of times until it is no longer possible.

**Solution:** Used a stack and then kept on comparing the character to be added with the top of the stack (k times). Time Complexity: O(nk)

The interviewer asked for further optimization, used pair<char, int> in the stack to store the characters and its continuous occurrence.

(Link: <https://www.geeksforgeeks.org/reduce-the-string-by-removing-k-consecutive-identical-characters/>)

**Question 2:** Given a 2D grid, containing multiple people, open points, and blocked locations. A person can move in four directions (up, down, left, right). Find the min distance for each open point from its nearest person. If any open point is unreachable, store -1 in it.

**Solution:** Consider a queue and store the coordinates of each person in that queue. After that create a distance array of the same dimension (Initialized as INT\_MAX). Apply BFS for each person and keep on finding the min value possible for all the points in the grid. The interviewer helped in arriving at this approach.

Finally, it was told that the interviews round are over and the results will be out soon.

**Verdict:** Selected \xf0\x9f\x99\x82\xc2\xab

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## Amazon Interview Experience for SDE-1 | 1.3 years Experienced (Aug-2020)

- Difficulty Level :[Medium](#)
- Last Updated :12 Oct, 2020

**Round 1 (Online Coding Round):** Two questions.

1. [Find number of Islands](#)
2. Custom sorting.

You have been given the task of reordering some data from a log file. In the log file, every line is a space-delimited list of strings. All lines begin with an alphanumeric identifier. There will be no lines consisting only of an identifier.

After the alphanumeric identifier, a line will consist of either: 1) a list of words using only lowercase English letters. 2) or list of only integers.

You have to reorder the data such that all the lines with words are at the top of the log file. The lines with words are ordered lexicographically, ignoring the identifier except in the case of ties. In the case of ties (if there are two lines that are identical except for the identifier), the identifier is used to order lexicographically. Alphanumeric should be sorted in ASCII order (numbers come before letters). The identifiers must still be part of the lines in the output strings. Lines with integers must be left in the original order they were in the file.

Write an algorithm to reorder the data in the log file, according to the rules above.

**Sample Input:**

```
logFileSize = 5\r\nlogLines =\r\n[a1 9 2 3 1]\r\n[g1 act car]\r\n[zo4 4 7]\r\n[ab1 off key dog]\r\n[a8 act zoo]
```

**Sample Output:**

```
[g1 act car]\r\n[a8 act zoo]\r\n[ab1 off key dog]\r\n[a1 9 2 3 1]\r\n[zo4 4 7]
```

**Round 2 Interview (Online on Amazon Chime):** Topic: DS-Algo and basic introduction

1. Find a number of triplets in an array A that satisfy the condition:  $A[i] < A[j] < A[k]$  where  $i < k < j$
2. [HTML parsing](#) (similar to the linked question. Just replace parenthesis with HTML tags)

**Round 3 Interview (Online on Amazon Chime):** Topic: DS-Algo and basic introduction

1. Discussion regarding hashing. Hashing techniques. Collision resolution. Data structure to be used for the best performance.
2. Don't remember this question, but it was not very difficult.

**Round 4 Interview (Online on Amazon Chime):** Topic: DS-Algo and basic introduction

1. [Zig-Zag tree traversal](#)
2. A modification of [Delete a Linked List node at a given position](#)

**Round 5 Interview (Telephonic Behavioral Test)**

1. A situation when you identified a customer-facing problem and how you solved it.
2. A situation where you had to build up some features up to completion within a short time.
3. For example whenever you were in a tough situation with another team member.

**Round 6 Interview (Online on Amazon Chime):** It was hiring managerial round

1. Introduction.
2. Discussion regarding the current job and current project. The impact of the project and my impact on it.
3. A few behavioral/situational questions.
4. Asked me to explain the project I did during my 3rd-year internship.

**Result: Selected.**

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# Amazon Interview Experience | 6-Months Internship for SDE-1 (On-Campus)

- Difficulty Level : \n[Medium](#)
- Last Updated : \n08 Oct, 2020

**1st Round Details (Coding test):** Coding round on their own platform. It consisted of 4 sections.

1. 7 debugging questions (C++/Java).
2. 2 coding questions.
  - [Search for a given number in a row-wise and column-wise sorted matrix.](#)
  - [Check if a given tree is a subtree of another binary tree. \xc2\xa0](#)
3. Psychometric test based on Leadership principles.
4. Aptitude and Logical reasoning.

**2nd Round Details (F2F technical round 1):** Introduced myself and jumped right into coding. The following two questions were asked.

1. [Given a binary tree, write a function to check if the tree is a mirror image of itself or symmetrical. This was done using recursion with time complexity of O\(n\) and space-complexity of O\(1\).](#) We discussed the approach and the interviewer was satisfied with it. I was asked to code it completely, covering all edge cases and having no bugs.
2. [Given a string of 1\xe2\x80\x99s and 0\xe2\x80\x99s, we can flip the 1\xe2\x80\x99s to 0\xe2\x80\x99s and the 0\xe2\x80\x99s to 1\xe2\x80\x99s. Find the minimum amount of flips required to make the string monotone increasing \(all the 0\xe2\x80\x99s on the left, and 1\xe2\x80\x99s on the right\).](#) This was a dynamic programming question. I didn\xe2\x80\x99t get the approach right on the go, but the interviewer gave me a hint, and I was able to code it. He wanted the most optimized solution which I got in the end.

**Note:** The above link is somewhat similar and the space complexity of the solution can be optimized even more.

**3rd Round Details (F2F technical round 2):** Again, just introduced myself and jumped right into coding. The following two questions were asked.

1. [Given a row-wise and column-wise sorted matrix, return the kth highest number. I solved this using a max-heap.](#) The interviewer was satisfied with it and asked me to code it from scratch (including the class for a heap). I think it could have been optimised even more.
2. Given the employees of an organization, each employee can mail two other employees, and so on. The CEO is at the root. Calculate the time taken for \xe2\x80\x98m\xe2\x80\x99 mails sent by the CEO to reach all the employees. This was a binary tree question and can be solved by finding the height of the tree.

**Note:** The above link is for kth the smallest element.

This was the last round and there were no HR questions, questions about my projects, or other topics.

**Verdict: Selected!**

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# Amazon Interview Experience for SDE-1 Internship

- Last Updated : \n06 Oct, 2020

The first round was the Online coding round which was held on the AMCAT platform

It consisted of 4 sections:

1:) Debugging Question (Pretty straight forward questions)

2:) Coding Questions

2.1:) Merge two sorted linked list

<https://www.geeksforgeeks.org/merge-two-sorted-linked-lists/>

2.2:) Check whether a tree is a subtree of another tree or not

<https://www.geeksforgeeks.org/check-if-a-binary-tree-is-subtree-of-another-binary-tree/>

3.) Work-Life assessment

4.) Aptitude and logical reasoning

Some other questions were

- <https://leetcode.com/problems/critical-connections-in-a-network/>
- <https://www.geeksforgeeks.org/clone-linked-list-next-arbit-pointer-set-2/>
- <https://www.geeksforgeeks.org/search-in-row-wise-and-column-wise-sorted-matrix/>
- <https://leetcode.com/problems/two-sum/>

Out of around 200 students who participated in the 1st round, 32 were shortlisted for the next round

## Round 1.) On amazon chime

1. This round took approx 60-70 minutes
2. The round started with a brief introduction from both the interviewer and me
3. After 2-3 mins of Introduction, he headed towards the question
4. The interviewer asked me only 1 question. Although my friends had an experience of being assessed on 2-3 questions.
5. The questions were mainly focused on DS topics like graphs ( topological sort particularly ), stacks, trees, and heap.
6. The interviewer analyzed my thought process and the approach I took, the reason for the approach, and the time and space complexity for the same.
7. The interviewer was very friendly, he discussed the approach I took and how I came up with this approach and all edge cases. He helped me clarify any doubts I had for the same.
8. The discussion took around 40 minutes after which I was told to write clean code for the same following proper naming convention.
9. To my luck, the interviewer was satisfied with the code after suggesting a few alterations
10. He pointed out one edge case which I missed and the discussion ended once I fixed it

The question was based on a graph that is to be solved by DFS/BFS.

After this round, 19 were shortlisted to proceed with the 2nd round

## Round 2:- On Amazon Chime

1. This round took approximately an hour
2. The round too started with a brief introduction from both the interviewer and me
3. The interviewer assessed me on the company principles by asking some behavior questions
4. After this, he asked me about the LRU cache and some test case
5. I was asked to implement the same and explain the time and space complexity of each approach I took
6. The interviewer asked me If I have any questions that he can help answer.

Verdict: Selected for 6 months Internship.

## 12 people made it through!

Tips:

1. Be honest with yourself.
2. Be clear with your approach and try to consider all edge cases
3. Try to familiarize yourself with the time and space complexity of every part of your approach.
4. Be confident. If you are stuck somewhere the interviewer usually helps you out to find the right path.
5. Read past Interview experiences. They helped me a lot.
6. Don't get demotivated by rejections. Just do your best and improve day by day, so you don't regret anything from the preparation side.

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## **Amazon Interview Experience | WoW 2020 (6 months Internship)**

- Difficulty Level : Hard
  - Last Updated : \n04 Mar, 2022

Amazon WoW is an initiative which gives an opportunity to women students in their final or pre-final year to work at Amazon as an intern or full time employee. The process started with filling an application in Amazon WoW website, in the application basic info about college, branch, resume were to be submitted. After a few days based on the resume mail was sent regarding the round 1 test.

The test consisted of 28 MCQ's (C++, data structures etc.) and 2 Medium level coding questions.

I was able to solve both the coding questions so I passed the round 1 test.

## **Round 1 Technical interview:**

The interview was online and took place on Amazon Chime platform. The interview started with my introduction and followed by his. After this he jumped straight into the coding questions.

I was asked 2 coding questions:

- ## 1. Given a graph of n nodes and e edges.

Find the minimum number of edges that must be added to the graph to make it strongly connected.

**Example:**

$\backslash xc2\backslash xa0 \backslash xc2\backslash xa0$  Here  
1 $\backslash xe2\backslash x80\backslash x93>2$  and 3 $\backslash xe2\backslash x80\backslash x93>4$  are connected to make it strongly connected we need to join  
either 1 $\backslash xe2\backslash x80\backslash x93>4$  or 2 $\backslash xe2\backslash x80\backslash x94>4$  or 3 $\backslash xe2\backslash x80\backslash x93>1$  or 2 $\backslash xe2\backslash x80\backslash x93>3$

**Approach:** This can be done by finding number of strongly connected components using DFS. If there are N strongly connected components then the minimum number of edges that must be added to the graph to make it strongly connected would be N-1.

[Minimum path sum](#)

I was asked to tell the time complexity before writing the code. ( clean code in my preferred language)

## Round 2 Technical interview:

The interview started with my introduction and followed by his. After this he jumped straight into the coding questions.

I was asked 2 coding questions:

1. [Flattening a linked list](#)
2. [Merge k sorted arrays](#) (priority queue approach)

Some discussion on priority queue insertion time complexity was also done.

## Round 3 Technical interview:

Usually Amazon internship have only 2 rounds but sometimes if they do not have enough data points on a candidate they conduct an additional round.

So I had this round 3.

In this round he asked me:

1. [Convert a sorted linked list into a balanced BST](#)
2. An efficient data structure for searching, inserting and deleting.

Lot of discussion was done on the 2nd question. He was satisfied with Hashing method.

Few DS, CN, OS questions were asked at the end.

**Verdict:** Selected

Knowing how to calculate time complexity is important. Staying confident, calm and focused throughout increases your chance of clearing the interview.

The secret of cracking an interview is **Never Giving Up.**

Practice from GeeksForGeeks, LeetCode and any other coding platform with which you are comfortable.

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# Amazon Interview Experience for SDE-1 | 6 months Internship (On-Campus)

- Difficulty Level : \nMedium
- Last Updated : \n01 Oct, 2020

**Online Round:** Around **250 candidates** appeared for this round

The online round comprised of 4 sections:

- Code Debugging Round (20 minutes \xe2\x80\x93 7 Questions)
- Coding Section (70 minutes \xe2\x80\x93 2 Questions)
- Work Style Assessment (25 minutes)
- Aptitude and Logical Reasoning (35 minutes \xe2\x80\x93 24 MCQs)

## Coding Questions:

1. [Search in a row wise and column wise sorted matrix](#)
2. [Clone a linked list with next and random pointer](#)

Different sets had different coding questions from some 5-6 questions. All the sections were fairly easy, but one needs to be a bit quicker to finish all the questions on time.

**39 candidates were shortlisted for interviews.** The interview process (Organized through Amazon Chime App \xe2\x80\x93 5 days after the online round) consisted of two rounds.

**Round 1 (F2F Interview for 35-40 minutes):** Formal Greetings and Introduction. Tell me about your favourite project (2-3 minutes). Let\xe2\x80\x99s jump to the coding questions (No discussion of any other stuff and also no counter questions on projects as well)

1. Given an array of random numbers, move all zeroes to the end of an array.
  - For example, if the given array is {4, -2, 0, 1, 0, 0, 3, -7, 0} then the output should be {4, -2, 1, 3, -7, 0, 0, 0, 0}. The order of all the other elements should be the same.
  - I have discussed 3 approaches and then told me to write down the optimized solution of O(n) time complexity and O(1) space complexity.
  - I write down the complete code and then the interviewer checked all the edge conditions and also told me to dry run the code for the given input.
  - <https://www.geeksforgeeks.org/move-zeroes-end-array/>
2. Sort the given linked list and return the head pointer of the resultant linked list.
  - I have discussed the approach first and then told me to write down the code (An only function which takes the head of the linked list as input and returns sorted linked list\xe2\x80\x93s head pointer).
  - I write down the code using Merge-Sort and the interviewer checked all the corner cases and also told me to dry run the code for the given input. Also asked about the time and space complexity of the code.
  - <https://www.geeksforgeeks.org/merge-sort-for-linked-list/>
- Asked me if I have any questions.

**24 candidates were shortlisted for the second round.**

**Round 2 (F2F Interview for 60-75 minutes):** Formal Greetings and Introduction. Directly jump to the coding questions (No other CS Fundamentals questions and also No questions on any project or

on the resume)

1. Given a sorted dictionary (array of words) of an alien language, find the order of characters in the language.
    - I haven't seen this question beforehand and also I am not so good at solving graph problems.
    - It took me 4-5 minutes to understand the question completely. The interviewer also gave 2-3 examples to give me a better idea of understanding the question.
    - I think about the different approaches but I didn't think of a Graph-based solution so the interviewer gave me a hint after 3-4 minutes to rethink if the question can be solved by building the graph.
    - After thinking 2-3 minutes I told the approach to solve the question using topological sorting and I described briefly about how the approach gonna work and also dry run on the pseudo-code using examples and then told me to write down the complete code.
    - Although I found it difficult to write down the complete code. But somehow I managed and the interviewer also helped me whenever I got stuck.
    - I write down the code using different logic but the approach for solving the problem is the same. Then the interviewer told me to explain the complete code line-by-line and also told me to dry run for the given 2-3 inputs and also checked all the corner cases and also asked me about the time and the space complexity of the code.
    - <https://leetcode.com/problems/alien-dictionary/>
    - <https://www.geeksforgeeks.org/given-sorted-dictionary-find-precedence-characters/>
  2. There are given n strings of different lengths, we need to connect these strings into one string. The cost to connect two strings is equal to the sum of their lengths. We need to connect the strings with minimum cost.
    - I have discussed 2 different approaches and also the optimized approach using a priority queue. Also discussed the time and the space complexity of the optimized approach.
    - Also asked me how the priority queue is defined (Here, I told that it is acting as minHeap for this question) and looked satisfied with my answer. Then asked me to write down the complete code.
    - It took me approx 1 hr to solve the first problem, so when I just started to write the second code, the interviewer told me that we're running out of time and no need to write the code as my approach is correct.
    - <https://www.geeksforgeeks.org/connect-n-ropes-minimum-cost/>
- Asked me if I have any questions.

Both the rounds went smoothly. The interviewers were very sharp and had sound knowledge. They were very friendly.

**Finally, 17 candidates were selected for an Internship including me.**

#### **Additional Information:**

- The Interviews were conducted on Amazon Chime (A video calling platform).
- Coding questions were asked to code on Amazon's LiveCode platform where both the interviewer and the interviewee can simultaneously edit and view the code.

#### **Tips:**

- Interviews have a slight luck factor and kind of day dependency. I would advise you to wait for your day, and on that day I guarantee you, no one can stop you from getting what you deserve, just be confident and solve all the problems with a positive attitude.
- Be polite and carefully listen to the interviewer (you might be lucky to grab a few clues)
- Interviewers will help you whenever you are stuck just keep thinking aloud. Before jumping into

the solution, understand the question properly, and avoid any assumptions regarding the problem statement and get them all-clear by asking the interviewer as many questions as possible. Think of all possible edge/corner cases. Discuss your solution with the interviewer and explain the cases that you are handling.

- Be thorough with Time and Space complexity calculation, as it is the first question you might get after proposing an algorithm to the interviewer.

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# Amazon Interview Experience for SDE

- Last Updated : \n 01 Oct, 2020

## PPI after 2 months Internship

Amazon conducted Interviews at the end of last summer Internship for SDE roles. Unlike previous years it was completely Work from Home and thus interviews were conducted to better judge the candidature of interns for full-time conversion at the end of the 2-month internship.

There were 2 rounds of interviews in the last week of the internship and the first round interviewer was an SDE and the second-round interviewer was a senior manager. Both rounds were conducted through amazon chime and a two-way code editor was used.

**Round 1:** In this round, the interviewer focused on coding skills/problem-solving skills. \xc2\xab

- The interview began with a brief introduction from my end and then the interviewer jumped to my CV and asked to explain the projects that I had in 2nd year, and I was caught off guard as I wasn't prepared for it. I tried to explain as much as I could but he wasn't satisfied with the explanation.
- Next, he asked me [Maximum sum triplet](#) and I gave a brute force solution to it and I coded it and then he asked me to optimize it. I suggested 2 methods, one with sort and the other with taking 3 variables(most optimized approach). He asked me which sort I would use and I told [merge sort](#) and then he asked me to write merge sort where I struggled and ended up only explaining the approach. Later, I coded the most optimized approach.

**Round 2:** In this round, the interviewer focused more on the DS/Algo proficiency.

- My first question was a very typical one and I couldn't solve it.  
Ques: There are two amazon centers, one in Bangalore and one in Hyderabad where the candidates need to go for interviews. A candidate needs to visit one of the centers and the expense would be on amazon. Each location needs to have half of the candidate(N, candidate number is even) and the cost associated with the travel expense needs to be minimized. Output the cost.

**Ex:** For 6 candidates {20,40}, {10,60}, {5,80}, {60,10}{100,15}, {150,20}. Here lets assume cost is given {Bangalore, Hyderabad} thus first 3 candidates should go to Bangalore and next 3 should go to Hyderabad and total cost is 70.

- The second question was transforming BST to [Greater sum tree](#), which was fairly easy and less time-consuming to write.
- The third question was to implement an audio/song player where there are n songs and needs to be played in a randomized order and a played song must not be repeated until all the unrepeated songs have been played. It was my first time with these questions and I struggled little with this. I gave 2-3 approaches with different data structures to implement it. Later, the interviewer told me to try this without any extra space as I was using O(n) space with using DS and the given form was an array/array list. Then, I suggested a two-pointer approach to it. One pointer(p1) would indicate the songs in the right are unplayed and another pointer(p2) to access the songs in this right to end range randomly and play and then swap that song with the p1's immediate right song and then increment p1 by 1 thus including that song in played portion. If all the songs have been played the rest both pointers to 1st element and now the songs can be repeated.

My performance was not up to mark as I made some mistakes during the 2 rounds of interview, and I was not offered a full-time role.

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## **Amazon Interview Experience | 6 Months Intern for SDE-1 (On-Campus )**

- Difficulty Level : [Medium](#)
  - Last Updated : [28 Sep, 2020](#)

## **Round 1(online) :**

Consisted of 5 sections:

- 1) 10 debugging questions
  - 2) 2 coding ques :- i) <https://www.geeksforgeeks.org/search-in-row-wise-and-column-wise-sorted-matrix/>  
ii) <https://www.geeksforgeeks.org/check-if-a-binary-tree-is-subtree-of-another-binary-tree/>
  - 3) Personality questions
  - 4) Logical Reasoning questions

**Round 2(Technical 1) \xe2\x80\x93 remotely \xc2\xa0:**

- 1) Introduced myself
  - 2) 2 coding questions were asked

i) <https://www.geeksforgeeks.org/minimum-steps-to-make-the-product-of-the-array-equal-to-1/>

Basically you have to find operations to change each non-negative element to 1 & negative element to -1. Count the operations for each element by taking absolute diff. If count of negative numbers is odd and no zeros are there then increase the operations by 2.

ii) In a binary tree, find a path between 2 nodes. There was a modification that the height of the tree is infinite and the tree is not in memory.

The structure of tree is like :-

I discussed with him to go from `\xe2\x80\x9cnode` to `root\xe2\x80\x9d` instead of general `\xe2\x80\x9croot` to `node\xe2\x80\x9d`. He asked me how and I found out LCA using map and stack.

\xc2\xa0 He said the approach is right but he does not want to use map/stack or any derived DS.  
Use only primitive DS. Solved it using arrays. \xc2\xa0I gave a case where the map-stack approach

would be more optimized. So he told me to analyze both the approaches w.r.t. time and space and explain why it is so.

Time and space for both approaches were  $O(\log(n))$  for the worst case. For average cases and in runtime map-stack would be more optimized and he agreed on it. He asked me to code any of the 2 approaches. I coded the array one as it was simpler to implement. Then he asked if I had any ques and concluded the interview.

### Round 3(Technical 2) \xe2\x80\x93 remotely :\\xc2\\xa0

No intro, no small talk, straight to coding

1. <https://www.geeksforgeeks.org/count-distinct-elements-in-every-window-of-size-k/>

\xc2\x0 No constraints on k & N and was told to handle all possible corner cases.

\xc2\x0 Discussed approach -> coded it -> approved -> discussed time complexity and why it is  $O(n)$

2. <https://www.geeksforgeeks.org/convert-a-given-tree-to-sum-tree/>

\xc2\x0 Explained approach -> she asked which traversal will be used and why -> postorder as we calculate left and right child first and then process root -> coded it -> approved

3. <https://www.geeksforgeeks.org/trapping-rain-water/>

\xc2\x0 Gave the solution with 2 arrays i.e. left-max & right-max. She told me to do it in a single extra array. Did after taking 5 mins. Then she told me to do it in constant space. \xc2\x0

\xc2\x0 I didn't think that was even possible. After trying for 10-12 mins I told her I am getting nowhere. She told me to code the single-array approach.

\xc2\x0 Coded it -> had some logical mistakes -> she gave a direction what the error can be and did a dry run together -> solved it after some time and code was approved.

\xc2\x0 She told me we have some time to think about how to do it in constant space. 10 mins later, the time was up I did not come up with anything and the Interview was over,

\xc2\x0 NO projects, subjects, HR questions

Verdict :- Selected

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# Amazon Interview Experience for SDE-1 (Full Time-Referral) 2020

- Difficulty Level :\nExpert
- Last Updated :\n28 Sep, 2020

Hi geeks! wish to share my interview experience with you all.

During this pandemic time, Amazon interviews were all virtual through Chime(Video Conferencing & Online Meetings App)

## Round 1: \xc2\xd0(Online Assessment \xc2\xd0Round)\xc2\xd0

Q1) Maximized partitions of a string such that each character of the string appears in one substring

Q2) \xc2\xd0Count of substrings of length K with exactly K \xe2\x80\x93 1 distinct characters  
\xc2\xd0\xe2\x80\x93 I have linked a similar problem in geeksforgeeks.

It was nearly 3 weeks gap before I got a call from Amazon regarding the interview process after this Online round.

So be patient and keep preparing.

## Round 2: \xc2\xd0(Technical Interview Round-1)

It is a coding round consisting of two coding questions. I was asked to discuss my approach and analyse the time complexity before getting into the actual coding.

Q1) Find the smallest window in a string containing all characters of another string

\xc2\xd0\xe2\x80\x93 I was able to come up with O( S + T) solution where S and T are lengths of the strings

Q2) Remove minimum number of parentheses to make the input string valid

## Round 3: \xc2\xd0(Technical Interview Round-2)

Q1) Find k closest elements to a given value \xe2\x80\x93 given array is not sorted

I thought of a binary search solution after sorting but was asked to use an apt data structure.

Later I explained my solution using Heap.

Q2) Given a input string 2(a3(bc)) output should be abcbcbcabcdbc

Solution was using stack

## Round 4: (Hiring manager Round)

Lots of questions on my project with follow up questions as well.

I was asked to design classes for a deck of card with functionalities like shuffle and hand-over.

Discussed about Serializing and deserializing the binary tree and many more

## Round 5: Bar Raiser Round

Q1) Bubble shooter : Given a matrix of colors

`[["r","g","b","g","b","r"], ["g","b","r","g","b","r"], ["b","r","g","b","r","g"], ["g","b","r","g","b","r"], ["r","g","b","g","b","r"], ["g","b","r","g","b","r"]]` and a target array `["g","b","r","g","b","r"]`

take each bubble from target array and try to blast the same color bubble in the matrix from the bottom view.

if able to hit a bubble, then that bubble in turn hits the neighbor bubble (4-direction) of same color.

Bursting a bubble makes the spot transparent and could allow to view the interior bubble from bottom view.

If one target color couldn't hit the matrix then the game ends `return count of the burst bubbles`.

I was asked for an optimized solution `return count of the burst bubbles` mainly for checking the bottom view

I used a hash to keep track of active rows for each column. whenever a bubble is burst active row is the row below it.

so bottom view for each column is `matrix[active_row[col]][col]`

## Q2) Immediate next larger element in an array.

I was asked for O(N) solution `return count of the burst bubbles` Used monotonous stack for my approach

There was a follow up `return count of the burst bubbles` to find Immediate left larger element without extra traversal or extra space

I was able to answer that too

After these there were plenty of behavioral and project related questions. Some of them are

- 1) what is the challenging project that you worked on? `return count of the burst bubbles` asked to explain in detail about the implementation, schema discussion etc.
- 2) Total number of the projects and how big they were.
- 3) Any customer tickets that you worked on.
- 4) Asked about [KMP algorithm](#) and [Segment tree](#).
- 5) Explain about a time when you had a tight deadline.
- 6) Explain about a time when you came up with any ideas or automation.

**Result:** SELECTED

**Before Interview :-**

I would like to share about my preparation process. Choose any programming language of

your like and keep solving plenty of problems in geeksforgeeks or similar sites to get the idea of problem solving. While solving problems my pattern is to cover the data structures one by one, understanding it's best/average/worst case time complexity. When you are using a STL in your code make sure you are clear about its time complexity. I used to spend some time in the discussion board and solution panel after submitting my approach to understand various thought process of other geeks and learnt a lot.

### During Interview :-

The Interviewer expects the most optimized solution with proper usage of suitable data structures and algorithms for every question with full implementation. Interviewers will help you whenever you are struck just keep thinking loud. Before jumping into solution, understand the question properly and avoid any assumptions regarding the problem statement get them all clear by asking the interviewer as many questions as possible. Think of all possible edge/corner cases. Discuss your solution with the interviewer and explain the cases that you are handling. It would be nice to make a rough run through your approach with an example input.

### All The Best !

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# Amazon Interview Experience | Internship Drive

- Difficulty Level :\nHard
- Last Updated :\n16 Sep, 2020

## Online Round:

**Around 800 candidates appeared for this round**

The online round comprised of 4 sections:

- *Debugging(C,C++,Java,Python)* You have to choose one among them 20mins approx)
- *Coding(2 coding questions medium to difficult level 90 mins)*
- *Psychometric test based on Leadership principle*
- *Aptitude and Logical reasoning* (I felt a short of time)

**76 candidates were shortlisted from this round.**

## F2F Interview (Round-1)(1hr approx)

We were given two coding problems in this round.

*Note: Every coding problems have to be coded in any one of your favourite language*

Q1: Rearrange a string such that no two characters are same if not possible return -1

<https://www.geeksforgeeks.org/rearrange-characters-string-no-two-adjacent/> \xc2\xab0

Q2: Given a sequence of words, print all anagrams together

We discussed about 2 approach and did complexity analysis and coded the hashmap \xc2\xab0

solution

<https://www.geeksforgeeks.org/given-a-sequence-of-words-print-all-anagrams-together/>

This round was basically to test your problem solving skills,coding skills.

## F2F Interview(Round-2)(1.5hr approx)

Initially had a 2 min introduction

Then went on to project discussion explained in detail about the SIH project which we did \xc2\xab0 for about 10min he was keen on understanding the challenges faced and knowing the complexity of the project.

Then went with coding problems

Since we were talking about internship experience which involved recommender system got a question from search engine related \xc2\xab0with pattern matching

Q1: Find the pattern in a string is existing or not

Discussed about naive approach complexity, not satisfied with it

Implemented Boye Moore\xe2\x80\x99s method.

**Q2:** From a grid of letters find whether a given word exists.

<https://leetcode.com/problems/word-search/>

**\xc2\xa0Q3:** Sort a string according to the order defined by another string.

<https://www.geeksforgeeks.org/sort-string-according-order-defined-another-string/>

By end of these three questions he was quite happy.

He later made a dry run through my resume and came to know the technologies I know \xc2\xaa and asked a few questions regarding that.

Both the rounds went smoothly. Interviewers were very sharp and had a sound knowledge. They were very friendly.

**Finally 9 candidates made it through!**

### **Tips :**

- Stay calm and positive during interview.(Don't talk with peers before interview)
  - If you have enough time try to read as many interview experience as possible in GFG as it will be really helpful in technical rounds on how to go about.
  - At last if unfortunately, If you are turned down don't worry keep the same spirit throughout the process(I was rejected during the interview of other 6 good companies even at hr levels but finally got what I wanted).It is a test of time,patience and faith.Keep yourself positive and confident.

**Thanks a lot GFG !**

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# Amazon Interview Experience for SDE

- Difficulty Level : \n[Medium](#)
- Last Updated : \n14 Sep, 2020

**Online Round:** There were multiple sets. Each set contained four sections.

1. Code Debugging section(20 minutes)
2. Coding section(70 minutes)
3. Work Style Assessment(10-15 minutes)
4. Logical Ability(35 minutes)

Except for the coding section and work style assessment other sections were MCQ type. In these sections, speed mattered.

## Coding questions:

1. It was based on hashing. After little thinking, the question simply got reduced to calculate two values in an array having sum equal to a given integer k. Simple 5-7 lines of code were sufficient to pass the given test-cases (**Difficulty-Easy** )
2. It was based on strings. We were given a string consisting of words separated by spaces or punctuation. Another vector of strings was given which were to be excluded. We had to return a vector consisting of strings having max frequency. It was simply a hashing based question, there were some strong corner cases which were to be handled. (**Difficulty-Medium**)

31 students were shortlisted for interviews. The interview process(Organized through **Amazon Chime App**) consisted of one round.

**Round 1 (Technical):** First, the interviewer told me to introduce myself. Then 4 coding questions were asked one by one.

1. [Count distinct elements in every window of size k](#)
2. [Convert a given tree to its Sum Tree](#)
3. [Partition problem](#)
4. [Trapping Rain Water](#)

The interviewer first asked about the brute-force solution and the optimal approaches were asked afterward. She was convinced of my solutions, and then she asked whether I had any questions for her. I asked her about the kind of work and the prerequisites during the internship. Further, I asked about the schedule and work hours during the internship. No questions were asked about my projects.

**Tips:** Be patient and confident as I have experienced sometimes your hard work didn't result in what you expected and you would feel depressed, in these situations just be patient and wait for the best. Also, interviews have a slight luck factor and kind of day dependency. I would advise you to wait for your day, and on that day I guarantee you, no one can stop you from getting what you deserve, just be confident and solve all the problems with a positive attitude.

**Result:** Finally 17 students were offered internships for the SDE profile.

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# Amazon Interview Experience for SDE-1

- Difficulty Level :\n[Medium](#)
- Last Updated :\n10 Sep, 2020

## First round:

1. Given an array of strings. Find all the strings that match the given pattern
2. Minimum number of insertions to make a string palindrome
3. Find max sum root to leaf path and print that path.

## Second round:

1. Given A tree whose leaf nodes are connected to form a circular doubly linked list. Print all the leaf nodes.
2. Modified BS- Searching in sorted rotated array

## Leadership principles:

- Tell me about a time when u did some that were outside ur role
- Tell me about a time when u had to get something done within a given timeline but u didn't have enough data
- Tell me about a time when u did something outstanding that was not expected of you.

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# Amazon Interview Experience 2020 for SDE-1

- Difficulty Level : \n[Medium](#)
- Last Updated : \n08 Sep, 2020

Hi geeks, I appeared for the amazon\xe2\x80\x99s interview for SDE 1, and here is my experience

**Round 1:** This round was online assessment and questions asked were:

1. [Stickler Thief\xc2\xa0](#)
2. Binary Tree \xe2\x80\x93 [Distance b/w two given nodes.\xc2\xa0](#)

**Round 2:** I don\xe2\x80\x99t know why my second round was an SDM round. This was more concentrated on my previous projects,

1. Give me the situations where you failed and pushed back.
2. Tell me the hardest task done by you till now and how you solved it.
3. If you are assigned two interns and there are two other interns who are assigned to someone else outside the team. But these two are also in your team, and they notice other two interns asking questions to you and so they start asking thing to you, due to this you are lacking in your productive time, how will you react?
4. Tell me the thing that hurt you the most in your career and how did you react to it?
5. Some leadership-related questions were also there.

And some more questions on OS and CN.

**Round 3:** This was straight coding round.

1. The zigzag traversal of a Binary tree: Gave a solution with BFS using Queue and Stack but he wanted me to optimize it, so used two stacks and that worked. ( no miss in edge cases)
2. How to [delete a node from Singly linked list when you are given only the node](#) (head is not provided): simply copy the next nodes data to current and delete the next. Coded as well ( no miss of edge cases)

**Round 4:** Here we started with the discussions of my previous projects and some system designs and how I solved the problems that occurred in the way of my projects.

Only one question was asked to create an HTML validator, I couldn\xe2\x80\x99t find it on Gfg, but I understood this is a variation of [balanced parentheses problem](#) and gave a solution with stack and coded as well (here I missed 2 edge cases).

It\xe2\x80\x99s been 1 week since I appeared for these interviews, no updates till now and I think I am **rejected** :-(\xc2\xa0

But if I get some more updates, I\xe2\x80\x99ll update this article.

**Tips:**

- Keep asking for the clarifications and edge cases.
- Keep track of all edged cases and ask your interviewer about them.
- Don\xe2\x80\x99t make your own assumptions, tell them that you are making these assumptions, and if they are good with that then only proceed with your solution.

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# Amazon Interview Experience for FTE SDE Internship (AmazeWoW)

- Last Updated : \n04 Mar, 2022

AmazeWoW is a development initiative with internship and FTE SDE (Full-time Software Development Engineer) opportunities for Amazon in India, focused on bringing in top talent from engineering institutes. AmazeWoW aims at building gender balance at the entry-level for the SDE role so that with Amazon\xe2\x80\x99s talent nurturing environment, the future leadership pipeline of the Amazon technology team is more diverse.\xc2\xao

**Online Test:** There were 4 sections in the online test, code debug, coding test (two questions), Work Styles Assessment, and logical ability.

## Coding Questions :

1. Longest Palindromic Substring: Standard DP question.
2. Find the most frequently occurring word in a sentence that is not in a given list of banned words: Divide the sentence into a stream of words, then use a hashmap to keep the count of the number of occurrences of each word that is not in the list of banned words and print the words from the hashmap with the maximum count.

**Telephonic Interview:** The interviewer first asked me to introduce myself.

## Coding Questions:

1. [Queue based approach for first non-repeating character in a stream.](#)
2. Output the leaves of a tree in the first line, then output the nodes which will become leaves after removing the current leaves in the next line. We had to repeat this process until the tree was empty. This can be done by storing the height of each node. Output the nodes in ascending order of heights.

He asked me the time and space complexities at each and every step. He also asked me to check my codes for edge cases.

**Result:** SELECTED

## Important Tips:

1. Be thorough with your data structures and algorithms.
2. Know the time and space complexities of every piece of code you write.
3. Before coding during the interview, clarify all your doubts with the interviewer.
4. Check your code for all the edge cases.
5. Write clean code.

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## Amazon Interview Experience (AmazonWow)

- Difficulty Level :[Medium](#)
- Last Updated :[04 Mar, 2022](#)

**Online Test:** There were 28 MCQs mostly based on stacks, queues, predict the output, Sorting, and Binary Trees and 2 coding questions.

1) Given a string convert it into a valid address by inserting a `\xe2\x80\x98.\xe2\x80\x99` after www then insert a `\xe2\x80\x98.\xe2\x80\x99` before com and if there are more characters after com then put a `\xe2\x80\x98/\xe2\x80\x99` after com and then the rest of the characters.

**Eg:**

**Input:** wwwgooglecomr\r\n **Output:** www.google.com/r

[Print the length of the longest decreasing subsequence.](#)

**Round 1 (Interview 1):** The interviewer introduced himself and asked me to introduce myself.

Coding Questions

1. [Print all the pairs whose sum is equal to 0.](#)
2. [He extended the question to find all the triplets with sum 0.](#)

**Round 2 (Interview 2):** Coding Question

1. Given n strings in `\xe2\x80\x98a/b=0.5\xe2\x80\x99,\xe2\x80\x98b/c=0.9\xe2\x80\x99` format. Find the answer of q queries in `\xe2\x80\x98a/c\xe2\x80\x99` format.`\xc2\xa0`

**Hint:** (Make a directed graph with a, b and other alphabets as vertices)

**Round 3 (Interview 3):** `\xc2\xa0`

1. **Tree-Based:** [Given a binary tree and one node is set on fire so find the time required to burn all the nodes.](#)
2. **Stack Based:** Given a string with `\xe2\x80\x98U\xe2\x80\x99` and `\xe2\x80\x98D\xe2\x80\x99`. Find the number of mountains and valleys`\xc2\xa0`

**Eg:** `\xc2\xa0`

**Input:** UUDDDDUDUU\r\n **Output:** Mountain 1 is formed by UUDD and 1 Valley by DDUDUU

The interviewer expected me to code all the questions completely and helped in between if stuck to find the optimized approach.

**Tips:** `\xc2\xa0`

- Start coding after the interviewer is satisfied with your approach.
- First, clarify all the doubts and then give your solution.
- Dry run your code for multiple edge cases
- Try to write a clean code.

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## Amazon Interview Experience | 2020 On-Campus for SDE-1 FTE

- Difficulty Level :[Hard](#)
- Last Updated :[02 Sep, 2020](#)

**Round 1:** It was a written test and this written test was cleared by 52 aspirants.

1. Construct a custom stack, operations of the stack, **push**, **pop**, **delete** the middle (expected Time complexity: O(1) per operation)

I don't remember actually, but possibly a good question

**Round 2:** Brief Intro of both interviewee and interviewer

Two Coding Questions were asked:

1. Given a binary tree, if any node is affected on this tree with a virus, its adjacent nodes will also be affected the next day. Give a list of an affected node, how many days will the whole tree be affected. (Tree Node can be customized)
2. An array with some numbers, return another array. The index i contains a number which is the multiplication of all except the current number, use of division and subtraction was prohibited.

**Eg:**[xc2xa0](#)

{1, 2, 3, 4} → {24, 12, 8, 6}

**Round 3:**

1. Pick any one of your projects and detailed discussion over that project regarding concepts.
2. OS Question like Process vs Threads, Thrashing, virtual Memory, Java Question like overloading vs over
3. **Coding:** Time of meetings of different employees, find a 1-hour slot which is free in the day.

**Eg:**

00:00 is written as 0\r\n01:30 is written as 1.3\r\nMeeting Time\r\nA\r\n<0 - 12>, <12- 14>, <4.5 - 11>\r\nB\r\n<13 - 1

**Round 4:**

1. Print a generic tree \xe2\x80\x93 reverse order bottom-up fashion.
2. Friends of Friends Network, list the top 1000 watched movies list. Input is a network (e.g. FB networks with each node containing a watched movie list) \xe2\x80\x93 It is up to you to decide input data structure to use for this problem

Given a reference node to you in that network, you need to return the top 1000 movies that have been watched by your friends and their friends.

Output the movie list with 1000 movies

\*\*made mistake on time complexity: didn't consider that we have to show only 1000 (constant factor \xe2\x80\x93 O(1))\xc2\xa0

Behavioral test based on Leadership Principles:[xc2xa0](#)

1. Tell a situation when you faced a bug and it took a lot of time to resolve and how did you handle that situation.

Round 4 was the final round and only 10 students gave it. I solved all the problems and hopefully optimally, but rejected after the fourth round 6/10 selected.

**Tips:**[xc2xa0](#)

- Every round starting: A brief introduction of interviewer and interviewee, so prepare one
- Every Round Ending: They asked, \xe2\x80\x9cAnything you want to ask about Amazon?\xe2\x80\x9d So be prepared for the same.
- Time and space complexity was asked for every question
- Production-ready code is required
- Not necessary to write to start writing from class and import, just required functions, assumptions (just ask before assumption) were allowed

Please mind my grammar and mistakes, good luck.

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# Amazon Interview Experience for FTE/6 months SDE-1 Internship

## \xe2\x80\x93 AmazeWow

- Difficulty Level :\nEasy
- Last Updated :\n04 Mar, 2022

I applied for Amazon SDE-1 Internship through the AmazeWow program only for Women.

**Online Test Round:** It was a quite easy round. It consists of around 28 MCQs on the basic concepts of Data structure and algorithms, C/C++ outputs, Time, and Space complexity.

1. How many push and pop operations for below operations will be required if we implement a queue using stack?

```
push (5), push (7), push (2), pop (), push (3), \r\npop (), pop (), push (6), pop (), pop ()
```

In this question, 4 options were given stating no of push and pop operations. The trick was when we implement a queue using stack, we will require 2 stacks and then count no. of push and pop operations.

**\xc2\xd0Second Round:** This round consisted of 2 coding questions which were quite easy.

1. Given a string of type **a+b=c** where any one of them is unknown, we have to find its value.

\xc2\xd0 \xc2\xd0 \xc2\xd0 \xc2\xd0 \xc2\xd0 \xc2\xd0 \xc2\xd0 **Example:**

Input: x+5=7 Output: x=2

\xc2\xd0 The only challenge was to consider each case and convert string to an integer.

\xc2\xd0 Given a large number in the form of the string, output its remainder modulo 11.

\xc2\xd0 **Example:** \xc2\xd0

Input: 121 Output:0

**Technical Interview Round 1:** The interview started with the interviewer\xe2\x80\x99s introduction followed by mine. Then he asked me about anyone project mentioned in my resume. Then he jumped to coding questions. The interview lasted for an hour.

1. Given n students starting from 1 in circular orientation starting from k and m gifts. Distribute these gifts among n students one by one. The last gift is broken. The return which student got the broken gift. It was a simple problem I started with traversing twice using 2 loops then he asked me to remove the last loop after that he asked me to remove the first loop as well, I took some time then did it \xe2\x80\x93 Just a modulus% operation was needed to make it work in O(1)\xc2\xd0
2. [Next Smaller Element](#)

With this, the interview ended. Within 1 week, I got the mail that I have been shortlisted for the next round of interviews.

**Technical Interview Round 2:** The interview started with the interviewer\xe2\x80\x99s introduction followed by mine. Then he jumped to coding questions. It lasted for 1.5 hours.\xc2\xd0

1. [The Largest value in each level of Binary Tree](#)
2. [Farthest Smaller element in an array](#)

I started with brute force then the interviewer asked me to think of more efficient solution, so I was not sure which data structure to use. So I started with a stack like next smaller but it turned out to be wrong. Then I tried queue but the interviewer said it will have the same complexity as the brute force. Then he helped me with a hint to think about binary search after which I was a little confused, but he asked me what is going on in my mind and helped me again with a hint. Then I was able to code it further \xe2\x80\x93 time complexity O(n).

With this, the interview ended. I was nervous because I could not do the second question all by myself but luckily I GOT SELECTED.

### Tips:

- Be loud while thinking so that interviewer could come to know your thought process, take it as a discussion and not a

test.

- Don't hesitate in asking for help if you got stuck somewhere.
- Ask every detail about the question like constraints.
- Be confident
- Practice questions from **GeeksforGeeks** and **leetcode**.
- Discuss space and time complexities with the interviewer.
- If you know the answer then pretend that it is a new question and take some time.
- Always start with brute force first.

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# Amazon Interview Experience for SDE Internship

- Difficulty Level :\n[Medium](#)
- Last Updated :\n14 May, 2021

I applied for Amazon SDE Internship through college.\xc2\xad

**Online Round:** There was an online round that had technical MCQs and 2 coding questions. The coding part was pretty simple. 7-8 people were shortlisted for the interview process.\xc2\xad

**First face-to-face Interview Round:** The round lasted for an hour. Firstly the interviewer asked me to introduce myself. Later there were 3 coding questions.

1. [Sort an array containing 0s, 1s and 2s](#). The interviewer wants you to give the optimized solution. They will help you to optimize the code.
2. [Given a 2-dimensional array containing 0s and 1s in ascending order in each row. Find the array which has the most 1s.](#) Firstly I gave 2 solutions for this problem he wanted me to optimize it further.
3. Given a binary tree in which the leaf nodes point to the adjacent leaf nodes and vice versa. Find if the given node is a leaf node or not. This can be solved by traversing the tree and checking if( node->left->right==node || node->right->left==node) return true;

The selected candidates were called for the next round.

**Second face-to-face Interview Round:** This round lasted for 1&1/2 hour. Three coding questions were asked.

1. [Given inorder and preorder traversal of a tree. Print the actual tree.](#) The interviewer verified it with an example.
2. [Rotate a given 2D array by 90 degrees.](#) Again the optimized solution was asked.
3. Given a number and asked the number of ways the number can be obtained as a sum of the natural numbers. I faced some issues coding this. The interviewer helped along the way and it is done using recursion.

2 people were selected for the internship from our college.

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# Amazon Interview Experience for SDE-1 FTE/6 Months Internship \xe2\x80\x93 AmazeWow

- Difficulty Level :\nHard
- Last Updated :\n04 Mar, 2022

Online Coding Test: The test consisted of 28 MCQs primarily focused on C/C++ outputs, data structures, OOPS Concepts. 2 coding questions were also asked.

1. Find mean, median, mode.
2. An array consisted of a number of chocolates each child had, we need to find a number of steps in which all children can have the same chocolates such that one can pass its chocolates to next one.

Coding Questions were comparatively easy. The most difficult part was the output based question. I was lucky enough to clear the online round.

Then I had 4 rounds of interviews that were conducted through Amazon Chime. Each interview was about 1hour except the 3rd one, it lasted for about 1hr 30 minutes.\xc2\xab0

**Round 1 (Coding 1):** It started with the introduction of the interviewer and then mine. He then directly jumped to coding questions

**Questions asked were:**

1. [Rearrange characters in a string such that no two adjacent are same](#)
2. Given 2 strings of numbers, I was asked to add them.

With this, my first round ended.

**Round 2 (Coding 2):** After introducing himself, he directly jumped to the coding question

1. [Path in a Rectangle with Circles](#) I was required to print the path.

The interviewer then asked me to make the code easier to understand by using structures. With this, the interview ended.

**Round 3 (Tech):** This round started after the introduction. The interviewer jumped to coding questions.

1. [Box Stacking Problem](#) (But there was an assumption that we have the only box of each dimension.)
2. A person is standing at floor \xe2\x80\x98A\xe2\x80\x99 and wants to go floor \xe2\x80\x98B\xe2\x80\x99 using a lift. A lift can either go x floors up and y floors down. I was supposed to tell the minimum number of steps.

After thinking, I reached a solution using BFS and the interviewer was satisfied.

The interviewer then asked some basic computer fundamental questions:

- Features of oops
- Where we should not use the concept of oops
- Deadlock and its conditions and its avoidance
- OSI layer which among these layers is most important according to me

- Difference b between SQL and no-SQL

With this my 3rd round ended.

**Round 4 (Technical+HR):** The interview begins with the introduction of the interviewer and the mine. The interviewer asked me about my projects.

Then asked some HR questions like:

- The technical problem you faced during any of your projects
- Anything you learned on your own

Then the interviewer asked questions related to CS fundamental

- What happens when we type www.amazon.com basically he was asking about DNS
- Deadlock and its conditions
- OOPs and its features \xc2\xa0I explained using real-life examples
- No-sql
- ACID properties

Then he asked me one coding question\ xc2\x a0

1. [Reverse words in a given string](#)

But here the string was in form of linked list like:\ xc2\x a0

g->e->e->k->s->\ ' \ '->f->o->r->\ ' \ '->g->e->e->k->s

I used the same i.e. reversed the entire linked list and the reversed words using the approach same as [Reverse a Linked List in groups of given size](#) with this my 4th round ended. After 2 days, I got the result and I am offered FTE + 6 months internship.

#### Tips:

- Be loud while thinking so that interviewer could come to know your thought process.
- Don\xe2\x80\x99t give up coding questions, keep on discussing it with the interviewer and you will reach to the approach.
- Be confident
- Practice questions from GeeksforGeeks and leetcode.
- Should be able to calculate space and time complexities.

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# Amazon Interview Experience | 2 months Internship

- Difficulty Level :\n[Easy](#)
- Last Updated :\n23 Aug, 2020

It was a one-hour technical interview under AmazeWoW program for 2 months internship after the third year.\xc2\xab0

**First 20 minutes:** The interviewer started with asking questions on OOP concepts, revolving around abstraction, polymorphism, inheritance, accessibility of variables.\xc2\xab0

After OOP, we moved to Computer networking basics. He asked me about HTTP, https, TCP/IP, different layers(7) in networking.

**Next 40 minutes:\xc2\xab0**

1. [The first question was to do post order traversal of binary tree using a single container.\xc2\xab0](#)
2. The second question was based on array. Given an array of integers, find triplets x, y,z such that all three are elements of the array and  $x^2 + y^2 = z^2$ .

\xc2\xab0 \xc2\xab0

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# Amazon Interview Experience | On-Campus for SDE-1

- Difficulty Level :\nHard
- Last Updated :\n18 Nov, 2021

There were totally 5 rounds,(1 online coding Test+3 Technical Interviews+1 (managerial-cum-technical \xc2\x90Round))

## Round-1(Online Coding Test)

The test was conducted on amazon\xe2\x80\x99s platform.

It had 4 sections:

1. Code Debugging (C, C++, Java)[Not sure of python and other languages]. (20 minutes)
2. Aptitude and Reasoning Ability. (35 minutes)
3. Workstyles Assessment. (20 minutes)
4. Coding Round. (70 minutes)

The first 3 sections were fairly easy, but one needs to be a tad bit quicker to finish all the questions on time.

There were 2 coding questions. Different sets had different questions. links to a few of them are as follows:

Q1) <https://www.geeksforgeeks.org/merge-two-sorted-linked-lists/amp/>

Q2) <https://www.geeksforgeeks.org/clone-linked-list-next-arbit-pointer-set-2/>

Q3) [https://www.geeksforgeeks.org/search-in-row-wise-and-column-wise-sorted-matrix/ \xc2\x90](https://www.geeksforgeeks.org/search-in-row-wise-and-column-wise-sorted-matrix/)

Q4) <https://leetcode.com/problems/two-sum/>

Q5) <https://leetcode.com/problems/critical-connections-in-a-network/>

## Round -2(Technical Interview)

Q1) <https://www.geeksforgeeks.org/check-number-can-expressed-sum-consecutive-numbers/>

The solution given on the above link was not expected, but the interviewer was satisfied\xc2\x90  
with  $O(n^{0.5})$  approach

Q2)<https://www.geeksforgeeks.org/print-k-sum-paths-binary-tree/>

## Round-3(Technical Interview)

Q1)The idea was similar to the problem given in the link below, but the question was completely different.

<https://www.geeksforgeeks.org/painters-partition-problem/>

Q2)<https://stackoverflow.com/questions/28871860/algorithm-to-find-the-maximum-non-adjacent-sum-in-n-ary-tree>

## Round-4(Technical Interview)

### Q1)<https://www.geeksforgeeks.org/minimum-steps-reach-target-knight/>

A lot of reasonings and variations(like, why BFS, can we do with DFS, if no then why?, its time and space complexity, can we do by using only O(1) memory to keep track of distance, etc ). \xc2\x0

**Q2)**As the first question gulped the majority of the time because of its variations and reasoning, he told me that he would ask me a theoretical question.

So, first, he asked me to write down all the data structures which I know. And then, to think of real-time applications of each of them. \xc2\x0

## Round-5(Technical-cum-Managerial)\xc2\x0

### 1)<https://www.geeksforgeeks.org/find-rotation-count-rotated-sorted-array/>

**2)**What would you do if you are stuck in a huge Technical problem? Support your answer with a realtime situation you have faced.

**3)** Describe an incident where you were in a difficult situation(professional, not personal) first but then, finally came out of it successfully?

And a few other \xe2\x80\x9cDescribe an incident\xe2\x80\x9d Questions were also asked.  
\xc2\x0

## Additional Information

- The Interviews were conducted on Amazon Chime(A video calling platform).
- Coding questions were asked to code on Amazon\xe2\x80\x99s LiveCode platform where both the interviewer and the interviewee can simultaneously edit and view the code.
- The Interviews were of 1 hr each.

## Tips:

- Be thorough with \xc2\x0Time and space complexity calculation, as it is the first question you might get after proposing an algorithm to the interviewer.
- Don\xt be silent in the interview, keep sharing all your thoughts and budding ideas, it would not only engage the interviewer but also help you to get fresh ideas.
- Be polite and carefully listen to the interviewer(you might be lucky to grab a few clues).

A big Thank you to **GeeksforGeeks** for transforming me from a reader to a writer.

\xc2\x0

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# Amazon Interview Experience | On-Campus for SDE-1

- Difficulty Level : \n [Hard](#)
- Last Updated : \n 17 Aug, 2020

Recently, Amazon came to our campus for the role of Software Development Engineer. The hiring process consisted of 1 coding test and 4 interview rounds.\xc2\xao

**Round 1 (Coding Round):** The coding round consisted of a code-debugging section, Aptitude questions, and 2 coding questions. The code-debugging section was simple where we had to find the fault in the code due to which wrong output was coming. Aptitude questions were general logical-reasoning questions. The coding questions were also easy. I only remember one question.

- [Find an element in a sorted 2-D matrix.](#) \xc2\xao

After this round, 57 people were shortlisted for interviews. Due to the current situation of coronavirus, all the interviews were conducted online on the Amazon Chime platform.\xc2\xao

**Round 2 (Technical):** I was asked three coding questions. I was asked to write the code on the LiveCode site that Amazon uses and discuss the time and space complexity.\xc2\xao

- [Find the number of disconnected components in a graph.](#) \xc2\xao

I first gave a DFS approach by using a visited array but the interviewer asked me to use O(1) space. Then, I suggested changing the node value when we visit the node.\xc2\xao

- [Populate the next pointer in a binary tree.](#) \xc2\xao

I first gave a level order traversal method which required a queue. She then asked me to do it in O(1) space. So, I gave a recursive solution in which we traverse each level before moving forward.\xc2\xao

- Given a BST, find the number of arrays that will result in the same BST.\xc2\xao

**For eg \xe2\x80\x93 Given a BST like this:** One array is 2 3 4 5 7 6 10. Another array is 2 5 7 6 10 3 4. But this is not valid array \xe2\x80\x93 2 5 10 7 6 3 4. This is because if 10 comes before 7, then 10 can become the root and 7 become the left child which will result in different BST.\xc2\xao

```
5\r\n / \\\r\n 3    7\r\n / \\\r\n n2   4 6 10
```

**Round 3 (Technical):** The interviewer first asked me some questions on the project that I had done. Then, he asked me two coding questions.\xc2\xao

- Given an array where each element denotes the cost, we will take two elements, add them, then insert it back in the array. The cost of the operation is the sum of the cost of both elements. We have to minimize the cost.\xc2\xao

**Eg:** given array as 2, 3, 4, 10. The minimum sum is 5 (2+3) + 9 (5+4) + 19(9+10) = 33.\xc2\xao

The solution that I gave was to insert all elements in a min-heap (implemented as a priority queue) and then pop two elements from the queue, add them and push it back in the queue. We will do this till the size of the queue becomes 1. He then asked me to write the complete implementation of a priority queue, that is, the push, pop, top, empty, and size functions.

- [Devise a stack data structure that performs the following operations in O\(1\) time \xe2\x80\x93](#)

## push, pop, top, max element, min element.

I first gave a solution by using three stacks one for the actual stack, one for min element, and one for the max element. He asked me to optimize the space complexity. So, I gave a solution where we encode the min element in the stack itself.

**Round 4 (Technical):** In this interview, I was asked questions from literally all topics. He started with networks and asked me all the steps that happened when I type www.google.com. Then, he went on to ask what happens in the OS when I type this and how does the OS responds to this high priority process. Basically, he was asking about the scheduling policy used for scheduling a high priority process. He then asked me what happens in the server and possible causes of bottlenecks in servers. Then, he moved on to OOP and asked me about the importance of inheritance and interfaces in OOP. He then asked me two coding questions.

- Given a linked list, return a new linked list such that the order of nodes us 1->n-1->2->n-2 and so on.

For this, I gave the solution to split the linked list in the middle, reverse the second half and traverse both the halves alternately.

- Given a hashmap, we need to print the hashmap in sorted order.

For this, I didn't know the concept of a linked hash map in Java. He gave me the concept of a linked hashmap as I was stuck. I gave a solution to add the key-value pairs in a vector, sort them, traverse the vector and populate the next pointers in the nodes of hashmap. Then, by just traversing the hashmap, we will get a sorted order of nodes.

**Round 5 (Behavioral + Technical):** In this round, the interviewer asked me many behavioral questions. Some of them were about the difficulties I faced in a project, how I solved them, and how I will handle disagreements in a group. Then, he asked me two coding questions.

- Find the number of couplets and triplets in an array whose sum is 0. I gave him the two pointer approach for solving this problem.
- Given a string, I have to find the longest substring with no repeating characters.

This is a basic sliding window problem where the window will only contain non-repeating characters. We will update the max length if the size of the window becomes greater than the max length.

In the last round, the interviewer was more interested in my approach than the code itself. Also, he asked a lot of behavioral questions in the last round. This can be considered as an HR round, although it was not explicitly mentioned anywhere.

Overall, the interviews were fascinating and whenever I got stuck somewhere, the interviewer would guide me in the right direction. In the end, 7 people were shortlisted for the job, and luckily, I was one of them.

I would suggest doing the amazon interview questions from GeeksforGeeks and interviewbit as they contain all the types of questions asked to date. The archive interview questions in GeeksforGeeks are very helpful as it contains all types of problems with varying difficulty. I would also suggest revising the concepts of Networks, OOP, OS as they might ask questions from those topics too.

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# Amazon Interview Experience | Internship \xe2\x80\x93 AmazeWit

- Difficulty Level :\nMedium
- Last Updated :\n17 Aug, 2020

I got to know about Amazewit through the Training and Placement Cell of our college. Check it out here \xe2\x80\x93 <https://www.amazewit.in/>. They had a recruitment drive for both 2021 and 2022 batches. I think their criteria was CGPA>=6.5 , No backlogs, and opened applications on 20th April till 5th May 2020. I received an Online Assessment confirmation shortly after that. This was followed by a series of webinars through Facebook live that might also be available at AmazeWit\x80\x99s Facebook Page.

## Online Assessment \xe2\x80\x93 May 22nd \xe2\x80\x93 24th

They sent extensive details about the assessment and we could attempt it anytime within the test duration. They also held a webinar to clarify all relevant doubts. It had the following sections:

(i) **Code Debug** \xe2\x80\x93 20 minutes for I think 4 or 6 questions, I don\x9t remember exactly, but they were fairly simple and time was adequate.

(ii) **Coding** \xe2\x80\x93 70 minutes for 2 questions. the questions weren\x9t direct but if you read them carefully, they boiled down to simpler problems like as follows.

1. It was something like there is flight, and select a pair of movies such that the maximum possible sum of the time is 30 mins less than the time of the flight. Return the index of the pairs. So it boiled down to <https://www.geeksforgeeks.org/pairs-difference-less-k/> . I think I missed some corner case here, as all of my test cases didn\x9t pass.
2. It was something like you need to deliver something so find the closest warehouse. So it boiled down to <https://leetcode.com/problems/k-closest-points-to-origin/> . All test cases passed.

As far as I remember I solved both of them with a sorting approach.

(ii) **Work Style Assessment** \xe2\x80\x93 10-15 minutes \xe2\x80\x93 I was 100% honest and didn\x9t think too much really, and I recommend the same.\xc2\xab

(iv) **Logical Reasoning** \xe2\x80\x93 35 minutes \xe2\x80\x93 I had not prepared for this. We couldn\x9t skip and come back to questions here, I did as many questions I could do as quick as possible.

## F2F Interview \xe2\x80\x93 18 June

I had a really nice and humble interviewer !\xe2\x80\x99d say, it was a wonderful experience. I was pretty excited too. We had it over Amazon Chime, due to the pandemic, and we both had our cameras on. (Some people\x80\x99s interviewers didn\x9t switch on their camera too though). He looked at my Resume and asked me to quickly go over it. He also asked me one very genuine question from skills that I had mentioned, about my choice of technologies.

Then we started with coding. Amazon has a very cool coding platform of their own for interviews. He commented and explained the questions there only.

1. <https://www.geeksforgeeks.org/check-anagram-string-palindrome-not/> , a fairly easy question to start with, i asked him some clarifying questions e.g. if its an ASCII string or Unicode and

- about my choice of using an array or a hashmap etc., explained my approach and time complexity of my approach, and then proceeded to coding.
2. <https://www.geeksforgeeks.org/find-missing-number-string-numbers-no-separator/> I was seeing this question for the first time and I don't remember my exact approach. I first explained my approach, time complexity and there he reminded me of the corner case of 99100. Then I coded my solution and did a dry run.
  3. <https://leetcode.com/problems/number-of-islands/>, here also I explained my approach and I had also done this question in the Leetcode Challenge. I had clarifying questions like, do we need to preserve our matrix, etc. (I in general ask a lot of questions for every task so I was really happy that interviews encourage clarifying questions and asked alp that I had xD ), and solved it and discussed the solution, time complexity etc.

We were a little bit over time, but my interviewer was gracious. He asked if I had any questions and I had thought of two, one related to Amazon's culture and one related to internships.

I was really happy with the process, and after a long wait we received the results on 6 August.

VERDICT SELECTED

I derived a lot of help and experience by reading interview experiences here at geeksforgeeks and hope to help others too! All the best!!

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# Amazon Interview Experience | Off-campus AmazeWow

- Difficulty Level : \n[Hard](#)
- Last Updated : \n04 Mar, 2022

## Round 1: Online Assessment

The AmazeWow assessment: 28 technical questions + 2 coding questions.

**Time:** 1.5 hours

### 1. \xc2\xd0Evaluation of Postfix Expression

\xc2\xd0 \xc2\xd0 \xc2\xd0 \xc2\xd0<https://www.geeksforgeeks.org/stack-set-4-evaluation-postfix-expression/>

**2. \xc2\xd0**Given n dices each with m faces, numbered from 1 to m, find the number of ways to get a given sum X. X is the summation of values on each face when all dice are thrown.

\xc2\xd0 \xc2\xd0 \xc2\xd0 \xc2\xd0<https://www.geeksforgeeks.org/number-of-ways-to-get-a-given-sum-with-n-number-of-m-faced-dices/>

Technical MCQs were based on Data structures, OOPs, Computer fundamentals, etc.

## Round 2: Technical Interview 1

**1. \xc2\xd0** Given a sorted array with possibly duplicate elements, the task is to find indexes of first and last occurrences of an element x in the given array.

\xc2\xd0 \xc2\xd0 \xc2\xd0 \xc2\xd0 \xc2\xd0<https://www.geeksforgeeks.org/find-first-and-last-positions-of-an-element-in-a-sorted-array/>

**2. \xc2\xd0** Given an N \* N binary maze where a 0 denotes that the position can be visited and a 1 denotes that the position cannot be visited without a key, the task is to find whether it is possible to visit the bottom-right cell from the top-left cell with only one key along the way.\xc2\xd0

\xc2\xd0 \xc2\xd0 \xc2\xd0 \xc2\xd0 \xc2\xd0<https://www.geeksforgeeks.org/maze-with-n-doors-and-1-key/>

Time and space complexity of each approach.

## Round 3: Technical Interview 2]

**Ques:** Given an array of strings \xc2\xd0

String 1 : a/b=1.6

String 2 : b/c=2.3

String 3 : p/q=2.8\xc2\xd0

\xe2\x80\x99

String n: y/m\xc2\xd0

Then return the value of a/c

There can be more such queries like f/a or anything.

Time and space complexity of the approach used.

## Round 4: Technical Interview 3

**Ques:** The cost of a stock on each day is given in an array, find the max profit that you can make by buying and selling in those days. Given conditions

(i) You can make any number of transactions.

(ii) For a particular day, you can either buy or sell a stock, but not both.

(iii) You cannot sell a stock before buying it. (Lol Quite obvious )

<https://www.geeksforgeeks.org/stock-buy-sell/>

**Modification:** Modify the code for k number of transactions instead of any number of transactions.

Time and space complexity for each.

Computer fundamentals and networking questions. A few of them are listed below:

(i) If we have our services over several locations, how do we reduce the latency for retrieving data?

(ii) What are the types of cache?

(iii) Difference between thread and process.

(iv) Which one is light-weight among thread and process and why?

(v) What happens when we type a URL on our browser?

(vi) How servers handle a large amount of load?

(vii) Networks among systems are centralized or peer to peer?

## Round 5: Technical Interview 4 + HR round

**Projects:**

Personal projects + projects completed during internships

**Fundamentals check:**

Some basic fundamentals of python and OOPs

(i) Difference between list and tuple

(ii) Difference between deep copying and shallow copying

(iii) Overloading and overriding

(iv) Given 2 examples of overriding , tell why or why not overriding concept will fail here.

## **Behavioral:**

Tell me about a time when you have faced some challenging situation in your past (during any project or internship) and how I tackled the situation.

## **Coding:**

Given an array of strings

Each string in the format <Operand><space><Operator><space><Operand>

Operand = [a-z]

Operator = greater than or less than sign (> or <)

Find if the given set of strings is valid or not. A set of string is valid if there is no paradox.

## **Verdict: Selected**

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# Amazon ACMS Interview Experience | SDE Intern

- Difficulty Level : \n[Medium](#)
- Last Updated : \n17 Aug, 2020

**ACMS** is **Amazon Campus Mentorship Series** for women in Tech. Amazon visits a few colleges to select a few students for this program by conducting an online exam.

**Selection process:** Amazon conducted a test to shortlist the students for the mentorship program. The test had around 23 MCQ\xe2\x80\x99s and 2 coding questions. MCQ\xe2\x80\x99s were quite simple. They covered Programming languages, DBMS, and few topics of OS.

The coding questions were simple too. One was the Coin Change problem (Minimum number of coins). I don\xe2\x80\x99t remember the other one but it was quite simple too.

The results were declared exactly after 15 days of the test.

**Mentorship Program \xe2\x80\x93 Sessions:** After Amazon shortlisted few students for mentorship, we had various sessions on Object-Oriented Principles, Amazon Leadership Principles, Data Structures and Algorithms, Databases, etc. There were 4 sessions one every month(almost) from February. \xc2\x90After the first session, we were divided into a team of 5 and were assigned a mentor. \xc2\x90

We were informed about the interviews in our last sessions and were asked to prepare all the CS topics. After our final session, we had a mock interview with our mentor where our mentor wanted to give explanations to us how interviews are done at Amazon. The mock interview was quite helpful to prepare for the original interviews.

**Mentorship Program \xe2\x80\x93 Team division and project:** The team division was random. We had a call almost every 2 weeks with our mentor, and we were working on a project decided by our mentor. The main aim of the project was to check if we\xe2\x80\x99re a team player and the technologies we know etc. Since it was the COVID season, the only first session was offline at the campus in Hyderabad. All the other sessions including the meetings with mentors were virtual.

We were given a month to complete the project. So the work division and the presentations were done accordingly. This gave us an experience of how projects are done at Amazon. The entire project was divided into 5 parts which were database designing, backend connectivity, 2 separate features, and front end. I worked on the front end of the project.

Later in the last week, we were asked individually to integrate the project and were asked questions on the integration of the project in the mock interview.

**Mock Interview:** Since the interviewer was my mentor itself, he directly started asking me a coding question and asked me to optimise as much as possible. The question was a basic problem on arrays: \xc2\x90

- [Given an array arr\[\] of n integers, construct a Product Array prod\[\] \(of the same size\) such that prod\[i\] is equal to the product of all the elements of arr\[\] except arr\[i\].\xc2\x90](#)

He then asked me not to use the division operator and asked me to modify as much as possible. After that, he asked me to add a feature to the project we did and asked me to code for the feature and make necessary changes. This was just for him to get an idea about us since the sessions weren\xe2\x80\x99t offline, they had to conduct a mock interview individually to check our

performance.

**Interview Round 1:** The interviewer asked me a question on strings. The question was quite simple.

- Given a string s with opening and closing brackets (parentheses), the number of parentheses to be removed to make it a valid string.
- I was asked to print the valid strings. I was asked to optimise as much as possible but since it was a timed interview for 1 hour, I couldn't code the entire thing.

**Interview Round 2:**

The interviewer started by asking me about myself and my **ACMS** experience and then he started asking coding questions. The question was similar to the Two Sum problems from leetcode.

<https://leetcode.com/problems/two-sum/>

The questions were simple and straight forward. If you're stuck anywhere make sure to ask the interviewer for hints. They will surely help you out.

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# Amazon ACMS Interview Experience

- Difficulty Level :\n[Medium](#)
- Last Updated :\n13 Aug, 2020

Hi! If you're looking to know about ACMS, I am here to share my experience with it.

## What is ACMS?

Amazon Campus Mentorship Series(ACMS) is a diversity initiative to help women in tech to integrate into business through a series of workshops, training and business communication. This follows the model of classroom based learning facilitated by Amazon leaders and spans over 4 classroom sessions over a course of 24 weeks. Each session is of 4-6 hours duration. Along with these sessions, students are grouped and assigned a small project to give them an opportunity to apply the learning. Mentoring is one the key factors and each group is assigned a mentor. These mentors work with their respective groups for the entire duration and help the students in completing their assigned projects.\xc2\xab

Amazon came to our campus and conducted the first round of selection on 25th January 2020, where 8 students were selected for the mentorship.\xc2\xab

Once the mentorship started we got to visit the Amazon Hyderabad Campus and have the first face to face session in the February of 2020. Although other sessions were to be carried out in a similar fashion, due to the pandemic, our face to face sessions were carried out online on Amazon Chime. In these sessions we learned topics such as Functional programming, OOPs concepts, Machine learning introduction, Problem solving, Data structures, Amazon leadership principles etc.\xc2\xab

In the April of 2020, we were assigned our teams( 8 girls from our college were made into 2 teams. Students of previous years were assigned teams randomly ) and our mentor made contact with us for the first time and notified us about the project. We were given around 45 days to complete the project during which our mentor was always available to clear our doubts and suggest new ways to approach the problem. It was a huge learning experience.

Our mentor also conducted mock interviews and weekly meeting to track our progress about the project and train us for the upcoming interviews and gave us tips to improve ourselves.

Our final face to face session was scheduled in mid July. Where we were informed that our interviews would be scheduled in July.\xc2\xab

Our interviews were conducted on Amazon Chime and a live coding platform. After a month of the interviews we were given our results, where 6 out of the 8 students have secured an intern position at Amazon.

## Interview Experience:

### First Round:

The questions were on the easy side.

- MCQs about C (find error, find output etc.)
- 2 programming questions ( learn standard Dynamic Programming questions)

## SDE Interviews:

**First Interview:** ( 1 hour interview. 2 questions apart from \xe2\x80\x9cIntroduce yourself\xe2\x80\x9d)

1. Given a sorted array whose size is unknown find the number of times a given element occurs.
2. Given an array find the shortest subarray to delete such that the remaining array is non decreasing order.

**Second Interview:** ( 1 hour interview (same day). 2 questions apart from \xe2\x80\x9cIntroduce yourself\xe2\x80\x9d)

1. Assume a binary tree with a mirror passing vertically through the root node. Given a node on the tree. find which node would become its reflection.
2. Given an array of stock prices. Find the maximum profit one can make by buying and selling any number of times. But you cannot sell before you buy.

Practice carefully and do not get nervous in your interviews. Never be afraid to ask your interviewer doubts or hints. For each question you should be able to give a proper time and space complexity analysis \xc2\x94 for every solution you propose.

All the best for your interview preparation.

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# Amazon Interview Experience for SDE-1 | Amazon-WOW 2020

- Difficulty Level : \n[Medium](#)
- Last Updated : \n04 Mar, 2022

Amazon has a special program called AmazonWOW for women. It is to promote women in technology. It is a very good opportunity for women as they have to only compete with other females, not with males. The online application came in April. The program consists of a two-month internship for prefinal year student and fulltime plus Internship for final year student.

It consisted of a total 4 rounds, first was an online coding contest and then 3 telephonic interviews.

## Online test :\xc2\xd0

The first round was an online coding round. It consisted of 2 coding questions and 28 MCQ. We had 1.2 hrs. The coding questions were quite simple but MCQs were very difficult. I would like to say that luck matters a lot in cracking online coding round.

**1. First question:** Find the longest common subsequence between two string. It is standard Dynamic programming question but the constraints were not very high so I solved it using recursion.

**2. Second question:** I did not find the exact question on any platform but it was very simple. You are given a string consisting of lowercase English alphabets, return the internet resource address of the string.

Internet resource address of a string is defined as

<protocol>://<domain>.ru[/<context>]

<protocol> can be either http or ftp.

<domain>is a string consisting of lower case English alphabtes.

<context> is a non mepty string of lower case English alphabtes.

Ex:\xc2\xd0: httpsunrux -> http://sun.ru/x

For MCQs, you must have a strong grip on OOP and c++ language.:

## Round 1:\xc2\xd0

For this round, I was given an amazon chime link and live code editor link in which I had to code. The interviewer started by asking me my introduction and then he gave his introduction. In my introduction, I told him about my passion for competitive coding, writing and reading.

Then Immediately we moved to coding questions. He told me that I have only 45 minutes to answer so I have to come up with the best approach possible.

**1. First Question:**\xc2\xd0 Find  $x^y \bmod z$ . I gave him the  $O(\log(y))$  approach. I covered all the edge cases when x will be zero or negative when y will be zero or negative. When y will be negative, he told me to return an error to the user. I coded properly using indentation and suitable variable and function names. I used int to store the variable but when the value is very high I should use long long int. I missed this case. He then moved to the second question.

**2. Second Question:** Given a set of dependencies I have to find one of the suitable ordering of the dependencies. I told him I will use topological sort for this. He told me to explain my approach and then I coded it. But while coding I missed an edge case when there will be a cycle in the dependency. He told me to correct my code. I corrected my code by checking if there is a cycle present in the dependency.

**3. Third Question:** For this question, I gave him two approaches, first one was linearly counting the no of x and second was using a modified binary search. He did not ask me to code this question.

The best part was that I had already solved all these questions before so I did not get nervous there. In the end, I asked him where I can improve, He told me to check code before finally submitting to the interviewer.

After 12 days the result of this round was declared.

## Round 2:\xc2\xd0

For this round also, I was provided with the Amazon chime link and live code link. The interviewer asked me two questions.

**1. First Question:** Add all greater values to every node in a given BST. I gave him O(n) time complexity solution. Initially, I had written the wrong code but my approach was right. He dry ran my code, pointed out the mistake that I made in code and told me to correct the code. I corrected the code and he was satisfied by my approach. I told him about the time complexity ie O(n). I told him if we consider internal stack then space complexity will be O(n) because in the worst case the height of BST can be O(n) if it is skewed BST.

**2. Second Question:** But in this question, He gave me three conditions.

1. You can traverse the data structure in only one direction.
2. You cannot use extra space ie in-place algorithm.
3. You can use any data structure of your choice.

My first approach was to use an array data structure. I told him that in first traversal I will find the count of negative numbers and then I will start filling my result array. But he said I cannot use extra space.

My second approach was to use a binary search tree and the result will be inorder traversal of the tree. But he told me that I have to return the data structure which I am using.

Then He asked me what are the data structures that I know. I told him I know heap, queue, stack, singly-linked list and doubly linked list. Then suddenly doubly-linkedList came to my mind and I told him I will use doubly Linked List. He told me that in doubly-linked you can traverse in both directions. Then I told him that I will use a singly linked list. He told me to write code and dry ran my code. He was satisfied with my code.

My second interviewer was a very helpful and knowledgeable person. In the end, he said \xe2\x80\x9cit was nice to interview you. \xe2\x80\x9d

After 11 days the second-round result was declared.

## Round 3:\xc2\xd0

For this round also, I was provided with the amazon chime link and live code link. The interviewer

was a very nice and chill person. He tried to make me comfortable. He introduced himself and then I gave my brief introduction. In this round, I was asked two questions. One was a coding question and the other was OS( operating System ) question.

**1. First question:** If we have a well-optimised code, On what factors the maximum no of threads in a process depends?

We had around half an hour discussion on this topic. I told him how threads are used in the client-server application, use of threads in a text editor which simultaneously performs writing, auto-correction and suggestions. He asked me if a site has 1 million clients, then 1 million threads will be created, I told him about the use of multiple servers. I told him the no. thread depends upon the resources of the machine. I told him it will depend upon the memory of the computer. Then He wanted to know, which memory affect it, primary memory or secondary memory. I told primary memory will affect the no of threads as all the processes/ threads reside in the primary memory. I was thinking of other factors also but then he moved to coding question.

After this, we moved to coding question.

**2. Second Question:** Find the first missing positive number in an array.

My first approach was to use hashing, the time complexity of this approach was  $O(n)$  and the space complexity was  $O(n)$ . He told me to do it in constant space. I suggested to him that whenever I will encounter an element and if it is smaller than n, then I will make element negative at that index. Then I will traverse the whole array again and if I find any index whose value is non-negative, its means that element is not present and it is the first missing positive no. If no such no. is found then the answer will be  $n$  ( size of the array ) + 1. But this approach will not work for an array containing negative and repetitive no. So I improved my code to handle the negative and repetitive no.

He was very much satisfied with my approach. In the end, he asked me to ask a question to him. I asked him how can I improve more. He seemed to be very much impressed by me. He told me that I am very sharp in handling all the edges cases and I am very focussed.

Result: **SELECTED**

**Some important tips:**

1. Always believe in your self.
2. Communication skills matter a lot in the interview.
3. Luck is an important factor, you can not ignore it.
4. Always be positive in life. No matter how difficult the situation do not give up.
5. Practise and patient is the key.

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# Amazon Interview Experience | SDE-1 (Off-Campus, 1 Year Experienced)

- Difficulty Level : \nMedium
- Last Updated : \n10 Aug, 2020

Hey guys !\xc2\xa0

I am sharing with you my interview experience with Amazon for SDE-1 role in June 2020. I was contacted by the HR asking me for my Resume. Next day she said she will be sharing an Online Assessment link.\xc2\xa0

## Round 1:(Online Coding Round on Amcat Platform)\xc2\xa0

There were two coding questions need to be completed in 90 Min.\xc2\xa0  
\xc2\xa0

1. <https://leetcode.com/discuss/interview-question/542597/>
2. <https://leetcode.com/discuss/interview-question/411357/>

<https://leetcode.com/discuss/interview-question/344650/Amazon-Online-Assessment-Questions/350386>\xe2\x80\xb3>

After this round, All rounds were **Virtual Onsite Interviews** of 1 hr each held on video call through Amazon Chime.\xc2\xa0

## Round 2:\xc2\xa0

This round started with the Interviewer\x80\x99s introduction and then my introduction. He then jumped to questions.\xc2\xa0  
\xc2\xa0

1. [Search an element in a sorted and\xc2\xa0rotated array](#)

I gave him the pivoted approach. He then asked me to code it on a live code share.\xc2\xa0

2. Follow-up question: He asked me to solve it in a single Binary Search without finding the pivot.\xc2\xa0

Then I gave him the Improved Solution and he asked me to code it.\xc2\xa0

3. Tell me about a project that you have completed in your current organization.\xc2\xa0
4. Behavioural question: Any situation when you had to cut corners to meet a deadline.\xc2\xa0

\xc2\xa0\xc2\xa0

## Round 3:\xc2\xa0

This round again started with the Interviewer\x80\x99s introduction and then my introduction. He then jumped to questions.\xc2\xa0  
\xc2\xa0

1. [Count number of occurrences \(or frequency\) in a sorted array](#)

First I gave him the naive approach and then optimized to the best solution. He asked me to code

it.\xc2\x0

2. There are N bags, each having some no. of coins given by an array. We will be making K turns. In each turn, we have to select a bag and take out half coins from it (if coins=even, then coins/2 else coins/2+1). Return the maximum no. of coins that can be taken out in K turns.\xc2\x0

Approach: Solved using Max Heap.\xc2\x0

\xc2\x0\xc2\x0

#### **Round 4:(Hiring Manager)\xc2\x0**

This round again started with the Interviewer\xe2\x80\x99s introduction and then my introduction. He then asked me a lot of Behavioural questions related to the projects for the first 40 minutes. [Here](#) you can find some Amazon Behavioural Questions. Then he asked 2 coding questions:\xc2\x0\xc2\x0

1. [Print all subarrays with 0 sum](#)

We first discussed the approach and then he asked me to code it.\xc2\x0

2. [Print all pairs with given sum](#)\xc2\x0

He wants me to discuss all the possible solutions (Naive, Sorting, Hashing) with their time complexities. Only the approach, no need to code.\xc2\x0

\xc2\x0\xc2\x0

#### **Round 5:(Bar Raiser)\xc2\x0**

This round was taken by a Senior SDE having 10+ years of experience at Amazon. The round started with his introduction and then my introduction.\xc2\x0  
\xc2\x0

1. Tell me about a project that you have completed in your current organization.
2. Some Behavioural questions related to the project.
3. [Transform a BST to greater sum tree](#)
4. [Find intersection of intervals given by two lists](#)

**Verdict: Selected**

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# Amazon ACMS Interview Experience

- Difficulty Level : \nMedium
- Last Updated : \n04 Aug, 2020

Hey Everyone! Amazon visited our campus for ACMS selection. I am sharing my experience of entire journey here.\xc2\xab0

**ROUND 1:** Everyone who satisfied the required cgpa (probably 7) criteria was allowed to sit for this round. There were three coding questions to be completed in 1.5 hrs.\xc2\xab0

1. Arrays and Strings\xc2\xab0

2. Linked list \xe2\x80\x93 A linked list was given : 1->1->1->2->2->3->\xc2\xab0

Required Output: 1->3->2->2->3 (finds the occurrence for each element in an unsorted list and printing it next to the element if frequency is greater than 1)\xc2\xab0

3. Linked List\xc2\xab0

**ROUND 2:** Shortlisted students received a mail from Amazon with another test link of duration of 1.5 hrs.\xc2\xab0

The test had two coding questions and 30 MCQs. MCQs were based on OOPS concepts, DSA, DBMS, OS and networking, Pointers in C++: concepts of pointer to a pointer, function pass by values versus pass by reference, expected output.\xc2\xab0

The selected students received a mail after 3-4 weeks. Mentorship was started where three people were assigned a mentor, SDE in Amazon who guided us throughout. There were 4-5 technical sessions where we were taught different topics like OOPS, Data structures, functional programming, DBMS, Design patterns, scalable services, web hosting, database clustering, NoSQL etc..\xc2\xab0

Along with the technical sessions, assignments were given each week. A project was also assigned to us. Based on assignments and project, we were shortlisted for interviews.\xc2\xab0

## **ROUND 3: INTERVIEWS\xc2\xab0\xc2\xab0**

I had two interviews on same day.\xc2\xab0

### First Interview:\xc2\xab0\xc2\xab0

1. I was asked about a puzzle. You can refer the link below to know exact problem statement.\xc2\xab0

<https://www.geeksforgeeks.org/puzzle-two-robot-parachute-line/>\xc2\xab0

2. Second question was easy.. it was similar to trapping rain water\xc2\xab0

<https://www.geeksforgeeks.org/trapping-rain-water/>\xc2\xab0

### Second Interview:\xc2\xab0\xc2\xab0

1. I was asked about my mentorship and projects.\xc2\xab0

2. He asked me questions about hashmap in detail.. collision handling, hashing, hash code etc.. He covered almost every topic related to hashing and hashmap in depth.\xc2\xa0

3. LRU Cache\xc2\xa0

4. Questions related to graphs and trees in depth.\xc2\xa0

Time complexity and space complexity for each question was asked.\xc2\xa0

After around 3-4 weeks, I got the mail of selection along with 3 other students from my college.\xc2\xa0

## **TIPS FOR PREPARATION\xc2\xa0**

I practiced for about 5-6 months . Initially I practiced topic wise , later when I was confident enough I started practicing company wise ( mainly for those companies which visited our campus). Also I made it a habit to read atleast one interview experience from gfg daily.\xc2\xa0

## **TIPS FOR INTERVIEW\xc2\xa0**

1. Think out loud. Interviewer is more interested in knowing your thought process than the exact solution. So, speak whatever you are thinking while creating a solution.\xc2\xa0
2. Don\x92t give the most optimised solution directly even if you know, tell the brute force solution first and then optimise the solution.. (my mentor gave me this tip since he had also interviewed many candidates and rejected few who acted too smart because he thought they are more of textbook geeks)\xc2\xa0
3. Ask the interviewer before starting to write the solution\xc2\xa0
4. Explain your approach first using examples and walk the interviewer throughout the solution. This creates an impression of clarity.\xc2\xa0
5. Interviewers drop hint whenever you are going in wrong path during interview, try to form your solution around that hint.  
\xc2\xa0

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# Amazon Interview Experience (On-Campus for Internship 2019)

- Difficulty Level :\nEasy
- Last Updated :\n29 Jul, 2020

Amazon visited our campus for internship and full time. I took part in the internship drive and I am sharing my experience here.

## Round 1 (Online) :

Everyone who satisfied the required cgpa (probably 7) criteria was allowed to sit for this round . It was mixture of aptitude and coding questions . The main parts were :

1. Logical Reasoning \xe2\x80\x93 Questions based on basic mathematics , relations , paragraph based questions were asked .
2. Debugging \xe2\x80\x93 We were asked to correct the given code / write the output of the given code in preferred language (c++, java etc).
3. Coding \xe2\x80\x93
  1. Graph based question (BFS) :  
<https://www.geeksforgeeks.org/shortest-distance-two-cells-matrix-grid/>
  2. Matrix based question :\xc2\xao  
<https://www.geeksforgeeks.org/search-in-row-wise-and-column-wise-sorted-matrix/>

I could solve both the coding questions in minimum time and space complexity .

## Round 2 (Pen and Paper Round) :

We were given two DSA questions and we had to write production ready code from scratch in 30 mins. The questions were:

1. <https://www.geeksforgeeks.org/lowest-common-ancestor-binary-tree-set-1/>
2. <https://www.geeksforgeeks.org/print-a-given-matrix-in-spiral-form/>

The code had to be syntactically correct and also all edge cases should have been covered . Additionally if you are confident enough do mention the time and space complexities. Small things like **proper variable names , edge cases consideration , neat code** makes a huge difference .

## Round 3 (PI) :

This was the first face to face interview round . The interviewer was friendly and made me feel at ease before starting the interview . First he had a quick look at my cv . I didn\xe2\x80\x99t have any personal project / previous internships / extra technical skills .So I was asked mostly conceptual questions . \xc2\xao\xc2\xao

He asked me my preferred programming language . (I said C++). He asked me some questions on object oriented programming aspect like what are the main features of object oriented programming , difference between the access specifiers , where to use what , what are the benefits of oop , inheritance & polymorphism in depth etc .\xc2\xao

He asked me some dbms questions . I was asked to write one or two sql queries mainly based on joins.

Then he shifted to DSA . I was asked about hashing \xe2\x80\x93 how it is implemented , types etc . I was also asked to design a hash function of my own . I couldn\x9t answer this question perfectly . Then I was asked two DSA questions \xe2\x80\x93

1. LCA : <https://www.geeksforgeeks.org/lowest-common-ancestor-binary-tree-set-1/>

At first I couldn\x9t give the space optimized solution . He gave me some hints and ultimately I could give the space optimized solution .

\xc2\xd0

2. <https://leetcode.com/problems/k-th-symbol-in-grammar/>

I could give the recursive solution for this but it was not space optimized , so he gave me several hints . I followed them ,even went in the right direction but couldn\x9t come up with the correct solution . However I shared my thought process throughout the discussion .

This round took about 1 hour . Some of my friends were called for a second PI round .

**NOTE \xc2\xd0:** It\x99s better to be fluent in java as most interviewers prefer that . Also it\x99s not always important to give the correct code. The way we are approaching the question , our thought process matters as well . Therefore **think loud**.

**Verdict :** Selected

I practiced from geeksforgeeks for about 5-6 months . Initially I practiced topic wise , later when I was confident enough I started practicing company wise ( mainly for those companies which visited our campus). Also I made it a habit to read atleast one interview experience from gfg daily .

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# Amazon Interview Experience- System Dev Intern

- Difficulty Level :\n[Hard](#)
- Last Updated :\n30 Jul, 2020

## Written Test

There were 30 MCQs based on DBMS, OS, output questions, OOP concepts. And there were 2 coding questions \xc2\x90

- One simple question based on the array.
- Second based on Dynamic Programming [Number of ways to get a given sum with n number of m faced dices.](#)

Both the coding question needed to be solved to proceed for the interview.

Based on my performance in the written test and maybe my resume they had selected me to interview for the System Dev Intern.

## Interview Round -1

The interviewer went through my resume. Without wasting any time he said let\xe2\x80\x99s move into coding. He told me that first he would explain/write the question. Then I will have to tell my approach and then after the approach in final, I will write down the working code in an A4 size paper.

Question- \xc2\x90[Search an element in a sorted and rotated array](#)

I told him about the approach to find the pivot using binary search and then apply binary search in two half to find the element. He told me if I can find the pivot using binary search then I can also find the element without finding the pivot. I got stuck at this moment. Then I asked him for a hint he said you have the first element in the array, last element and the middle element how you can use it, using this I was able to solve and write the working code in the paper.

Why I used mid= start +(end-mid)/2 ? \xc2\x90(to avoid overflow!)

Time Complexity of the program was asked. ( O(log n) )

Then he asked me some questions related to my project, internships and all went fine.

## **Interview Round -2**

The interviewer started that your projects and internships were discussed by the previous interviewer lets start with coding. He asked a simple character count program but basically wanted to know about my knowledge about STL i.e use of Map.

The main interview started with questions from subjects

- Basic shell commands like cd, pwd and also asked me grep, cut commands as had done shell scripting before in my project.
- Operating system related question, scheduling
- What happens when I write a URL and press enter in the browser.
- Networking related questions like TCP and UDP
- He gave me some example and asked which protocol is used here.

- And some scenarios which one should we use and why?
- When should we increase the number of servers and when we should increase the performance of servers. (Vertical and Horizontal scaling)

That\xe2\x80\x99s all at the end of the day I was selected.

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# Amazon Interview Experience | SDE-2

- Difficulty Level :\n[Medium](#)
- Last Updated :\n18 Sep, 2020

I was recently interviewed for Amazon SDE 2. There was a **online test** followed by **4 rounds** of online interviews.

## Online Test : 2 Questions.

1. You are a in-flight movie service provider. You are given a list of movie lengths and the duration of the flight. Return a pair of (2) movies whose combined length is the highest and is less than or equal to flight duration. If multiple such combinations are possible, return the pair which has the movie of longer longest duration.

Ex :

MovieLengths : {27, 1, 10, 39, 12, 52, 32, 67, 76}

Flight Duration : 77.\xc2\xa0

The 2 possible pairs are (1,76) and (10,67), The answer is (1,76) as per the last constraint.

\xc2\x02. You are given a list of pairs of items(strings) where each pair is an association. Return the association group with the highest number of elements. If two groups have the same size, return the group that has the lexological smallest element between these 2. Also while returning the group, return it in a lexological sorted order.

Sample Input : {{Item0,Item1}, {Item2, Item3}, {Item0, Item4}}\xc2\xa0

## Round 1: Technical round and some Amazon Leadership Principle questions.

1. Brief Introduction.
2. <https://www.geeksforgeeks.org/find-number-of-islands/>
3. Why Changing Company.
4. Why amazon.
5. Explain a situation where you have taken an initiative in the current role that helped the team/company in a quantitative way.
6. Explain a situation where you solved a problem which had a lot of time constraint associated with it.

## Round 2: Technical Round \xe2\x80\x93 1st Try

1. <https://www.geeksforgeeks.org/longest-increasing-subsequence-dp-3/>

I had internet problems, so had to retake round 2.

## Round 2 : Technical Round \xe2\x80\x93 2nd Try

1. Given a list of pairs of characters \xe2\x80\x9cPairs Array\xe2\x80\x9d and a list of double

numbers \xe2\x80\x9cWeights Array\xe2\x80\x9d resolve the weights of query array.

Sample Input :

Pairs Array : {{a,b}, {b,c}, {c,d}, \xe2\x80\xa6}

Weights Array {5.0, 7.0, 2.0,\xe2\x80\xa6}

Query Array {{a,c}}

Explanation : each object in Pairs array is associated with the equivalent element in the weights array as follows.

a/b = 5.0, b/c = 7.0, c/d = 2.0.

Query = {a,c} = a/c = a/b \* b/c = 5.0 \* 7.0 = 35.0

So the answer is 35.0.

Do Note that the Weight Array can have Zeroes.

2. asked to write code, explain algorithm and space, time complexity.

### **Round 3 : Hiring Manager Round: (Design)**

1. Brief Introduction.
2. Describe projects I had worked on.
3. Some technical questions on the projects.
4. Explain a situation where you had to go deep to resolve an issue.
5. Design a file sharing system with Version control of files. (Dropbox)

### **Round 4 : Bar Raiser:**

1. Give the result of \xc2\xad<https://www.geeksforgeeks.org/previous-greater-element/> and <https://www.geeksforgeeks.org/next-greater-element/> in a single pass over the input data.\xc2\xad
2. Explain a situation where you have taken an initiative in the current role that helped the team/company in a quantitative way.
3. Explain few answers in the previous interviews that you would like to change now.
4. Explain few design patterns that you have used till date.
5. Elaborate on the software designs that you have created in you work.
6. Design a Chess Game.\xc2\xad

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# Amazon SDE Internship Interview Experience | On Campus-2019

- Difficulty Level :\nBasic
- Last Updated :\n14 Jul, 2020

**AUG-2019**

**ROUND 1:** It was a Computer Based Test Interview of 90 min.

Difficulty : Medium.

## 3 TIMER SECTIONS :

- 1- Aptitude questions.
- 2- Debug the code.(JAVA/C++/C /PYTHON ETC.)
- 3- Two medium coding questions .

- <https://www.geeksforgeeks.org/round-robin-scheduling-with-different-arrival-times> . PS:OS-based coding question
- Finding path in matrix.

20 /90 got selected.

## ROUND 2: Coding Interview Round

Started with friendly handshake and cliche question \xe2\x80\x9d Tell me about yourself something unique which is not mentioned in cv\xe2\x80\x9d .

All the coding questions were asked in 3 phases:

- 1-Data structure & Algo to be used
- 2- Writing explicit code & explaining complexity.
- 3-Again solving it with modifications & optimization.

Q1: <https://www.geeksforgeeks.org/minimum-number-of-jumps-to-reach-end-of-a-given-array/>

Further solving if negative jumps are given.

Q2: <https://www.geeksforgeeks.org/minimum-time-required-so-that-all-oranges-become-rotten/>

The main focus was on algo used i.e. BFS

Q3: <https://www.geeksforgeeks.org/check-if-value-exists-in-level-order-sorted-complete-binary-tree/>

I told basic approach i.e. traveling in the right direction & then storing the required level and doing Binary search. But the use of gray code was required.The interviewer helped me to get to the soln.

Q4: Sort a nearly sorted (or K sorted) array.

Interviewer hinted to use searching algo.I got the point to use insertion sort.

Then he asked if i could use any data structure to optimize it .I used heap .

There wasn\xe2\x80\x99t any time pressure .If you aren\xe2\x80\x99t getting any idea of how to start , interviewer will give you suggestions.

Do a dry run on paper to explain your code.

He moved to cse fundamentals :

- 1- Explain on paper Deadlock.
- 2-Elucidate inheritance.

3-Asked for preference JAVA /C++. I said java.

4-Does JAVA support multiple inheritance?

He expected me to explain the diamond problem with a clear example.

At last, asked me if I had any questions for him.

This is a great opportunity to showcase your oratory skills. I Asked about current projects, domain of intern work which would be given.

The interviewer was really helpful in steering my way to get to the optimized soln by giving constantly hints. Its just that you need to speak out your thought process.

I would like to owe 80% of my success in cracking amazon interview to GFG who have beautifully curated sections like :

1-AMAZON Interview Experiences.

2-<https://www.geeksforgeeks.org/must-do-coding-questions-for-companies-like-amazon-microsoft-adobe/>

3-<https://www.geeksforgeeks.org/must-coding-questions-company-wise/#amazon>

I must say there was a huge questions question resemblance that helped me to get on to the solution approach in time quickly.

I am really proud & elated from being an avid reader of AMAZON Interview Experiences to being a writer of one.

GFG is a must-read to crack such tech-giants company.

THAAANXXX TEAM GFG.

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# Amazon Interview Experience for SDE-Intern

- Difficulty Level :\n[Medium](#)
- Last Updated :\n08 Jul, 2020

I recently scored an SDE internship with Amazon (Gurugram). Here are my two cents.

1. Stop listening to whoever boasts about having an easy interview. A lot of folks become complacent and are unprepared when the interviewer throws a difficult problem at them.
2. Pick a website of your choice- Leetcode, Hackerrank, InterviewBit etc and practice every day religiously. There\xe2\x80\x99s no slacking on this front.
3. Cramming Amazon or XYZ company-tagged questions won\xe2\x80\x99t be sufficient. The idea is to practice enough questions to develop your coding abilities and become able to tackle a completely new problem.
4. Be comfortable with calculating the time and space complexities of your program.
5. You should know basic data structures (and a few advanced ones like Tries, balanced BSTs etc) and the complexities of the operations on them.
6. For the online round, try to solve a few debugging and SAT-style questions in a limited time.
7. Prepare solid answers based on your resume and projects for the behavioral round in tune with Amazon\xe2\x80\x99s Leadership Principles. Practice with a friend.

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## What is E-paper Technology in Amazon|x80|x99s Kindle?

- Difficulty Level :[Expert](#)
- Last Updated :[09 Jul, 2020](#)

**Amazon** is one of the most famous IT companies in the world. It had launched a product called Kindle (2007), aimed at book lovers who could now read several books with new technology. **E-paper** or [Electronic paper](#), aka Electronic Ink Display (EID), is the representation of ink on paper with the use of technology. Unlike other similar technologies that use back-light, E-paper follows the principle of reflection of light.

[https://www.amazon.com/dp/B07F7TLZF4?ref=ods\\_ucc\\_eink\\_oasis\\_nrc\\_ucc&th=1](https://www.amazon.com/dp/B07F7TLZF4?ref=ods_ucc_eink_oasis_nrc_ucc&th=1)

### Technical Details



### History

Gyricon was the first kind of E-paper and was developed by Xerox. Gyricon uses polyethylene spheres of 2 colors, black and white. The black part is negatively charged while the white part is positively charged. The application of voltage decides which color is visible to us. These spheres are suspended in oil so they can rotate freely when voltage is applied and placed in a transparent silicone sheet.

E-paper technologies are several such as *Gyricon*, *Electrophoretic Displays*, *Electrowetting displays*, *Electrofluidic display*, *Mirasiol*, etc. Here, we would be talking only about the technology used in Amazon Kindle, i.e. Electrophoretic Displays.

### Electrophoretic Displays

In Electrophoretic Displays, titanium oxide particles are placed in oil which is mixed with blue-black colored dye. When a negative voltage is applied, the particles move away from the viewer and are hidden behind the dye, which results in the viewer seeing the color of the dye. A positive voltage on the other hand makes light scattering particles move towards the viewer and he can see the color scattered by the light.

## Advantages

1. We can view E-paper in sunlight as well as in normal light (same readability as paper).
2. High resolution and high contrast are seen in E-paper.
3. It has a wide viewing angle of 180 degrees, we can view the screen with ease from any position (unlike LCD which is better viewed only from the center front).
4. E-paper is very thin and flexible.
5. It has very minimal power consumption (4 hours charge of Kindle can last up to 4 weeks).
6. It has a reflective display, so no need for a backlight.
7. They do not strain the users' eyes.
8. It is more suited to e-learners due to lower power drainage.

## Disadvantages

1. It has a low refresh rate. It cannot be used in products with high user interaction.
2. It has a ghosting effect, the images may be refreshed but their shadow may still be visible.
3. There is a lot of competition in the market. Other technologies have become industry standards and inventions in those, have also addressed the power drainage issue.
4. This works just like a normal book, hence, it becomes very difficult to read it in the dark.
5. Some sort of room lighting is always needed to read (it is unreadable in the dark).

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# Amazon Interview Experience | SDET (Off-Campus 2020)

- Difficulty Level : \n[Medium](#)
- Last Updated : \n29 Jun, 2020

I got to know about the open role through my college placement team. I later contacted the Amazon APAC recruiter on LinkedIn and forwarded my resume stating my interest in the role. the role for which hiring was begin done was *Software Development Engineer in Test.*\xc2\xa0

I along with 5 students in my department heard back from the recruiter and we were provided with an online test link.\xc2\xa0

The online test was begin held on mettle platform and had 2 coding questions and 20 MCQ\xe2\x80\x99s. the coding questions we easy-medium level and MCQ\xe2\x80\x99s covered ds/algorithm, c language, and OS concepts.\xc2\xa0

for clearing the online test I would recommend to regularly practice competitive programming and participate in ongoing contests\xc2\xa0

I cleared the online test and was further instructed that I will be having my first round in next 2 days.\xc2\xa0

## Round 1:\xc2\xa0

The interview was being conducted online on the amazon chime platform. I was asked to introduce my self by the interviewer and then I was asked two coding questions\xc2\xa0

problem 1 \xe2\x80\x93 <https://www.geeksforgeeks.org/minimum-number-swaps-required-sort-array/>\xc2\xa0

I was supposed to clearly explain all the approaches that I was thinking about and also **time and space complexity** were asked.\xc2\xa0

the interviewer was from java background and I coded in CPP so explaining syntaxes was also important.\xc2\xa0

## Round 2:\xc2\xa0

*This was **design round** and a design problem followed by a graph problem was asked\xc2\xa0*

design problem asked to me \xe2\x80\x93 <https://www.geeksforgeeks.org/minimum-number-swaps-required-sort-array/>\xc2\xa0

then I was asked \xe2\x80\x93 Number of connected components in an undirected graph\xc2\xa0

design problem asked that was asked to my friend \xe2\x80\x93 <https://www.geeksforgeeks.org/implement-a-dictionary-using-trie/> further asked to modify the code to also support <https://www.geeksforgeeks.org/auto-complete-feature-using-trie/>\xc2\xa0

## Round 3:\xc2\xa0

*This round was **project discussion** round and then question-related to core CS concepts were asked.\xc2\xa0\xc2\xa0*

The interviewer asked why did I choose to build the project and the difficulties that arose while building the project and how I overcame that. also, questions like why did I choose a certain\language or framework was asked.\xa0

Then question on OS \xe2\x80\x93 deadlock conditions and avoidance and some questions on DBMS were asked.\xa0

#### **Round 4 :\xa0**

*This was **bar raiser** round and the interview was being conducted by an engineering manager or someone at a higher position.\xa0*

question asked \xe2\x80\x93 <https://leetcode.com/problems/odd-even-linked-list/>\xa0

question asked that was asked to my friend

\xe2\x80\x93 <https://leetcode.com/problems/find-median-from-data-stream/>. Also, the whole approach was also asked and was asked to explain why does the algorithm work.\xa0

The overall interview process was very smooth but giving an interview online requires some preparation. The questions asked in Amazon interview are standard classical problems so make sure to practise enough problems. I would recommend first solving around 150 problems on LeetCode and then depending upon the company you are interviewing for practising problems focused on those companies\xca0

**All the best.**

\xa0

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# Amazon Interview Experience | AmazeWow 2020

- Difficulty Level :\n[Medium](#)
- Last Updated :\n04 Mar, 2022

## Round 1: Online Assessment

The AmazeWow assessment was of 30 questions including 2 coding questions.

1. <https://www.geeksforgeeks.org/counting-inversions>
2. <https://www.geeksforgeeks.org/number-of-ways-to-get-a-given-sum-with-n-number-of-m-faced-dices/>

Other 28 MCQs were based on technical portion including OOPCs, DSA etc.

## Round 2: Virtual Interview (Round-1)

The interviewer started with few subjective questions based on DBMS, OS and OOPCs.

Then for data structures he asked type of traversals in trees which later on turned into the\xc2\xa0 first coding question itself, after that he asked is there anyway to reconstruct the tree using these traversals. He then asked is there any exception to reconstruct tree using only one type of traversal. The answer was BST which was my coding question as- Construct the binary search tree using given preorder traversal.

<https://www.geeksforgeeks.org/construct-a-special-tree-from-given-preorder-traversal/>

Note: You have to ask about input method and other important details from the interviewer yourself.

The first approach I told was  $O(n\log n)$  which he asked to optimize then after few minutes of *thinking out loud*\xc2\xa0 and with a small hint I got the  $O(n)$  solution and after coding it, tried to dry run it and the question was done.

Then he moved to some basic paradigms of OOPCs , following with the difference between run time polymorphism and compile time polymorphism.

Here is the link <https://www.geeksforgeeks.org/polymorphism-in-c/> to the answer.

He asked the next question which was\xc2\xa0<https://www.geeksforgeeks.org/find-k-closest-elements-given-value/> with first  $O(n)$  then the optimised one with  $O(\log n + k)$ .

And with this round-1 ended.

\xc2\xa0

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# Amazon Interview Experience \xe2\x80\x93 Application Engineer

- Last Updated :\n08 Jun, 2020

## Round 1 : Scripting and troubleshooting

Scripting :-

1. Return the count of word present in a file
2. How will you kill one/multiple process in cmd
3. Return PID of a process
4. How will you Change file permissions
5. Return number of empty lines in a file
6. Return 1st word of every line in a file

Simple questions like these and basic linux commands to get current running process.

Troubleshooting :-

- How will you handle sudden increase in request count in the system
- How will you optimize and reconstruct your DB tables so that we can decrease search time (DB concepts)

\xc2\x0

***Basic Scripting and linux cmd, \xe2\x80\x9ccgrep\xe2\x80\x9d, \xe2\x80\x9csed\xe2\x80\x9d are some important cmd to brush up.\xc2\x0***

***Issue analysis and finding root cause is important in troubleshooting\xc2\x0***

## Round 2: Programming

Array questions

1. Find maximum sum in an array, provided \xe2\x80\x93 you cannot add the neighbour elements
2. Find maximum sum strictly increasing subarray .\xc2\x0[Check here](#)

\xc2\x0

***Time complexity, space complexity, handling edge cases like considering negative numbers, explain with proper example so that interviewer can get your point of view. Don\xe2\x80\x99t start to write the code at the first shot, ask questions and get a clear view about the question then start coding.***

## Round 3: Programming and Scripting

Again Array question similar to the previous round with slight modifications in constraints.

Write script to download a zip file from a website. Copy those to remote machine and extract that zip file in remote machine, Check file permissions. Return count number of html and css files in that directory.

SQL queries:-

1. Display the count of people staying a city.
2. Display the count of unique cities.
3. Display the count of people more than 19 age for every city.

Basic questions about previous experiences and projects.

***Brush up basic DB queries, array and strings concepts, Scripting and your leadership skills if you have experience.***

#### **Round 4: Hiring Manager**

Prepare yourself for Behavioral Questions and STAR interview questions.\xc2\x0Find the questions here.

:

<https://www.indeed.com/career-advice/interviewing/how-to-use-the-star-interview-response-technique>

***Speak confidently and take it slow & steady. Explain your project and everything clearly so that they will find easy to understand your contribution and efforts.***

\xc2\x0

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# Amazon Interview Experience | SDE (1.5 Year Experienced)

- Difficulty Level : \n [Hard](#)
- Last Updated : \n 26 May, 2020

**Round 1** \xe2\x80\x93 Online Coding Round on Amcat Platform:

1) Top N competitors similar to this

<https://leetcode.com/discuss/interview-question/460127/>

2) A very similar question to this, the same concept of BFS will apply. Given a 2D grid, each cell is either a zombie 1 or a human 0. Zombies can turn adjacent (up/down/left/right) human beings into zombies every hour. Find out how many hours does it take to infect all humans?

Example: Input: [[0, 1, 1, 0, 1], [0, 1, 0, 1, 0], [0, 0, 0, 0, 1], [0, 1, 0, 0, 0]]

Output: 2

Both top N competitors and the Zombie problems were quite interesting and challenging. Although the zombie problem was twisted in terms of description, the scope of the problem was exactly the same. Instead of Zombies, it was updating the adjacent servers in the least possible number of days. After this, in each round they were expecting the most optimized and productive code as I was 1.5 years experienced.

**Round 2** \xe2\x80\x93 Asked for my Work Experience and Projects in beginning and then jumped to questions. This was taken by 2 SDE\xe2\x80\x99s PEN-PAPER-ROUND:

1) Convert BST to Doubly Linked List without deforming tree and without using extra space except used for creating List. So this shouldn\xe2\x80\x99t be done in-place. Time and Space Complexity of my solutions :- O(n) & O(1) respectively.

2) You are given a subarray which has only 0\xe2\x80\x99s and 1\xe2\x80\x99s, Maximise the subarray containing 1\xe2\x80\x99s and in this you can only flip one 0 , tell the index of that 0. Similar to this <https://www.geeksforgeeks.org/find-zeroes-to-be-flipped-so-that-number-of-consecutive-1s-is-maximized/>

Time and Space Complexity of my solutions :- O(n) & O(1) respectively.

**Round 3** (It was a Managerial Round) -Discussion on one of my Projects and then jumped straight to questions, it was more of WHITE-BOARD-ROUND:

1) <https://www.geeksforgeeks.org/minimum-swap-required-convert-binary-tree-binary-search-tree/> Firstly asked about my approach and then code.

2) Implement LRU Cache.

Detailed discussion on Idea and then code <https://leetcode.com/problems/lru-cache/> I gave an approach similar to what needed in this. Worst time complexity for get() is O(1) and for put() can go to O(n).

3) Find the next greater element of every element in an array. I gave stack-based approach with time and space complexity of O(n) each traversing array from left to right, he wanted to work with the same approach but optimize it further, so I thought and told him that we can traverse array from right to left, it reduces the number of comparisons <https://www.geeksforgeeks.org/next-greater-element/>

Then we had a long discussion on Leadership Principles.

**Round 4** \xe2\x80\x93 This was taken by a SDE , he was very helpful and cool. Firstly he told me about himself and then asked about me and then he jumped to questions. He asked me the difference between Trees and Graphs and then he gave me this question.

1) We have been given a list of pair, which denotes edges of a tree, there can be an edge which leads to the creation of cycle, I have to find a pair, which causes cycle. If there are multiple edges

that form a cycle, then I have to choose last from the list. First I told him, DFS Approach and then I told him Disjoint Set, he was satisfied with the second approach and then I implemented it and wrote a solution for this problem. Time Complexity  $O(n^2)$  where n is the length of the list given in input.

2) Find minimum length subarray whose elements sum up to  $\geq k$  similar to <https://www.geeksforgeeks.org/minimum-length-subarray-sum-greater-given-value/> First I gave him  $O(n^2)$  approach and then  $O(n)$  windowing technique and then I wrote code for the second technique.

**Round 5(It was taken by a different manager)**-As this round started so late, I got tired till then. He was really very cool. He asked about me and how is my experience till now. then he gave me a question and he wanted robust productive code considering each and every test case carefully. This code should never crash or give wrong output.

1) Replace every element in array with next greater element present to its right in an array(greater by position not value)so I told him that it is very similar to question asked to me in round 2, still, he wanted to listen my approach and wanted me to code it.I gave him approach and I coded it , then he found some loopholes in it which can be potential points for crashing and some things which he didn't like in my code , then I coded it again as he wanted. He was happy with my this attempt.First code was working fine, the only error in it is no check for null or empty array and some duplicate code.

Time Complexity  $O(n)$ , Space Complexity  $O(n)$

Then again discussion on projects and leadership aspects. The process ended after this.

### **Verdict: Selected**

Thanks, GeeksforGeeks. It helped me a lot in preparation.

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# Amazon Scotland Interview Experience

- Last Updated : \n21 May, 2020

Amazon Scotland was hiring for the position of SDE-2. I just happened to get knowledge of their opportunities from a friend. I had applied, but did not really think about getting shortlisted. However, my resume got shortlisted and I received an email to choose a date for telephonic interview. I had given the 1st round interview, and could not clear it. I would however like to share my interview experience.\xc2\xab0

**Question 1:** Approximately how many lines of code have you written till now?\xc2\xab0

I answered this question in a very subjective and calculative manner. I counted the number of courses and approximately the number of projects I had done till the time. Then I fixed an average code size for each project. And gave him an approximate answer. He seemed to be satisfied with the approach.\xc2\xab0

**Question 2:** Given a file with large number of sentences, choose a sentence randomly where all sentences have equal probability.\xc2\xab0

I could not really solve this question. I gave him few approaches like counting number of sentences and then choosing a random between and then choosing a line. However, I later realized I could have normalized the sentence length by subtracting mean length and dividing by standard variance. But I am not sure if this approach would have satisfied the interviewer.\xc2\xab0

These were the only technical questions asked.\xc2\xab0

Below are a few behavioral questions I was asked.\xc2\xab0

**Question 1:** What was the biggest problem you faced till now while developing a project and how did you resolve it?\xc2\xab0

**Question 2:** What would you do if you feel biased towards a team member during an ongoing project?\xc2\xab0

And with this the interview was completed.

\xc2\xab0

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# Amazon Interview Experience | SDE-1 | WOW 2020

- Difficulty Level :\n[Medium](#)
- Last Updated :\n04 Mar, 2022

## Online exam:

The online test consisted of 28 MCQs and 2 coding questions, which were of medium level difficulty.

It was followed by 4 technical face-to-face interviews.

## Round 1:

Discussed about my projects.

1. Find the node violating binary search tree properties

<https://www.geeksforgeeks.org/a-program-to-check-if-a-binary-tree-is-bst-or-not/>

similar to above post.

2. Print leaf nodes of n-ary tree from left to right

## Round 2:

Discussed about challenges faced while doing projects. He asked about achievements I was proud of and a technology or a subject that I have learnt on my own.

1. <https://www.geeksforgeeks.org/find-number-of-islands/>

## Round 3:

Asked to explain any one of the projects mentioned in my resume in detail.

1. \xc2\x0<https://www.geeksforgeeks.org/zigzag-tree-traversal/>

2. A person participates in a race, where he has to step on rocks having numbers on them. If he steps on a rock, the number on rock will be added to his score. If he is level L and on \xe2\x80\x98n\xe2\x80\x99th rock then he can jump only to \xe2\x80\x98n+L\xe2\x80\x99th rock. Given that he can choose his start and end points, find the maximum score he can make for a given level \xe2\x80\x98L\xe2\x80\x99.

This is similar to finding maximum sub-array sum.

## Round 4:

Discussed about all the projects in brief.

1. <https://www.geeksforgeeks.org/snake-ladder-problem-2/>

2. \xc2\x0<https://www.geeksforgeeks.org/median-of-stream-of-integers-running-integers/>

3. LRU cache

4. ACID properties in DBMS

5. OSI model vs TCP/IP model

6. Discussed about deadlocks

Different approaches were asked for every problem and optimized solution is expected. We were asked to write the code in our preferred language. Interviewers were helpful, we need to think out loud and clarify any doubts about the questions.

Verdict: Selected!

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# Amazon Interview Experience | SDE-2

- Difficulty Level :\n[Hard](#)
- Last Updated :\n28 Apr, 2020

I interviewed for Amazon SDE2 position in Bangalore, India on March 2020. I had 3 years of Experience at the time of Interview

## Round 1: Online Coding

1. A variation of \xc2\xd0\xc2\xd0[Minimum time to rot all oranges.](#)
2. Evaluating top N Competitors of Amazon echo from reviews received by Crawling websites.

## Round 2: DS & Algo

1. The [square root of a number](#)\xc2\xd0
2. [Bottom view of a BT](#)
3. Some situational questions like a situation where you came up with a quick solution to save time.

## Round 3: DS & Algo

1. [Design a Data Structure that supports Insertion, Deletion, search and getRandom in constant time.](#)
2. [Print nodes at k distance from root](#)
3. Some situational questions like a situation where you were helped out a colleague, etc

## Round 4: Design Round (SDE 2)

1. Design an IP Blocking system. Asked for multiple approaches along with their pros and cons
2. Design a Logger.
3. Why Amazon?

## Round 5: Hiring Manager Round (SDM)

This round mainly focuses on presenting situations that test the candidate\xe2\x80\x99s compatibility with Amazon. Strong Leadership and Ownership principles are the focus. You will be asked a lot of situational questions like

1. Brief Introduction
2. Innovative solutions you came up with in your previous company.
3. Conflict with manager
4. A situation where a colleague helped you out.
5. How did you handle tasks with a strict deadline?
6. How do you go about approaching a new task at hand?  
etc.

## Round 5: Bar Raiser

1. Brief Introduction
2. Design a Job Scheduler. Drawbacks of the system I designed. How to implement a recurring job? Further optimizations.
3. Situational questions like the biggest technical challenge I faced, A situation where I had to fix someone else\xe2\x80\x99s bug, etc.

The process was very smooth.\xa0 My HR was very supportive. The Amazon interviewers are very friendly and give you hints if you get stuck. Be sure to handle every edge case and come up with multiple approaches wherever feasible.

### I got a call 2 days after the Bar Raiser Round confirming my selection.\xa0

GeeksForGeeks has been a great resource in preparing DS and Algorithms and getting an overall idea of the interview process.

\xa0

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# Amazon Interview Experience | (Off-Campus 2020 for Programmer Analyst)

- Difficulty Level :\n[Medium](#)
- Last Updated :\n28 Apr, 2020

I had applied to Amazon Hyderabad off campus for Programmer Analyst role. The first round conducted on HackerEarth.

## First Round \xe2\x80\x93

I don't remember those questions but there were one easy, medium and last one related to OOPS concept implementation.

All rounds from second to fourth conducted on Amazon Chime

## Second round \xe2\x80\x93

1. [infix-to-prefix-conversion-using-two-stacks](#)
2. [nth-node-from-the-end-of-a-linked-list](#)
3. [swap-kth-node-from-beginning-with-kth-node-from-end-in-a-linked-list](#)

## Third round \xe2\x80\x93

In this round only 2 problems were asked:-

1. Remove unnecessary brackets from expression  
ex: input (a+b)+((c+d)) and output should be (a+b)+(c+d).
2. Find the longest sub string length which is in Alphabetical order.  
ex: input \xe2\x80\x9ccfaxy\xe2\x80\x9d and output should be 3(axy).  
interviewer was expecting code without any bugs so be careful.

## Fourth round \xe2\x80\x93

1. Interviewer asked me about my projects.
2. Behavioral question- tell me any situation where you completed your task under lack of information.
3. Find a missing number in range of 1 to n.
4. Gave me a code snippet and asked me to find error.

For every coding question I was asked time and space complexity too.

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# Amazon SDE-1 Interview Experience | Amazon WOW-2020

- Difficulty Level :\n[Hard](#)
- Last Updated :\n04 Mar, 2022

## Online Test:

The first round contain easy to medium questions. The online test consists of 28 MCQs in which there were general aptitude questions, OOPS, output, Data structure etc. In addition to this, there were 2 coding questions.

Q1). <https://www.geeksforgeeks.org/counting-inversions>

Q2).Find the position of leftmost and the rightmost set bit, also the number of total set bits.

**Tips**\xe2\x80\x93 Complexity doesn\xe2\x80\x99t matter in this round, O(n<sup>2</sup>) solution is acceptable. Also STL works well.

After this there are 4 Technical Online Interviews.

## Round 1:

It is a coding round consisting of two coding questions.

Q1). <https://www.geeksforgeeks.org/modify-binary-tree-get-preorder-traversal-using-right-pointers>

Q2). [Find the strings from an array which are not prefix of any other string.](#) (He want the optimised trie solution with full Trie implementation).

## Round 2:

It is also a coding round consisting of two coding questions.

Q1). At first he asked me about cache and its types and then full implementation.

<https://www.geeksforgeeks.org/lru-cache-implementation/>

Q2). <https://www.geeksforgeeks.org/minimum-number-platforms-required-railwaybus-station>

## Round 3:

This round is based on knowledge about subjects and 2 coding questions are asked. At first he asked me about my favourite subject I said Data Structure then he asked me basic questions about the complexity and type, and questions related to Cache(Very Important).

Q1). <https://www.geeksforgeeks.org/a-linked-list-with-next-and-arbit-pointer/>

Q2). \xc2\xab<https://www.geeksforgeeks.org/construct-a-special-tree-from-given-preorder-traversal/>

## Round 4:

It was both behavioural and technical round. Amazon focuses more on their Leadership principles. Questions related to that were asked. For Example:-

1. Describe any situation when your judgement/idea had a great impact.
2. Describe any situation when you took initiative.
3. What will you do if you are given a deadline and it\xe2\x80\x99s not possible to complete that project with that deadline.
4. Describe a situation when your teammates did not agree with your idea.

Many more questions were asked. The interviewer want me to give answers specifically related to

software only.

Two coding questions were asked-

Q1).<https://www.geeksforgeeks.org/find-triplets-array-whose-sum-equal-zero/>

Q2).<https://www.geeksforgeeks.org/find-union-and-intersection-of-two-unsorted-arrays/>

**Result:** SELECTED

**IMPORTANT:**- Go through Geeksforgeeks in depth also go through the past experiences available. The interviewer wants the most optimised solution possible to every question with full implementation. Don't give up on coding question, the interviewer will help you whenever you are stuck. Also a production ready, clean code is expected on the live coding platform. The whole process took 1 month so be patient.

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# Amazon Interview Experience for SDE intern | On Campus (December 2019)

- Difficulty Level :\nMedium
- Last Updated :\n26 Apr, 2020

**Position:** SDE Intern

**Location:** Bangalore

## Online Assessment:

The test was conducted on mettl platform.

It was divided into two parts:

1. First section consisted of gate level C, DS and algo based MCQ questions.
2. Second section consisted of two coding questions

- First question was based on Kadane\xe2\x80\x99s algorithm
- Second\xc2\xa0 question was a medium level logic based question

**Interview:** Out of 690 students only 57 were selected for the final interview process.

## Round 1:

- Tell me about yourself

- **Trapping Rain Water:**

<https://www.geeksforgeeks.org/trapping-rain-water/>

- **Maximum product:**

<https://www.geeksforgeeks.org/find-maximum-product-of-a-triplet-in-array/>

## Round 2:

- Tell me about yourself

- <https://www.geeksforgeeks.org/sorted-linked-list-to-balanced-bst/>

- <https://www.geeksforgeeks.org/design-a-stack-that-supports-getmin-in-o1-time-and-o1-extra-space/>

## Note :

Areas to work upon while preparing for coding interviews:

- Understand the question properly asked by the interviewer
- Give various scenarios and the test cases and ask different questions in order to understand the question properly.
- Ask the right questions to clarify your doubts.
- Analyze the problem clearly and write various patterns on the paper
- Try to find brute force solution first.
- Then tell the optimised solution and try to tell the solution logically.
- Also check for the edge cases while thinking about your solution.
- NULL checks, overflows and also check test the boundary conditions
- Practice on pen and paper.

## Pro tip:

Keep a smile on your face while giving an interview \xf0\x9f\x99\x82 All the best!!!

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# Amazon Interview Experience |x2|x80|x93 SDE 2 (3+ Years)

- Difficulty Level :|n[Hard](#)
- Last Updated :|n26 Apr, 2020

I was interviewed at Amazon Hyderabad for SDE 2 role.

## Round 1 (Online Test, Hackerrank):

1. [Medium] A big problem statement, it was very similar to|xc2|xa0[Rotten Oranges Problem](#). Instead of orange, there was a file that needs to be transferred across all systems represented in the matrix.
2. [Easy] Problem statement demanding to sort the array of custom objects with a custom comparator based upon the use case of the problem.

|xc2|xa0

## Round 2 (F2F, Technical):

1. [Next Greater Permutation](#)
2. I did a project on the internals of Java Reflection and Classloading, the interviewer was interested in the entire architecture and implementation.
3. Leadership Questions, when was the last time you realized the importance of a good leader

|xc2|xa0

## Round 3 (F2F, Managerial & HLD):

A use case of B2B business where Amazon would be onboarding multiple companies in its platform. Each company has some characteristics (CompanyInfo Partner) that are used to rate them and we have |xe2|x80|x9cn|xe2|x80|x9d partners that can provide those characteristics via API. Each CompanyInfo partner returns some different sets of fields (though contributing to the same factor). Rating is used to provide additional services to the partner. Design a system where all of such partners and companies onboarding would be seamless. At any time, he should be able to query the system basis any characteristics and filters (revenue, numberOfEmployees, etc). He wanted to understand how do I generify the whole vague problem statement and ask doubts regarding the same with him. We had an exhaustive high-level discussion of microservices that I would be putting up.

There were behavioral questions as well.

|xc2|xa0

## Round 4 (F2F, Technical, LLD):

Design a feature in Google search which returns |xe2|x80|x9ck|xe2|x80|x9d most visited websites at any point in time from a log server. A log server provides a trigger whenever a particular website is visited. Low-level implementation is an extension of [K most frequent elements in an array](#). I started off with sorting and moved to Heaps, took me time to get there after struggling. I was asked to write APIs for each operation considering this feature and all design principles that were involved in the design.

Discussion of concepts of MicroServices, Monolithic system, Singleton pattern, Immutability.

\xc2\x0

## Round 5 (F2F, Technical):

1. [Word Ladder Problem](#). I was then asked to optimize queries if dictionary is constant. I cached the Graph and ran BFS for each query.
2. Extension on previous problem, he wanted production ready code with suitable methods, method signatures, classes for consumption. He wanted to see if I can write readable, and extendable code.
3. Questions on Amazon leadership principles
  1. When was the last time when you had to compromise a requirement due to lack of time.
  2. Last time you couldn't deliver on time.

A week later a got a call for last round (Bar Raiser).

\xc2\x0

## Round 6 (Video Call, Bar Raiser):

This round was completely behavioural round. Inclusive of questions about work that I have done in current organization.

Some of the questions that I remember are:

1. A contribution that you are proud of and made a big impact.
2. A case when you had a conflict with your manager or lead regarding a design.
3. A case when you messed something up and how did you handle it. How did your manager respond to this?
4. Something that you learnt working closely with your manager.
5. Why Amazon?

There were a lot of questions that I can't recall. Amazon has a set of leadership principles that they follow and accordingly try to understand you. Just be yourself and don't lie about your work. Because trust me, you will get caught in deep dive.

Few suggestions for preparations from my side

- Design questions are broad and intentionally left vague, ask relevant questions to understand the problem better. Interviewers would be happy if you put up right questions.
- There is no perfect solution to design problems. The whole point is to understand how good are you in solving real use cases.
- Prepare for leadership and behavioural questions as well. They do make a difference.
- Don't rush into buzz words (as mentioned by Tushar Roy in its [Preparing Design Interviews](#) video). You rush to Consistent Hashing with basic knowledge and interviewer might slit your throat.

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# Amazon SDE-1 Interview Experience | WOW-2020

- Difficulty Level :\n[Medium](#)
- Last Updated :\n04 Mar, 2022

## Online Test:

The first round contains easy to medium questions. The online test consists of 28 MCQs in which there were general aptitude questions, OOPS, output, Data structure etc. In addition to this, there were 2 coding questions.

Q1). <https://www.geeksforgeeks.org/counting-inversions>

Q2). Find the position of leftmost and the rightmost set bit, also the number of total set bits.

**Tips**\xe2\x80\x93 Complexity doesn\xe2\x80\x99t matter in this round, O(n<sup>2</sup>) solution is acceptable. Also STL works well.

After this there are 4 Technical Online Interviews.

## Round 1:

It is a coding round consisting of two coding questions.

Q1). <https://www.geeksforgeeks.org/modify-binary-tree-get-preorder-traversal-using-right-pointers>

Q2). Find the strings from an array which are not prefix of any other string. (He want the optimised trie solution with full Trie implementation).

## Round 2:

It is also a coding round consisting of two coding questions.

Q1). At first he asked me about cache and its types and then full implementation.

<https://www.geeksforgeeks.org/lru-cache-implementation/>

Q2). <https://www.geeksforgeeks.org/minimum-number-platforms-required-railwaybus-station>

## Round 3:

This round is based on knowledge about subjects and 2 coding questions are asked. At first he asked me about my favourite subject I said Data Structure then he asked me basic questions about the complexity and type, and questions related to Cache(Very Important).

Q1). <https://www.geeksforgeeks.org/a-linked-list-with-next-and-arbit-pointer/>

Q2). \xc2\xad<https://www.geeksforgeeks.org/construct-a-special-tree-from-given-preorder-traversal/>

## Round 4:

It was both behavioural and technical round. Amazon focuses more on their Leadership principles. Questions related to that were asked. For Example:-

1. Describe any situation when your judgement/idea had a great impact.
2. Describe any situation when you took initiative.
3. What will you do if you are given a deadline and it\xe2\x80\x99s not possible to complete that project with that deadline.
4. Describe a situation when your teammates did not agree with your idea.

Many more questions were asked. The interviewer wants me to give answers specifically related to

software only.

Two coding questions were asked-

Q1).<https://www.geeksforgeeks.org/find-triplets-array-whose-sum-equal-zero/>

Q2).<https://www.geeksforgeeks.org/find-union-and-intersection-of-two-unsorted-arrays/>

**Result:** SELECTED

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# Amazon Interview Experience for SDE-1

- Difficulty Level : \n[Basic](#)
- Last Updated : \n21 Apr, 2020

Hey guys recently I appeared for an SDE 1 interview in Amazon and wanted to share my experience to help others

## Round 1(HackerEarth):

- Q1. You need to find out the longest subsequence of a string from a given string such that the absolute difference between two alternating characters of the subsequence is less than K.  
Q2. You are on an infinite graph and starting from (1, 1), you can move either (x+y, y) or (x, x+y) and you need to find out whether you can reach the given point or not.  
Q3. Given a set of numbers, you need to find out the number of ways you can divide the set into two groups such that no two groups are left empty.

## Round 2:

- Q1. Given two strings containing a special character \xe2\x80\x98#\xe2\x80\x99 which represents a backspace, you need to print true if both the strings will be equal after processing the backspaces.  
Example:

AA##BCAS#  
B#BCA

Output:

True

(Expected time complexity: O(n))  
(Expected space complexity: O(1))

## Round 3:

- Q1. Tell me about yourself?  
Q2. Implement a stack that can do operations like push, pop, find the mid element and delete the mid element in O(1).  
Q3. Given a binary tree and a key, print all the elements in the path from the key to the root.

## Round 4:

- Q1. Tell me about yourself?  
Q2. Given a directory tree, you need to find out kth largest file. (Expected time complexity n log k)  
Q3. Given a staircase and you can take either 2 jumps and or 1 jump at a time you need to find out the number of ways you can reach to n-th stairs.  
Follow up: there are some stairs which are broken and you cannot jump ahead from those broken stairs.

## Round 5:

- Q1. Tell me about yourself?  
Q2. Given a graph and you are starting from point 0, 0. You will be given commands like:  
*forward 40*  
*right 50*

*left 30*

*backward 70*

You need to print your location after processing these commands.

(Behavioural questions)

Q3. Tell me a mistake you regret the most in your professional life?

Q4. Have you ever had a conflict with your manager?

Q5. What is your college CGPA?

Q6. What\xe2\x80\x99s your current role in your team?

## **Round 6:**

Q1. Tell me about yourself?

Q2. Why are you looking for a change?

Q3. The interviewer asked me to tell me some other approach for the questions asked in the 2nd round.

Q4. Tell me about the project you are working on in your current company.

Q5. Tell me about the challenges you faced in your projects.

From Round 2-5 I was told to write the code in pen and paper and they expecting a production-level code that means no compilation issue and no syntax errors and all the errors and edge cases handled.

## **Some tips:**

- You must know how to calculate the time and space complexities of the problems.
- In each round you can be asked about the project you recently did/ the project you liked working most/most challenging work etc- so you should be prepared well for at least one project with in-depth details.
- Start with the naive approach for each question asked and then proceed with solutions with better space and time complexities.
- They mostly care about the projects you did and your coding skills whether you cover all the edge cases while writing code, know time and space complexities, have better approaches for solving the same problem and so on.

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## Amazon ACMS Interview Experience | On-Campus

- Last Updated : \n21 Apr, 2020

Amazon came to our campus for ACMS in February 2020. The test conducted consisted of 20 Computer Science MCQs from DSA, C and Cpp . I was one of the 20 people selected. The questions asked were:-

1) You are given a string with httpweru.com. You have to insert / after http and before ru in the given string. It was a very easy question.

2) You are asked to find the number of depermutations in the array.

Final verdict-Selected

Those who one question completely out of 2 coding questions and a few mcqs were selected.

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# Amazon Interview Experience SDE-1 | Feb 2020 ( Exp 1.5 yr )

- Difficulty Level :\n[Easy](#)
- Last Updated :\n13 Apr, 2020

Hey guys !

I am sharing you my interview experience with Amazon for SDE-1 role in Feb 2020.

## Round 1:

Well first round was an online assessment test on AMCAT. There were two coding questions need to be completed in 90 Min.

1. Given a 2-D matrix of 0\xe2\x80\x99s and 1\xe2\x80\x99s, where 1 represents an infected person and 0 represents an uninfected person. After each second an infected person infects his 4 uninfected neighbors(L, R, U, D). Need to calculate time such that all becomes infected.  
Approach : Apply BFS  
Similar to :\xc2\xa0[Rotten Oranges](#)
2. Given a 2-D matrix of 0\xe2\x80\x99s and 1\xe2\x80\x99s, where \xc2\xa01 represents a building component and 0 represents an empty area. We need to calculate total number of connected building components.  
Approach : Apply DFS  
Similar to :\xc2\xa0[Number of Islands](#)

Next three rounds were onsite at Gurgaon location.

## Round 2:\xc2\xa0

This round started with brief introduction about me and my work at previous company followed by two coding questions :

1. Given a string say \xe2\x80\x9ccABAABCD\xe2\x80\x9d. Calculate minimum number of letters to be removed such that remaining letters can form a palindrome string.  
Answer for \xe2\x80\x9ccABAABCD\xe2\x80\x9d is : 2  
Explanation : Remove C and D, remaining string is : \xe2\x80\x9ccABAAB\xe2\x80\x9d which can form a palindrome(BAAAB)  
Approach : Simply count the number of odd characters. Since you can keep one character of odd count hence answer will be odd character -1.\xc2\xa01 used HashMap for storing characters and their count.  
if(odd\_characters==0) return 0;  
return odd\_characters-1;
2. Given two Linkedlists in sorted increasing order. Merge them in decreasing order. You have to merge in place, you can\xe2\x80\x9t create new linkedlist.  
Approach : Simply apply merge-sort concept and append characters at front of merged list instead of end.  
Merge in increasing order :\xc2\xa0[Merge Two Sorted LinkedList](#)

## Round 3:

This round also started with brief introduction about me and my work at previous company followed by two coding questions :

1. Given an sorted array of 0\xe2\x80\x99s and 1\xe2\x80\x99s in non-decreasing order. Find the sum of array in O(log n)

Approach : Apply Binary Search to find the position of first 1 and return n-position+1.

- Given an array of Integers, find and replace next smaller element of each element in the given array in O(n).

Approach : Use Stack.

Steps :

Insert element starting from rear.

If top of the stack is greater than current element keep removing until smaller element is found or stack becomes empty.

if Stack `\xe2\x80\x93` Empty answer for current element =-1

else answer for current element= stack.peek();

Insert current element to stack and repeat above 3 lines.Further he asked me some OS concepts and some previous work related questions.

#### Round 4:

This round also started with brief introduction about me and my work at previous company followed by two coding questions. He also asked me about my current project, asked deeply about the approach I used to solve the problems I faced.

- Given a number n which represent total stairs. Find in how many ways you can reach the nth stair with 1 or 2 steps at a time.

Approach : DP

Since to reach 0th, number of ways = 1;

to reach 1st, number of ways = 1 (0->1);

to reach 2nd, number of ways= 2 (0->1->2 | 0->2)

to reach 3rd, number of ways= 3

Hence we can see, to reach nth stair, number of ways= ways to reach (n-1)th +ways to reach (n-2)th.

Link :[\xc2\x80\x93Nth Stair](#)Furthermore he asked me expand this problem with k-steps (k steps at max which can be taken) :

It's simple again just need to add previous k values to get ways to reach at particular stair.

- Given a binary search tree(BST), find top view of given BST.Approach : Maintain both horizontal distance and as well as level for each node.

Create a TreeMap<Integer, Pair> which stores horizontal distance and a pair class object.

(Note : TreeMap is already sorted based on key i.e. horizontal distance)

Apply Inorder traversal as per following :void topView(Node root, int hd, int level)

```
{  
    if(root==null)  
        return;  
    if(map.contains(hd))  
    {  
        if(map.get(hd).level<level)  
            map.put(hd, new Pair(root.data, level));  
    }  
    else  
    {  
        map.add(hd, new Pair(root.data, level));  
    }  
    topView(root.left, hd-1, level+1);  
    topView(root.right, hd+1, level+1);  
}  
Simply print Pair.value for each key in TreeMap.class Pair{  
int value;  
int level;  
Pair(int a, int b)
```

```
{  
value=a;  
level=b;  
}  
}
```

## Round 5:

This was final round of an hour which was held on Chime Video Call :

- Asked me hardest thing which I have done in last 1.5 year and my previous work related questions.
- A number is represented by a LinkedList, where each node represent a digit of number. You are given two such number, find sum of two numbers. You need to return head of LinkedList representing sum of two given numbers.

Approach : First I answered reversing both and then adding each digit and forwarding the carry. And finally reversing the final LinkedList.

Second I gave him another approach using Stack.

Finally I gave recursive approach and he asked me to solve using the same.

Link : [Sum Of Two LinkedList](#)

Finally I got a call from HR that I got selected for SDE-1 role.

Kindly keep below points in mind which I've used during my interview :

- Always answer if you know else simply say I don't know Sir/Ma'am.
- For coding questions, start with brute force approach to optimized one.
- While writing code make sure to cover all the edge cases by yourself only. You may dry-run your code before finally saying you're done.
- Should be able to calculate Time and Space complexity.

\xa0

Practice more for all Data Structure and Algorithm concepts on GeeksForGeeks, you will find all the concepts at this place.

Artical submitted by : Ripesh Yadav

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# Amazon Interview Experience (SDE-1, 8 month experience, Refferal)

- Difficulty Level :\n[Medium](#)
- Last Updated :\n13 Apr, 2020

## Round 1:\xc2\xd0 (1 hour)

Que 1:\xc2\xd0You are given a list of packages and their dependencies as follows.  
You need to return one of the order in which the packages should be compiled.

< 1, <2, 3, 10> >, < 7, <>>, < 2, <4, 5> >, < 3, < 5, 6, 7> >, < 8, <>>, <4, < >>, <5, <6> >, < 6, <> >, < 10, <> >

Output Example \xe2\x80\x93 6, 4, 5, 7, 2, 3, 8, 10, 1 \xe2\x80\x93 If we can compile, else return NULL.

Topics: Graph, Topological sort, Cycle in a graph

Que 2:\xc2\xd0There are N Ropes. You need to connect N ropes into single rope into minimum cost.  
Cost of connecting 2 ropes is length of connecting 2 ropes.  
For 4, 3, 2, 6 length ropes ? Output will be 29.

Example: One of the ways to connect the rope. But you have to tell them the minimum cost.

4+6 = 10 \xe2\x80\x93 [10, 3, 2]

10 + 3 = 13 \xe2\x80\x93 [13, 2]

13+2 = 15 \xe2\x80\x93 [15]

Total Cost = 10 + 13 + 15 = 38.

Topics: Min-Heap, Greedy

## Round 2:\xc2\xd0 (1 hour)

Que 1:\xc2\xd0Q: Print a Binary Tree level by level alternating the order each level. (ZIG- ZAG Tree Traversal).

Topics: Tree, Dequeue, Stacks

Que 2:\xc2\xd0Find the rank-k (k-th maximum) in a continuous stream of numbers.

Topics: Heap

> k=1

> 10, 5, 7, 3 => 10

> 10, 5, 7, 3, 12 => 12

> 10, 5, 7, 3, 12, 11, 15, 9 => 15

> k=2

> 10, 5, 7, 3 => 7

> 10, 5, 7, 3, 12 => 10

> 10, 5, 7, 3, 12, 11, 15, 9 => 12

## Round 3: (1 hour)

Print top view of a binary tree.

Topics: Tree, queue

#### Round 4:\xc2\xb0Managerial round (40 minutes)

No coding questions in this round. Questions in this round were related to projects and past experiences only.

Every round was followed by a 10 minute discussion related to what you are doing in the current company and past experiences. And no doubt interviewers were very friendly.

\xc2\xb0\xc2\xb0

\xc2\xb0

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# Amazon Interview Experience for SDE-1 | Off-Campus (Exp<1year)

- Difficulty Level : \n[Medium](#)
- Last Updated : \n16 Mar, 2020

**Position:** SDE1 at Amazon

**Location:** Bangalore/Hyderabad

**Date:** 7 March, 2020

## Online Assessment

There were two coding questions:

1. One based on standard BFS in a matrix
2. Based on priority queue something similar to k Order statistics

## Virtual Onsite Interviews:

### Round 1:\xa0

1. There are two types of chocolates Milk chocolate and Dark chocolate and N rows of such chocolates. You are given some number X(milk chocolate) and Y(dark chocolate) that is the number of chocolates you have to complete . You have to find what is the maximum number of rows you can cover? (Sorry, if the description is not clear but in the interview I was given this description only, \xe2\x80\x99 try to clear it with help of some examples).

Note: Order of chocolates is not important.

Example 1: M M D D

D D

D M M

X=3 Y=4

Output: 2

As we can cover either row 1 and row 2 or row 2 and row 3 but not all the rows.

Example 2: D D

M

D M M

X=1 Y=1

Output: 1

As we can cover only row 2.

Example 3: M M D D

D D

D M M

X=5 Y=7

Output: 3

As we can cover all the rows.

2.\xa0<https://www.geeksforgeeks.org/count-subarrays-equal-number-1s-0s/>

### Round 2:

1. <https://www.geeksforgeeks.org/sliding-window-maximum-maximum-of-all-subarrays-of-size-k/>
2. You are given a linked list and a number k. You have to sort the linked list in groups of size k by the sum value of each individual chunk in decreasing order. The elements within a chunk will not

change.

Example:

Linked List: 1->3->0->5->1->7->0->2->4->3

k=2

Output: 1->7->4->3->0->5->1->3->0->2

Explanation:

1->3=4

0->5=5

1->7=8

0->2=2

4->3=7

So, the chunk 1->7 has sum 8 which is the highest so it will be placed first. Then chunk 4->3 with sum 7 after it and so on.

### Round 3: With Senior Technical Program Manager

Behavioural LP

Role in current company sort of questions.

Little discussion about projects.

What is caching?

OOPS questions like inheritance, problems faced in inheritance, diamond problem and virtual keyword.

Design LRU cache ( only approach was discussed, no need to code).

Coding question: [careercup.com/question?id=5717962873896960](http://careercup.com/question?id=5717962873896960)

### Round 4: Senior Manager

Detailed discussion about projects and current role. Lots of behavioural questions based on LP.

What is caching? Types of caching algorithm.

Design LRU cache. Extended it a little bit how you will handle if more than one thread try to insert value in cache at the same time. Also, should know whatever STL containers you are using how they are implemented. I was asked how is list implemented in C++ (doubly linked list or singly linked list not too much depth).

More LP.

\xc2\x80

After a week around I got the call that I am selected :). Thanks GeeksForGeeks!

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# Amazon Interview Experience \xe2\x80\x93 Application Engineer 2 (2.3 years experienced)

- Last Updated :n11 Mar, 2020

## Round 1: Telephone Interview

1. Initial, Questions were mostly from Technologies mentioned in the Resume.
2. After that they entered into coding part and they shared a online editor which belongs to amazon .  
-> question 1: Given a Set of strings find the number of occurrences of each string .  
-> question 2: Given array of even and odd numbers move even numbers to front and odd number to end  
they excepted optimized solution for both questions.
3. Few questions on scripting like they asked what are the linux commands you know and where you have used it .
4. Database query question based on join and some stuffs.

\xc2\x0

## Round 2:

After an hour of telephone interview got the call from hr saying short listed for further rounds of face to face interviews .

1. Two people came for interview panel\xc2\x0 . they started with resume and entered the main part\xc2\x0 with simple coding . First question to print the pattern .  
\*  
\*\xc2\x0 \*\xc2\x0 \*\xc2\x0 \*\xc2\x0 \*\xc2\x0 \*
- > and second question\xc2\x0 was some java output debugging with operator precedence . 2 debugging questions like this.
2. \xc2\x0Another guy started his part with one coding questions given two arrays merge into a single array .
3. Find number of occurrences of a word in a file\xc2\x0 using any one of the scripting language ruby, shell or linux commands
4. they asked me any questions i just asked about how an application engineer work will be there in amazon . they explained about it .

## Round 3: After an half hour of waiting this round started with two people

- 1.\xc2\x0 This round is full of scripting and scenario based debugging questions .\xc2\x0 they started with scripting questions  
how will you get count of number of errors occurred from a log file .
- 2.\xc2\x0 How will you automate the before question scenario with multiple servers running\xc2\x0 ?\xc2\x0 have to answer with automation script how to do this
3. Explain about my current project and its architecture .
4. Given a search result it takes millisec to complete and it takes more than a sec on the second day of query . what might have happened and explain what would you do ?\xc2\x0 . they tried to get answer from me itself without giving any clue .\xc2\x0 Answer : due to duplicate contents index might have gone wrong and indexing needs to be improved or fixed .

5. They asked me few behavioral questions and asked me what is your greatest achievement in work so far.

#### Round 4 :\xc2\xA0 After my Lunch this round started

1. this is more of problem solving

one guy can and just started with a coding question . given an array of strings group the string that are anagram to each other . group non anagram strings separately . started with a brute force solution . he asked to optimize more in tc and sc .

after giving the more optimized solution he asked me to code it .\xc2\xA0 The guy who came to me is more even worse he was seeing syntax errors also in code .

2.\xc2\xA0 Second one was : Given an array and constant k\xc2\xA0, find the maximum number in the window size of k . same like started with a brute force and ended with optimized solution .

3. After these questions he asked me few behavioral questions to analyze my decision making .

#### Round 5:\xc2\xA0Manager round\xc2\xA0

1. he came with a horrer face . he didnt even see my face looking at his laptop\xc2\xA0 started his first question .\xc2\xA0 Given a Jar of Pills find the jar with defective pills puzzle questions .

2. After that he also asked me my current project explanation and architecture .

3. based on that he asked again a scripting question . group files of particular format and zip and move it to given folder location .

4. then asked me any questions .\xc2\xA0 i asked about application engineer work . he given a detailed explanation of work and asked me to have some coffee . hr will come and inform me like that .

HR came and once we get feedback from every panel will let you know the results . After one week they called me and offered me Application Engineer 2 position \xe2\x80\x99

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# Amazon SDE-1 Interview Experience | Women of World 2020

- Difficulty Level :\n[Hard](#)
- Last Updated :\n11 Mar, 2020

\xc2\xd0

## Round 1:

Q1) Given the column number in an Excel sheet, find the column name.

<https://www.geeksforgeeks.org/find-excel-column-name-given-number/>

Q2) Given a binary tree find the maximum sum from one leaf node to another.

<https://www.geeksforgeeks.org/find-maximum-path-sum-two-leaves-binary-tree/>

Q3) Modify Facebook\xe2\x80\x99s friend request operation by adding a condition that a person can only send a friend request to someone if they have at least 1 mutual friend.

Here the interviewer asked to use an appropriate DS to store the friend list. I used the adjacency list representation and searched for common values in the two lists.

## Round 2:

Q1) Given a binary tree, perform Zig-Zag level order traversal of the tree.

<https://www.geeksforgeeks.org/zigzag-tree-traversal/>

Q2) Given a tree T1 with millions of nodes and a tree T2 with hundreds of nodes check if T2 is a subtree of T1.

Q3) Difference between an interface and an abstract class.

I wrote a Java code to explain different scenarios where each of them can be used.

Q4) Reader Writer conflict in DBMS.

## Round 3:

This round started with a project discussion. I explained my project and he asked some questions related to it.

Q1) You purchased a product from Amazon and now wish to return it. There are N pick up agents in your locality, you have to return the K closest ones.

I first solved it by sorting the distances and returning first K values. The interviewer asked me to optimize the solution. I solved it using a max heap.

Q2) Given a dictionary of strings and two strings s1 and s2, check if you can reach from s1 to s2 by selecting words from the dictionary. At each step, you are allowed to change only one letter of s1 at a time.

eg. dictionary = {cat, bat, pat, but, bun, sun, pun, put}

s1=cat, s2=sun

Answer: cat->bat->but->bun->sun

or cat->pat->put->pun->sun

I solved it by making an adjacency list for each string and then DFS to check the reachability of s2 from s1.

#### Round 4:

This round started with a discussion of all the questions asked in the previous round.

Q1) Find the diameter of a given n-ary tree and return the two end nodes of the diameter.

I first solved it for a binary tree then extended the solution for an n-ary tree.

Q2) What happens when you type www.amazon.com?

A long discussion on DNS, ARP, and TCP/IP stack was done.

Q3) What is a deadlock? What are the conditions for a deadlock to occur?

Q4) Http vsHttps

The interviewers were really motivating and friendly. I had an amazing experience and enjoyed solving problems in all of these rounds. Just maintain a calm mind during your interview; it will help you solve the problems quickly.

Verdict: Selected!

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# Amazon Interview Experience SDE-1 | Amazon-WOW 2020

- Difficulty Level :[Medium](#)
- Last Updated :[04 Mar, 2022](#)

## 4 Technical rounds:

### First Technical Round:

- Given two arrays and we need to find whether one array is a subset of other or not

Ex:

array1: 1 6 5

array2: 1 4 7 3 5 6

o/p: yes

- Given a matrix and there will be bombs in the cells, find the number of blasts. A group of connected bombs leads to blast.

- Level order traversal of a tree.

### Second Technical Round:

- Find the lexicographically maximum level sum and its level of a tree.

Ex: 1 15 6 6 4 5 6 (i/p format: root left right )

Max Level sum : 21

Level: 1

- Given a sorted array and an element x, find k closest elements to the x in an array

Ex; a : 12 15 18 21 22 43, k = 4, x = 20

o/p :15, 18, 21, 22

### Third Technical Round:

- Sort the given linked list.

- Top view of a tree.

- Operating System and Computer Network Basics like about DNS, Deadlocks, Routing, OSI model, Processors etc

### Fourth Technical Round:

- Given an array and split the array into two halves such that the absolute difference between them should be minimum.

Ex : 37, 43, 7, 54

$o/p = (37+43) \times 80 \times 93 (54+7) = 19$

2. Given a string find the count of unique palindromic substrings

Ex: aabaaa

o/p: 6 ( a, b, aa, aba, aabaaa, aaa)

3. LRU Cache

4. Infix to Postfix conversion

5. Inheritance and its types

6. Difference between linear and non-linear data structures.

Resume and the challenges faced in developing projects and asked about MENTORSHIP in Smart Interviews.

We need to give different approaches for a problem and need to write code for the optimized solution in your preferred language

Thank you so much Amit Bansal Sir and Abhishek Sir (SMART-INTERVIEWS) and GeeksforGeeks from the bottom of my heart. Because of your teaching and guidance, I am enjoying this fruitful result.

Verdict: Selected

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# Amazon Alexa Hackathon Experience

- Last Updated :\n05 Mar, 2020

Recently I have attended a 30 hour Hackathon on Amazon Alexa skills.

The main object for organizing a hackathon or attending a hackathon is to get an experience of working on a single project for 30 or 36 or 40 hours depending upon the time given for the Hackathon and building Software products that can tackle real-life issues.

In that Hackathon, the basic or core concept of it was to work on the environment that is used for exploring new voice Interface techniques and problem-solving.

For which we can mainly work or use some of the tracks i.e. VUI, AI, IoT, Machine Learning, Computer Vision and many more.

The Benefits of attending a Hackathon are as follows:-

1. Putting Our Business in Front
2. Emotional Connection with others
3. Awesome Experience
4. Variety of Brand awareness
5. Great ROI

Over All, it was my great experience to attend Hackathon Like this in which many of the well-experienced Speakers were called Upon the stage to share there experience with all of us.

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# Amazon Interview Experience | SDE-2

- Difficulty Level : \n[Medium](#)
- Last Updated : \n26 Feb, 2020

Hello Everyone,

I would like to share my experience in interviewing with Amazon for the SDE-2 position. I had 4.5 Years of experience while I was attending this interview.

I got a call from a recruiter in the US and I was told about the Amazon Hiring Event that would be happening in the last week of January 2020 in Hyderabad, India.

## Round \xe2\x80\x93 1: (Online Coding)

This was an online round, I was told based on the results of this round I will be asked to come for Onsite interviews.

1. [Number of Islands in a matrix.](#)

2. It was a similar kind of problem as mentioned above but instead of DFS here we had to use BFS, I couldn't remember the question exactly.

After 2 days I got a confirmation that I have cleared the online round and was invited for Onsite Interviews to Hyderabad.

## Round \xe2\x80\x93 2: (Data Structures and Algorithms)

This round was taken by a Senior Software Engineer based out of the US.

1. You have been given a grid and a starting point. You are supposed to check if you can visit all the points and return to the starting point.

2. Project-related questions and behavioral questions.

## Round \xe2\x80\x93 3: (System Design)

This round was taken by a Senior Manager based out of India.

Amazon system is already in place design or upgrades Amazon's existing system for Amazon's Great Indian sale.

More Focus on Scalability, Availability, Single Point of failure, database, and low Latency.

Some Behavioral and Leadership questions were asked at the end of the interview.

## Round \xe2\x80\x93 4: Data Structures and Algorithms

This round was taken by a Senior Manager based out of India.

He asked me if I have worked on Maven applications. I told him yes. So the question was;

In pom.xml we add dependencies to utilize the methods of the package, how does the compiler know which module or package it has to resolve first.

I told him about [Topological Sorting](#) he agreed and asked me to write production-level code for the same.

A lot of Behavioral questions were asked in this round.

## Round \xe2\x80\x93 5: (Bar Raiser)

This round was again by a Senior Manager

This round was a combination of Requirements Gathering, Coding, Dynamic Change in requirements and System design.

So the question was to implement the Windows OS file search feature. For example, if I type .xml the system should show all the files of type .xml and also should check recursively in subdirectories.

The new change in the requirement was users can now filter by the size of the file.

I gave him a solution of the N-Ary tree where each node represents a file name, type, and size. To search for a file, we perform BFS of the N-Ary tree until we reach the end. He was satisfied and asked me to code the solution.

**Result:** Selected for full-time SDE-2 role.

I would like to thank GeeksForGeeks for creating such a useful platform to help aspiring candidates get a job in Multinational companies.

### Tips and Suggestions to Candidates:

1. Kindly explain your thought process when you are trying to solve a problem or designing a system. This will help the interviewer know if you are heading in the right direction and might help you in case you are stuck.
2. Please don't try to solve the problem with the most optimal solution in the first go. If you know the naive approach go ahead with that first, this will give the interviewer the impression that you can solve the problem. Once you have the naive approach then try to optimize it by discussing various approaches.
3. Please don't give up after 2 attempts, keep trying different data-structures and algorithms to solve the problem. This will show the interviewer that you have a never-give-up attitude and you have knowledge on other topics as well. If you follow this approach you will ultimately end up in solving the problem with at-least a naive approach.
4. For System Design you can go through website <https://www.educative.io/courses/grokking-the-system-design-interview> - Grokking System Design (Paid course but worth it) and videos from <https://www.youtube.com/channel/UCRPMAqdtSgd0Ipeef7iFsKw> Gaurav Sen System Design
5. Please don't get disappointed if the interview results were not positive. Remember that the company could have various other reasons to reject the candidate irrespective of the interview going well. Learn from your mistakes if you had done it during the interview and take that experience for future interviews.

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# Amazon Interview Experience for Internship

- Difficulty Level :\n[Easy](#)
- Last Updated :\n25 Feb, 2020

## 1st round (Online)

30 MCQs and 2 coding questions

- 1) [Find the contiguous sub-array with maximum sum \(Kadane's Algorithm\)](#)
- 2) [Find mean, median and mode of an array of integers.](#)

## 2nd round (F2F)

2 coding questions

- 1) [Clone a linked list with an additional random pointer](#)
- 2) [Search in a row wise and column wise sorted matrix](#)

## 3rd round (F2F)

2 coding questions

- 1) [Print the boundary of a binary tree.](#)

But this wasn't the solution according to him. Leaf nodes that are surrounded by other nodes are not included. Basically print the left view, right view and bottom view of the binary tree.

- 2) [Trapping rainwater problem](#)

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# Amazon Interview Experience (Off-Campus for SDE-1)

- Difficulty Level :\n[Hard](#)
- Last Updated :\n25 Feb, 2020

First, there was shortlisting on the basis of cpi and board percentage I guess.

**Round 1:** Round 1 was coding round consisting of 2 coding questions and 28 MCQs on based on output, data structures and algorithms. The first coding question was to convert infix expression to postfix (<https://www.geeksforgeeks.org/stack-set-2-infix-to-postfix>) and the second was to find the mean, median and mode of the given array. This round was for 1 hour 30 minutes.

After getting shortlisted, a total of 4 face to face interviews were to take place, each being eliminative in nature. The time for each was fixed to 45 minutes each and each of them involved writing the complete code on paper.

## Interviews:

**Interview 1:** Started with my introduction and then 2 coding questions.

Question 1: Given an array, find the number of sub-arrays having even sum.

<https://www.geeksforgeeks.org/find-number-subarrays-even-sum/>

After brute force, I derived the formula and the interviewer was satisfied.

Question 2: Given an array of 0s and 1s, and a number m, you can flip maximum m zeroes, count the maximum length of 1s you can make by flipping at max m zeroes.

I tried it for some time and approached it right. But then, according to the interviewer, I got off-track to which I explained my approach to him and he verified it with a few test cases. My approach was also right and he was convinced.

Then I got shortlisted for the next round.

**Interview 2:** Started with the interviewer\xe2\x80\x99s introduction and then one question on networking (since my project involved switches) and then 2 coding questions.

Question 1: Given two very large numbers represented as a vector, multiply them.

Coded it right.

Question 2: Print the boundary traversal of a binary tree.

Coded this too.

**Interview 3:** Started with my project and then coding.

Question 1: Given a dictionary in which the length of all the words are equal, you are allowed to change just one character. Given a starting word and an ending word, what will be the smallest number of steps required to change the starting word to the ending word.

Solved it in first attempt (the interviewer seemed a little surprised at this).

Question 2: Given a pointer to a node in a linked list, delete the given node in O(1).

No code, only the approach.

**Final Interview:** Again with my project and internship.

Question 1: Given a Linked List and a number k, reverse the Linked List in groups of k.

Coded it.

Question 2: Same as the first question in round 3.

The interviewer asked only the approach and complexity and then one more question.

Question 3: Given a number, find the next greater number that can be formed using the same digits.  
Could only reach the approach, time expired, hence could not code.

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# Amazon Interview Experience for SDE-1

- Last Updated : \n 25 Feb, 2020

## 1st round (Online)

30 MCQs and 2 Coding questions

- 1) Find the position of the rightmost and leftmost set bit of a number.
- 2) Given an equation of X, for example:  $X + 2 = 5$ , find X.

## 2nd round (F2F)

2 Coding questions

- 1) Given an array that represents the height of trees, you have to mandatorily cut down one and only one tree. Find the number of possible ways in which you can cut down a tree, so that all other trees are in an increasing order.
- 2) Rearrange characters in a string such that no two adjacent characters are same (Priority Queue)

## 3rd round (F2F)

3 questions

- 1) [Find the Rotation Count in Rotated Sorted array](#) ( $O(\log(n))$  solution)
- 2) [Check if two trees are Mirror](#)
- 3) [Algorithm to minimize the file merge time](#) (Min Heap)

## 4th round (F2F)

3 questions

- 1) [Diameter of a Binary Tree](#)
- 2) Difference between Overriding and Overloading
- 3) Compile time and runtime polymorphism

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# Amazon Interview Experience | SDE-1 Bangalore

- Difficulty Level : \n[Medium](#)
- Last Updated : \n24 Feb, 2020

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## Round 1:\xc2\xd0

They asked to write solutions for 2 different questions mainly

1. [KMP Algorithm](#)
2. [Find mirror of a given node in Binary tree](#)

## Round 2:\xc2\xd0

This was a face2face round mainly involving problem solving and data structures.

1. [Minimum insertions to form a palindrome](#)
2. [First Missing positive number in an array](#)

## Round 3:

This was again face2face round with 2 coding questions.

1. [Nodes in Top View of Binary Tree](#)
2. [Minimum deletions required to make frequency of each letter unique](#)

I got rejected after this round.

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# Amazon ACMS Interview Experience | On-Campus

- Last Updated : \n24 Feb, 2020

Amazon came to our campus in February 2020. There were 2 rounds.

## Round 1:

The test conducted consisted of 3 coding questions.

1. Given an input linked list, write a function that returns the Run Length Encoded linked list. For example, if the input is a->a->a->c->b->b then the output should be a->3->c->b->2.  
<https://www.geeksforgeeks.org/program-to-implement-run-length-encoding-using-linked-lists/>
2. Given a linked list, replace every element with the least greater element on its right side in the linked list. If there are no greater element on right side, retain the same value. For example 8->58->71->18->31->32->63->92->43->3->91->93->25->80->28 then the output should be 18->63->80->25->32->43->80->93->80->25->93->93->28->80->28.  
<https://www.geeksforgeeks.org/replace-every-element-with-the-least-greater-element-on-its-right/>
3. Given a string, reverse every sub-substring formed by consecutive k elements.  
<https://www.geeksforgeeks.org/reverse-an-array-in-groups-of-given-size/>

## Round 2:

There were 20 MCQs, it consisted of questions based on finding output for a given code snippet.

There were 2 coding questions

1. Count the number of inversions in an array. <https://www.geeksforgeeks.org/counting-inversions/>
2. Minimum number of jumps to reach then end of array. <https://www.geeksforgeeks.org/minimum-number-of-jumps-to-reach-end-of-a-given-array/>

In total 482 students applied and 8 students were selected and I was one of them.

Hope this helps.

All the best

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# Amazon Interview Experience for SDE-1

- Last Updated : \n24 Feb, 2020

## Round 1: It was an online round on Amcat platform consisting of two questions.

I don't exactly remember the question, but the first question was based on DFS and second on BFS.

## Round 2: It was f2f round in amazon hyd building

This round had 2 questions:-

Q1. <https://www.geeksforgeeks.org/find-next-greater-number-set-digits/>

Q2. Data structure with insert(), delete(), getrandom(), delrandom() functions, such that all happens in O(1) time.

## Round 3:f2f round

An in-depth discussion of my previous work experience, followed by 2 design questions:-

Q1 design drinks vending machine.

Q2 design LRU cache, with complete code.

## Round 4: f2f round

Q1. <https://www.geeksforgeeks.org/level-order-traversal-in-spiral-form/> iterative as well as recursive approach.

Q2. Merge K sorted array.

link:- <https://www.geeksforgeeks.org/merge-k-sorted-arrays-set-2-different-sized-arrays/>

## Round 5: f2f round

An in-depth discussion of my previous work experience.

A question similar to :- <https://www.geeksforgeeks.org/find-possible-words-phone-digits/>

it was not exactly the same question but a variation of above.

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# Amazon Interview Experience for SDE-1

- Difficulty Level :[Medium](#)
- Last Updated :[21 Jan, 2020](#)

## Round 1:

- Find the next greater element in an array:
- Find the next greater of next smaller element in an array
- Longest Palindromic String(Iterative and Recursive)
- Longest Palindromic Subsequence

## Round 2:

Find the maximum element for every window of size k.

Write edge cases, write code for the mentioned data structure

## Round 3:

Managerial Round:

Tell instances where you demonstrated Learn and Be Curious, Customer Obsession

## Round 4:

Bar Raiser Round

Add one to a linked list ( Time Complexity: O(n), Space Complexity O(1))

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# Amazon(Barcelona) Interview Experience for SDE | Off-Campus Internship

- Difficulty Level :\n[Hard](#)
- Last Updated :\n15 Jan, 2020

Just completed Amazon\xe2\x80\x99s online assessment that was given 5 days in advance to prepare for.

It consists of 3 rounds:

**Round 1:\xc2\xa0** Code debugging (20 min). In this round 7 questions were given either in c, c++ or java. The questions were very easy and anyone who is having programming experience can clear it with ease. No Data Structures and algorithm knowledge is required to clear this round. In every question only logical errors were there which you have to see and correct it and then compile/run the code. I got all 7 questions and cleared this round.

**Round 2:** Coding round(70 mins). In this round, 2 programming questions were one was regarding hashing and the other one was a typical graph question. They asked to code a question in c, c++, python3 or java. In the graph question, they asked me to find total number of bridges from graph. In that question I used bridge finding algorithm but due to less time I was able to complete only one programming question. But, Still I cleared the round. For this to get clear you should have good knowledge of data structures and algorithms. Link for graph question is\xc2\xa0<https://www.geeksforgeeks.org/bridge-in-a-graph/>. But at last, I cleared this round.

**Round 3:** The interesting part comes in this round. In this round 4 hour online simulation test was there. This test will test you that how you will react when some situation arises while you are working as a SDE at amazon. For example, you have contributed some code in amazon relay website and out of 3 senior engineers, 2 senior engineers are happy and appreciate your code and give some feedback to improve your code, But one senior engineer finds that your code design is wrong or inappropriate for this project. So whether you will convince him with your idea or you will follow your senior advice or you will keep meeting with all three senior engineers and then decide it. Also in this 4 hour online simulation test, some cases were given along with some data and you have to choose whether algorithm 1 is appropriate or algorithm 2 is appropriate for this situation. After this, a 35 min logical ability test was there which just tests your logical ability(multiple choice questions) and not your technical skills. But I failed to clear this round due to some wrong answers given in online simulation test.

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# Amazon Interview Experience | Off-Campus for Internship

- Difficulty Level :\nEasy
- Last Updated :\n10 Jan, 2020

Hello everyone. Here is my interview experience at Amazon for an internship.

Duration \xe2\x80\x93 6 months

Rounds \xe2\x80\x93 1 online test + 2 Personal Interviews (F2F)

## Round 1:

The first round was comparatively easy. Here I had to give an online test which consists of 20 MCQs in which there were general aptitude questions, OOP, output, etc. In addition to this, there were 2 coding questions:

1. <https://www.geeksforgeeks.org/number-of-ways-to-get-a-given-sum-with-n-number-of-m-faced-dices/>
2. This was a question on String that I don\xe2\x80\x99t remember.

## Round 2:

For this and the next round, I was called to Bangalore. This round was of 1hr approx. I was asked 2 coding questions:

1. <https://www.geeksforgeeks.org/search-an-element-in-a-sorted-and-pivoted-array/>
2. <https://www.geeksforgeeks.org/merge-k-sorted-arrays-set-2-different-sized-arrays/>, there was a slight difference though. If there are k arrays, the last array had n elements but the total size of this array was equal to the sum of sizes of all the other arrays and n. I was not allowed to use any extra space. To solve this question, I had to use a max heap of size k from the end of and the result was inserted at the end of the last array each time.

## Round 3:

This round was of 1hr 20 mins. In this round, there were 3 parts, first and last were coding while the second was the theory. The 3 parts in the sequence were:

1. Each node in a tree generally has utmost 1 parent and 2 children, in the given tree each node can have utmost 2 parents and 2 children. Each node had a value associated with it. I had to find the maximum sum that I can get by traversing from the root to the leaf most efficient manner. The values of each node can be negative too. I had to solve this in O(n).\xc2\x9a To solve this I had used Dynamic Programming.
2. Regarding the theory questions, the questions were:
  1. Difference between ipv4 and ipv6 except for the length.
  2. What is memory virtualization?

There were 2 more questions, to be honest, I was not able to answer any of the theory questions that the interviewer asked me. When I was not able to answer the questions, he asked me to tell him about my projects. I explained all the projects I had. He also told me to tell of what all I knew about the Operating System and I explained everything I knew for 15-20 minutes.

3. Given an array of nodes, each node represents a road which connects 2 cities. I need to find

whether there exists a path between the given source and destination city. The roads are can be traversed in both the directions i.e from A to B and from B to A. First I created a hash map of type `<String, ArrayList<String>()>` ((city), (consisting of all the cities that I can reach from that city)) and then I applied BFS on it. Refer to the link to understand the BFS part  
<https://www.geeksforgeeks.org/find-if-there-is-a-path-between-two-vertices-in-a-given-graph/>

I was able to answer all the coding questions properly but not the theory questions but luckily I was selected

Important Advice Don't give up on the coding questions, keep trying till you find a solution. If you get stuck on something, the interviewer gives you a hint to help you out. Even if you are not able to answer the theory questions but can solve the coding questions well then you will get selected.

### Verdict: Selected

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# Amazon Interview Experience

- Difficulty Level : [Medium](#)
- Last Updated : [10 Jan, 2020](#)

## Online Test:

- 28 MCQs based on Data Structures & Algorithms, Database Management Systems, Operating Systems, Predicting C and C++ output.  
<https://www.geeksforgeeks.org/quiz-corner-gq/>
- 2 coding questions:
  - [Longest common subsequence](#)
  - [Find the minimum height of a tree given its inorder and level order traversal](#)

**Note:** Test conducted on mettl platform, do atleast 1.5 coding questions for good chance

**Pen Paper Round:** Given 2 questions, discuss the approach with an assigned mentor and write code on paper handling all test cases. Make sure the presentation is neat, good variable names are used, comments are given to explain what each block of the code does, use least time and space complexity.

The questions were:

- [Count all possible paths from top left to the bottom right of an \(m X n\) matrix\(similar to below link but the matrix was also given which was filled with either 0s or 1s, the path can only be made of 1s\)](#)
- [Find the vertical sum of a binary tree](#)

## Technical Round 1:

- Given a linked list, connect the first to last, last to second, second to second last and so forth.

**Input:** 1 → 2 → 3 → 4 → 5 → 6 → NULL  
**Output:** 1 → 6 → 2 → 5 → 3 → 4 → NULL

Involves finding the [middle of the linked list](#), [reversing second half](#), merging the two linked lists

- [Next greater element in an array](#)

After writing code, just do a dry run, it should handle all corner cases. The interviewer is going to count the number of errors.

## Technical Round 2:

The interviewer was very friendly and gave me hints and a lot of time.

- He asked me about my projects(basic level and didn't go deep), the 4<sup>th</sup> year project even though I didn't mention it in my resume.
- The coding question was to [count the number of turns in a binary tree](#).  
 I told him some observations and asked him for some hint, he simplified the question and made the question given a node and the root, find the number of turns in the path. After some time, I was able to come up with an answer. He asked to optimize and I came up with an answer after some more thinking.

## Technical Round 3:

- Tell me about yourself
- Given an array, left index and right index, return the sum between the given indices in less than O(n) time. [Segment trees](#)
- Building [heaps](#), [merge sort](#), [insertion sort](#), [count inversions](#) in an array
- Basic Database Management Systems & Operating Systems questions like :
  - [What are ACID properties in a database?](#)
  - How to implement isolation in a database?
  - [What is thrashing?](#)
  - [What is virtual memory?](#)

**Tips:** I kept solving questions from the following [link](#). Have some good projects, some certifications if possible on a resume, I used a website **zety** for building a resume. Practice typing or writing code instead of reading it. I am deeply indebted to GeeksforGeeks for providing all the necessary resources.

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# Amazon Interview Experience for SDE-1

- Difficulty Level :\n[Medium](#)
- Last Updated :\n09 Jan, 2020

## Round 1: Coding round

Online coding round consisting of 3 question (Duration-1hr)

1. Given a space separated string find the first substring whose reverse is present in the string. And string will end with \$ sign.
2. Chocolate distribution problem-There are  $N$  people standing in a row with some count ( $1 \leq i \leq N$ ) number of chocolates in their hands. You have to select a range of people and take all their chocolates with the condition that you should be able to distribute those chocolates equally among  $M$  boxes. Write a program to determine the maximum number of chocolates that can be placed in a box.
3. Related to DP(not remember).

## Round 2: Write on paper

- <https://www.geeksforgeeks.org/convert-an-arbitrary-binary-tree-to-a-tree-that-holds-children-sum-property/>

## Round 3: F2F round

1. <https://www.geeksforgeeks.org/maximum-path-sum-matrix/>
2. <https://www.geeksforgeeks.org/lru-cache-implementation/>

## Round 4: F2F round

1. <https://www.geeksforgeeks.org/implement-a-dictionary-using-trie/>
2. <https://www.geeksforgeeks.org/sliding-window-maximum-maximum-of-all-subarrays-of-size-k/>

## Round 5: Hiring manager round (video calling)

1. Basic questions about team and project and problem faced in current company.
2. Basic question about leadership like have u lead any project in current company.
3. Team conflict question
4. One design pattern question- Design an E-commerce application where user can place order and order will go to cart and then place order after payment. After explaining the question he gives me 15 minutes of time in which first i have to ask all my doubt and then code the solution.
5. Any question for me.

## Round 6: Bar raiser round ( video calling)

1. Question related to Amazon leadership principle.
2. A lot of question related to project in current company.
3. <https://www.geeksforgeeks.org/merge-two-sorted-arrays-o1-extra-space/>
4. <https://www.geeksforgeeks.org/count-pairs-with-given-sum/> and then said to generalize it for triplet and other also.

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# Amazon Interview Experience | On-Campus 2020 for SDE-1

- Difficulty Level : \n[Medium](#)
- Last Updated : \n06 Jan, 2020

## Round 1: Coding round

Online coding assessment consists of 2 sections

MCQs: 28 questions with no negative marking

The questions had code snippets based questions, OOP and OS based questions. C basics should be strong.

Coding: 2 coding questions

They have a pool of about 20 questions from which they give 2 random questions.

1) [Dice Throw | DP-30](#)

2) Given a starting and ending time of events and only 1 event can take place at a time, print the maximum number of events that can take place. (Hint: Sort on the basis of start time and take a greedy approach)

## Round 2(Face to Face Interview)

- [Print Nodes in Top View of Binary Tree](#)

I started with a level order traversal approach, then he moved on and asked to do the same with a preorder traversal. I had used a map to store the nodes and then print them after the complete traversal but then he asked me to improve the print operation and for that I used an unordered\_map and a min index for the complete traversal. Then he asked me for the changes to make it a bottom view.

He went onto ask a few concepts of Operating Systems like Process, Threads, deadlocks and Scheduling.

## Round 3(Face to Face Interview)

- [K\x{e2}\x{80}\x{99}th Largest element in BST using constant extra space](#)  
He questioned about the approach and tried to dig if I had seen such a question earlier.
- [Largest subset of rectangles such that no rectangle fit in any other rectangle](#)  
It was a modified version of the question(Just give the biggest element in the subset).

He then asked me about the strongest point on my resume and discussed deeply on the topic for about 20 mins.

## Round 4(Face to Face Interview)

Given an array of R and C, where R represents a rabbit at that location and C represents a carrot at that location and an integer D, a rabbit can eat a maximum of 1 carrot within the range D. Output the maximum number of carrots that could be eaten.

I gave a solution of  $O(n+d)$  but he made me improve it to  $O(n)$ .

## Round 5(Face to Face Interview)

- [Number of palindromic paths in a matrix](#)

The interviewer helped out a bit though. Asked a few minor things from the resume. He then relaxed the environment and asked about my hobbies.

In all the interviews they started by asking the approach and at the end we had to finally code up the problem.

## Result

Converted.

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**Amazon Interview Experience | SDE-1 (Off-Campus)**

- Difficulty Level : [Hard](#)
  - Last Updated : 06 Jan, 2020

Amazon Interview Experience for SDE 1 Off campus Drive Hyderabad Location.  
2019 passed out.

## **Round 1:(Online Coding Round)**

This is a Hackerearth test, it consist of 20 MCQ majorly form DS, OS, CN and OOPS and few output questions and 2 programming questions.

1. <https://leetcode.com/problems/reverse-string-ii/>
  2. <https://leetcode.com/problems/course-schedule/>

Above round is of 90 min. After some day I received a mail from HR that I was shortlisted for onsite rounds.

## **Round 2:\xc2\xa0(Face to face interview)**

In this round 2 questions were asked which I have to be answered in 70 min and also write code for them on paper.

- First question was to reverse the link list with size of K. <https://www.geeksforgeeks.org/reverse-a-list-in-groups-of-given-size/>
  - Given an array break the array into three sub-array by removing 2 elements of it, in such a way that all three sub-array have same sum. O(n) Time Complexity and O(1) space complexity.

\xc2\xa0

### **Round 3:(Face to face interview)**

In this also 2 questions were asked and also i have to write code for them on paper.

1. Given a string print the largest sub-string containing vowels in even counts. O(n)  
|xc2|xa0 |xc2|xa0

2. <https://www.geeksforgeeks.org/minimum-number-platforms-required-railwaybus-station/>

## **Round 4:(Face to face interview)**

Interviewer start with discussion about my current profile work and also with a short discussion on my project(College Project). Then he asked me to design a algo for how to maintain server-load with load Balancer.(Not able to answer it basically he want to answer something like round robin type algorithm.)[This question was ask on the basis of my current work]

Now he jump to coding questions.

- Given a data made up of BST which is dynamic(i.e nodes keep on adding as the user enter new details) he want me to convert that BST to Complete tree.[Have a healthy discussion on it about 10-15 min i gave him solution with rotations like in AVL and ultimately at end he agreed with a solution consist of in-order which run on the Batch basis.]. Then he told me to code the function which take tree as input and return root by changing it to complete tree.
  - Second he asked for a given a number \xe2\x80\x98n\xe2\x80\x99, print how many valid parenthesis strings containing \xe2\x80\x98(\xe2\x80\x98 or \xe2\x80\x99)\xe2\x80\x98n\xe2\x80\x99 are possible of that length. I told its an application of Catalan Number then he want me to write a code to generate nth Catalan number without using formula basically he want me to write the Dynamic version of it. [<https://www.geeksforgeeks.org/program-nth-catalan-number/>]

Luckily i was able to write both codes in this round and after all 3 onsite rounds HR told me that i also have 1 more round i.e Bar Raiser round and she will share the detail via mail.

\xc2\xa0

#### **Round 5:(Bar Raiser)[On video call]**

This round is with a very Senior person having 15+ years of experience, Interview started with his introduction, and then my introduction. Then he asked me my role in my current team and also want me to explain a situation in which i perform something which is completely different from my current role.[This is basically a Behavioural question so answer such question on the basis of there Leadership Principle.]

Then he jump to coding part.

- Given a number in form of link list we have to add one to that number and update the link list accordingly. eg. 123 is stored like 1->2->3 and adding 1 to 123 it becomes 124 so we have to update the list to 1->2->4. O(n) time and with O(1) extra space without reversing without recursion.
  - Given a playlist of songs we have to shuffle that playlist. [Basically an application of <https://www.geeksforgeeks.org/shuffle-a-given-array-using-fisher-yates-shuffle-algorithm/>]

After 2 weeks i received a call from HR saying that Amazon is releasing an offer of SDE1 for me.

\xc2\x0

## SOME TIPS:

1. In all rounds you will be asked to write a production level code so be prepared for that.[But In first two round of face to face if your code is not perfect in one go and interviewer found 1, 2 corner cases which may fail in it the you may got a chance to correct it, all depend on the interviewer not sure about 3rd round as in my case i was able to write perfectt code in one go]
2. In any round if you stuck, discuss it with interviewer as they definitely help you on that.
3. But in the last round i.e with BAR Raiser make sure to write complete code and moreover your code should be production ready i.e if he/she will able to find any case which fail in your code then there will be chance of rejection as he/she only read your code and said ok thats it for the day any questions for me and finished your interview, so make sure to write a perfect code before submitting to him.\xc2\x0 \xc2\x0 \xc2\x0 [As one of my friend got rejected in Bar Raiser as he was not able to complete code]

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# Amazon Interview Experience | 6-months SDE Internship (2020)

- Difficulty Level :\nBasic
- Last Updated :\n27 Apr, 2020

On 14th December 2019, I appeared for an interview at B.M.S. College of Engineering for a 6-month Software Development Engineering Internship Role. I had applied through the amazon career site and got shortlisted for online assessment in the mettl platform.

**Online Round:** In this round they\xe2\x80\x99ve asked 2 coding questions and 28 MCQs of computer science fundamentals like DS, Algo, and C++ basics. They usually call for an interview if you complete both coding questions.

**On Site Interview::** It was the second round, in this round recruiter had given the 2 coding questions for 40 minutes which are mostly of DS and Algo. In each coding question, first of all, you have to discuss your approach then optimize the solution then they\xe2\x80\x99ll tell you to implement the solution in language and make sure you write the production-ready code and be interactive with a recruiter they\xe2\x80\x99re very cool and guide you if you stuck somewhere. Unfortunately, I got rejected because I could not optimize the solution.

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# Amazon Interview Experience | 6-Months Intern for SDE

- Difficulty Level : \n[Medium](#)
- Last Updated : \n30 Dec, 2019

The process consisted of an online round and a maximum of two face-to-face technical rounds. I applied through amazon.jobs so it was an off-campus drive for me.

## Online Round :\xc2\xab0

This round had 30 questions (28 MCQs + 2 Coding questions) in total and 90 minutes to complete the test. The test is monitored through webcam and microphone. The MCQs were mainly asked on C and data structures. Coding questions were fairly simple. If you're good at problem solving you will get through.

## Face to Face Interview:

### Round 1:

The interviewer started with normal question about what my favorite subjects are. Moving onto Data Structures he asked which is my favorite data structure. I answered Trees ( It is totally up to you what your favorite is).

Then he asked a question based on Trees (obviously!)

[Given a binary tree, print the top view of the tree.](#) I told him the approach and then he asked me to find some corner cases. Unable to do so he drew one on the paper and there my logic failed. Then after some thinking I optimized my approach and he seemed to be satisfied with the answer.

On to the question, he asked me to [print the nth node from the last of the given linked list.](#) I explained him the approach and he then told me to write the code on the paper. He reviewed the code and found some mistakes and I corrected them at once. I did it in two traversals, he asked for a approach with one traversal. He even provided me a hint of using two pointers instead of one. I was getting some trouble but was close to the solution.

He then asked me to write my name on the paper and told me to go.

After 5 minutes, I was told that I cleared round 1.

### Round 2:

The interviewer was very friendly. He asked me to introduce myself. After that he jumped to the technical questions.

1. Given a set of strings and an input string. A string is valid only if it can be broken into non-overlapping sub-strings such that each of those sub-strings are available in the set. The question was somewhat similar to [this](#). Since I am weak in strings I was not getting any good solution. I told him my approach and he told me take time and think about it. Watching me struggling with the solution, he started to ask me about my projects. I was not able to find a good solution. He then moved onto the next question.
2. [Given a binary tree and two nodes, Node 1 and Node 2. Print the path from Node 1 to Node 2.](#) I told him that we can find the [lowest common ancestor \(LCA\)](#) of both nodes and store path from LCA to Node 1 in a stack and print the stack and path from LCA to Node 2 in the stack (except for LCA this time because it's already been printed) and print the stack. He said

it\xe2\x80\x99s a good approach and asked me to write the code. I was unable to write the code properly. He asked me questions on LCA.

In the end he asked me if I have any questions. I asked what kind of projects do interns get to work on at amazon. He replied it varies on department and location.

It was a nice interview experience. GeeksForGeeks is a good place to brush up your skills on Data Structures and problem solving.

I was not selected for the role but working hard for future.

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# Amazon Interview Experience | 6-months Internship (Off-Campus)

- Difficulty Level : \nEasy
- Last Updated : \n03 Nov, 2021

I applied for the 6 months internship through referral at the end of November. I thought if you apply through a referral it takes only 1-2 days to get back from HR but after 2-3 days, when no one contacted me I thought I am not going to hear back from them. But after two weeks, I got the mail about the online coding round.\xc2\x0

## Round 1: Online Coding Round\xc2\x0

There were 2 coding questions and 28 MCQ.\xc2\x0  
\xc2\x0

1. Infix to Postfix conversion
2. Very easy string manipulation problem\xc2\x0  
\xc2\x0

I was able to solve both of them.\xc2\x0

After two days, they told me about the onsite interview and that I had to go to the Amazon Bangalore office.\xc2\x0

On the day of the interview, I went to the office. There were about 70-80 other students.\xc2\x0

## Round 2: Technical Interview\xc2\x0

This was 60 minutes round and 2 coding questions were asked. I solved one completely and one partially. My interviewer was cool and friendly. Although he was not smiling a lot, he made me feel like we are having a discussion about the question. He started with the usual About you question and then directly jumped to the coding questions.\xc2\x0

Q1. You are on the ground stair and you have to reach \xe2\x80\x98Nth\xe2\x80\x99 stair. At any stair, you can take at most \xe2\x80\x98K\xe2\x80\x99 steps. Find the total number of ways you can reach the Nth stair.\xc2\x0*int countWays(int N, int K)*\xc2\x0

He explained to me the question, then explained it through a sample test case. And then asked me to first explain the approach and if he is satisfied with the approach, then only I can code. He told me that he will also note things down on his laptop.\xc2\x0

Firstly, I gave him the recursive brute force solution(Because that\xe2\x80\x98s what CTCI says). Then he asked me to optimize it. Then I gave him the DP-approach with time complexity O(N\*K) and space complexity O(N). Then he asked me to further optimize it. I used another variable to store the sum of last K stairs and increase its value for ith stair and decrease for (i-k)th stair. Now my time complexity was O(N) and space complexity was O(N). I thought that now I can code, but he again asked me to optimize the space. Then I gave him O(K) space queue solution. Now he was satisfied with the approach and asked me to code it. Again he explained to me what he is expecting while writing the code. (Readable, modular, indented, meaningful variable name).Then I wrote the code, he checked it and was satisfied.\xc2\x0

Q2.\xc2\x0Smallest string with swaps \xe2\x80\x93 [http://https://leetcode.com/problems/smallest-string-with-swaps/](https://leetcode.com/problems/smallest-string-with-swaps/)\xc2\x0

It was difficult for me to come up with the brute force solution and I told him. Then he gave me some hints, and with his help, I came up with a brute force solution. After that, we had some discussion that whether the brute force solution will always give the correct solution. After that, he asked me to optimize it, which I was trying but he told me that time is up and if I have any questions. I just asked him about the role of the intern and which team is hiring the intern.\xc2\x0

After 15 minutes, they told me that I am moving the next round.\xc2\xa0

### Round 3: Technical Interview\xc2\xa0

It was also 60 minutes round and 3 coding questions were asked. First, he asked me to give a brief introduction. Then he asked me about my internship and my projects. Then he told me what he is expecting from me in this round. He told me that he will ask 2-3 questions, depending on the time, and I need to explain to him the logic first, and then code. Also, follow good coding practices. He told me that he will I cannot overwrite writing the code, and that he will write the exact code on his machine(not sure if he really did that, but he was typing something on his laptop).\xc2\xa0

Q1. Trapping rainwater problem\xc2\xa0

Firstly, gave him the brute force solution  $O(N^2)$ . He told me to optimize it. Then gave him the leftMax and rightMax array approach. He said I can code now. While writing the code, I made sure to keep it clean, made it as modular as I can, use the descriptive variable name. He looked at my code, asked me a few questions, and then moved to the second question.\xc2\xa0

Q2.\xc2\xa0<https://www.geeksforgeeks.org/dynamic-programming-building-bridges/>\xc2\xa0Since I\xe2\x80\x99ve already done this question, I told him that I just need to find the LIS in the array. He told me how I would do that. I gave him  $O(N^2)$  approach. He said it is okay and asked me to code.\xc2\xa0

Q3. It was an easy question. He asked me there is a land, and there is a lake inside. I need to find the size of the lake. I told him that I can use 1 for land, 0 for water, and then apply DFS when I encounter any 0. Then he asked questions on DFS and how I will do that. I explained to him my approach and then he asked me to write the pseudo-code for it.\xc2\xa0

Then he asked if I have any questions. I asked him some questions.\xc2\xa0

Then after about 20 min, HR called him and congratulated me.\xc2\xa0

### Advice for interview\xc2\xa0

\xc2\xa0

1. No matter how much time is left, make sure your code follows good practices. I remember a time when I thought I will write code super fast and then explain to him the code, but it doesn\xe2\x80\x99t work like that. They will keep the paper where you wrote the code, and then later review it in case they have any doubt on you. So make sure, what you write is clearly understandable. Your code, your logic, your diagram, your test cases.
2. Make sure you are having discussions and not an interview. Make sure to explain your approach and your answers to his/her questions in a way that makes it look like a discussion. How? Explain things like you know things, don\xe2\x80\x99t just guess, explain why you are thinking recursive solution.
3. Always look up on the internet the answers to your questions. The next interviewer might ask you.

\xc2\xa0

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# Amazon Interview Experience | SDE Intern (Off Campus)

- Last Updated : \n24 Dec, 2019

**Round 1:** It was an online test at Mettl. It consisted of 28 MCQs based on Data structures and algorithms and some output based questions and 2 Coding Questions. Difficulty level for this was Medium.

Coding questions asked were:

1. Euler's Totient Function  
<https://www.geeksforgeeks.org/eulers-totient-function/>
2. Count Inversions in an Array  
<https://www.geeksforgeeks.org/counting-inversions/>

I was able to clear this round and received interview call 2 weeks later but couldn't attend it because of some reason then I was again called for an interview a week later.

**Round 2:** This was a F2F Technical Interview or I'd say more of a problem solving round. Interviewer seemed friendly. She started off by asking about myself, then after giving her introduction and straight away jumped to DS and Algo.

I was asked 2 questions \xe2\x80\x93

1. Stock Buy Sell to Maximize Profit  
<https://www.geeksforgeeks.org/stock-buy-sell/>
2. Given a string and a pattern. Find the count of occurrences of pattern as sub sequence in the string(Non \xe2\x80\x93 overlapping).

I was able to solve both the questions. In the end she asked me if I have any questions for her and then told me to wait outside. HR told me that I have a Round 2 and was called for round 2 in about half an hour.

**Round 3:** This was again a F2F Technical Interview / problem solving round. He straight away jumped to DS and Algo.

I was asked 2 questions \xe2\x80\x93

1. Connect n ropes with minimum cost  
<https://www.geeksforgeeks.org/connect-n-ropes-minimum-cost/>  
I wasn't directly told to implement this problem but had to figure out from the problem statement that this is the underlying problem.
2. Return the number of steps to reach from a node to another in a directed unweighted graph.  
I did it using Level Order Traversal.

I was able to solve both the questions. In the end he asked me if I have any questions for her and then told me to wait outside.

\xc2\x90

The thing with these technical interviews is to know the candidates' thought process behind approaching a problem. They give you a lot of hints if you get stuck somewhere, they ask you to optimize the approach if they know this can be optimized further. After discussing the approach you are asked to write production-ready code on paper.

After 10 minute or so HR told me that \xe2\x80\x99m hired \xf0\x9f\x99\x82

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# Amazon Interview Experience | SDE Intern

- Difficulty Level : \n[Medium](#)
- Last Updated : \n17 Dec, 2019

**Internship** \xe2\x80\x93 6 Months Off Campus December 2019

## Round 1:

It was an online test at Mettl. It consisted of 28 MCQs based on Data structures and algorithms and some output based questions. Difficulty:- Medium to High

It also had two programming questions:-

1. Dice Throw Problem  
<https://www.geeksforgeeks.org/dice-throw-dp-30/>
2. Given an unsigned 32 bit integer, find\ xc2\x a0 a) leftmost signed bit b) rightmost signed bit c) the total number of signed bits. We have two return a character array containing a#\#b#\#c

I was able to solve both questions. After about 7 days, I received a message that I had cleared the test and was called for an interview a week later.

## Round 2:

It was a Face to Face round. The interviewer was friendly. Started off by asking technical introduction, whether I have done any internships or not. Then he jumped right into DS and algorithms.

I was asked two questions in this round and was asked to write code for the same.

1. Iterative PostOrder Traversal Of a Binary Tree.\ xc2\x a0 (The interviewer specifically asked me to use only one stack)  
<https://www.geeksforgeeks.org/iterative-postorder-traversal-using-stack/>
2. Printing the maximum length increasing subsequence(length and subsequence both)  
He expected the optimized form but I could only write code for\ xc2\x a0 O(n^2) approach. I just mentioned about Patience sorting algorithm which can solve this problem in O(N log N) time.

After this question, he asked me whether I have any questions for him. After discussing, he asked me to wait for the result. The HR came and told me that I have to wait for the second round. After about 40 minutes, I was called for the second round.

## Round 3:

The interviewer didn\x e2\x80\x99t waste any time and jumped right into DS and algorithms. No questions from resume were asked in this round.

I was asked the following questions:-

1. \ xc2\x a0Given an array of n elements, it should satisfy the following property **a < b > c < d > e < f > g\ xc2\x a0**

I observed that elements at even indices must be lesser than their neighbors while elements at odd indices must be greater. I told him a naive approach of O(N log N)

We could put elements in a maxHeap and then first one by one pop and fill the odd indices first and then the even indices. He wasn\x e2\x80\x99t satisfied with the complexity.

He wanted O(n) time complexity solution. After thinking for about 5 minutes, I asked him for a

hint. (He said bubble sort). I was also thinking about swapping adjacent elements and got the green signal once I heard this from him.\xc2\x97 I told him that if the current element doesn't satisfy the rules, we swap it with the next element. I wrote the code for it and he went through some examples. He was satisfied and moved to the next question.

2. \xc2\x97 He asked me to implement an **LRU** cache (Indirectly)  
<https://www.geeksforgeeks.org/lru-cache-implementation/>

He asked me to implement the mechanism for obtaining three recently played videos for a user such that if a user plays a new video and that is not in the recently played list, the earliest one is removed from this list and this became the latest one. I at once told him that this seems like an LRU cache. He asked me which data structure I would use to solve this problem.

I told him an unordered map with a doubly-linked list. He asked what the map and list would store. After discussing the approach, \xc2\x97 he asked me to write the code for the insert function.

After I wrote the code, he asked since you have specifically used doubly-linked lists write delete function for a doubly-linked list, given a node pointer.

3. Given a pointer to a Doubly Linked List Node, delete the node.

<https://www.geeksforgeeks.org/delete-a-node-in-a-doubly-linked-list/>

I wrote the code and he asked me to run through some edge cases. The code was correct so he quickly moved on to the next question.

4. \xc2\x97 Design a custom data structure that supports insert, search, delete and getRandom operation in O(1) time.

<https://www.geeksforgeeks.org/design-a-data-structure-that-supports-insert-delete-search-and-getrandom-in-constant-time/>

I took some time to think of the approach and gave the approach to him. He even helped me when I got stuck. I told him that an unordered map and a variable-sized array would be good. He asked me to write the code for the delete function.\xc2\x97 I wrote the code and he asked me if I am making any mistake. I looked again and found a mistake. I corrected it and then he was satisfied.

5. \xc2\x97 Given a matrix of 0 and X, where 0 represents water and X represents land, find the maximum size of the continuous island. I told him that I would do this by using BFS.

He asked me what I will store in the queue and how I will maintain the size of the island. I didn't have to write the code for this. He was satisfied just after listening to the approach. After this, he asked me if I had any questions for him. I asked him some questions about work at Amazon. We discussed for about 10-15 minutes and then he said that the interview was over. I knew that this was the last round. The HR told me that they would mail me the result and I shook hands with the interviews before leaving. I got the mail that I am selected as an intern just one day after the Interview.

Tip:- Whenever stuck, try discussing the interviewer what you are thinking of and where are you stuck. I got stuck in Question 4 in round 2 in between using a linked list or array. He asked me to focus on the array approach.\xc2\x97 When that fails, don't be shy to ask for a hint. The interviewer will give you a slight hint and you can build upon that.

Verdict: SELECTED!!!

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# Amazon Interview Experience for SDE-Intern 2020

- Difficulty Level :\n[Expert](#)
- Last Updated :\n16 Dec, 2019

Hello geeks today I am sharing my Amazon SDE Intern interview 2020.

I applied through link on amazon careers for internship I got link to finish an online test by certain date.

**Round 1:** Online Test on mettl [90 min]

28 MCQ on c++, data structures,

2 coding questions

Q1. Given a matrix each entry in box is an integer. find row having maximum sum.

Q2. Given a dice having m faces each numbered from  $1 \times 10^2 \times 10^3 \dots m$ , the dice rolled n times. then find in how many ways a particular target sum T can be generated since ans is large we have to answer using modulo  $10^9 + 7$ .

Approximately 70+ students are invited for off-campus drive at one of the college in Bengaluru.

Technical Algorithm DS interview Round 1:

Q1. Interviewer was cool tried to make me comfortable he asked me about my online round at that time I only able to recognize only first question of my online round about matrix and tell him my approach [ my bad was I not able to recognize second question of dp If I would then perhaps it might impress him more]

Q2. Given a one dimension array find two elements such difference b/w them is minimum.

Q3. Expanded question to two sorted array then to k sorted array

Q4. asked to write code for heapify. little discussion on build heap complexity [ got confused and not able to clearly explain him how complexity becomes  $O(n)$ ]

Q5. Asked about bst, lots of discussion on bst.

given a bst make it a balanced binary tree Such that its preorder traversal gives us sorted sequence. No use of extra space, only to use operation to swap any two nodes.

I give him some unpolished approach. He asked am I not comfortable with trees.

finally got selected, for round two approx 20 were selected for round 2.

Technical Round 2 : [Algo Ds] [60 min]

little discussion on my project [5 min]

Q1. asked about dynamically growing sequential list, name them and discussed about various complexity of insert, remove random access in them.

myans. Discussed about ArrayList in java and linkedlist [he asked me for one more but I am not able to answer]

Q2. asked me about dictionary how they are internally implemented.

I discussed about red black trees (bst), and hashtable and complexity of its various operation.

Q3. he asked me to implement a full Hashtable class which should dynamically grow as no of keys increases and handle collisions.

implement methods like get(key) and put(key).

myans. I implement it fully but it takes more than two A4 size pages It takes my lots of time about 40 mins finally he satisfied.

he said we are running out of time so I have to solve next question very quickly.

Q4. Given a string of characters you can erase K consecutive occurring characters [though I misinterpreted it as more than K consecutive occurring characters which leads me to not come up with solution] . then what is minimum length we can get, note operation can applied recursively. ans. first I gave him naive approach, then I further come up with unpolished solution using two pointers from middle. He asked for standard one. Time up !!!!

Result : REJECTED

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# Amazon Interview Experience | On-Campus for SDE-I

- Last Updated : \n09 Dec, 2019

Experience from IIT Delhi On-Campus, Dec. 2019

## Placement Test:

Two questions from a pool of 15 questions (easy and medium) and 28 MCQ\xe2\x80\x99s based C/C++ skills and pointer arithmetic.

Some of them which I remember are:

1. Mean, Mode & Median of an array.
2. Find the number of inversions in an array.
3. Min. Dice throw DP etc.

## Round 1:

The interviewer asked 3 questions:

Q1. Write code to find the path from one node to another in a binary search tree. Did it well.

To proceed to round 2, do one of these:

Q2. Write code to heapify an array. OR Find the minimum number of modifications to sort an array where one modification means to increment or decrement an element by one.

## Round 2:

First, the interviewer took a quickfire round from CV.

Then, he asked this question:\xc2\xa0<https://www.geeksforgeeks.org/design-a-data-structure-that-supports-insert-delete-search-and-getrandom-in-constant-time/>

## Round 3:

I got asked this problem:\xc2\xa0<https://www.geeksforgeeks.org/k-maximum-sum-combinations-two-arrays/>

But I couldn\xe2\x80\x99t go beyond brute force solution this time and he wasn\xe2\x80\x99t very happy with my efforts.

He saw I was very exhausted and frustrated (it was day 2 slot 2, and I was being interviewed simultaneously by two companies at that time). So, he told me, it was the same story with him and he got rejected by Amazon on-campus but got in 6 months later.

## Round 4:

I didn\xe2\x80\x99t get to round 4.

\xc2\xxa0

Hope this helps!

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# Amazon Interview Experience | SDE-1 (1-1.5 years experienced)

- Difficulty Level :\n[Hard](#)
- Last Updated :\n09 Dec, 2019

## First Try:

### Round 1: Written test.

Q1. given a matrix of characters. find minimum steps to reach from \xe2\x80\x98S\xe2\x80\x99 to \xe2\x80\x98D\xe2\x80\x99 where \xe2\x80\x98#\xe2\x80\x99 is an obstacle.

Solution: BFS from \xe2\x80\x98S\xe2\x80\x99 to \xe2\x80\x98D\xe2\x80\x99.

Q2. print a binary tree vertically.\xc2\xa0[link](#)

### Round 2: f2f interview.

Q1. given a binary tree print the nodes whose parent and grandparents sum is more than K.

Solution: pass GP and parent in recursion call.

Q2. modified the above question to print the nodes whose N parents sum is more than K.

Solution: recursion with a sum vector to calculate the sum in O(1) for any node.

### Round 3: f2f interview.

Q1. given an Array print min and max of each subarray of size K.

Solution: DQ approach.\xc2\xa0[link](#)

he modified the question to find median as well.

Solution: 2 heaps approach [link](#). he insisted on optimizing more by re-using the calculated data while finding min and max but I couldn\xe2\x80\x99t.

Q2. given a Binary Tree and a pointer to one of its Node. at any point of time, this Node starts burning and the fire takes 1 second to reach an adjacent node. Print the nodes which will be burnt on each second separated by a newline.

Solution: find k distance nodes.\xc2\xa0[link](#)

I called such function while increasing the k value each time. he asked to do it in O(N) which I couldn\xe2\x80\x99t.

later I thought I should have created a map of distance and nodes in a single function call.

I was called again next week.

**Round 4:\xc2\xa0f2f interview.** (this round was taken by mistake as they though It was my first round)

Q1. find the min replacements needed to convert string 1 to string 2.

Solution: DP approach.similar\|xc2\|xa0[link](#)

Q2. the next greater elements.

Solution: Stack approach.\|xc2\|xa0[link](#)

**Round 5:**\|xc2\|xa0f2f hiring manager.

Q1. design an elevator system.

Solution: I was more focused on writing code than designing interfaces for all components of the lift.

I\|xe2\|x80\|x99ll advise learning the way of answering such questions like class diagrams and then focus on design patterns.

Q2. median of a stream of numbers.

Solution: 2 heap approach.

**Result:**\|xc2\|xa0Rejected.

\|xc2\|xa0

**Second Try:**

**Round 1:** Written test(solve 2/3)

Q1.\|xc2\|xa0find zeroes to be flipped so that number of consecutive 1s is maximized.\|xc2\|xa0\|xc2\|xa0[link](#)

Q2. sort the array when an index x can only be swapped with x+k. if not possible return -1.

Q3. print the numbers having same digits, together. similar\|xc2\|xa0[link](#)

**Round 2:**\|xc2\|xa0f2f.

Q1. k most frequent strings in a book.

Solution: described Hash-Heap and\|xc2\|xa0[Trie-Heap](#) approach and was asked to code Hash one.

Q2. count number of subarrays having the sum equal to K.\|xc2\|xa0\|xc2\|xa0[link](#)

**Round 3:** f2f.

Q1. search element in the row-wise, column-wise sorted matrix.\|xc2\|xa0[link](#)

Q2. Maximum path sum in BT.\|xc2\|xa0[link](#)

**Round 4:** f2f\|xc2\|xa0hiring manager.

Amazon Leadership principles.

Detailed discussion on my current Project.

**Round 5:** Online\|xc2\|xa0bar-raiser.

Amazon Leadership principles.

any project/task that I am most proud of.

Q: he shared a link\c2\x0to a 30-second youtube video. describing the amazon lockers system. where a delivery guy puts the package in locker. the customers scan the locker and get their package. design the schema and write an efficient algorithm to help find the appropriate locker for the delivery guy.

Solution:

Schema: lockers -> Racks -> Locations.

Algo: having queues for each locker size on every location.

**Result:**\c2\x0selected.

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# Amazon SDE II Interview Experience

- Last Updated : \n02 Dec, 2019

## Round 1:

Ques 1: Rearrange a LinkedList \xe2\x80\x93

Before : a->x->b->y->c->z

After : a->b->c->z->y->x

1st intuition \xe2\x80\x93 Maintain two list for a->b->c and x->y->z respectively.

Reverse the second list and join it at the end of the first list.

Interviewer : Reversing of LL is not allowed.

2nd intuition \xe2\x80\x93 Use of Stack, while traversing the second list which is to be reversed, maintain the elements in a stack and then join them.

Interview : Use of stack is not allowed.

3rd intuition \xe2\x80\x93 Manipulate the pointers in one-go!!!

Ques 2: Find Diameter of a Tree

## Round 2:

Ques 1: Given an array of numbers and a window size, k. Find the max element in each window while traversing the array.

Ques 2:\xc2\xa0k-Reverse a LinkedList

Leadership Principle Question

## Round 3:

Design a Library Management System.

Extended:

Add the concept of Reservations.

Provide the minimum time to wait for a Student before he can be issued a Book.

e.g 3 Books already issued and new student is 37th in queue for the issue.

Leadership Principle Question

## Round 4:

Leadership Principle Question

Ques 1: Design a Pluggable Cache, i.e. at any time it may be changed from LRU to MFU or LFU, etc.

LRU \xe2\x80\x93 Least Recently Used

MFU \xe2\x80\x93 Most Frequently Used

Ques 2: Multiple Matrices

Input : [[a, b, c]

[d, e, f]

[x, y, z]]

# of Rows and Columns can vary.

Output: adx, ady, adz, bdx, \xe2\x80\x93 adx. cfy, cfz

Result : Rejected

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# Amazon Interview Experience | SDE-Intern

- Difficulty Level :\n[Medium](#)
- Last Updated :\n28 Nov, 2019

Status: Fresher, B.Tech CS[2020 Batch]

## Round 1: Online Test\nc2\x00[Two sections] [90 minutes]

### Section A:

This section was having 2 programming question. Level of difficulty was very easy.

### Section B:

This section was having around 30 CS theoretical and some output based question, solely based on Data Structures and Algorithms.

**This round was held in my college [JSSATE] and around 15 students were selected from my college.**

**The interview was held in G.L. Bajaj College and around 120 students were there**

## Round 2: Technical Interview-1 [80-90 minutes]

They directly dive into asking DS Algo questions.

1. Given a binary tree. Print its Spiral form from top to down. After printing root, print third level in reverse order, then second level in forward manner, then 5th level in reverse order then 4th level in forward order and so on.
2. Given a matrix, each cell has positive or negative numbers. Starting from top left cell, reach bottom-right cell with optimum path such that maximum positive sum is received.

## Round 2: Technical Interview-2 [90-120 minutes]

After having intro they just dive into asking DS Algo questions.

1. Given a BST, initially two nodes are swapped. Now correct the BST.
2. Given a array containing continuous numbers starting with 1 in sorted order. One number is missing in this. Find out that number.
3. Make your own data-structure through with insertion, deletion, searching and finding random number can be done in O(1) time complexity. Finding random number Algorithm is given.

After 30 minutes, result is declared. They offered internship for 6 months which would later be converted to Full time SDE1 on the basis of performance.

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## Amazon Interview Experience for SDE-2

- Difficulty Level : \n[Medium](#)
- Last Updated : \n25 Nov, 2019

### Round 1: DS Algo round

The interviewer asked me about briefly my current experience, but that didn't seem like the goal of the interview round.

Then he started with ds algo questions. Below are the specific questions he asked:

1. Given a string and \xe2\x80\x9cab\xe2\x80\x9d, determine if the string can be generated by \xe2\x80\x9cab\xe2\x80\x9d. If it can form, then return true or else return false. Initial assumption is that the given input string will only contain characters \xe2\x80\x98a\xe2\x80\x99 and \xe2\x80\x98b\xe2\x80\x99.
  - Examples:
    - \xe2\x80\x9caaabb\xe2\x80\x9d \xe2\x80\x93 true
    - \xe2\x80\x9ccaabb\xe2\x80\x9d \xe2\x80\x93 false
    - \xe2\x80\x9cabababab\xe2\x80\x9d \xe2\x80\x93 true
    - \xe2\x80\x9caaabb\xe2\x80\x9d \xe2\x80\x93 false
  - Basically the rule is, for each \xe2\x80\x98a\xe2\x80\x99 in the given string, there should be a corresponding \xe2\x80\x98b\xe2\x80\x99 after that \xe2\x80\x98a\xe2\x80\x99.
  - My solution:
    - Have a counter set to 0
    - traverse through the string, for each character, if it is \xe2\x80\x98a\xe2\x80\x99, increment the counter, if it is \xe2\x80\x98b\xe2\x80\x99, decrement the counter.
    - At any point in array, if the counter is less than 0, then return false.
    - Once the array traversal is over, then if the counter is 0, then return true else return false.
  - He then asked to consider the input array having other characters than \xe2\x80\x98a\xe2\x80\x99 and \xe2\x80\x98b\xe2\x80\x99 as well.
  - Asked to write production level code to solve this problem. But I had to only write the method.
2. Reverse every k element set of singly linked list.
  - Examples:
    - list: 1 2 3 4 5 6 7 8 9, k:3 \xe2\x80\x94 output: 7 8 9 4 5 6 1 2 3
    - list: a b c d e f g h i j k l, k : 4 \xe2\x80\x94 output: i j k l e f g h a b c d

Then one more question: What would you do if you have 5 tasks, and a deadline where you can only perform 3 tasks. What would you do?

### Round 2: DS Algo (again)

This round also was about ds and algo, but before going to that, he asked a couple of work related questions like:

- Tell me about yourself
- What is the daily work that you have to do, specific to your role and responsibilities

Then he moved to ds algo questions:

1. Consider the number keypad of old mobiles. number 2 will be associated with a, b, c. number 3

is associated with d, e, f. number 4 is associated with g, h, i\xe2\x80\x9a6. so on and number 9 is associated with w, x, y, z. Now, the input to your method is\xc2\xa0 a number. You have to print all the strings that can be formed by that number considering the association described.

- Examples:



2. Zig zag printing of a binary tree of node type as string, but when you are printing right to left, you need to print string in reverse.

- Example:

\xe2\x80\x9cabc\xe2\x80\x9d

| \xc2\xab0 \xc2\xab0 \xc2\xab0 \xc2\xab0 \xc2\xab0 \xc2\xab0 \xc2\xab0 |

\xe2\x80\x9ccdef\xe2\x80\x9d\xc2\xa0 \xc2\xa0 \xe2\x80\x9cghi\xe2\x80\x9d

\xe2\x80\x9cjk\xe2\x80\x9d\xc2\xa0 \xe2\x80\x9clm\xe2\x80\x9d \xe2\x80\x9cno\xe2\x80\x9d\xc2\xa0  
\xe2\x80\x9cpq\xe2\x80\x9d

\xc2\xa0

The output would be:

abc

ihgfed

jklmnopq

\xc2\xa0

### **Round 3:**

I was rejected in the second round. I do not know the reason because I had given right answer to all the questions, and wrote working code on paper as well. Anyways, \xe2\x80\x9ckuch koshishen taiyaari ke liye hoti hain\xe2\x80\x9d right? \xf0\x9f\x99\x82 All the best my fellow geeks!!

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# Amazon Interview Experience for SDE2 | 3+ years Experienced

- Difficulty Level :\nExpert
- Last Updated :\n25 Nov, 2019

**Location:** Hyderabad

## Round 1(Project discussion):

Discussion about my best project and some questions on indexes.

## Round 2 (Design):

1. Design lift
2. Gave me a sample code in c++(first they ask the language you are comfortable with, mine was c++), and asked me to review it.
3. Discussion on some projects

## Round 3 (Design):

1. Design notification system (SMS, email and push) \xe2\x80\x93 HLD
2. questions on message queues
3. max number of 1s in sorted m x n 0, 1 matrix

## Round 4 (Design):

1. Design pacman game (showed the youtube video) \xe2\x80\x93 LLD
2. HLD of the same game

## Round 5 (DS and Algo):

1. Minimum number of operations to make a string balanced. All characters are in [A-Z] and the string is balanced when the frequency of all the characters in the string is same. The only operation that we can do is replace a character with any other character(and only replacement is allowed)
2. Incoming stream of characters, at every point in the stream, return the first non repeating character

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# Amazon Interview Experience for SDE Intern | On-Campus November 2019

- Difficulty Level :\n[Medium](#)
- Last Updated :\n25 Nov, 2019

Amazon visited our campus for hiring in November 2019. The profile was SDE- Intern and was open to all branches.

**No. Of Rounds => 3 { 1 online on Mettl + 2 tech F2F interview }**

## Description of rounds

### Round 1 (Online Coding Round)

Conducted on Mettl platform \xc2\x80 \xe2\x80\x93 620 students appeared .We were given 90 minutes to solve 2 coding questions and 28 mcqs.

The mcqs were solely based on data structures and algorithms as well as finding error/output in given c/c++ snippet there was no negative marking.

My coding questions were :

\xc2\x80

- Gcd of an array :\xc2\x80<https://www.geeksforgeeks.org/gcd-two-array-numbers/>
- [Max Sum Contiguous Subarray](#)

The coding questions of round 1 were easy and most of the people solved both their 2 questions correctly but the mcq made the difference in selection. So make sure you attempt the mcq problems carefully.

### Round 2 : 127 students shortlisted for F2F interviews

We were called for interviews in groups initially and the situation was like 2 students and 1 interviewer. The purpose of this round was to check the problem solving and coding proficiency of the students. The interviewer told a bit about himself in the beginning followed by the standard question of every interview \xe2\x80\x9c Tell me about yourself ?\xe2\x80\x9d.

There was almost no discussion on my resume or about my projects. Then we moved to the questions of that round. { pen paper round }

The first question given to me was :

\xc2\x80

- Next greater element using the same digits:\xc2\x80<https://www.geeksforgeeks.org/find-next-greater-number-set-digits/>

\xc2\x80

I was asked whether I have seen the problem before and I was honest and told him that sir yes I have solved this problem before. He gave the subsequent problem then.

\xc2\xa0



They first discuss the approach and once they are satisfied with the approach we are expected to write production ready code without any bugs and the code should compile in one go.

\xc2\xa0

**Round 3 :** F2F interview approx 50 students appeared for this round

This interview also followed a similar approach like the previous interview but this time it was 1 interviewer and 1 candidate. The interview began with a few questions about my coding language and skills. Then we moved straight to pen and paper coding.

I was again asked to write 2 production ready codes and the questions were :

\xc2\xa0

\xc2\xa0

- You are at the beginning of the array, you can either take 1 jump or  $\text{arr}[i]$  jumps at each step, you have to return the minimum number of steps to reach the end of the array. {DP}

\xc2\xa0

- Given a string, find its first non-repeating character  
<https://www.geeksforgeeks.org/given-a-string-find-its-first-non-repeating-character/>

\xc2\xa0

Again the focus was on production ready code and how well you cover all the corner cases.

This was the last round and offers were released by EOD

\xc2\xa0

## Advice and Tips :)

# BE READY FOR EVERYTHING\xc2\xa0

Be confident, bold and honest in your answers. Be yourself.

If you do not know the topic or answer to a question they ask, do not panic, and just tell them that you do not know.

Interviewers do not expect an exact answer to a question, but they see your attitude, approach and improvisation in solving the problem.(yes body language also does matter)

\xc2\x0Think out loud during the interview and try to engage the interviewer in problem solving along with you. Don't rush to writing the code, first discuss the approach with the interviewer and then write the code. You will have ample of time so no need to worry and remember that the interviewer is there to help you only they will provide the required hints, from where you can pick up and reach the solution.

\xc2\x0If you get stuck in between the interview, stop right there take a deep breathe, ask for a new sheet of paper and start again.

### Lastly \xe2\x80\xa6\xc2\x0

Do not consider placement as burden, when you have actually prepared thoroughly, you will crack it one day provided company feels you fit into their requirements.

**DO NOT LOSE HOPE IF YOU ARE NOT HIRED**, it is very much necessary to learn from each interview experience you have and to prepare yourself best for the next. Do not give up at any cost, keep preparing (because there is lots to learn) and be in the race.\xc2\x0

THERE WILL BE A COMPANY WHICH WILL HIRE YOU BECAUSE YOU WILL BE THE BEST TO THEM.

\xc2\x0

**All the best <3\xc2\x0\xc2\x0**

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# Amazon Interview Experience | On-Campus Internship

- Difficulty Level :\n[Easy](#)
- Last Updated :\n21 Nov, 2019

Amazon visited our campus(Sathyabama University) to recruit interns. I\xe2\x80\x99m sharing my internship\xe2\x80\x99s interview experience.

**Round 1:** The\xc2\xa0round is online test conducted by mettl paltform.

There were 28 mcqs, it covers c, c++, ds and algorithms.(switch case, printf, cout, recursion, trees, heaps, stacks)

2 coding questions

1. Maximum sum subarray

2. Find nth term in A.P

## Round 2:

2 coding questions

1. search an element in rotated and sorted array.
2. find the vertical sum in binary tree.

## Round 3:

This round was fully coding . Totally he gave me 3 questions in that I have solved 2. Interviewer was very friendly. They will help if you have got struck anywhere. My interview was almost 1 and half hour. He didn\xe2\x80\x99t checked my resume. They are expecting coding from us.

coding questions:

1. check if a binary tree is subtree of another tree

2. Given a String and a banned array. The task is to find the most frequent word in the string which is not present in banned array. (Not case sensitive)

string: If you think you can do it, you can do it

banned[]:{ you, can}

output: do (\xe2\x80\x99cit\xe2\x80\x99 also occurred two times but \xe2\x80\x99cd\xe2\x80\x99 occurred first)

I didn\xe2\x80\x99t solved this question.

Then he asked about joins.

Later he asked me to write use cases for

1. if youtube is not working in your mobile

2. use cases while entering the debit card numbers

And then he asked a coding question

Merge two sorted linked lists

My advice to prepare ds and algorithms. Finally, I got selected for Internship by god's grace.

Role-System Development Engineer.

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# Amazon Interview Experience for SDE(1-2 years)

- Last Updated : \n20 Nov, 2019

## Round 1:(Written)

- Print boundary of a tree

<https://www.geeksforgeeks.org/boundary-traversal-of-binary-tree/>

- Re arrange positive and negative numbers \xc2\xa0 in odd and even positions .Also maintain the order

## Round 2:

- <https://www.geeksforgeeks.org/find-first-non-repeating-character-stream-characters/>
- <https://www.geeksforgeeks.org/minimize-the-sum-calculated-by-repeatedly-removing-any-two-elements-and-inserting-their-sum-to-the-array/>
- <https://www.geeksforgeeks.org/transform-bst-sum-tree/>

\xc2\xxa0

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## Amazon Interview Experience (For SDE Intern)

- Difficulty Level : \nHard
  - Last Updated : \n17 Nov, 2019

Amazon visited our campus recently(November 2019) for hiring SDE Interns. It was a three round hiring process.

## Round 1 (Online Coding Round) :1xc21xa0

It was an online coding round on mettl platform. We were given 90 minutes to solve 2 coding questions and 28 mcqs.

The mcqs were solely based on data structures and algorithms as well as finding error/output in given c/c++ snippet there was no negative marking.

The coding question for me were,

1. It was a simple question based on string manipulation, you just have to take care about corner cases, otherwise it was a cakewalk.
  2. The second question was to [find the next greater number using the same digits as given in the input string](#). Constraints on input string length was  $1 \leq \text{length} \leq 100000$  so an  $O(N \log N)$  solution would be good to go.

## Example

Input: 1532

Output:2135

I'm not sure exactly but, students who solved both the coding questions completely and also did well in mcqs were selected for next round. The results of this round were declared after a week. And the next two rounds were after a week of results.

## **Round 2(F2F interview):**

This round was a f2f personal interview and was of nearly 1 hour for each candidate.

First he started with his introduction about his background and his current work in amazon as SDE, Then I was told to introduce myself. After that he began with the interview.

First he went through my resume as I mentioned about my summer internship he asked about my work there and about the application I worked on. He was friendly and seemed to be keen about everything I said. Then he took a glance on my project and found one of my project interesting so he asked me to show the logic and calculations on paper, I explained it for around 10 minutes, he was convinced with the answer and then we moved to the data structure and algorithm questions.

- Keeping the story aside the question was basically to find [two nodes which sums up to given value in a balanced binary search tree](#).

I suggested an approach to take inorder traversal and get the sorted array. And then to apply [this](#) two pointer O(N) time approach as the array already being sorted. He asked me if I can improve space complexity instead of O(N) to something better? I told him a method to maintain two stacks one for inorder traversal and the other for reverse inorder traversal and doing the same two pointer approach as one stack would give array elements in ascending order and the other would give it in descending order. I was not sure about the iterative implementation of this traversals so he said it was fine and told me to code the first approach. He reviewed the code thoroughly and after some explanation on code from my side he was satisfied and moved on next question.

- He asked me to design a data structure which supports insert, search and delete operation in best possible way. I suggested a doubly linked list with hashmap than he said if I can improve on delete time complexity. Then I suggested Self balancing BST (AVL Tree) which will support all of these in O(LogN) time. He was convinced and told me to show how will I balance the tree? I told him about the rotations to perform after every insert and delete operations. I didn't have to code this.
- After this he said if I had any questions for him, I asked a couple of general questions and then the round was over.

The results of this round were declared after around an hour of completion of the entire round for all the candidates.

### Round 3(F2F interview):

This round was also based on data structure and algorithms and it lasted for more than an hour.

- The first question was that I was given an array of non negative integers where each integer represents the maximum number of jumps that I can take from that position and have to find the number of ways to reach the nth step. where n is the length of the array. I suggested him a DP solution, I took an array count[n] which stores number of ways to reach that particular step and lets take the input array as steps[n].
  - And the relation was,  
count[0] = 1; (As there is one way to reach there and we are already there by that way!) for each i from 1 to n  
count[min(i+1, n-1)] to count[min(i+steps[i], n-1)] would be incremented by count[i] as the ways to reach here were count[i] and we can go up to steps[i] from here.

He was convinced with the solution and told me to write a working code without any mistake.

- The second question was about [joining the parts of a rope by taking two parts at a time to join them and finally merging them to a single rope in minimum cost](#), where the cost is defined as sum of the two ropes we chose to join. I told him greedy approach using priority queue, to take two min length pieces from the priority queue and adding the merged piece again to the priority queue until there is a single rope. Then he asked me how would I implement priority queue? I told him that I will use min heap. Then he asked me about insertion and deletion in min heap and after that we moved to the next question I didn't have to code this one.
- The third question was that I was given an n-ary tree each node has an integer value and I had to find a subset of node which has maximum sum but I can't take both parent and child in the set (i.e. I have to exclude at least one of them). This problem resembled to [this](#)

[problem](#) which I had solved earlier. So I suggested the same by taking two extra properties in Node class (i.e. maximum sum including this node and excluding this node) and than taking level order traversal of the tree and changing the value of the including and excluding variables of Nth level while being in (N-1)th.(i.e. while inserting them in the queue, here we have to do it by considering all the childs of the current node. And the root node being initialized with the value of excluding as zero and including as the value of that node) And finally taking the sum of max(including, excluding) for all the leaf nodes. He then told me to write working code with all the corner cases covered. And he also told me to write the Node class.

After this 3 question he asked me about my internship and projects and as when the terms kept coming he asked me various questions on them,

- What is react?
- What is component based development?
- What is the difference between SQL and NO-SQL database?
- What is AWS? etc.

At last he asked if I had any questions for him, and then the round was over.

After around two hours of this round the results were declared, I and other 6 students were selected.

I would suggest to be confident and think loudly while being there and also express your thoughts by taking examples on paper and ask questions wherever there is a doubt. Best of luck for your interviews!

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# Amazon Interview Experience SDE-1

- Difficulty Level : \n [Hard](#)
- Last Updated : \n 13 Nov, 2019

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## Round 1: Pen Paper based DSA Round.

I was asked to solve two problems. The focus was to write a complete production ready optimised code managing all the edge cases. You were not allowed to write pseudo codes:

1. [Reverse a Linked List in groups of given size](#)
2. [Connect n ropes with minimum cost](#)

The HR gave me the feedback that the Interviewers are really impressed with the clean and optimised code that I wrote managing all cases.

\xc2\x0

## Round 2: F2F \xe2\x80\x93 Pen Paper based DSA Round.

Interviewer introduced himself and asked me tell him about myself. Then we straightaway jumped into problems. The focus was same. Pseudo codes were not allowed. Was asked to write complete production ready code in preferred language managing all test cases.

1. [Trapping Rain Water](#)
2. [Boundary Traversal of binary tree](#)

\xc2\x0

## Round 3:\xc2\x0F2F \xe2\x80\x93 Pen Paper based DSA Round.

There were two people in the interview panel. Each one of them introduced themselves and asked me one question each. Write complete code. Pseudo codes were not allowed.

1. [Water drops in a pipe problem](#). We discussed on different cases. I gave a stack and maths based solution.
2. [Minimum candies distribution problem](#). I gave an approach but was not able to code the whole solution properly in the given time. The interviewers asked me to stop as they were running out of time.

\xc2\x0

## Round 4:\xc2\x0F2F \xe2\x80\x93 Pen Paper based DSA Round.

The interviewer introduced himself and went straightaway for the question. He emphasised the same thing that he is looking for production ready complete code. Only one question was asked in this round. Lots of discussion on optimising the solution which took a lot of time.

1. Print the nodes of the binary tree in such a fashion that you print the leaves first. When you print the present leaves in the tree, these leaves would be deleted which may result in new leaves. After first round of leaves deletion you have to print new sets of leaves that were created due to previous deletion. Now print these leaves and delete them which would result in newer leaves.

Again print these newer leaves and proceed so on, till you process the whole tree.

The required complexity to solve this problem was  $O(n)$ . I gave  $O(n^2)$  solution using multiple recursion but was then able to optimise it to  $O(n)$ . After giving the approach I was asked to write working code for the same.

\xa0

#### **Round 5:\xa0F2F \xe2\x80\x93\xc2\xa0Computer Science Fundamentals.**

I was asked to answer questions on Computer Networking, Operating Systems, DBMS, NoSQL, In-memory Caching, CDN (Content Delivery Network) and its use cases. Nothing fancy. If you had studied these subjects in your college you could easily answer the questions. Some of the questions were based on the technology I had worked on.

#### **Round 6:\xa0F2F \xe2\x80\x93\xc2\xa0Engineering/Hiring Manager Round.**

After brief introductions the interviewer started questions based on the projects I have done in my organisation.

- He asked me to draw the whole flow of the project(HLD) and explain each micro-services we had. I explained him the end to end architecture and the flow and why we were using certain technologies.
- I explained him how we were using NGNIX SSD caching capabilities which he was not aware of.
- I explained him my contribution in the project.
- Who made various design decisions and technology stack decisions and why.
- How hard was it to convince the team when you chose a certain technology to work with.
- I assume the focus was also on numeric figures or rather how well I was involve in the project. I was asked QPS, response times, type of http request being used, number of instances of the micro-services running, etc. Thankfully, since I am closely involved with the architecture of my project, I was able to answer almost all of them.

These are some of the discussion points I could recall.

#### **Round 7:\xa0Video Conference \xe2\x80\x93\xc2\xa0Bar Raiser Round.**

After brief introduction, the interviewer told me that I need to answer the question based on my experience in my present organisation. The focus seemed to be to answer the question in STAR methodology.

- He asked me to describe the most challenging technical problem that I faced in my project and how I solved it/still working on it, which benefited or would benefit the team. Was it the most difficult and rewarding challenge that you faced? We had further discussions on it.

Then he asked me to write production ready code in a screen-shared word doc. I was required to manage all cases and sub-cases.

1. Sorted insert node in *Doubly Circular Linked List*.

\xa0

After two weeks time, I was informed that I am a hire for them!

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# How to Prepare for Amazon AWS Cloud Support Associate On-Campus test?

- Difficulty Level :\n[Medium](#)
- Last Updated :\n31 Oct, 2019

The test comprises 4 sections total of 77 questions in 90 minutes of time:

#1. 1st Section consists of 20 Aptitude questions to be solved in 15minutes of time they were from mediocre to hard ones so practice some online from geeksforgeeks or careeride sites.

#2. 30 questions of OS, DBMS, and Computer Networks they were easy ones try to learn from this will surely help

#3. 20 questions of Cloud computing for that prepare from Amazon AWS web site about that all is given or a free coursera course by google on cloud computing or by nptel videos on youtube anyone will help you learn.

#4. Lastly two easy coding questions same for all 1 coprimes numbers and other sorting one both you can find on GeeksforGeeks easily. I got shortlisted thanks gfg.

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# Amazon Interview Experience for SDE-2

- Difficulty Level :\nHard
- Last Updated :\n29 Oct, 2019

## Round 1:\xc2\xd0

1- Maximum water that can be stored between two building.

[Maximum water that can be stored between two buildings](#)

2 \xe2\x80\x93 Sort linked list(Used merge sort)

## Round 2:

1 \xe2\x80\x93 Word Ladder problem.

[Word Ladder \(Length of shortest chain to reach a target word\)](#)

2 \xe2\x80\x93 Left view and right view of binary tree

## Round 3:

1 \xe2\x80\x93 Question on projects[HLD]

2 \xe2\x80\x93 Design a system like Red bus [HLD, DB design, Design microservice architecture]

## Round 4:

1 \xe2\x80\x93 Detail discussion on projects like HLD, most challenging task, why sql or nosql, db design

2 \xe2\x80\x93 Some behavioral questions[Asked to explain it using STAR(Situation, Task, Action, Result) methodology]

## Round 5:

1 \xe2\x80\x93 Discussion on projects

2 \xe2\x80\x93 Design a system like Amazon locker.

<https://leetcode.com/discuss/interview-question/233869/Design-Amzon-Locker-system>

3 \xe2\x80\x93 Behavioral questions.

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# Amazon Interview Experience for SDE 1 (1.5 years Experienced)

- Difficulty Level : \n[Medium](#)
- Last Updated :\n29 Oct, 2019

Amazon Chennai conducted drive for SDE 1 and SDE 2 recently on 28th September in Delhi

Initially there was a written round where we were asked to write algorithms for certain problems. The problems were of medium level. There were total 3 problems as:

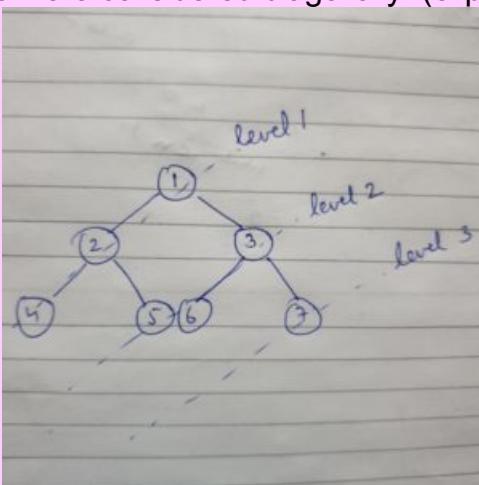
Problem 1: [Check whether given linked list is palindrome or not](#)

Problem 2: \xc2\xd0[Find row with maximum number of 1s in sorted binary matrix](#)

Problem 3: [Wild card pattern matching](#)

## Round 1(F2F):

1. Given a binary tree, find the difference between sum of all the elements at odd and even level of the tree. The level of tree were considered diagonally. (expected space complexity O(1), time



complexity \xc2\xd0 O(n).

2. It was a standard DP question, we have to find the maximum possible sum to reach the last row of matrix starting from top left corner and only possible moves were going down and diagonally right.

Then he asked me some behavioral questions.

## Round 2(F2F):

1. [Maximum sum path in a binary tree](#)
2. He started this question by framing a story just like we find for every question on codechef but it turn out be one of the DP problem ([word-break problem](#)). I told him my approach using Trie and it worked on some test cases too but couldn't provide the efficient solution using DP.\xc2\xd0 I had never seen this question before but later got to know it is one of the common question to be asked.

## Round 3 (F2F Hiring Manager):

He was one of the senior manager of the team for which this hiring drive was conducted. Firstly, he asked me to introduce myself and then he asked many behavioral questions based on amazon

principles.

Only 3 rounds were conducted on that day and HR told me that next round will be conducted over video conferencing.

#### **Round 4 (Bar Raiser):**

This round was conducted after two weeks and the interviewer was a senior manager having more than 10 years of experience at amazon itself. He started with my introduction and then asked behavioral questions based on amazon principles like :

1. Tell me a situation when you worked on something beside your team
2. If there is a product release tomorrow and you came to know that there are many bugs in product which would take at least a two weeks, what would you do in this situation.
3. Best project you have worked on.

He also asked some questions from Operating Systems on scheduling algorithms, race condition, how mutex and semaphores work and their practical implementation, how data is saved on disk.

He wanted to ask questions on design patterns also but I replied that I am not much knowledge of that.

At last, I was asked to solve an algorithmic problem which was given a text file of words and spaces with no punctuation and we need to compress this file in order to reduce the actual size of the file.

\xc2\xA0

After two weeks I got the call from HR that I have been shortlisted for this position.

**Verdict:** Selected

**Note:**\xc2\xA0At every stage you are expected to write clean, simple and efficient code with minimal possible time complexity on paper or whiteboard. Even if you are not sure about your solution, tell the interviewer about your thought process and approach as sometimes they are not just looking for the exact solution rather they judge you on your thinking ability and how you see the problem in itself.

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# Amazon Interview Experience for SDE-1(0 \xe2\x80\x93 2 years Experienced)

- Difficulty Level :\n[Medium](#)
- Last Updated :\n22 Oct, 2019

Amazon Interview Experience for SDE \xe2\x80\x93 1 Off campus Drive Bengaluru.  
Myself 2019 passed out.

First round is a written round. There are different sets of questions.

## Round 1\xc2\xa0 WRITTEN TEST

- > Stocks maximum profit problem
- > Sum of heights of nodes in binary tree

Above round is for 45 min. After that they announced results. I was shortlisted for next round.

## Round 2, Face to face technical interview \xe2\x80\x93 1

tell me about yourself

discussion on stack and queue about their usage and operations.

- >Implement stack with push, pop, peek, getmin operations in O(1)
- >Right view of binary tree.
- q/a on different data structures.

Code must be flawless and production ready.

Interviewer is friendly and we had a healthy discussion about her role and work-culture at Amazon.  
This round took more than 1 hour. I was shortlisted for next round.

## Round 3, Face to face technical interview \xe2\x80\x93 2

Tell me about yourself

->Minimum number of platforms for trains, given train arrival, departure.

->Get the zig-zag traversal of a binary tree.

(Interviewer asked me do you know this question before I admitted I know, then asked me to give logic)

discussion on binary tree

->flatten the linked-list(asked to give the logic)(Interviewer modified this question as below and asked to code)

->print the values of the nodes, for given linked-list as when flattened(without modifying linked-list)

Interviewer is very particular about the code and logic and asked me to try different solutions other than given, I tried and gave different solutions but it took time. Interview took\xc2\xa0 around 1.5 hours .

Be honest in the interview it will help you a lot.

## Round 4, Face to face technical interview \xe2\x80\x93 3

This interview is 2 on 1.

Tell me about yourself

a brief discussion on different data structures and their importance

->All the following operations must be achieved in O(1) addition(), removal(), getRandomNumber(), search()

allowed to use any Data Structure

(Assume you are giving input from user and can perform operations in-between)

one more question asked(don't remember exactly) (only logic and how I approach discussed)

->Few os questions on deadlocks, Multi-threading.

->discussion on basic networking and how internet works

how will you earn the trust of your colleagues

and behavioural questions related to their leadership principles.

Be genuine and give your best. Let the interviewer feel you are a team player and able to work.  
(Amazon is very particular about the 14 leadership principles, do refer them)

### **Round 5, Face to face interview \xe2\x80\x93 4(Hiring Manager round)**

->Pruning a binary tree (prune all nodes if path\_sum > n from root to nodes)

Interviewer asked me why I did choose the logic and explain about the optimal space and time complexity for my solution.

->Asked about internship and role, how I contributed to my team in intern.

->Project discussion.

Few behavioral questions.

**Verdict :** Selected

**NOTE :** Whole process took more than a month so don't worry they will definitely convey the info.

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# Amazon Interview Experience(ACMS) | On-Campus

- Last Updated : \n21 Oct, 2019

Amazon came to our campus for ACMS in December. The test conducted consisted of 20 Computer Science MCQs from DSA, DBMS, Networks, OS and a bit of Computer Architecture. I was one of the 20 people selected. We started from January and worked with them for a project and were called for 4 sessions to the Amazon Office after which Amazon took a written test consisting of four sections:

1. Aptitude-Easy Questions
2. Some Basic English
3. Two coding questions
  - a) A problem based on Round Robin Scheduling
  - b) Problem based on two sum problem

<https://leetcode.com/problems/two-sum/>

with some language added to make it seem difficult also we had to take care of rounding off the answer and set the precision for 4 digits after the decimal point.

We had our project presentations after the test. The scores were finalized from the project and the test combined. Those who had scores good even were forwarded to interviews.

In the whiteboard interview round I was asked three questions-

1. To serialize and deserialize a binary tree-

<https://leetcode.com/problems/serialize-and-deserialize-binary-tree/>

2. Two sum problem again-

<https://leetcode.com/problems/two-sum/>

. I told them both of the approach using hashmaps and two pointers

3. Four sum problem-

<https://leetcode.com/problems/4sum/>

I was asked to write the code and describe my approach while going through the code.

My interviewer was very friendly. They always want to look at how you approach the problem. Geeks for Geeks has an extensive section of questions. InterviewBit can be handy to look at the time you are taking to solve the problem. LeetCode has many test cases that help you look at all the possible problems your code might have. LeetCode Mock tests come handy as well. However Geeks for Geeks community can always be helpful to solve and understand all possible approaches to the problems.

Hope My post helped

All the best \xf0\x9f\x98\x80

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# Amazon Interview Experience | SDE-I

- Difficulty Level : \n [Hard](#)
- Last Updated : \n 27 Apr, 2020

## Online round:

Test Pattern: Two coding problems, 28 MCQs

Time: 1 hr 30 min

MCQs were solely based on the questions pertaining to the input/output of a C program. A general pattern observed was that there would be a code snippet in the question and one would have to provide correct output/error of that particular program.

Coding problems included:

1. [Count trailing zeroes in a factorial of a number](#)
2. A coordinate plane is given. On each point  $(x, y)$ , there is  $x+y$  number of apples on it. A person is standing on  $(0, 0)$  and he wants to buy a square plot having  $N$  number of apples inside it (including the periphery). Return the value of perimeter of that square plot if the value of  $N$  is given

After a couple of weeks, I was called for the face to face interviews. Four rounds of interviews were conducted spanning over two days.

## Round-1 (Technical) [60 mins]

Questions in this round were of easy difficulty, having pretty straight forward solutions. The interviewer asked the below-mentioned questions. Once I provided the correct solution, he tweaked the question to some degree and again asked me for the solution. After receiving the correct solutions, he asked me to write the code of it on paper.

Questions:

1. [Count all possible paths from top-left to bottom-right in a matrix](#)

Tweak: Count all possible paths from top-left to bottom-right in a matrix having obstacles

2. Find inorder predecessor and successor of the node in BST in which nodes also have a **parent** pointer along with left and right pointers.

## Round-2 (Technical) [120-150 mins]

This round was the most difficult round of the entire process. I was expecting that this round would have an easy-medium kind of difficulty level but the interviewer had other plans. He straightforwardly asked me to solve [Longest Palindromic Substring](#). I was taken aback a bit (as Dynamic

Programming hasn't been my strong point) and sat there doing nothing for about 10-15 mins.

After then, slowly, ideas started coming into my mind and I started to design the solution on the paper. At regular intervals, the interviewer would ask me about what I am thinking and would point out contradictory cases if the approach was wrong. But after some point, I realized that my approach was nowhere in the vicinity of the correct solution and so did my interviewer. So he started providing me hints disguised in questions like *What if you approach the question from this perspective?* After a couple of hints, I came on the right track and went on to solve the question!

Apart from this, he asked me the questions on heaps, its building, inserting and deleting time complexities, and priority queues.

After the round ended, I was almost certain that I was *done for the day* but again, the interviewer had other plans!

### Round-3 (CS Fundamentals) [30-40 mins]

This round was solely focussed on checking my Computer Science fundamentals. Questions were from the domains of Operating System, DBMS and Computer Networking. Difficulty level was easy, as they were asking only basic questions of this domain. Some of them are mentioned here:

- What is Deadlock?
- How deadlocks can be detected?
- Given a directed graph of process dependency, write a code to detect deadlock. (Solution: Cycle in Directed Graph)
- What are ACID properties in DBMS?
- Difference between TCP and UDP

### Round-4 (Tech + HR) [90-120 mins]

Technical questions:

1. [Find Excel column name from a given column number](#) (Wrote the solution on paper)
2. [Coin-in-a-line problem](#)
3. Detailed explanation of need and working of Virtual Memory in Operating System
4. Overview of pages and page faults

HR questions:

- Why Amazon?
- Which was the most difficult interview round and why?
- Did you solve all the questions in all the rounds?
- Given the fact that your current company is also good, why are switching the company at such an early stage of your career? (*Reason for asking this was because it had only been two months since I had started my first job*)
- What were the mistakes that you have committed in your current job and what did you learn from it?

After the round got completed, the HR team informed me that they will get back to me after some days, and guess what, I got the offer!

Last but not the least, I would like to list down some points which I personally experienced during this interview process:

- Interviewers provided enough time for the candidate to think, design and write the solution.
- They were willing to help the candidate in case he was unable to solve the problem by providing hints and pointing out caveats in his/her solution.
- Rather than the solution, they were more interested in checking how a candidate approaches a problem and whether he/she has the ability to solve it if provided some help.
- Testing candidates\xe2\x80\x99 coding skills with pen and paper coding style.

Looking forward to working with you at Amazon.

**ALL THE BEST! \xf0\x9f\x99\x82**

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# Amazon Interview Experience 2019 (SDE, DE, SE )

- Last Updated : \n16 Oct, 2019

**Round 1:** Online assessment consists of 2 sections(sectional cut-off exists, no negative marking)

Coding: 2 coding questions(one easy and one hard)

MCQs: 20-25 mcqs on c/c++

Students who did 2 coding questions completely and who also did well in MCQs got selected for the Interview

**Round 2:** Technical round consists of 2-3 rounds

They came to hire for 3 different roles SDE, DE(data engineer) and SE

**TR1:** 45-60 minutes

1. Projects and schema(you need to explain clearly about your projects and technologies you used. Latest Technologies might help you to grab their attention like ML)
2. Simple queries on MongoDB(as it is on my resume)
3. SQL Queries based on joins and Inner query(This part is little difficult you may get confused)
4. Draw database schema of uber
5. normalization and normal forms
6. Try to normalize the given 2 tables to 3NF
7. What is cloud computing and what are the advantages over a normal database
8. oops and DBMS concepts(polymorphism, abstraction, savepoint, DML, DDL commands etc)
9. Types of joins
10. What is a distributed file system?
11. lastly 2 simple coding questions(find the frequency of a number in a sorted array, implement binary search)

\xc2\x90

**TR2:** 30 minutes

1. Project and schema
2. SQL queries harder than the previous round. They test your idea and efficiency of retrieving data using joins and inner queries
3. Simple DBMS concepts
4. 2 simple coding questions(frequency of a number in an array, find the second largest number in the given array)

\xc2\x90

**TR3:** 20-30 minutes

1. This round is to test our problem-solving ability.
2. find mid element of a Linked List
3. find merging point of 2 linked lists
4. print right view of a binary search tree
5. Time complexity matters

6. Based on your performance your role will be decided
7. For Software Development Engineer(SDE) you need to have good problem-solving skills. Prepare LL, Trees, DP, Graphs.
8. For Data Engineer(DE) role prepare SQL queries and Database concepts as well as cloud computing and big data basics. You get to work on AWS as a DE.
9. TR rounds may moy be in the same order for everyone.

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# Amazon Interview Experience for SDE 1 | OFF-Campus

## \xe2\x80\x93 2019

- Difficulty Level :\nHard
- Last Updated :\n01 Nov, 2019

A recruiter contacted me through INSTAHYRE (Job searching platform), I have my profile on a lot of platforms, but Instahyre seems to be the most genuine one. So I got a mail from Amazon HR, he called me for an onsite interview at Amazon Bangalore.

Around 60-70 candidates were there on the interview day. There were 4 rounds, each one was elimination round. After interview rounds there was 1 more round on skype call.

**Round 1(Written Round):** Generally amazon conducts an online assessment, but in my case, they conducted a written round at the venue with the same format as that of online assessment- 2 Coding Questions in 60 minutes. MCQs were not there.

- [Find all triplets with zero sum](#)
- [Replace each node in binary tree with the sum of its inorder predecessor and successor](#)

Questions were easy, but their main focus was on Time and Space Complexities. After this round, some 50 students were left.

**Round 2 ( Face to face interview):** This round was focused only on my DS and ALGO skills. The interviewer was very friendly. He gave me 2 questions and asked me to first discuss the approach, and then implement production-ready code for the problems. The main focus in this round was:

1. To optimize the solution to best possible complexities.
2. Write production-ready code, your implementation will be tested, you have to write a code that would run without any compilation error or runtime error if tested on a system, even a small mistake can lead to your rejection.

### Questions asked:

1. This was recursion and memorization based. This took a lot of time, I was trying to solve this, but since I saw this question for the first time, I was a bit afraid, interviewer was friendly, he helped me with some hints and finally we reached to a solution.: \xc2\xa0\xc2\xa0<https://www.hackerrank.com/challenges/grid-walking/problem>
2. This was hashmap and tree-based problem <https://www.geeksforgeeks.org/construct-a-binary-tree-from-parent-array-representation/>:

This round went well, and I was qualified for the next round.

**Round 3( Face to face interview):** This round was also focused on DS, ALGO. Interviewer asked basic details about my projects and then he asked 2 questions.

1. It was a string problem, the question was of medium difficulty, I was able to solve this in less time. \xc2\xa0 \xc2\xa0\xc2\xa0\xc2\xa0<https://www.geeksforgeeks.org/find-the-smallest-window-in-a-string-containing-all-characters-of-another-string/>
2. This question a standard DP problem \xe2\x80\x93 Buying and selling stocks with max profit if only k transactions are allowed. He started with basic version and then moved to the standard version. \xc2\xa0\xc2\xa0<https://www.geeksforgeeks.org/maximum-profit-by-buying-and-selling-a-share-at-most-k-times/>\xc2\xa0.

I cleared this round.

**Round 4( Face to face interview):** This round was focused more on CORE knowledge (OS and DBMS only, no Networking questions were asked.). He discussed my projects in great detail, be ready to answer each and every minute detail about the projects mentioned in your resume. After this, since I'm a C++ guy, he asked me some questions about C++ like:

1. How C++ has evolved from C++ to C++17?
2. What is diamond problem?
3. How virtual keyword works?
4. Questions about multi threading in C++.
5. How C++ compiler works in detail.

Then he moved to core subject questions i.e., OS and DBMS, he gave me some scenarios and asked me how OS would behave, how it will handle all this, how semaphores will help, what is virtual memory, how does page replacement algorithms work. In DBMS he asked me about Indexing in detail, how actually indexing works in DBMS.

Since my resume mentioned about Javascript and NoSQL, he asked my differences between NoSQL and SQL databases, and when to use what.

I cleared this round and then I was told that I will have one more Round of interview on skype and that would be a technical one.

**Round 4(Online call):** Interview started with his introduction, and then my introduction. Then he asked questions about my academic project. Then he asked some behavioural question like Why Amazon?, What motivates you?, What have you learnt on your own?. After these questions, he asked me one easy coding problem. After discussing the approach he asked me to write production-ready code for this.

- [Minimum Number of Platforms Required for a Railway/Bus Station](#)

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Next day I got a call from HR congratulating me for bagging SDE 1 offer at Amazon.

\xa0

## SOME TIPS:

1. One month before your interview, start practising coding problems by implementing them on paper as during the interview they would expect a production-ready code which means that if they write that same code in their system it would run without any compilation error.
2. Improve your communication, it doesn't mean improving English, just make sure that during the interview, the interviewer gets to know about your thought process, that would help him in making the correct decision even if you're unable to solve the problem.
3. Go through your resume, you should be able to answer every question about anything mentioned on your resume.
4. Write your knowledge level with every skill that you are mentioning in your resume like if you are good enough in C++, mention it's PROFICIENT skill.
5. Don't panic if you see a new question. Try to solve that as if you are sitting with a friend, it's a part of the interview.
6. Always think as an interviewer during the interview, like what would you expect from someone if you were interviewing a guy and he is in the same circumstance as you are.
7. It's your responsibility to get your strength noticed by interviewer.

All the best!! Happy coding!!

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# Amazon Interview Experience for SDE | On-Campus 2019

- Difficulty Level :[Expert](#)
- Last Updated :[11 Oct, 2019](#)

## Round1: Online Assessment Round

Online test was on mettyl platform: **28 Technical MCQ and 2 coding questions.** Test duration was 90 mins.

Technical questions i remember were \xe2\x80\x93

1. Implementing stack using 2 queues and given push should be  $O(1)$  and a series of push and pop operations. What are the number of enqueue and dequeue operations performed
2.  $\text{int } a = (b=6)+(c=8)$ . What is the value of  $a$ ?
3. There were some questions w.r.t. to operator precedence.

All are C and C++ related questions. If you know the basics of c and c++, you will be able to solve most of it.

### Coding questions

1. Given a string with small letters convert the string into proper URL format considering the various constraints given. (like ru is always the domain extension and few other constraints)

i/p -    ftpramgruindex \r\no/p \xe2\x80\x93 ftp://ramg.ru/index\r\n

2. Given the 1D matrix of size  $k$ . Consider it as a 2D matrix of  $m$  rows and  $n$  columns(such that  $m*n=k$ ) and return the sum of maxrow-sum and maximum-column sum.

i/p \xe2\x80\x93 [1, 2, 2, 3], 2 rows and 2 columns\r\no/p \xe2\x80\x93 10\r\n

## Interview Process

The interview process consists of 4 technical interviews. Each technical interview is mainly based on Data structures and Algorithms. Code for an optimised solution to each problem asked in every round should be written on paper.

### Tech Round 1: 50 mins

1. A glance at my projects and achievements.
2. A question quite similar to [Minimum platforms](#)
3. Given an array(size 365) of boolean values saying if a particular person is travelling on that day or not. The ticket schemes are given like for 1 day it costs Rs 2, for 7 days(continuous) it takes Rs 5 etc. We have to select the tickets in such a way that the total cost of all tickets is minimum for the whole travel. (somewhat similar to coin changing problem).

### Tech Round 2: 90 mins

1. Reverse a LinkedList in the most efficient way. Can we reverse in  $O(1)$  space complexity?
2. Check palindrome in a LinkedList say in  $O(1)$  space complexity.
3. To find the maximum number of people in a party at any time given every person\xe2\x80\x99s entry and exit time.
4. Given a 2D matrix containing 0 and 1 which are row-wise sorted, write the most efficient algorithm to

return the maximum number of 1's in a single row.

5. A question similar to this [painters partition problem](#). He wanted a dynamic programming solution of  $O(k \cdot N^2)$  time complexity.
6. Discussion on my project implementation.

### Tech Round 3: 60 mins

1. A small discussion about my project database and backend implementation.
2. You will be getting a stream of edges for a directed graph. You have to tell at what point the cycle is formed. (My approach was using Disjoint sets). He asked if I can implement the same algorithm to the undirected graph also? He asked me to implement Disjoint sets algorithm and to make it efficient using union by rank and path compression. We discussed its time complexities.
3. Asked me about Ford-Fulkerson max flow algorithm. We discussed the applications, space and time complexities of the algorithm.
4. There is a codeword to win the game and an input stream of characters is coming. When the input stream forms a codeword, the player wins. Find at what point a player wins. Basically it was substring search problem. I told my approach using Z algorithm and later we discussed the KMP algorithm.
5. Some simple questions on OS like semaphores, threads, scheduling etc.

### Tech Round 4: 60 mins

1. He was checking on my skills written in Resume. Later he asked questions on my blockchain project.
2. Write code for recursive soln of DFS for an N-ary tree
3. Write code for iterative soln of DFS for an N-ary tree.
4. Write code for iterative soln of DFS for an N-ary tree without a stack.
5. Write code for iterative soln of DFS for an N-ary tree without stack when parent pointer is given.

### Verdict: Selected

#### Tips-

After listening to the question clarify any doubts you have, else you might end up solving a wrong question and this will leave a bad impression on the interviewer. Even if you know the solution, first tell the brute force and then optimize it. Write the code once you reached the optimised algorithm. Discuss with the interviewer, about tradeoffs between space and time complexities. Don't panic if you take more time to solve a problem, they expect you to do so. Don't panic if you can't come up with an optimised solution rather interact with the interviewer about your approach so that he may point where you are going wrong. Tell them your thought process instead of telling the solution straightforwardly. Amazon puts more emphasis on implementing optimised data structures rather than just coming up with a solution. So make sure that your data structure implementations are in optimised form. Stay confident and trust your instincts.

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# Amazon Interview Experience Offcampus for SDE-1

- Difficulty Level :\n[Medium](#)
- Last Updated :\n06 Oct, 2019

There was a drive conducted on august 2019 in Bangalore. There were 6 rounds for me 1 written round 3 f2f technical rounds and 2 online rounds on amazon chime.

**Round 1: (written round )** Two easy questions were given in this round there was no limit in the time but i submitted it in around 25 minutes.

<https://www.geeksforgeeks.org/find-triplets-array-whose-sum-equal-zero/>

<https://www.geeksforgeeks.org/sum-of-two-linked-lists/>

**Round 2: ( f2f ) two questions were asked in this round**

<https://www.geeksforgeeks.org/find-the-row-with-maximum-number-1s/>

this question i had already had solved earlier so i told him the soln a bit quickly.other question was something like given a set of fishes which moves in either right or left direction and every fish has a size associated with it and the bigger fish eats the smaller fishes if they are facing in opposite direction. the question was to find the remaining fishes in the end. I came up with a solution using stack and they were much satisfied with that.

**Round 3: ( f2f ) two question were asked in this round.**

<https://www.geeksforgeeks.org/merge-sort-for-linked-list/>

<https://www.geeksforgeeks.org/median-of-stream-of-integers-running-integers/>

the interviewer wasn't friendly in this round so i messed up in the second question a little bit after these question he asked few questions related to operating system and i answered those but he wasn't very satisfied.

**Round 4: ( f2f )** three question were asked in this round which were from dp, linkedlist and binary search.

the first question was <https://www.geeksforgeeks.org/count-number-binary-strings-without-consecutive-1s/> 2nd was find the element of linked list which is at the position  $\text{sqrt}(\text{len(linkedlist)})$  in one iteration and the third question was on binary search which i dont really remember. I hadn't seen any of these questions earlier so it took me a little time for solving these question. and then he asked me a few questions related to my project. he was pretty impressed.

**Round 5:** this was the easiest among all the interviews

<https://www.geeksforgeeks.org/given-an-array-a-and-a-number-x-check-for-pair-in-a-with-sum-as-x/>

and the second question was about finding the first number which is common between two linked lists. I told him a solution using hashing and he was pretty much satisfied with that and then he asked me some questions from dbms like acid properties and normalisation.

## Round 6: (Bar raiser round)

the first question was given a playlist of songs you have to randomise the list and play every song once until all the songs in the playlist are done. the second question was https://www.geeksforgeeks.org/sort-a-stack-using-recursion/ and last question was finding the first missing number given the starting value and the sorted list. i told him a solution using binary search and he was pretty satisfied with that. and after that he asked me few questions related to internship which i was able to answer.

for each round i was told to write code for the programs except for the 4th round's last question. After 8 days of the last interview i got a call from the hr that i have been selected for the sde1 role at amazon hyderabad. I was a bit lucky in the sense that i wasn't asked questions from computer networks which is one of my weaker subjects. i would suggest every one to keep practising and try to maintain a calm attitude while giving the interviews.

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# Amazon Interview Experience for SDE 2 (3 years Experienced)

- Difficulty Level : \n [Expert](#)
- Last Updated : \n 06 Oct, 2019

Amazon Interview Experience 1:

*Screening Round:*

1. Find all pairs that add up to 0
2. Find all pairs with sum closest(abs value) to 0 but non 0
3. Find all pairs with sum farthest(abs) to 0

*Design Round:*

1. A startup website has a lot of real-time traffic . I want to see the real-time view (refreshed every 1 min)\xc2\xd0 of top 20 users by hit count within last 10 mins. Full distributed system, I have to resolve all the concurrency issues.

*Coding Round:*

1. There are 4 patterns of arrays: monotonic increasing, monotonic decreasing, increasing then decreasing, decreasing then increasing. Given an array, identify accordingly
2. Given array of number, find the max from each subarray of size k. Sliding window

*Result: Rejected*

Amazon Interview Experience 2:

*Design Round:*

1. Design\xc2\xd0 a blogging website that scales from 100tps to 1000tps . What design choices will you make between No-Sql vs Sql and full explanation why ?
2. How do you send Notification to users based on their followed topics every day\xc2\xd0 in the above system? How do you add comments to the blogs ?
3. How do you add a node in a live system where consistent hashing is used for load balancing ?
4. Time Complexity to find a row in Sql Vs No-Sql database. Need to go in depth and explain why . (What if there are duplicates ?)
5. What exactly is the problem with Relational Database systems when you want to scale ? \xc2\xd0
6. What is ElasticSearch ? What is Dynamodb?

\xc2\xd0

*Amazon Leadership Principles*

1. Hardest technical challenge solved: In depth details on what was the challenge, why was it required to be solved, what approaches were there, which one did you choose over others and why. Who else was involved, and how were their contributions ? How long did it take to develop
2. Situation\xc2\xd0 where you faced ambiguity and how you resolved it\xc2\xd0
3. Any example of system that you designed in your current work that showcases your design skills ?

*Result: Rejected*

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# How to Prepare for Amazon Software Development Engineering Interview?

- Difficulty Level :[Hard](#)
- Last Updated :[29 Nov, 2021](#)

**Amazon** [Hire and Develop the Best](#). One of the [Big Four Tech Companies](#) who cares a lot about their [Leadership Principles](#) when it comes to opening a door for a candidate in the company. Amazon is a top company according to the [2018 LinkedIn Article](#). If you are a person who is preparing yourself to get into this company, you might be definitely aware of the importance of [Data Structures and Algorithms](#) for interview preparation.

\xc2\x0



There is no doubt that this one is a must-have skill to apply for the job of SDE or software engineer role in Amazon or any other big tech company. Hiring procedures in these companies are kind of similar but we are going to share some specific detail, tips, preparation strategy, and evaluation process of Amazon to crack the interview. Keep in mind that the difficulty level of these rounds depends on the level of SDE position you are applying and you can prefer any programming language you are comfortable with.

## Important Points to Keep in Mind:

- Amazon gives higher weight and has a standardized script for [Leadership Principles](#) throughout the interview. It has a much stronger focus on customer obsession. So go through their leadership principles carefully if you are applying there.
- Do some background research on the company. What is the company doing right now or what is the market scenario or technology they are working on currently. That shows your interest in the company and this is a good way to judge a person how much a candidate is interested in the company.
- Interviewers are trained to not react to your answers so don't expect yes or no answers from them that if you are heading in the right direction or not. This sucks but is a very effective way of assessing a

candidate so prepare yourself to see stone-cold faces.

- Amazon conducts a **Bar Raiser** round during the onsite interview and in this round, they make sure that you as a candidate raise the bar for certain competencies, which means that you should be better than 50% of the people that are currently at that level.
- Amazon's interview questions/difficulty levels are less consistent vs. Google or Facebook.

Now it's time to discuss the strategy and rounds that Amazon conducts for the hiring procedure. But before that keep in mind a quick tip that works in every company: **Your goal is to write just the right amount of good code and communicate well. You're not paid to write code, you're paid to think, figure out problems, and give the solution.** To crack any technical interview all you just need is a laptop, a working internet connection will solve problems regularly and within a few months, you can learn the essentials.

The interview procedure in Amazon is kind of similar to other big tech companies so let's discuss that:

**Sending Application:** Getting a call from Amazon for an interview is not easy if you don't have any referrals. Your chances to get the interview call are more if you have a connection with an employee there. If you don't have we highly recommend making connections with hiring managers or recruiters via [LinkedIn](#). Also, focus on your CV when you are applying for the job. Make it short, precise because none of the recruiters has more than 15 seconds to scan a CV. Write down only those things you are comfortable with, do not fake anything because the interviewer can spot that easily during the interview. Below is the link for the guidelines of CV.

- [Resume Building Resources and Tips](#)
- [How to write an awesome and unique CV](#)

**Screening Interview:** Shall we invite this candidate for the full loop? To filter out a lot of candidates Amazon conduct this round and this round saves a lot of time and resources for the company. So there will be 1-2 screening rounds before the onsite interview. The screening round could be telephonic or you will be asked to complete a coding challenge where you need to write clean, good, and bug-free code and that should be also optimized. This round consists of basic to medium level data structures and algorithms questions, you will have some online document to write down your code and that will be visible to your interviewer. It can have a 2-3 coding question. Below is the point to keep in mind for an online coding challenge or telephonic interview.

- The telephonic round is not designed to be very difficult, the meet of the challenge is to be delivered at the on-site interview.
- Amazon HR's are pretty flexible with the phone interview so generally, you can postpone the phone interview by a week to prepare yourself.
- Don't bother much about Dynamic Programming or Leetcode hard questions for telephonic interviews.
- Concentrate more on Binary Trees and Binary Search Trees. Learn how to traverse the binary tree in a different order, how to apply BFS and DFS to binary trees. You should know how to construct the tree from a given array. These questions will help to provide you with the basic foundation for any binary tree problems.
- Check Arrays and Stacks-related questions on Leetcode and GeeksforGeeks. Also, take a glance at the Linked List-related questions on Leetcode and GeeksforGeeks.
- For phone screens, concentrate on data structures and algorithms for about 70% and LP (Leadership Principles) 30%.
- Their typical response times are anywhere between 1 day to a week. Within a week they should definitely get back with the results. In case someone fails to contact you then send an email after a week. Also, check the link [Amazon Phone Interview](#) for more ideas.

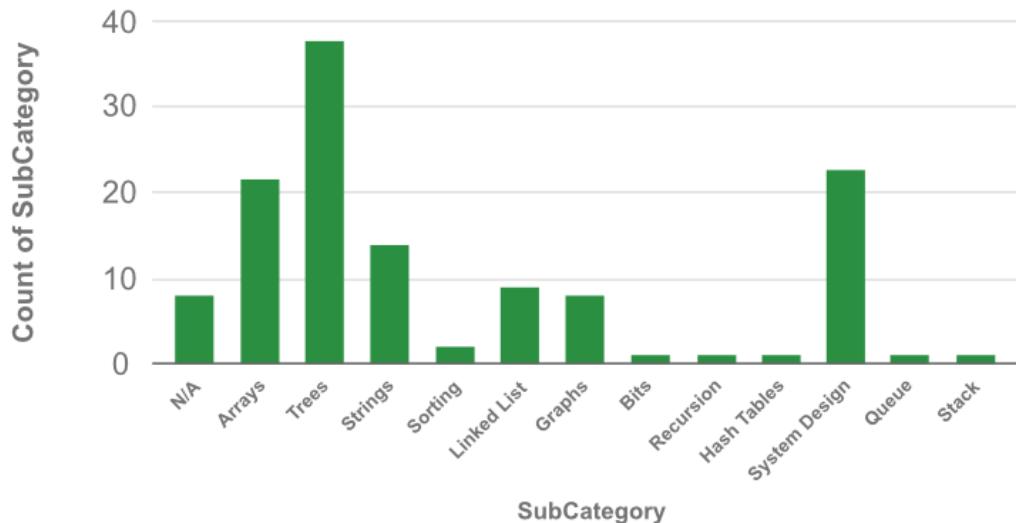
**Onsite Interview:** Once you get selected in the previous round, you will be invited for a loop that will take one full day, consisting of about four to five separate interviews and each of these interviews takes roughly an hour. All these rounds will be technical with BR round (All Technical + One Managerial) at the end. The exact number of rounds depends upon how you perform in each round and the level you are applying for. Now here comes the role of DSA and CS fundamentals to check your coding and problem-solving skill. You need to prepare yourself with all your projects, internship, previous experiences, and definitely your coding and problem-solving skill.

We are going to categorize this in the below section:

## 1. Technical Coding Round (Including Projects):

- The candidate is tested on whether he/she can solve real-world problems using the knowledge of data structures and algorithms. The expectation is to be able to arrive at the most optimized solution to the given problem. Your ability to convey your algorithmic knowledge along with code is a must.
- Below is the distribution of the types of problems that were generally encountered in an Amazon interview. This data is based on the interview experiences from Glassdoor for Amazon.

### Count of SubCategory



- Check the link [How to Get a Job in Product Based Companies?](#) to deal with in-depth technical coding questions, what approach, and tips you should follow during the interview.
- Check the amazon site [Software Development Topics](#) to go through all the topics for technical rounds.
- Ask all the clarifying questions, think about the Brute Force approach, optimize the solution, and then write down the code. This is the simple step we recommend you follow to solve the coding question.
- You need to be comfortable with projects you have done in your past experience or during your internship. The interviewer will throw questions from there so make sure you have complete knowledge and detail about your project to explain it to the interviewer.

## 2. System Design Round:

- System design questions are an open-ended conversation and this round is mostly conducted with an experienced candidate where they test your overall ability to design and scale technically based systems.
- Check the link [System Design Interview Questions](#), [System Design Interview Preparation](#), and also check [GeeksforGeeks](#)
- The interviewer usually is interested in the choice of resources like Databases, Storage, Logging; efficient algorithms of the functionalities; identifying all the data and classes that would be important to store if anything goes wrong in the system; what functionalities are exposed to the end-user and what not so that they might not screw up the whole system?; Scaling of Systems and servers involved; Use of Multithreading, messaging queues, Cache, etc.
- Having a solid grasp on various database technologies, how they scale, and how they compare, knowledge of frameworks, and different technologies helps a lot in the system design round.
- Amazon has a specific flavor of involving more of a web-based component in the system design round.
- On a Glassdoor data set designing an e-commerce store or URL shortener service popped out frequently.

## 3. Bar Raiser Round:

As we have already mentioned about the Bar raiser round in Amazon where a candidate is assessed on skills and cultural fit with amazon's customer-centric and innovative principles. Bar raisers are specially trained for this. Below is the point you need to keep in mind for this round.

- The motive is to ensure the candidate is raising the bar not only for the specific team but for the whole company. Check the link [Hire Like Amazon](#) for more help.
- Amazon cares a lot about the [Leadership Principle](#) that we have already talked about. You should have stories for each principle. Expect the interviewers to probe into these questions.
- It's almost a technical round but they judge your leadership skills, your decision-making power, your mistakes, your learning from your mistakes, your work and your conflicts with your team members, your initiative in the past work, your manager's response to your work. Sometimes they give you situations and you have to answer your behavior in that situation.
- Amazon is also a place where you have to adapt quickly to changing objectives, your responses have to demonstrate that you can handle that.

**Interview Evaluation Criteria:** After the interview, a meeting is held between all the interviewers to discuss, debate, and justify their individual ratings with the Hiring Manager and HR Representative. The interviewers give the whole summary after the interview. The outcome of this meeting will be a final Inclined or Not-Inclined decision for the candidate.

A software engineer is expected to know how to code, know when to ask for guidance, ability to articulate the thought process, approach to solving a problem, and deliver results timely while maintaining a willingness to learn new processes and adapt quickly to changing roadmaps. An entry-level basic understanding of the core concepts of coding is generally all that is required and for higher-level ability to code and solve complex problems based on experience matter a lot.

**Tips:**

- Make a habit to solve problems regularly especially from [GeeksforGeeks](#), LeetCode, and HackerRank.
- Take the hints. Interviewers are always helpful and they will give you precise useful hints if you get stuck. It is important to catch the hint as fast as possible and proceed with the solution. If you are not able to catch the hint it is a big red flag.
- Never say that you cannot do it. Even if there is a problem that you have not solved before or seemed that you can't solve, keep attacking the problem from different angles, the interviewer will give you hints. But if you would say that you can't solve the problem it is a big red flag and you might end up getting rejected.
- Interviewers have generally a mindset while taking the interview that if he/she can work along with the candidate in his/her daily to a job or not. So make sure that you don't speak something which can give a red flag sign during the interview.
- Learn to **think out loud**. It's weird but in an interview setting, the most important piece is showcasing how you've come to a solution or understanding why you're doing X before Y.
- Your interviewer wants to see 3 key things in your code. It should run fast, not take up more memory than it needs to, and is stable and easy to maintain. Accomplish that and you're already ahead of most people.
- For behavioral questions read about the [STAR method](#) to describe a situation where you solved an issue that relates to the question; Explain the tasks you had to complete in order to solve the issue; Describe the action you took to complete the tasks; And close with the results of your efforts.

## How to prepare for Amazon SDE?

GeeksforGeeks is providing you with an enriching [Amazon SDE Test Series](#) that will help you **prepare for the Amazon coding interview** and other product-based companies. Here, you can prepare yourself with various **coding questions for the Amazon interview** for the role of SDE. This test series is designed by industry experts who have taken into consideration all the **important topics of DSA** that various top-notch companies put forward for hiring.

**Important Links:**

1. [Amazon Interview Experience](#)
2. [Practice for Cracking Any Coding Interview](#)
3. [Cracking Technical Interviews](#)
4. [Tushar Roy's Coding Made Simple](#)
5. [Glassdoor Amazon Software Development Engineer Interview Questions](#)
6. [Ace The Coding Interview Everytime](#)
7. [Coding Interview University](#)
8. [Amazon Onsite Interview Question Onsite 2019](#)

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# Amazon FT Interview Experience 2019 (On-Campus)

- Last Updated : \n30 Sep, 2019

All the 4 rounds were technical rounds.

## Round 1:

The round began with an introduction and a brief discussion on projects. Then the interviewer started with the questions.

- [Quicksort a linked list](#)

I had to write the code for it on paper. The interviewer then asked me if we should continue with linked lists or move on to something else. I told him I was fine in either case.

- [Find the intersection point of two linked lists \(they may have loops\)](#)

First the question was without loops. I told him my approach. He then told me to solve it taking loops into consideration. I discussed my approach and wrote the code for it.

## Round 2:

This round again had 2 questions.

- [Find the minimum number of  \$\text{O}\(n^2\)\$  operations to be done on an array for it to have only  \$\text{O}\(n\)\$  distinct elements](#)

I initially told an  $\text{O}(n^2 \times b^3)$  solution. He told me to optimise it. I optimised it to  $\text{O}(n \times c^2 \times b^2)$ . He told me to try and optimise it further. I came up with an  $\text{O}(n)$  approach but it would not work for a particular case. However, the interviewer was satisfied with this and told me to write the code for it.

- Given a chemical compound, find the numbers of each atom in it.

For reference, C6H2(NO2)3(CH3)3

I told a stack-based approach, traversing the string from right to left. As time was running short, I did not have to code it.

## Round 3:

There were 2 questions in this round.

- Given the quad tree representation of 2 images, construct the quad tree for the image formed by superimposing these 2 images.

The interviewer first explained what a quad tree is and how an image is represented in the form of a quad tree. I solved this question using a recursion-based approach.

- [Number of ways to reach the N<sup>th</sup> step](#)

I had to code my solution for both the questions on paper.

## Round 4:

The round began with an introduction, followed by a detailed discussion on my projects and internship. The interviewer then moved on to questions.

- [Find the K<sup>th</sup> largest element in a BST](#)
- [Implement an LRU cache](#)

I had to write the code for the first question only.

#### Tips:

- The interviewer doesn't expect the most efficient solution to each question right away. Instead, doing so will make it seem like you have mugged up the solution. So, start with the approach that first comes to your mind, and then optimise it further if the interviewer asks you to do so.
- After listening to the question clarify any doubts you have, else you might end up solving a wrong question and this will leave a bad impression on the interviewer.
- Make conversation with the interviewer while you are working on your approach. The interviewer may point out some mistakes and direct you the correct way.
- If you are stuck at any point, talking to the interviewer will help and you may also get some hints.
- Don't get nervous if the interviewer is pointing out mistakes in your approach or code. The number of mistakes you make won't matter as long as you correct them later.

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# Amazon Interview Experience SDE-1

- Difficulty Level :\nHard
- Last Updated :\n01 Nov, 2019

## Round 1 (Online on HackerRank)

**Duration:** 90 minutes

20 MCQ questions mostly based on Operating System, Data Structures and Algorithms and a few puzzles.

### 2 coding questions:

1. I don't remember the exact problem statement but it boils down to finding the cycle in an directed graph .
2. It was a no-brainer basic implementation question on strings. (Don't remember the problem statement).

We were called On-Site in Hyderabad for further F2F rounds.

**Round 2 (F2F) Duration= 70 minutes :** Started with my resume asked few questions for about 5 minutes and started with the Problem statements.

So there were 3 questions asked in this round:

1. Given an array and a positive integer k, find the first negative integer for each and every window(contiguous subarray) of size k.

Started with the naive approach then gave the optimized solution similar to the Sliding Window Maximum.

2. Given a matrix of size M x N, there are a large number of queries to find submatrix sums. Inputs to queries are left top and right bottom indexes of submatrix whose sum is to find out. For each query, we have to find the sum in O(1).

After solving these 2 questions the interviewer had still some time so he asked the third question.

3. Consider a pipe of length L. The pipe has N water droplets at N different positions within it. Each water droplet is moving towards the end of the pipe(x=L) at different rates. When a water droplet mixes with another water droplet, it assumes the speed of the water droplet it is mixing with. Determine the no of droplets that come out of the end of the pipe.

I was not able to understand the problem statement in one go after all the clarifications required I gave the mathematical approach to solve this problem. He was convinced with the solution but was emphasizing as to which data structure could come in more handy for solving this particular problem. After a few hints, I told that it can be solved using stacks.

**Round 3 (F2F) Duration= 75 minutes:** He started with few questions on my previous job experience but it hardly lasted for 5 minutes and then interviewers started with the questions.

2 questions were asked in this round :

1. Given a stream of characters, find the first non-repeating character from stream. You need to tell the first non-repeating character in O(1) time at any moment.

I gave the very first approach of using a hashmap and Dequeue for solving this but the interviewer told he didn't want to do any processing for the result and this approach would require polling the characters from the dequeue if they are repeated. After that, I gave an approach of using a Hashmap where each character will be mapped to a Node of a Doubly Linked List. If we encounter a repeated character in our stream then we can delete that character from the DLL as we can get the node address from the hashmap. The head of the DLL will be our result.

Almost half an hour was consumed by this question.

## 2. [Print the longest leaf to leaf path in a Binary tree.](#)

I gave the most optimized solution as the time consumed on the first question was high.

**Round 4 (F2F Duration= 70-80 minutes:** Started with my resume and previous work experience. Questions were asked on OOPS and SDLC(which was mentioned in my resume). After 10 minutes he started with the problem-solving questions.

2 questions were asked in this round:

### 1. [Sort the LinkedList.](#)

I gave the solution of merge-sort on the linked list.

2. Given that to prepare a certain ingredient we may require another ingredient i.e.
  - To prepare ingredient A we require ingredient B.(A -> B)
  - To prepare ingredient B we require ingredient C.(B -> C)
  - To prepare ingredient C we require ingredient A.(C -> A)

We have to determine if we will be able to prepare the dish or not. So it boils down to finding the loop in the directed graph. After the 3 On-site round, selected candidates were told that they will have a video call round(Bar raiser). The bar raiser round was conducted after a long wait of about a month.

**Round 5 bar raiser round= 70-80 minutes:** Started with the introduction interviewer then told that he will ask few questions then I have to answer them with an example from my previous company experience. Following that he will ask one coding question.

So the questions asked by the interviewer were :

1. Tell me a situation where the customer was pushing really hard and you have to deliver the results very fast because of the same.
2. Tell me a problem you solved in your previous organization? After that, he asked why did I choose this particular problem only.

After around 30 minutes of discussion, he gave a coding question that was to solve on the code editor that was shared.

1. [We have to rotate an array of size n by r](#). He was expecting an  $O(n)$  in-place solution. I gave the Juggling algorithm solution for this particular problem.

After around a week I received an mail saying `Congratulations!` We are pleased to inform you that Amazon is making an Offer for the role of Software Development Engineer.

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# Amazon Interview Experience

- Difficulty Level : \n[Medium](#)
- Last Updated : \n23 Sep, 2019

## Round 1: Written-test

Two programs to write in any language. The laptop was also allowed to code and then write the final program on paper.

1. Find minimum distance between source and destination in a matrix. See this [post](#) for details
2. Print Binary tree in vertical order. See this [post](#) for details.

\xc2\x0

## Round 2: Technical Round

Search element in array having special property.

Special property of an array is each element of it is either +1 or -1 to the previous element. The solution should have time complexity less than linear search.

The interviewer was helpful and giving hints to reach to correct solution. When the solution was finalized he asked me to write code for it covering every boundary case and other scenarios. Code should be production-ready.

I managed to write the code. Here is the [post](#) I found for a given problem

## Round 3:Technical Round

Again it was coding round and Interview asked me below two programs

1. Find 5 most frequent words from the given string. I found this [post](#) for a given question but I told hashmap approach to the interviewer and he said this is not the most efficient approach as string can be very big so iterating it twice is not good solution. In the end, I couldn't figure out an alternative so he asked me to write a code for the initial solution only.
2. Reverse a linked list in k blocks. see this [post](#). I was aware of the question so I told him approach. He asked me to write code for the same. couldn't complete it due to time constraint.

\xc2\x0

After Round 3, the HR person said I can leave for the day \xf0\x9f\x99\x81

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# Amazon Interview Experience for SDE Internship

- Difficulty Level : \n[Hard](#)
- Last Updated : \n23 Sep, 2019

I attended the pool drive in a college where students from different colleges were present. There were 3 rounds- online round and 2 technical face to face interview rounds.

**Online round:** There were 28 MCQS and 2 coding questions. MCQs were mostly on data structures, C/C++ outputs, and 3 aptitude questions.

**The two coding questions were:**

1. Given a string input in the format \xe2\x80\x9cnum1+num2=num3\xe2\x80\x9d. One of the numbers will be given as \xe2\x80\x9cX\xe2\x80\x9d (eg: \xe2\x80\x9c5+X=9\xe2\x80\x9d). Return the value of X.
2. Given a string input in the format \xe2\x80\x9ccar ar2\xe2\x80\x9d (eg: \xe2\x80\x9c9 27\xe2\x80\x9d) which are 2nd and 3rd numbers in Geometric progression. Given n, return nth value of that Geometric progression.

There were around 80 people waiting for an interview from 4 different colleges.

**Technical round 1:**

The interviewer started by asking about the projects I had done. I explained the recent project I did. He then started asking questions about implementations of some things in my projects. I was asked to write database schema, queries that I used in my web application. I used the firebase database in my android application. He asked a few questions about the storage and retrieval of data in firebase and also the difference between SQL and NoSQL databases and about which one\xe2\x80\x99s the most preferred. I answered them.

He then asked a few questions about cache memory in web browsers and also to write the code in my C compiler project. The questions about my projects went on for 45mins.

Then I was given a simple coding question.

- Find the missing number in an array where the numbers are consecutive and but in an unsorted manner.

I explained my two approaches. He then asked me to write the code for that (You are free to write code in any language unless the interviewer mentions otherwise).

After the first technical round around 30 people were shortlisted for technical round 2.

**Technical round 2:**

This was completely coding round. He asked optimal solutions for all the questions and write the code.

**The questions were:**

1. Find the intersection point of 2 linked lists.
2. Print right view of the binary tree.
3. Given a lake starting at 0, ending at 1 and list of drops in the pairs (x, r) where x is the point that the drop falls on the lake and r is the radius of the ripple caused in the lake due to that drop. Find the minimum number of drops required to cover the entire lake with ripples.

The interviewers in Amazon are really chilled out and you can freely interact with them.

They'll even help you if you get stuck anywhere in answering their questions.  
After the interviews were done, 4 were selected for SDE role (fortunately I was one of them), 3 for Data Engineer role and 8 for Support Engineer role, out of the 80 that attended the interviews.

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# Amazon Interview Experience | On-Campus

- Difficulty Level : \n[Medium](#)
- Last Updated : \n23 Sep, 2019

Amazon visited our campus in the beginning of August. There was no eligibility criteria and 330 students approx sat for the online round.

## Round 1 (Online):

It was an online coding round of two questions, and it really depends on your luck whether you'll get an easy question or not (in my case they were easy, while some other candidates got lengthy DP questions).

1. Given an expression in the form of a string  $\text{A}+\text{B}=\text{C}$ , where any two of A, B, and C were given, you had to find out the value of the third variable.
2. [Given a matrix, calculate the row with maxSum, and column with maxSum.](#)

Around 50 students got through. This was followed by 4 technical F2F rounds, and they asked nothing from my resume, only Data Structures and Algorithms. Interviewers were friendly and kept giving adequate hints, they just want to see how well you can tackle a question.

## Round 2:

1. [Given a n by n matrix, rotate each layer of the matrix by one element clockwise](#), so:  $\begin{bmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \end{bmatrix}$  should become  $\begin{bmatrix} 4 & 5 & 6 & 9 & 8 & 7 & 1 & 2 & 3 \end{bmatrix}$ . This is to be done in constant space.
2. [Given a linked list, find Kth node from its end in one single traversal.](#)
3. Given a linux cd command like  $\text{cd a/b/c/./d/../e/}$ , you have to find the resulting directory, or report error if any.

## Round 3:

1. [Given a Binary Tree, convert it into a doubly linked list without using extra space.](#)
2. [Given an array of strings, group all the anagrams together.](#)

## Round 4:

1. [Linearise a 2D linked list in one traversal and without using extra space](#). Each node would have a right and down pointers. The down pointer may or may not point to a non NULL node.
2. [Check whether two nodes in a Binary Tree are cousins or not](#) in one single pass.
3. Which sorting algorithm would be appropriate to sort a line of almirahs according to their height so that my effort is minimum. (Selection sort)

## Round 5 (Final Round \xe2\x80\x93 Bar Raiser):

Around 16 students qualified till this round. Only one question was asked which would require the application of multiple data structures to solve.

- Given an infinite stream of incoming strings with their timestamps, print a string *only* if it has *not* been printed in the last 10 seconds. A map based approach would not work because it can potentially grow to an infinite size with so many strings.
- So, if the timestamp-string pairs were as follows:
  - 1 \xe2\x80\x93 foo

- 3 \xe2\x80\x93 bar
  - 6 \xe2\x80\x93 foo
  - 11 \xe2\x80\x93 bar
  - 13 \xe2\x80\x93 foo
- It would print: [ foo, bar, foo ] (foo at timestamp 6 was not printed as foo was already received within 10 seconds in the past)
  - This solution required the combination of both map and a deque.
- 

I was rejected after the Bar Raiser, because my round 2 did not go very well. I could not propose a space optimized solution for the Binary Tree question. Your scores across all of the rounds will finally be added up.

Whatever solution you propose, you should try to optimize it as much as you can. And keep your fundamentals of DSA very strong as all Amazon wants in a candidate, is a very good aptitude for coding. And whatever happens is for the best, so don't take rejection in any round very hard, immediately shift your focus toward the next company. You can cry all you want *after* you get placed. \xf0\x9f\x98\x9b

***Best of luck.***

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# Amazon Interview Experience for SDE-1

- Last Updated : \n18 Sep, 2019

Date: (14-Sept-2019)

Venue: Global Infocity Park, Perungudi, Chennai

I'd like to share my interview experience @Amazon for SDE-1 with all of my fellow geeks.

## Screening Round:

Initially, our resumes were shortlisted by the Amazon Team and we were called for an interview just 2 days before the process. So be prepared at any time.

### Round 1 (Online Coding):

There were a total of five questions to solve all the questions time was given 100 mins (later 20 mins were given extra), and the coding platform was [www.expanion.com](http://www.expanion.com) we were asked to bring our own laptops.

1. Print the top view of a binary tree
2. Print the characters which occur more than (or) equal to the value specified sequentially

Input: \r\nzazazbgh\r\n2\r\nOutput: \r\nzzaa

3. Print the maximum prefix

Input: \r\n3\r\ngee, geeks for, geeks for gee\r\nOutput: \r\ngee

4. Remove the element which is less than the next element;  
cycle 1: 2<6; so remove 2; result: [4 6 10]  
cycle 2: 4<6; so remove 4; result [6 10]

Input: \r\n4 2 6 10\r\n2\r\nOutput: \r\n6 10

5. Asked to print the pattern by user-defined input.

Input: \r\n5\r\nOutput: \r\n\*\*\*\*\*\r\nnb\*\*\*\*\*b\r\nnbb\*\*\*\*bb\r\nnbbb\*\*\*bbb\r\nnbbbb\*bbbb

But unfortunately, I was not able to proceed to further rounds. All the best for your success guys!!

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# Amazon Interview Experience | 1 year Experienced for SDE-1

- Difficulty Level : \n [Hard](#)
- Last Updated : \n 17 Sep, 2019

Location:- Hyderabad

## Round 1:

Written Round-

1. Print binary tree vertically.

2. Given matrix of \xe2\x80\x9c#\xe2\x80\x9d, \xe2\x80\x9c&\xe2\x80\x9d, source \xe2\x80\x9cS\xe2\x80\x9d, destinations \xe2\x80\x9cD\xe2\x80\x9d, calculate minimum number of steps required to go from Source to Destination. Can only move in four directions(up, down, right, left)

## Round 2:

F2F Interview

1. Given \xe2\x80\x9cN\xe2\x80\x9d houses find number of ways to paint it with \xe2\x80\x9cK\xe2\x80\x9d different color such that no two adjacent houses have same color.

<https://www.geeksforgeeks.org/ways-to-paint-n-paintings-such-that-adjacent-paintings-dont-have-same-colors/>

2. Sliding Window Problem. Given array of N elements and integer \xe2\x80\x9cK\xe2\x80\x9d find minimum and maximum in each window of length \xe2\x80\x9cK\xe2\x80\x9d.

<https://www.geeksforgeeks.org/sliding-window-maximum-maximum-of-all-subarrays-of-size-k/>

## Round 3

F2F Interview:-

1. Knight Tour Problem with infinite Grid and obstructions in the path .

## Round 4

### F2F(Bar-Raiser)

This is probably the most important round that decides whether you will be offered the job or not. (Solely on this round.)

This round was conducted by 10 year experience employee of Amazon.

Behavioral Questions

- 1.What did you learn from your current organization.
- 2.Situation where you get a higher Priority task.
- 3.What is the toughest challenge that you have faced ?

and some more based on Amazons principles.

1 coding question

Check whether the given tree is complete binary tree.

**Round 5 :-**

Hiring Manager Round

This was telephonic round.

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# Amazon Interview Experience SDE1 | Off-campus

- Difficulty Level :\n[Hard](#)
- Last Updated :\n16 Sep, 2019

## Round 1: Online coding + MCQs

MCQ consisted of Data Structures, Algorithms, Code Output of C/C++ snippets (Pointers).

Coding questions:

- Count trailing zeroes in factorial of a number
- Find the minimum height of Binary Tree for a given inorder and level order traversals

## Round 2:\xc2\x0F2F Problem Solving

Initially, Interviewer asked current job role and introduction and then start coding questions. In this round, they asked two questions

- Find the square root of number up to 3 precision
- Design queue using stack

## Round 3: F2F Problem Solving

In this round also Interviewer asked two coding questions. For the second question, he gave some used cases and explained thoroughly and asked to write production-ready code and some technical questions from Java since I mentioned Java in my resume

- Clone a Linked List with next and random pointer
- Minimum Heap tree
- What is Polymorphism,
- Explain real-life case of Function overloading and overriding
- What are virtual destructor and a private constructor

## Round 4:\xc2\x0 Video call on Amazon Chime App

The interviewer asked me to introduce myself and brief him about my job role and contributions. Some questions he asked regarding my company project on which I am working. Later he starts some generic questions like:

- Why do you want to change job?
- Why only Amazon?
- Anything that you had taken lead or gave your ideas to your Lead or Manager

He shared a live screen to write code. He asked me to explain the approach first and time and space complexity

Coding question:

- Find the rank of every element in a stream.\xc2\x0<https://www.geeksforgeeks.org/rank-element-stream/>

I explained him using Insertion sorting but due to its worst time complexity, he asked to think some other way. He helped me in writing code using binary search tree and coding round went well.

## Round 5: Bar Raiser

In this round Interviewer checked how technically strong and capable enough to handle any sorts of challenging tasks based on our past works. He asked some generic questions like:

- Why do you want to change job?
- He asked some questions\| seeing my resume
- \|Any critical issues have you resolved? If yes, then how were your approach, resolve, and impacts
- He asked many questions related to Automation Framework that I created using java and Selenium

He asked to solve one code on the live share screen. Firstly, he asked to tell him the approach and what will be time and space complexity and what kind of Data Structure will you prefer.

Coding question:

- Boggle (Find all possible words in a board of characters)\| \|  
\|<https://www.geeksforgeeks.org/boggle-find-possible-words-board-characters/>

I explained to him and write code using BFS. Although, it was not the best solution but he convinced.

**Result:**\| Hard luck not selected. This was my first interview experience with Amazon.  
Although, not selected in the first attempt but gain enough confidence for a future interview.

**Tips:** Mention only those kinds of stuff in your resume which you can explain well. Be prepared with Data Structure and Algorithm and technical questions from the domain where you worked on.

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# Amazon Interview Experience

- Last Updated : \n06 Sep, 2019

## Round 1: Online test

You have M identical ropes and N identical weights. You want to do an experiment to determine the strength S of the identical ropes, by testing how many weights can be held by one single rope. The strength S of the ropes is defined as:

- 1) If a rope breaks with the first weight, S=0;
- 2) If a rope can hold n weights and breaks at n+1 weights, S=n;
- 3) If a rope can hold all N weights, S=N.

In one test (\xe2\x80\x9ctest\xe2\x80\x9d means to check if one rope can hold an amount of weights), if the rope breaks, you have to take another rope to continue the experiment; if the rope does not break, it can be used for the next test with no problem. If you used up all the ropes but still cannot determine the strength S of the ropes, the experiment fails.

Please write a C/C++ program that, given M and N (M and N are both integers,  $M \geq 1$ ,  $N \geq 1$ ), calculates the minimum number of tests T needed to guarantee you can determine S. Try to optimize the time complexity of your program, and explain:

- 1) What kind of \xe2\x80\x9ctricks\xe2\x80\x9d you have used to optimize the time complexity?
- 2) What is the time complexity without these \xe2\x80\x9ctricks\xe2\x80\x9d and what is the time complexity with these \xe2\x80\x9ctricks\xe2\x80\x9d?

Hint 1: If you have limited number of ropes, you don't dare to take the risk. For example, if  $M=1$ , your only choice is to increase the weights one by one, from 1 to N, to make sure you can determine S in the worst case. In this case,  $T=N$ .

Hint 2: If you have lots of ropes, binary search is obviously helpful to calculate the minimum T efficiently.

Example 1: M=1, N=20

Command: calc\_n\_tests 1 20

Output: 20

Example 2: M=2, N=5

Command: calc\_n\_tests 2 5

Output: 3

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# Amazon Interview Experience (For Experience \xe2\x80\x93 2.8 yrs) | SDE 1

- Difficulty Level :\n[Medium](#)
- Last Updated :\n04 Sep, 2019

## Round 1:\xc2\xa0 Written

- Given a Binary Tree, find the sum of all leaf nodes which are at the maximum depths in the tree.
- Find all occurrences of a given word in a matrix of characters by traversing in all 8 directions (<https://www.geeksforgeeks.org/find-all-occurrences-of-the-word-in-a-matrix/>)
- Given an unsorted array, find a triplet, whose sum is K.

After this there were few design rounds for sde2 candidates, to which I didn\xe2\x80\x99t appear.

## Round 2: F2F

- Given an unsorted array, find the Kth smallest element in the array.
- Given a matrix, rotate by 90 degree anti-clockwise (inplace)

## Round 3: F2F

- Given a sorted doubly linkedlist, find triplets, whose sum is K (without extra space ofcourse)
- Given 2 Binary Trees, check if one Binary Tree is a SubTree of the other

## Round 4: F2F

- Project specifics, with open source contributions(stackoverflow) discussions
- given few scenarios, asked to figure out the approach to solve with few algorithms
- Questions related to Amazon Leadership Principles (be prepared with real-time good examples in the past)

## Round 5: F2F

- Find two numbers in a BST, whose sum is K (using two pointers on the tree itself) (also asked if I can do without using stack i.e, Morris Traversal explanation only)
- Given a Binary Tree, find the last level upto which the tree is a Full Binary Tree and return that level

(In all these rounds, working code was needed and it should cover all the edge cases)  
(You have to speak out loud to make them understand your thought process)

## Round 6: F2F\xc2\xa0

HR Round (usual HR questions)

\xe2\x80\x94 contributed by Ashish Subudhi

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Amazon Interview Experience SDE1 | Off-campus

- Last Updated : \n02 Sep, 2019

## **Round 1:**

Online coding test comprising of three coding questions.\xc2\x9a0The coding problems were:

- Find next greater number with same sets of digits  
<https://www.geeksforgeeks.org/find-next-greater-number-set-digits/>
  - Maximize the number of 1s by flipping a subarray
  - Find minimum operations required to make an array sorted:  
<https://www.geeksforgeeks.org/minimum-number-of-swaps-required-to-sort-an-array-set-2/>

## Round 2:\xc2\xa0

She asked two coding questions and asked me to dry run test cases maintaining time and space complexity. The coding questions are:

- Find the sum of all nodes present in each level and finally the print the product of all sums found at each level
  - Find row having maximum number of one in 2D sorted binary array  
<https://www.geeksforgeeks.org/find-the-row-with-maximum-number-1s/>

### Round 3:\xc2\xa0

This round is completely technical and no coding questions. After the introduction and questions from my current job role, he asked to design portal and database schema for a given input.

After doing so he asked questions from the database\xc2\xa0 like

1. What is the difference between master and transaction table
  2. What is a cursor, trigger in the database, stored procedure, ACID property
  3. How to improve database performance (indexing in the database)
  4. \xc2\x0JSON and difference between HTTP and HTTPS

## Round 4:\xc2\xa0

Initially, I gave an introduction and details of my current job and works then he asked one coding questions and a few technical questions from OS.

1. Print all nodes which are at K distance from a particular node  
<https://www.geeksforgeeks.org/print-nodes-distance-k-given-node-binary-tree/>
  2. What is thrashing, page fault, System call, kernel
  3. Memory allocation technique, paging, segmentation.
  4. How a big size program can be efficiently loaded onto RAM and virtual memory concept.

#### **Round 4:\xc2\xa0 Bar -Raiser Round**

It was an online video call interview using Amazon Chime and was taken by Manager from the US.

1. He asked to explain any project which I am proud of and some cross-questioning happened while explaining the project.
2. He asked any critical issues do I resolved. If yes, then how and where and what the impacts
3. Any innovation and challenging work so far
4. One coding question on the live code sharing screen. He asked to explain the approach first and then told to write code  
https://www.geeksforgeeks.org/trapping-rain-water/
5. Finally, Why Amazon?

Tips: First and foremost, you should explain your current project and works very smoothly and clearly while giving an introduction. While solving coding questions make sure it should be efficient and cover all corner cases. Data structure and coding is must and technical questions depend on the role and team.

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## Amazon Interview Experience for SDE 1- Off campus

- Difficulty Level :\nMedium
  - Last Updated :\n02 Sep, 2019

I applied off campus through referrals that are rolled out frequently and during one of the hiring drives, I got a mail for interviews. They had the following things planned.

Written Test on Coding- 45 Mins

Technical Competencies:**Coding, Problem solving, Algorithm, Data Structures, Computer science fundamentals**

Each round is an elimination round. One important thing for all the rounds is to be aware of Amazon's principles and their STAR (Situation, Task, Action and Result) method to answer questions.

## Written Test:\xc2\xa0

They will have 3/4 sets of two questions and you will be given one of the sets. For me the questions were:

1. Reverse a linked list
  2. Find maximum from all the subarrays of size K

Try to write the optimised solution and give in as much detail as possible by writing comments. I even mentioned the complexity of both the codes. There were around 100 people and they filtered out around 65-70% of the people after this round.

## Round 1:

This round started with my introduction. Then he asked two technical questions of moderate difficulty based on arrays primarily. One of the question was:

To find an element in a sorted and rotated array.

The other question was around arrays and map and was doable. Then he asked me about one of my projects and how I showed ownership there. This round lasted for around an hour.

## Round 2:

I was told that since my previous round was really good so this round will be a shorter one. He asked me just one technical question around trees. The question was to find the right view of the tree but he didn't give out all the details in the beginning. There was a condition that the vertical depth of the nodes have to be considered too. The node with the largest vertical depth on a particular level of a tree had to be considered. I used a hashmap and a queue for solving this and he was satisfied with my approach. This round lasted for around 30 minutes. They filtered a lot of candidates after this round.

## Round 3:

This around lasted for around 2 hours and they asked questions from every possible topic, coding, theory, behaviour, projects and what not. There were two interviewers, one of them was a

shadowing interviewer so she was just observing me. The coding question asked were:

1. We have a company where unique alias has to be allotted to all the employees and an alias is the smallest unique prefix of the employees' name. Here, same alias cannot be given more than once say for 6 Tanyas, alias would be T, Ta, Tan, Tany, Tanya, Tanya\_2 respectively and for the last Tanya since the complete name has been taken before so the alias would be the name appended by the number of times the alias has been repeated. I suggested the use of Tries with storing the count for every alias that is allotted and he asked me to return the alias for every new employee who comes.
2. Find the maximum length of subarray where the product of array elements = the LCM of those elements. I suggested him the use of GCD here because the GCD would be 1 for the elements that satisfy this condition. He gave me a range so the final solution that I proposed was to store unique prime factors of all the numbers before and then find the range in a single traversal, keeping track of the start and end.

He then asked me questions around Networking. How does a server respond to a client's request and how is the connection established. Then I was asked questions around cryptography and the Digital Signature algorithm. He then asked me why Amazon and why not the other companies that you have offers with.

#### Round 4:

This round was scheduled after 4 days and it was VC round. This round was a bar raiser round so they asked easy technical questions and was focused on principle based skills as well. He started off with asking the condition of a tree being balanced and then asking the code for it. Then he asked me for code to check if an array is a subarray of other array. He didn't want the usage of extra space. He asked me about the sorting algorithms that I know of and pointers about each. Then he asked me about deadlock and how can it be resolved using code. Then another interviewer joined and they asked about situation where I faced deadlock and how I overcame that. I was asked about situations where I took the ownership and stuff like these. Remember their principles and build your answers around them. This round lasted for around 40 minutes.

Verdict: Selected

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# Amazon Interview Experience (On-Campus) for SDE1 FTE/6M Intern

- Difficulty Level :\n[Medium](#)
- Last Updated :\n02 Sep, 2019

## Round 1: Online Coding + MCQs

Interview Date: 29th July, 2019.

Platform : mettl

28 MCQ and 2 coding

MCQ consisted of Data Structures, Algorithms, Code Output of C/C++ snippets (Pointers).

Coding questions:

1. Find Mean, Median, Mode from an array.
2. Rearrange array such that summation of difference between consecutive pairs is minimum, and return that summation.

## Round 2: F2F Problem Solving

The interviewer directly moved to the questions part.

- [Maximum sum such that no two elements are adjacent](#)

I explained DP approach with  $O(n)$  time and  $O(1)$  space. He was satisfied with it and I coded it on paper.

- [Peak element in an array](#)

Initially, I told linear search approach but he told me to do better. After some pen-paper work I realised it can be done with Divide and Conquer approach. So, I told him and he asked me to code the same.

## Round 3: F2F Data Structures

This interviewer asked me to introduce myself and also asked how did my last round go. Then he straight away moved to problems.

- [Clone a linked list with random pointer:](#)

Initially, seeing this problem I got dumbstruck, and was not able to think of anything. But after some thinking I told him HashMap based solution. As this was  $O(n)$  solution, he asked me to optimise further in space complexity. It took me around 5-10 minutes, to come up with \xe2\x80\x98changing the links\xe2\x80\x99 solution. He seemed quite happy with the solution. And asked me to code.

I really suggest to look at this problem as this required very unique and out-of-the box thinking.

- [Rotate Matrix Inplace:](#)

This was simple implementation based problem, and he wanted space optimised approach, I explained the same. He didn't ask me to code it.

## Round 4: F2F CS Fundamentals

This was the longest round lasted for 90 mins. I really admire this interviewer's way of asking questions.

This interviewer was a very cool person. First we did introduction. Then he told me to be very comfortable, he said this will be discussion round, where we will discuss about Computer Science basics, but in detail.

He asked me all the questions in very different manner. Out of all listed below topics, HE explained me what the concept is, and asked me WHY, WHEN and WHERE do we use this. Basically, he wanted to know how deeply I understand basic fundamentals.

- He explained me what interface is and asked me why, when and where do we use it? We discussed on it in detail giving practical examples.
- How would you implement printf() function?
- What is pass by value and pass by reference in Java?
- He explained me public, private, protected. Asked why, when and where do we use it? I explained it by giving practical examples and giving several class definitions.
- We moved to database part. He explained me what Normalisation is, and again asked me why, when and where do we use it. I explained it again giving examples, and he was really happy with it.
- Explain ACID properties. I explained it in detail. When I said that NoSQL databases didn't have these properties. He asked whether I know about NoSQL, I said yes. Then we did discussion on SQL vs NoSQL.
- What do you understand by unstructured data? Why NoSQL for those kind of data?
- He asked to do trade-off between SQL and NoSQL using practical examples. Why, when and where will you use SQL and not NoSQL and vice versa. I gave him satisfactory answer. He was happy with it.
- He then asked me to time-space complexity analysis on Quick Sort, Merge Sort. Asked me when worst, best and average case arises, asked me to give example.
- What do you understand by balanced BST? Why it is used?
- He then asked can we do better than Binary Search in searching in an array. I gave him several approaches: HashMap, Ternary Search, [Binary Search started from left](#)

After long discussions on various topics he asked if I had any questions. I asked him few questions regarding work culture at Amazon.

## Round 5: Bar Raiser

This was a phone interview, conducted after 3.5 weeks of onsite, and was done on AWS Chime. The interviewer was very experienced person having 20+ years of experience.

He asked me to introduce myself. When I mentioned about my internship, he asked me what kind of project I worked with, and asked you have to code features which you implemented right now. I tried to code it, but as I had no documentation in front of me and no IDE was there, I was not able to do it well.

After that he asked me one coding question. [Connect nodes at same level binary tree.](#) I said level order traversal using queue. Asked me to do it recursively. I gave him recursive approach and then he asked me to code it.

In the end we discussed on working at Amazon and leadership principles.

I really suggest, Phone Interviews are different than in person F2F interviews. It takes different set of skill set to crack/do-well in this kind of interviews, which I feel is the reason of my rejection.

Overall it was a good learning experience.

Thanks Geeksforgeeks.

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# Amazon Interview Experience SDE1| Off-campus

- Last Updated : \n30 Aug, 2019

## Round 1:

Online coding test comprising of two coding questions and 20 MCQs. The coding problems were:

- Rotate a matrix by 90 degrees.
- Longest increasing subsequence.

## Round 2: Technical 1, he asked me two questions:

- If a number is written on a paper and that paper is rotated by 180 degrees, will the number remain the same?
- Merge two sorted arrays to get a resultant sorted array. Sub questions were to get the resultant array into increasing as well as decreasing order.

Round 3: Technical 2, he also gave me two questions. He first asked me about my strong areas. I accidentally told him my weak areas too. That was my blunder. Don't ever do that.

- If there are files that are dependent on each other and I need to compile them. In what order should they be executed that all of them would get successfully compiled? This was basically topological sort.
- $2x+3y+7z = n$  Find all possible combinations of x, y, z such that they satisfy above equation. I had suggested two approaches but he wanted the solution of lesser complexity. The optimized solution is obtained by dynamic programming. I couldn't answer it using DP.

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# Amazon Interview Experience (SDE 1 | 80% 2 yr exp)

- Last Updated : \n29 Aug, 2019

## Round 1: Pen and paper-based 2 questions

1. Given a linked list reverse every node at even places. Eg

Given list - 1-2-3-4-5\r\nOutput list - 1-4-3-2-5

2. Don't remember, but somewhat based a tree. It was an easy question.

## Round 2: Face to face (1 hour) 2 interviewers

1. Given a tree find a way to serialize and deserialize it back.
2. Another tree-based question
3. What is Cache? Difference b/w cache and hashmap.

## Round 3: Face to face (1 hour) 2 interviewers

1. Zig zag level order traversal of a tree.
2. BST question. convert given array to BST.
3. Project discussion and questions around it like why MongoDB and not Elasticsearch or DynamoDB.

## Round 4:

1. Why do you want to join Amazon?
2. The most challenging project you did until now?
3. What would you do in case of conflict on your recommended design with someone else?
4. DS question based on the tree.

## Round 5:

1. Explain the previous project.
2. difference b/w Mongo vs Mysql. In this, he kept going on deep, one after another. So, better you are prepared at your best.
3. Multithreading. Concept of mutex, semaphore.
4. Write a program to add 2 large numbers. Handle negative also.

Finally got an offer after a week.

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# Amazon Internship Interview Experience

- Last Updated : \n29 Aug, 2019

I am from IIT Kharagpur. Last week Amazon came to select for the 2-month summer Internship program. At first, there was an online test to shortlist candidates for interviews. The test contained 5-7 debugging questions, 30 aptitude questions, and 2 coding questions.

Two coding questions:

1. Given an array and a number. We have to find the maximum sum of two numbers from an array which is less than the given number.
2. <https://www.geeksforgeeks.org/program-round-robin-scheduling-set-1/>

They selected 120 students for interviews.

In my interview 2 questions were asked to code with pen paper:

1. Given 2 N-ary trees, check if they are mirror of each other or not.
2. Given 2-D array of characters, check the given words are there in the array or not. (crossword type.)

I did 1st one correct and for the second one I could not complete it but the interviewer was convinced with the approach. I got selected for the summer internship at Amazon.

I would like to thank Geeksforgeeks. As during my preparation, I always found it easy to surf it. The collection of must-do coding questions is very good and helps you build confidence.

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# Amazon Interview Experience | (FTE) On Campus

- Last Updated : \n 29 Aug, 2019

Amazon visited our campus (BIT Mesra) on 10th August 2019 for FTE and a 6-month internship.

**Process:** 1 online coding round, 4 F2F Technical Interviews.

**Online coding round:**(90 minutes)

The test was conducted on mettl platform, on 7th August 2019.

There were 2 coding Q and 28 MCQ\xe2\x80\x99s.

- Given an array find the inversion count.
- Postfix evaluation.

MCQ\xe2\x80\x99s were based on c++, DSA, operating system, input/output.

Coding Q\xe2\x80\x99s were easy, hence MCQ\xe2\x80\x99s played a major role in Round 1 shortlisting.

30 students were shortlisted for the further interview process.

**Round 1:(90 minutes)**

He went through my resume and asked me to explain one of the projects I mentioned, hence the first 15 minutes were spent on project discussion.

After that, he asked 2 coding Questions:

- Given an array which is rotated n times from left or right, find the largest element of the array. (**Expected time complexity O(log N )**)
- The interviewer asked this Q in typical Fashion, basically, the Q was similar to finding the min element in a given stream of numbers.

He was initially checking my approach. After that, he asked me to code on paper.

The interviewer was really helpful, I got stuck once while implementing but he gave me a hint and after that, I was able to code correctly handle all corner cases.

Around 20 students were selected for the next round.

**Round 2:( 60 minutes)**

This was purely coding round. Initially, the interviewer introduced himself and after that asked me to give a brief introduction of myself.

He asked me 3 coding Questions:

1. <https://www.geeksforgeeks.org/construct-bst-from-given-preorder-traversal/>
2. <https://www.geeksforgeeks.org/pairwise-swap-elements-of-a-given-linked-list/>
3. <https://www.geeksforgeeks.org/print-nodes-distance-k-given-node-binary-tree/>

I was able to solve all the three problems optimally and he asked me to code them on paper.

After that, he asked me another coding Q(extension of 3rd Q),

To print all nodes which are at a distance of given range [a, b].

He just wants to check my approach for this Q, and I was able to crack the same.

The interviewer was looking for the most optimized approach for all the questions.

After this Round, 12 students were selected for a 6-months internship and 4 were shortlisted for further rounds.

**Round 3:** Technical round, This round lasted for nearly 2 hrs.

The round started with a project discussion(20 mins).

After that, he asked me a few coding questions:

1. Modular exponentiation.
2. A simple dynamic programming Q(I don't remember the actual Q)
3. Implementing queue from 2 stacks and vice versa.
4. Merge sort, quick sort, heap sort.

There were a few more Q based on Data structure, which I don't remember.  
After that, he asked me some theoretical questions on c++, as I mentioned in my resume.

Then he asked me the concepts of oops. Some of the questions that I remember are:

1. What is dangling pointer?
2. Reference variable VS pointer.
3. Garbage collector, memory leak.
4. Virtual function and polymorphism.
5. overflow and underflow etc

Finally, the interviewer shared his experience in Amazon and asked me if I have any questions to ask.

3 of us were selected for the next round.

**Round 4:** (Bar Raiser) This round was held on Amazon chime, The round lasted for 90 minutes.

1. Tell me about yourself.

After that, he asked me to explain my machine learning project, I gave him a detailed explanation of the same. Luckily the interviewer had worked on some ML projects, so explaining my project logic was easy to him. There was a 30 mins discussion on my project which involved several cross-questions like, why CNN, what technology I used, how I trained such a huge dataset, discussion on the model that I implemented, how did I analyzed and preprocessed the images, etc. After that, he asked me for the recent blogs I have read. After this he asked a coding question:

1. Given a Linked list find if there is a loop in it, if yes find the starting point of the loop and also the total nodes that are outside the loop.

I gave him 3 approaches to solve this problem. He asked me the proof of the Floyd's cycle algorithm. I did the proof by writing all the required diagrams and equations and he was satisfied with it and then I wrote the code.

Result: Selected for FTE

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# Amazon On-Campus Internship 2019

- Difficulty Level : \n[Basic](#)
- Last Updated : \n28 Mar, 2022

## Round 1:\xa0

This was a coding and aptitude round. It was divided into 3 sections- quants, logical and aptitude and coding.\xa0

There were 30 aptitude questions which were simple. Anyone could score full in this with little precaution. Answers to some questions were dependent on each other. So, answer carefully.\xa0

There were 20 quants which were also simple and easy.\xa0

The coding section had 2 questions which were to be done in 1 hr and 30 mins.\xa0

First question was a simple array based question on the concept on Window Sliding.\xa0

Second question was to find the avg waiting in round robin scheduled algorithm.\xa0

There were around 400 applicants.\xa0

## Round 2:\xa0

Around 40 people were selected for this round. The list was further extended. This was a technical interview round\xxa0

and continued till 11 pm at night. Majority of the questions were based on trees, resume and heaps. Some questions were based on stack and queue. Questions from OS and DBMS were asked by some interviewer.\xa0

Finally, They took 13 students for internship.\xa0

**Advice:**\xa0 1. Be thorough with your resume and your Projects.\xa0

2.Put Machine Learning or Artificial Intelligence in your resume only if you know very well otherwise your interview may get screwed doesn\xe2\x80\x99t matter how good you are at coding.\xa0

3.I have seen people knowing just theory of coding and little application getting selected by their patience confidence and honesty.\xa0

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# Amazon Interview Experience | On-Campus

- Last Updated : \n27 Aug, 2019

## Round 1: (Online)

Though this was an On-Campus Internship at my Institution- Birla Institute of Technology and Sciences, Pilani, K.K. Birla Goa Campus. But even then, we had to apply for the internship on the Amazon Jobs site. The form on teh website required us to attach a resume and fill out a few general questions related to the candidate\xe2\x80\x99s academics, etc.

Then the very same day, we had been sent the test link and required us to take the test in the next couple of days. But the Placement Unit on our campus made us give the test in the Computer Centre at a given time slot.

It had around 7 questions \xe2\x80\x98debug the following sets of codes\xe2\x80\x99 where the wrong code and the a description of what the function should do was given. We were given 15 minutes to finish this part. Students had to change the given (very basic changes, ex: 1. Changing the sign of \xe2\x80\x98<\xe2\x80\x98 to \xe2\x80\x98>\xe2\x80\x99 in the function, 2. Changing the \xe2\x80\x98=\xe2\x80\x99 sign to \xe2\x80\x98==\xe2\x80\x99 sign) code and submit it (after testing). There were around 25 or so questions based on logical reasoning (they were very easy). We were given 40 minutes for this part. There was a set of feedback questions asked to every student after this section.

The next section had a couple of coding questions.

Question 1. Pair with largest sum less than K in the array.

The solutions with  $O(n^2)$  time complexity were also accepted.

<https://www.geeksforgeeks.org/pair-with-largest-sum-which-is-less-than-k-in-the-array/>

Question 2.\xc2\x96 Round Robin Scheduling (Finding Average Wait Time)

The second question was to find out the average waiting time of processes in Round Robin scheduling, and it can solved with the help of queues.

<https://www.geeksforgeeks.org/program-round-robin-scheduling-set-1/>

After this section, there was another feedback section which was compulsory to fill.

After the second feedback section, there was one final section on Psychological Questions which were not timed.

We were also informed that anybody who would have not finished the feedback sections, would not be selected by default.

The only problem I had with this test was that we were told that the test would be held from 7:00 PM to 8:30 PM, and most of the people were still not finished at 9:25, you have to understand that there was another company\xe2\x80\x99s test that was scheduled at 9:30 at the same location.

\xc2\x96

## Round 2: Personal Interview (One-to-One)

Of the students who had writted the online test, 60 students had been selected for the Interview round which was held a couple of weeks later. There were 14 different interviews that were going to take place at once. We were also informed before-hand that only one round of interviews would be conducted.

From what I heard, the questions were pretty simple. During my interview, I was asked:

- To introduce myself and talk about my projects. The interviewer asked me the core CS subjects I have finished. Then he had a few basic questions on the same subjects.
- He started the Data Structures and Algorithms questions next.
- One question was \xe2\x80\x9cWhat is cache memory, which data structure would you use to implement it?\xe2\x80\x9d.
- Given an array of integers and a number K, find the number of distinct integers in every contiguous subsequence of size K.
- Given an array of Zeros (0) and Ones (1), find the maximum number of ones that can obtained in a contininous fashion if you are allowed to switch one zero to a one.\xc2\xaa  
<https://practice.geeksforgeeks.org/problems/maximize-number-of-1s/0>. An easier reproduction of the same problem where M=1.

Then he said that he does not have any other questions for me and he was done from his side. I took that opportunity to ask him about work in Amazon, etc.

\xc2\xaa

That was it for the selection process. A few hours later the list of selected students was announced by our campus\xe2\x80\x99 Placement Unit.

Result: Selected!

Thank you, and all the very best.

\xc2\xaa

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# Amazon Summer Internship Interview Experience | On-Campus

- Last Updated : \n 27 Aug, 2019

Amazon was hiring from my college The LNM Institute of Information Technology, Jaipur for Full Time Employment (FTE) + Semester Long Internship (SLI) for the final year and Summer Internship for the pre-final year students.

## Online Assessment:

The online assessment was scheduled on 6th August 2019 and conducted on AMCAT. It consisted of 4 rounds and the programming languages allowed were C, C++ and Java.

**Round 1:** In this round we had to debug, not so much inappropriate code in our favourable coding language based on given output and explanation. It consisted of 7 easy questions and 15 minutes were given to complete this task.

**Round 2:** It was the logical reasoning round and were given 24 questions with time limit of 35 minutes.

**Round 3:** The coding round consisted of 2 questions with time limit of 70 minutes.

The first question was an easy one, which required us to search in a 2D Array(matrix) and return the co-ordinates of desired value as a pair.

In the second question, I was given a grid consisting of 0, 1 and exactly one 9. The task was to find whether 9 is reachable from (0, 0) co-ordinate by only travelling along the cells containing 1. I solved it using DFS approach. BFS or recursion can also be used.

**Round 4:** It consisted of questions based on work ethics and was a serious weightage. The students who had done the first 3 rounds very well but did not respond to the questions properly were not selected.

The results of the online round was declared a day after and about 50 were selected for the next round from about 250 students who gave the online round.

## Personal Interview:

The next round for the hiring procedure was a face to face interview with the recruiters, scheduled at 10th August 2019.

The interviewer was a nice guy, first he introduced himself and then asked me to briefly introduce myself. After he began with the technical questions:

1: He gave me an array consisting of strictly increasing numbers to a point, followed by strictly decreasing numbers, for eg: 1 4 7 10 9 4 2 0, the task was to find the maximum in the array.

**Find the maximum element in an array which is first increasing and then decreasing?**

**\xe2\x80\x94GeeksforGeeks**

**Given an array of integers which is initially increasing and then decreasing, find the maximum value in the array.** [www.geeksforgeeks.org](http://www.geeksforgeeks.org)

2: The question was to decompress the compressed string.I solved it using a stack of characters.The interviewer asked me my approach and after that he asked me to pen it on a paper.He then tried a few test case on the code and was happy with my approach.

### **[Former Coding Interview Question: Compression and Decompression?\xe2\x80\x94?Google Tech Dev Guide](#)**

*You\xe2\x80\x99re invited to check out all the different learning resources in the guide: problems and projects, former Google\xe2\x80\x9a\x80\x96techdevguide.withgoogle.com*

3:Given a linked list\xc2\xa0, my task was to check whether the linked list was pallindrome or not.I began with solution using O(n) extra space\xc2\xa0, but after discussing a bit with the interviewer I was able to get to the inplace solution with no extra space\xc2\xa0, he then asked me to pen down my approach and he tried the code against 2 cases and my code was able to pass them with slight edge cases being missed, but while discussing my approach further I was able to rectify the errors and he was satisfied with the approach.

### **[Function to check if a singly linked list is palindrome?\xe2\x80\x94?GeeksforGeeks](#)**

*Given a singly linked list of characters, write a function that returns true if the given list is a palindrome, else\xe2\x80\x9a\x80\x96www.geeksforgeeks.org*

4:Some basics about BFS and DFS were asked\xc2\xa0, like difference between them and their uses.

After the coding questions, he switched to questions from computer science fundamentals, he began with the concept of OOPS, explanation of polymorphism\xc2\xa0, difference between function overloading and overriding.

Next, he switched to basics of Computer Networks and Operating Systems and asked some practical world applications of the concepts of threads and processes.At last he asked me about ACID properties from DBMS.

After all these he asked whether i have any question for him and he told me about his hometown and experience at the company as a software developer.

The results were announced on the day of interview itself in the evening and 14 students were selected for the summer internship out of 50 shortlisted for the interview and I was lucky enough to get selected.

Cheers, Happy Coding \xf0\x9f\x99\x82

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## Amazon Interview Experience | On Campus for Internship

- Last Updated : 26 Aug, 2019

Hello Geeks, recently Amazon visited our campus for Internship and Full time and I appeared for the **Internship Interview of Amazon**. What my personal experience says is that explore the problem first and then think progressively about possible solutions. Once the efficient approach hits you, think whether its possible to further optimize it or not, instead of trying to jump to right solution straight away. Check for all the corner cases and most importantly don't remain completely blank during your conversation with the Interviewer but keep on telling the tentative solutions that are coming to your mind.

My entire process consisted of 2 rounds

- Online Round
- F2F Interview

### Online Round:

Our online round was quite different than usual pattern followed by Amazon. We had three sections.

Section 1: 7 code debugging MCQs which were quite simple and required basic knowledge of any programming language but the constraint was only the time limit (10 minutes) and there was no negative marking.

Section 2: 24 MCQs based on aptitude and quantitative reasoning. They were also pretty easy with no negative marking and time limit of 35 minutes.

Section 3: 2 coding questions and time limit 45 minutes.

#### Question 1: Search in a row wise and column wise sorted 2D matrix

```
Input : mat[4][4] = { {10, 20, 30, 40}, {15, 25, 35, 45}, {27, 29, 37, 48}
```

#### Question 2: Round Robin Scheduling with different arrival times

You had to return the average waiting time for CPU to complete processing of all n processes.

(Processes were sorted according to Arrival time.)

```
Input: arrivalTime[] = { 0, 1, 2, 3 } \r\n      burstTime[] = { 10, 4, 5, 3 } \r\n      quantumTime = 3 \r\nOutput: Average
```

The three sections were followed by a feedback form which was a sort of HR round. This feedback too had a contribution in shortlisting students. So, I recommend to be concerned and a bit fair while telling about yourself through those feedbacks..

### Face to Face Interview:

The Interviewer asked me to introduce myself. Then he asked few questions based on my CV and questions of CS core subjects like OS, DBMS, Computer Networking and concepts of OOPs. Then he asked me 3 questions of data structures and Algorithms.

#### Question 1: Check if two nodes are cousins in a Binary Tree

He asked me to write code in O(n) and traverse tree only once. You need to consider that case too when one or both of the given nodes is/are not there in tree.

**Question 2:** Given a sorted array where all elements are repeated twice and only one element is present once. You are required to find that unique element. The instant approach that struck me was returning xor of all elements. This was O(n) approach. He asked me to optimize it. Then I gave O(logn) solution based on modified binary search.

**Question 3:** In a 2D array of integer, 2 denotes wall, 1 denotes zombie and 0 denotes human. Next day zombies turn adjacent human beings into zombies. A zombie is adjacent to the human one block above, below, left and right. Zombie cannot cross a wall. Find out how many days does it take to infect all human. If some human never get infected, return -1.

```
Input 1: mat[4][5]={ {2, 1, 0, 0, 0}, {2, 0, 2, 2, 0}, {1, 2, 0, 0, 0}, {1, 1, 2, 1, 0} }
```

Approach: First scan whole matrix and store position of all zombies in a queue. All these elements in queue represent level 1. and now apply bfs over that queue and for each level increment count of days by 1. After applying BFS, if there is no human left, return count of days, else return -1 as all humans cannot be converted to zombies.

Code Link: <https://ide.geeksforgeeks.org/M8HPFWNxRI>

Then he asked me if I had any questions. I asked him about the type of projects we have to do there and how these data structures and algorithms and OS, DBMS subject knowledge are applied in real scenarios in handling their millions of users efficiently. He gave example of their recent change in data organisation with trees and started elaborating entire-work process at Amazon some of which I could hardly understand.

I was finally hired for the Internship at Amazon. I would like to thanks Geeks for Geeks which helped me a lot in my preparation.

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# Amazon Interview Experience for Summer Internship 2020(On-Campus)

- Difficulty Level :\nEasy
- Last Updated :\n26 Aug, 2019

Recently Amazon visited IIT(ISM) Dhanbad for hiring interns.

## Round 1:

This was an online assessment test. The test consisted of three sections.

- 1). **Debugging:** There were 7 C++ programs to be debugged. This part was very simple.
- 2). **Aptitude:** There were 24 aptitude based problems. The time limit was 35 minutes. The problems were ranged from cake-walk to easy.
- 3). **Coding** Section: This consisted of 2 coding problems. The time allowed was 70 minutes.

The first problem was:<https://www.geeksforgeeks.org/search-in-row-wise-and-column-wise-sorted-matrix/>

The second problem was based on Round Robin Scheduling. Given n processes, their arrival times and burst times, it was required to calculate the average waiting time using Round Robin scheduling.\xc2\x9a0 \xc2\x9a0 \xc2\x9a0 \xc2\x9a0 The Round Robin scheduling was not explained in great detail in the problem, hence a lot of students failed to solve the problem. I was well aware with the working of Round Robin scheduling, so \xc2\x9a0 \xc2\x9a0 \xc2\x9a0 \xc2\x9a0 \xc2\x9a0 \xc2\x9a0 \xc2\x9a0 \xc2\x9a0 was able to solve both the problems and thus made it to the interviews,

## Round 2:

There was only one technical interview and no HR round.

The interviewer was very friendly. The interview started with discussions on the recent projects I was part of. The discussion lasted for about 15 minutes.

He asked me if I was aware of page faults in Operating Systems and asked me about the various page replacement algorithms.

Then he asked me about the LRU cache. I was told to implement its code.\xc2\x9a0\xc2\x9a0<https://leetcode.com/problems/lru-cache/>

Then he asked me about cycle detection in a directed graph. I had to implement its working code on paper.

Then I was asked to implement the code for\xc2\x9a0<https://leetcode.com/problems/best-time-to-buy-and-sell-stock/>.

I was able to solve and implement all the problems and was selected for the internship.

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# Amazon Summer Internship Interview Experience (On-Campus)

- Difficulty Level : \nMedium
- Last Updated :\n26 Aug, 2019

## Round 1: Online Round (2 hrs)

Online Round was divided into 3 sections.

1. This section had 7 questions. Parts of code were given and we were asked to debug them according to the expected output. These were easy questions and anyone with little knowledge of programming can solve them.(15 mins)
2. This section had 24 questions comprised of basic logical reasoning questions.(35 mins)
3. There were two coding questions in this section.(70 mins)

- Given a matrix sorted in row-wise and column-wise manner, check whether given element exists in the matrix. Hint: Use binary search for every row. Time Complexity O(nlogn).
- Find average waiting time of given processes executed in Round-Robin manner with given time quantum. <https://www.geeksforgeeks.org/round-robin-scheduling-with-different-arrival-times/>

Also, after the completion of online round there was a post-contest survey. You must fill out this survey fairly.

## Round 2: Face-to-face Interview (1 hour)

At first he asked me to introduce myself. You can brag about things you have done since your childhood but that is not something any interviewer wants to hear. He is only interested in your technical development in recent years. Try to focus on what you have learned and accomplished in past couple years (only technical parts).

After the introduction he asked me about my project, its functionality and my contribution in it.

Then he asked me 2 programming ques:

- Given an array of number of coins in different houses, find the maximum sum you can obtain by adding equal amount of coins from a sub-array. Hint: <https://www.geeksforgeeks.org/the-stock-span-problem/>
- Given an array and a value k, you have to find maximum in all different sub-arrays of size k. Hint:\xc2\xa0<https://www.geeksforgeeks.org/sliding-window-maximum-maximum-of-all-subarrays-of-size-k/>

I would suggest everyone not to dive directly into final solution. Instead explain the interviewer all the different possible solutions starting from worst-case to best-case time complexity. This suggests the interviewer that you have proper knowledge of the given topic. Another advice don\xe2\x80\x99t start coding directly, at first propose an algorithm that you think is precise and then analyze your algorithm (time and space complexity) and then start coding. Don\xe2\x80\x99t miss the corner test-cases, no matter how good you are it can happen to anyone, better safe than sorry.

After programming questions the interviewer asked me questions related to CN, OS, DBMS and OOPS concept.

In CN he asked me to explain everything that happens in the background after you click on a link.

In OS he asked me everything about Paging, from its need to all the concepts related to it.

In DBMS he asked me about ACID properties along with examples.

Then he asked me about OOPS concept. Remember examples are important.

Then he concluded the Interview by asking me if I have any questions. This is Important you must prepare at least one question in advance. I asked him if I need to prepare anything in advance for the internship if I get selected.

Last but not least some important preparation stuff:

<https://www.geeksforgeeks.org/data-structures/>

<https://www.geeksforgeeks.org/fundamentals-of-algorithms/>

<https://www.geeksforgeeks.org/Amazon-topics-interview-preparation/>

Good Luck to everyone!!

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# Amazon Interview Experience for SDE1

- Difficulty Level :\n[Hard](#)
- Last Updated :\n28 Aug, 2019

## Online Round:

Test Pattern: 20MCQ and 2 coding question

Time : 1:30 hours

MCQs were based on operating System, data base management system, computer networks, data structures and standard questions of computers. MCQs were of intermediate level. one can easily do all the questions correctly if has basic understanding of topics.

## Coding Problems:

1. It was a easy question to reverse a string taken k length at a time. i.e. Input:  
String=\xe2\x80\x9damazoninterview\xe2\x80\x9d, k=5\xc2\xa0 \xc2\xa0Output:  
\xe2\x80\x9cozamaetninweivr\xe2\x80\x9d
2. It was a basic graph problem. [click here](#)

## F2F Interviews:

There were 4 rounds and all rounds were technical round.

### Round 1:

It started with general introduction and then interviewer told me the process of interview as 2 questions will be asked and first you have to tell the approach and be able to write the code included with space and time complexity.

first question was to count the number of set bits in a given range (a, b). the question was really easy and i was able to do it in time complexity  $O(n * \log(d))$  and space complexity  $O(1)$ . and he was satisfied with the answer.

second question was, there is an infinite grid in first quadrant and a sequence of coordinate of first quadrant in particular order and one can move in all 8 directions from a point in grid . you have to calculate the minimum number of steps to reach the last indexed coordinate of sequence following the same order as sequence. At first i explained BFS approach but he told to reduce the time complexity and then i was able to do it in  $O(n)$ . (explanation: move to an intermediate node diagonally and then take the manhattan distance).

### [infinite grid problem](#)

at last we discussed about amazon for 10 minutes which is much needed for a good impression.

### Round 2:

It started with introduction and projects i have done in college and it goes for approx 30-40 minutes. he was asking about the overview of major project. after that he asked a programming question.

There are 3 sorted arrays({A1, A2, A3}) and you have to computer number of triplet {i, j, k} such that

{i, j, k} belongs to {A1, A2, A3} respectively and i<j<k. and he asked to write code clearly and should not fail for any edge case. and i was able to do it in linear time Complexity and without any extra space. and he was satisfied with my answer. and again we discussed about company for approx 5-10 minutes.

### Round 3:

It again started with general introduction. and then he asked basic questions from Operating system, Computer networks and database management system.

Operating System: There is a game which requires 4GB RAM memory and i have a system with 2GB RAM. Then which concept the system will use to run the game.

Computer Network: How any url is processed in details like how it find DNS server etc.

DBMS: which properties RDBMS should follow? then what is normalization and denormalization and why we need it explain with example.

Then He asked, There is a tree having node values as \xe2\x80\x98T\xe2\x80\x99 and \xe2\x80\x98F\xe2\x80\x99 only. write a function which should return the largest subtree having equal number of \xe2\x80\x98T\xe2\x80\x99 and \xe2\x80\x98F\xe2\x80\x99 nodes. I was able to do it in O(n) time complexity and O(1) space complexity and he was satisfied with answer.

after that he asked There is a sorted array in which except one element all elements have a duplicate number. write program to find unique element from array .First I told him XOr approach and checking next number if it is equal or not all in O(n) approach. then i told him O(log(n)) approach using binary search and then he was satisfied with answer.

then after, He told to reduce the complexity of searching in linked list by using any data structure or changing the node structure. at first i told him to use hash map but there can be duplicate data so he rejected this approach. Then after i was able to give 2 approaches .by using array of pointers which maintains middle element in every go of binary search and by using skip lists.

### Round 4:

It started with exchanging introduction. and there was a discussion about major project of college in details. I was explaining my project on white board. He was asking a lot of details from my project or a lot of other questions like: what will you modify now in the project and why? What have you learnt through this project technically and non technically? and a lot of inner details of project.

then he asked to find the number of nodes in linked list which is outside of loop of linked list. He wanted to know the floyd algorithm and asked why it is correct and give arithmetical expression for this and then he asked to write code.

Again He asked question from linked list. There is a linked list having an extra pointer random pointer which points to any random node of linked list. And you have to clone the linked list. At first i was able to do it in O(n) space complexity but he asked for O(1) space complexity. then i was able to do it without using any extra space.

Tips:

1. Be confident and discuss the approach with interviewer.
2. discuss about company at last with interviewer.
3. do some problems from leetcode.
4. last but not least don\x80\x99t give up try the problems in all possible way. you will realize

at last that you are able to do the problem and listen the interviewer carefully because he will give a lot of hints.

## All The best.

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Amazon Interview Experience (FTE) | On-Campus

- Difficulty Level :\nExpert
  - Last Updated :\n22 Aug, 2019

Amazon has visited our campus (**NITJ**) for the role of Software Developer Engineer-I (**16th August 2019**)

**Process:** 1 online coding round+ 4 F2F technical interviews.

## Online coding round:

It was very easy and there were 20+ MCQs and 2 coding questions-

1.you have a string and you have to replace every character with the character 3 place ahead(like a->d, z->c, \xc2\x80-\xc2\x86)

2 related to array | don't remember it but it was very easy to implement

## First technical round:

1. Tell me something about yourself.
  2. Tell me something not on your resume.
  3. Given an array of integers. If the number a and its negation -a both present in the array then print

At first I told him the linear search approach then binary search approach but, I was using the extra space. So, he told me to reduce it to O(1). I explained my modified approach and coded it.

#### 4. LRU implementation :

*I told him an approach having time complexity of O(size of frame). He was not happy with my approach.*

*I tried to think in a different manner and came to a solution where I used pointers and unordered map to reduce its complexity to O(1) and finally coded it.*

## 5. Merge k sorted array

*I explained him and wrote Min Heap based solution. He was impressed and then asked me the complexity.*

## Second technical round:

- ## 1. Some **SQL queries** (related to nested query) and sharding.

- 2.** What is BST and how to check that the given binary tree is **BST or not**.

*\xc2\xa0I told him the postorder approach using minimum and maximum range. He then asked me what would happen if the left most node is equal to INT\_MIN and right most node is equal to INT\_MAX then what will you do ?\xc2\xa0*

- ### 3. Sum of a given range

I explained him 2 approach and he wanted me to code for both of them.

### a) Segment tree( $O(\log n)$ )

<https://www.geeksforgeeks.org/segment-tree-set-1-sum-of-given-range/>

### b) Square root decomposition ( $O(\sqrt{n})$ )

<https://www.geeksforgeeks.org/sqrt-square-root-decomposition-technique-set-1-introduction/>

4. Which graph traversal method is better and why.

5. Spiral traversal of a binary tree but the direction of traversal should be down to up manner and start traversing from bottom right node.  
I used 3 stacks and coded it. After that he asked me to try out some examples.

## Third technical round:

1. Tell me something about your hobbies and interest.

2. A matrix m is given. You are standing on the given position  $m[x][y]$  and there are k numbers of delivery boys with their position given. If the  $m[i][j]=0$  that means this path is blocked. You can move in 4 directions, now you have to find the nearest delivery guy and return its position.  
I told him an approach using Backtracking. He asked me to reduce the complexity then I explained and wrote the program using BFS. He asked me to check my code with some examples.

## 3. Heavy Light Decomposition

I explained him and wrote the code.

link <https://www.geeksforgeeks.org/heavy-light-decomposition-set-1-introduction/>

4. Deadlock necessary conditions with examples.

5. There are 2 processors in a system and each having a process. When the process have 2 threads, it takes 4 ms to complete 4 tasks. How much time it will take if the process have single thread.  
First, I was confused then he explained me the question again.  
I told him the answer with the appropriate reason but I was not sure.

6. He said me that this is the first time he is taking interview of an ECE student. And asked me questions on microprocessor and RAM internal architecture.

## Fourth technical round:

1. Asked me about my internship project.

2. Why we use RNN and what is the difference between RNN and CNN.

3. Question based on system design.

I said that it was not in my syllabus because my branch is ECE then he told me to use any data structure. I used hash map and DBMS for storing the data. He asked me to write the code.

4. Given a stream of characters. Print all the characters, not repeated in last 10 ms.

I used deque of size 10 to implement it.

5. Implement Round Robin process scheduling.

It can easily be done using Queue data structure.

## 6.Why Amazon?

### Result

!!!!!!We were said to wait for the result.\xc2\xab0

!!!!!!finally, 4 CSE students and 1 ECE student (luckily me ; ) ) were selected for SDE profile.

### Tips:

They want each and every question to be coded properly on paper. So, do practice.

If you know the solution, tell the brute force and then optimize it. Discuss with the interviewer as much as you can. Stay confident and trust your instincts.

I would like to thanks **GeeksforGeeks**\xc2\xab0which was a great help during my preparation for the interview.

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# Amazon Interview Experience for SDE I

- Last Updated :\n22 Aug, 2019

## Online round:

Test Pattern: Two coding problems, 28 MCQs

Time: 1 hr 30 min

MCQs were solely based on the questions pertaining to input/output of a C program. A general pattern observed was that there would be a code snippet in the question and one would have to provide correct output/error of that particular program.

## Coding problems included:

1. A program to find the number of trailing zeroes for the factorial of a given number.
2. A co-ordinate plane was given. On each point  $(x, y)$  there are  $x+y$  number of apples on it. A person is standing on  $(0, 0)$  and he wants to buy a square plot having  $N$  number of apples inside it (including the periphery). Question was to return the value of perimeter of that square plot given  $N$ .

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# Amazon Interview Experience | On-Campus

- Last Updated : \n21 Aug, 2019

\xc2\xd0

## Coding Round:

- \xc2\xd0 20 mcq questions on C, C++.
- \xc2\xd0 2 coding question\xc2\xd0 1) Given infix equation in string, return the value of expression Ex.\xc2\xd0 (2+3)\*5\xc2\xd0 will return\xc2\xd0 \xc2\xd030\xc2\xd0 \xc2\xd02) find mean median mod of a given array

\xc2\xd0

## Round 1:

1. I was given an array with some numbers which denotes the denomination of coin we can use, and then i was asked to find out to make a sum using the available denomination so that number of coins used is minimum and also print the combination of coins.\xc2\xd0<https://www.geeksforgeeks.org/find-minimum-number-of-coins-that-make-a-change/>
2. This question was easy one . I was asked to return true if two given string having edit distance equal to or less than 1 otherwise false.
3. I was asked to return last Kth node in a linked list without using extra space and recursion. I given the solution which used two traversal of the linked list but i was asked to do this only with one traversal, then i gave him the solution with two pointers.<https://www.geeksforgeeks.org/nth-node-from-the-end-of-a-linked-list/>

## Round 2:

1. \xc2\xd0 \xc2\xd0 \xc2\xd0 This question was to find the maximum distance between any two leaf node in a binary tree.\xc2\xd0<https://www.geeksforgeeks.org/print-longest-leaf-leaf-path-binary-tree/>
2. This question was little bit hard. The question was that there is a mad scientist who has various solution.I was given an array that contains the volume of each solution. The scientist can mix any two adjacent solution. let\xe2\x80\x99s say two adjacent solution having volume a and b then the resultant solution will produce smoke volume of  $(a^*b)$  and liquid of  $(a+b) \% 100$ . Now i was asked to find a way such that all over smoke produced is minimum.\xc2\xd0 \xc2\xd0 \xc2\xd0 \xc2\xd0 \xc2\xd0 Hint: Use same approach as chain multiplication.
3. Last question of this round was to convert a source string to target string such that at any time you can change only one alphabet of the string and resultant string (at each alteration) must be present in a dictionary which was provided at the beginning.I had to find the minimum number of alteration. I gave him a bfs approach.

## Round 3:

1. I was asked to print to node of a binary tree in reverse zig zag order.
2. The second question was to tell number of islands present. 1 represents land while 0 represents water in the given matrix. adjecent 1\xe2\x80\x99s comes under single islands.\xc2\xd0<https://www.geeksforgeeks.org/find-number-of-islands/>
3. After that they asked a nested sql query. and then asked about types of join in dbms(inner and

outer).

#### Round 4(bar raising):

1. I was given two strings one contains only alphabets and another contains alphabets, dot(.) and star(\*). dot represents any one character and a star can represent any number of alphabets including 0 also. and I had to check whether both string match or not.
2. At last we talked about my project, he asked what I had done during my internship, and what challenges I faced during that.
3. Then he asked some question on Operation System including demand paging and thrashing.

I got selected.

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# Amazon Interview Experience | SDE (On Campus)

- Last Updated : \n21 Aug, 2019

Amazon came to our campus (BIT Mesra ) to hire FTE and 6 months interns .

**Online Round :** First round was online round consisting of 30 questions \xe2\x80\x93 coding questions and 28 mcq questions based on C, C++, Basic Networking. The test was conducted on mettl platform. Everyone had different set of questions . Some of the questions were :

1. LCS
2. Some String implementation question
3. Dice Throw Problem
4. Roots of quadratic equation.

After this round, 30 were shortlisted for\nc2\x0 further rounds.

**Round 1 (Technical Round) :\xc2\x0**The first 15-20 minutes were spent on project discussion, some cases to solve\nc2\x0 and use of process synchronization. Then the interviewer asked 2 coding questions :

1. <https://www.geeksforgeeks.org/print-nodes-distance-k-given-node-binary-tree/>
2. \xc2\x0<https://www.geeksforgeeks.org/function-to-check-if-a-singly-linked-list-is-palindrome/>

Initially, they want to know about the approach, if satisfied, they ask to write full functional code on paper . In between, they asked about the complexity of algorithm and more optimization that could be done on it.

**Round 2 (Technical Round):\xc2\x0**The interviewer gave 2 coding questions :

1. Find the LCA (Least Common ancestor) of nodes having maximum depth in a given rooted tree . He asked about the approach, complexity and data structure to use . In between, he asked some common questions like time and space complexity of dfs, bfs, dijkstra (in terms of E and V ) .
2. \xc2\x0In the last 15 min, he asked me to implement queue using two stacks.

He asked me to code both questions on paper . Take care of corner cases like skew tree, empty stack, etc .

After this round, 12 of us were given 6 month internships . 3 of us were shortlisted for further rounds .

**Round 3 (Technical Round) :** The interviewer asked me 3 coding questions :

1. <https://www.geeksforgeeks.org/perfect-sum-problem-print-subsets-given-sum/>
2. Given a list of string\nc2\x0 and a prefix . He asked to print all the strings in the list\nc2\x0 having that prefix . He asked what data structure to use, time and space complexity of it . He basically wanted to see\nc2\x0 implementation of operations on trie\nc2\x0 .
3. <https://www.geeksforgeeks.org/given-sorted-array-number-x-find-pair-array-whose-sum-closest-x/>

**Round 4 (Behavioral\nc2\x0+ Technical ) :\xc2\x0\nc2\x0**This round was taken on amazon chime . This round was of 1 hour .

### Behavioral (30 min):

- Give an example of an occasion where you've done a thing that was very hard for you .
- How did you handle shortcomings in your project .
- Compare your project with the current existing technology or project in real world scenario .
- He asked questions related to my project like why did you chose this technology, alternatives of the technology, difference between vertical and horizontal scaling, etc .

### Technical ( 30 min ) :

- Given a package and a list of packages associated with it (Means the package is dependent on those list of packages ) . Now, you're given a package name, let's say A, print all the packages in sequence that you need to install in order to install package A . This was basically an implementation of Topological Sort . He was more interested in the approach and then asked me to code it up on editor .

Result : Selected for FTE

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# Amazon Interview Experience | SDE-1

- Difficulty Level :\n[Medium](#)
- Last Updated :\n21 Aug, 2019

Amazon visited NIT Jalandhar on 16 Aug, and 5 were hired. Note: in each round, I was asked to write code on paper for every ques.

## Online Coding test:

- 1) Given a string of form a+b=c where one among a.b.c is replaced by x. find x.
- 2) A=1, B=2, C=3\xe2\x80\x9a6Z=26. Find possible decoding of the given digits sequence.

[Count Possible Decodings of a given Digit Sequence](#)

28 MCQS

## Round 1:

- 1) Collect maximum gold coins from potholes without selecting adjacent potholes.

[Maximum sum such that no two elements are adjacent](#)

- 2) Given a number n. Print all numbers from 0 to n which have adjacent digits as the abs diff of 1. (Stepping numbers)

[Stepping Numbers](#)

## Round 2:

- 1) Minimize the transactions needed to balance money between friends. Per transaction may not be equally distributed among all i.e. it is possible only few people are involved in that transaction not all. (More like Simplify debts of splitwise app)
- 2) Min and Max heap. With diagrams and proper illustration of extracting and inserting.
- 3) Heapify the min heap
- 4) Insertion in min heap

## Round 3:

- 1) N-ary tree. Create its mirror tree
- 2) N-ary tree with all positive keys. Find maximum sum path in whole tree. (If you think correctly it will start from some leaf node and will end at other leaf node since all keys are positive)
- 3) Producer consumer problem discussion. Semaphore, mutex, wait and signal. Then told me to write code for it using wait() and signal() for both producer and consumer (General code not in cpp or java)
- 4) Discussion over distributed systems. N-producers N-consumer problem in distributed systems. No. of mutex variables required to solve N-producers N-consumer problem? (ans: 1)

## Round 4:

- 1) Project Discussion (20 mins)
- 2) Singleton class. Its uses. Real world practical use. How to make a class singleton class. Code it.
- 3) Set right siblings of nodes. I told level order traversal. But he insisted for optimization. Told him O(1) space complexity sol, He was satisfied.

[Connect nodes at same level using constant extra space](#)

4) Length of longest palindrome substring.

[Longest Palindromic Substring | Set 2](#)

**Tips to crack Amazon Interview:**

- 1) Do first 200-300 Leetcode coding questions. <https://leetcode.com/problemset/all/>
- 2) Do all Amazon most asked questions from geeksforgeeks and do puzzles also. Sometimes they ask.

[Amazon topics for Interview Preparation](#)

3) 300 java ques from javaTpoint .

<https://www.javatpoint.com/corejava-interview-questions>

4) Most asked cpp, dbms interview questions (just google it)

5) For DBMS must do joins, normalization, DML, DCL, DDL, TCL and their commands.

6) Do OS thoroughly.

7) Always smile during interview and be confident.

8) Never give up on ques even if you are unable to find correct solution. Keep trying and ask for some time if stuck. Keep conversing with interviewer whole time discussing approaches while trying to find solution. They cooperate and sometimes gives you hints to take you to right path to find solution.

**All the best, rock it.**

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# Amazon Interview Experience | On-Campus

- Difficulty Level :\n[Expert](#)
- Last Updated :\n30 Jun, 2021

Amazon has visited our campus (NIT JALANDJAR) for the role of Software Developer Engineer-I (16th August 2019)\xa0

Process: 1 online coding round+ 4 F2F technical interviews.\xa0

## Online coding round:\xa0

It was very easy and there were 20+ MCQs and 2 coding questions-\xa0

- 1.you have a string and you have to replace every character with the character 3 place ahead(like a->d, z ->c, \xe2\x80\x9c.\xa0
- 2.related to array, I don\xe2\x80\x99t remember it but it was very easy to implement.\xa0

## First technical round:\xa0

1. Tell me something about yourself.\xa0

2. Tell me something not on your resume.\xa0

3. Given an array of integers.If the number a and its negation -a both present in the array then print it.\xa0

ex: if {10, 5, 0, 9, -10, 7, -5} is given then print 10, 5.\xa0

At first I told him the linear search approach then binary search approach but, I was using the extra space. So, he told me to reduce it to O(1). I explained him my modified approach and coded it.\xa0

4. LRU implementation\xc2\xxa0

I told him an approach having time complexity of O(size of frame).He was not happy with my approach.\xa0

then I tried to think in a different manner and came to a solution where I used pointers and unordered\_map to reduce its complexity to O(1) and finally coded it.\xa0

5. Merge k sorted array\xc2\xxa0

I explained him and wrote Min Heap based solution. He was impressed and then asked me the complexity.\xa0

## Second technical round:\xa0

1. Some SQL queries (related to nested query) and sharding\xc2\xxa0

2. What is BST and how to check that the given binary tree is BST or not.\xa0

I told him the postorder approach using minimum and maximum range. He then asked me what would happen if the left most node is equal\xc2\xxa0\xc2\xxa0 to INT\_MIN and right\xc2\xxa0 most node is equal to INT\_MAX then what will you do.\xa0

3. Sum of a given range\xc2\xxa0

I explained him 2 approach and he wanted me to code for both of them\xc2\xxa0

a) Segment tree(O(Logn))\xa0

b) Square root decomposition (O(sqrt(n)))\xa0

4.Which graph traversal method is better and why.\xa0

5. Spiral traversal of a binary tree but the direction of traversal should be-down to up manner and start traversing from bottom right node. I used 3\xc2\xxa0\xc2\xxa0\xc2\xxa0\xc2\xxa0\xc2\xxa0\xc2\xxa0 stacks and coded it. After that he asked me to try out some examples.\xa0

### **Third technical round:\xa0**

1.Tell me something about your hobbies and interest.\xa0

2.A matrix m is given. you are standing on the given position m[x][y] and there are k numbers of delivery boys with their positions given.\xa0

If the  $m[i][j]=0$  that means this path is blocked. You can move in 4 directions, now you have to find the nearest delivery guy and return its position.\xa0

I told him an approach using Backtracking . He asked me to reduce the complexity then I explained and wrote the program using BFS.\xa0

He asked me to dry run the code.\xa0

3. Heavy Light Decomposition\x0a

I explained him and wrote the code.\xa0

link \xe2\x80\x93 <https://www.geeksforgeeks.org/heavy-light-decomposition-set-1-introduction/>\xa0

4. Deadlock necessary\x0a conditions with examples.\xa0

5. There are 2 processors in a system and each having a process.when the process have 2 threads, it takes 4 ms to complete 4 task. How much time it will take if the process have single thread.\xa0

First, I was confused then he explained me the question again. I told him the answer with the appropriate reason but I was not sure.\xa0

6.He said me that this is the first time he is taking interview of an ECE student. And asked me questions on microprocessor and RAM internal\x0a\x0a\x0a\x0a\x0a\x0a architecture.\xa0

### **Fourth technical round:\xa0**

1.Asked me about my internship project.\xa0

2.Why we use RNN and what is the difference between RNN and CNN.\xa0

3. Question based on system design.I said that it was not in my syllabus because my branch is ECE then he told me to use any data structure.I used hash map and DBMS for storing the data.He asked me to write the code.\xa0

4.Given a stream of characters. Print all the characters, not repeated in last 10 ms. I used deque of size 10 to implement it.\xa0

5. Implement Round Robin process scheduling.It can easily be done using Queue data structure.\xa0

6.Why Amazon?\xa0

!!!!!!We were said to wait for the result.\xa0

!!!!!!finally, 4 CSE students and 1 ECE student (luckily me ; ) ) were selected for SDE profile.\xa0

### **Tips:\xa0**

They want each and every question to be coded properly on paper. So, do practice.\xa0

If you know the solution, tell the brute force and then optimize it.Discuss with the interviewer as much as you can.\xa0

Stay confident and trust your instincts.\xa0

I would like to thanks Geeks for Geeks which was a great help during my preparation for the interview.\xa0

\xa0

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# Amazon Interview Experience for SDE-I

- Difficulty Level :\n[Medium](#)
- Last Updated :\n19 Aug, 2019

\xc2\xd0

## Online coding test:

Three coding question were there on the hackerearth platform. It\xe2\x80\x99s 70 minutes test.

1) Find next greater number with same set of digits. If next greater element does not exist print \xe2\x80\x9c-1\xe2\x80\x9d.

**Input:** n=327698

**output:** 327869

<https://www.geeksforgeeks.org/find-next-greater-number-set-digits/>

2) Given array of\xc2\xd0 elements with zero and one only, you can do following operation at-most one time.

**operation:** flip all elements from i to j index where i<=j.

Now you need to print maximum number of one in array after doing these operation.

**Input:**

n=6

1 0 0 1 0 0

**Output:** 5

3) Given array and integer k you need to tell that whether array can be sorted or not after following operation any number of times.

**operation:** you can swap (i) index element with (i+k) index element any number of times.

Print the sorted array if the array can be sorted by doing the above operation or print \xe2\x80\x9c-1\xe2\x80\x9d.

**Input1:**

n=8 k=2

1 2 7 8 3 4 5 6

**Output1:**

1 2 3 4 5 6 7 8

**Input2:**

n=8 k=2

1 4 5 6 7 8 2 3

**Output2:** -1

\xc2\x0a

**Round 1:**

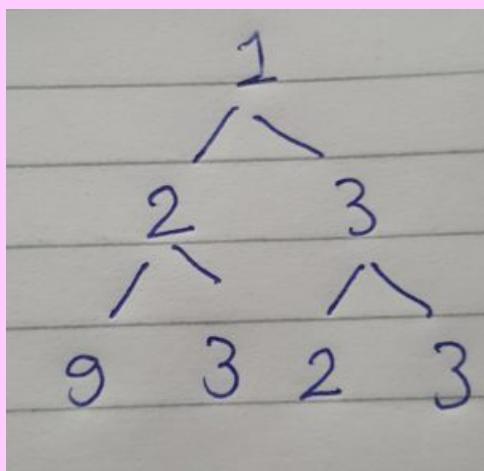
1) Tell me about your self.

2) Given binary tree, complete path is defined as root to leaf. The sum of all nodes on that path is defined as sum of that path. Given number K you need to remove the nodes in binary tree which don't lie in any path with sum $\geq$ K.

The function was given with root of binary tree and K you need to return the root after removing the nodes which don't lie in any path with sum $\geq$ K.

**Input:**

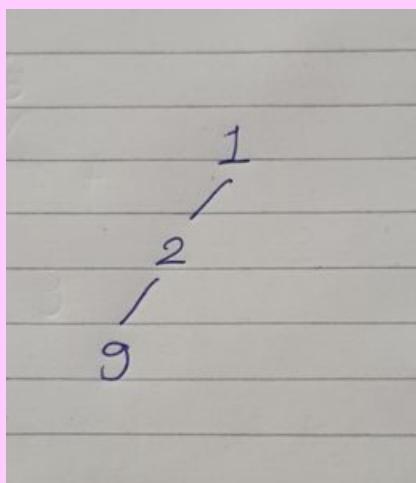
K=8



\xc2\x0a

\xc2\x0a

**Output:**



\xc2\x0a

<https://www.geeksforgeeks.org/remove-all-nodes-which-lie-on-a-path-having-sum-less-than-k/>

3) Given rotated sorted array find the minimum element in the array.

**Input:**

n=8

7 8 1 2 3 4 5 6

**Output:** 1

<https://www.geeksforgeeks.org/find-minimum-element-in-a-sorted-and-rotated-array/>

\xa0

**Round 2 (Managerial round over video call):**

- 1) Tell me about yourself.
- 2) Current role in the company.
- 3) Project you liked the most worked in the corporate life.
- 4) Time when you are given task and you are not able to complete on your own and take help of other colleague.
- 5) Time when you have received critical feedback from your manager and how did you improve it?
- 6) Extra work you have done in the previous company apart from your regular work.
- 7) Which was the most critical task in your work in previous company and how did you manage that?

\xa0

**Round 3:**

- 1) Tell me about yourself.
- 2) Stream of customer ID and product ID are arriving continuously. Now there will be query at any moment of time. You need to answer the query.

**Query:** Given product ID, number of the product with this product ID sold to customer.

**Input:**

**Current Entry:**

pID\xc2\xA0 \xc2\xA0 \xc2\xA0 cID

1\xc2\xA0 \xc2\xA0 \xc2\xA0 \xc2\xA0 \xc2\xA0 499

3\xc2\xA0 \xc2\xA0 \xc2\xA0 \xc2\xA0 \xc2\xA0 \xc2\xA0 421

1\xc2\xA0 \xc2\xA0 \xc2\xA0 \xc2\xA0 \xc2\xA0 \xc2\xA0 645

1\xc2\xA0 \xc2\xA0 \xc2\xA0 \xc2\xA0 \xc2\xA0 \xc2\xA0 989

2\|xa0 \|xa0 \|xa0 \|xa0 \|xa0 \|xa0 424

**Query:** pID=1

**Output:** 3

How will you space optimised this problem?

3) Number is arriving in the stream and the fixed K is given in the starting of Input. The below query can be asked at any moment of time. You need to answer the query.

**Query:** find K th maximum element in current stream.

**Input:**

K=3

**Current Stream:** 8 7 1 2 4 5 9

**Output at the moment:** 7

<https://www.geeksforgeeks.org/kth-largest-element-in-a-stream/>

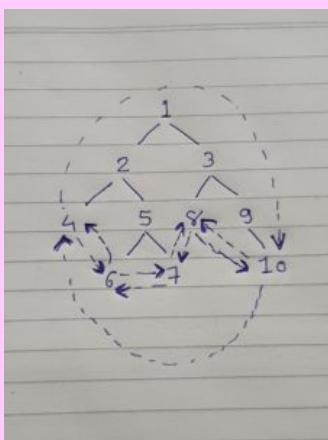
4) In the binary tree leaf\x80\x99s left and right node will not be null. one leaf\x80\x99s right node will be connected to node which is next leaf in the in order traversal. and the leaf\x80\x99s left node will be connected to previous leaf according to in order. First leaf\x80\x99s left will be the last leaf in the in order traversal and last leaf\x80\x99s right node is connected to first leaf in the in order traversal.

You need to print in order traversal.

**Expected Time Complexity:** O(n)

**Expected Space Complexity:** O(1)

**Input:**



\|xa0

**Output:**

**4 2 6 5 7 1 8 3 9 10**

5) Write the optimised code for LRU Cache.

Size of LRU cache will be given in the input.

6) What is polymorphism?

\xc2\x0

#### Round 4 (Bar Raiser round over video call):

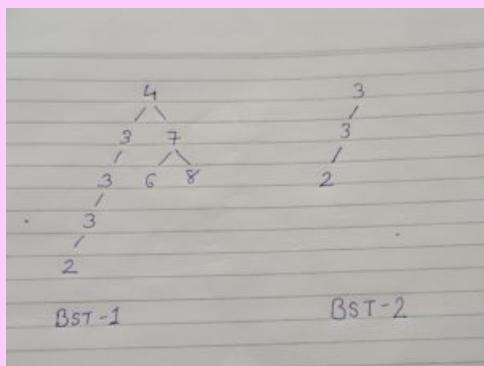
1) Tell me about yourself.

2) Check If one BST is subtree of another BST.

Function will be given with root1 and root2 as parameter of BST-1 and BST-2 and will return true if second BST is subtree of first BST or return false.

**Note:** Elements can be repeated. BST was created with all less or equal element will go to left child of node and greater element will be on the right child of the node.

**Input:**



\xc2\x0

**Output: true.**

\xc2\x0

**Result: Hired!!**

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# Amazon Interview Experience On Campus for SDE 1

- Difficulty Level :\n[Hard](#)
- Last Updated :\n19 Aug, 2019

**Key Focus:** MustDoCodingQuestion(GeeksForGeeks), HackerRank

## Written Round:

2 coding questions and\nc2\x0 30 MCQ\xe2\x80\x99s on mettl Platform (<https://mettl.com/>).  
Total Time : 1.5 hr.

Coding Questions:

- 1.Minimum number of jumps to reach end (<https://www.geeksforgeeks.org/minimum-number-of-jumps-to-reach-end-of-a-given-array/>)

Solved in O(n) time complexity.

2. Count Inversions in an array (<https://www.geeksforgeeks.org/counting-inversions/>)

Solved using Merge Sort in O(nlogn) time complexity.

MCQ\xe2\x80\x99s :

Questions on Trees(BST), Output Prediction of given Codes(Codes are given in C, C++\xc2\xxa0 Languages).

In my case, I have solved both the coding questions with all test cases passed.

## Round\xc2\x01:

Introduction of both of us.

1.Asked about what Data Structure to implement HashMap other than bst, bbst, Heaps, Arrays.  
Told about bst, bbst approaches and mentioned that I know implementation of these data structure approaches only, then he moved to next question.

- 2.Detect cycle in an undirected graph (<https://www.geeksforgeeks.org/detect-cycle-undirected-graph/>)

- 3.Find the first circular tour that visits all petrol pumps (<https://www.geeksforgeeks.org/find-a-tour-that-visits-all-stations/>)

- 4.Maximum Path Sum in a Binary Tree (<https://www.geeksforgeeks.org/find-maximum-path-sum-in-a-binary-tree/>)

- 5.Reduce the string by removing K consecutive identical characters (<https://www.geeksforgeeks.org/reduce-the-string-by-removing-k-consecutive-identical-characters/>)

For Question 3, 4 I had mentioned to interviewer that I already know the solution for those questions, so for that questions he only asked to explain logic to solve them without writing code.

For Question 2, 5 needed to write neat production code with all edge cases handled properly.

## Round 2:

Introduction of both of us.

- 1.Efficient search in an array where difference between adjacent is 1 (<https://www.geeksforgeeks.org/efficient-search-in-an-array-where-difference-between-adjacent-is-1/>)

- 2.Asked to specify about all Normal Forms and why normal forms are used (DBMS).

3. Asked to specify process synchronization concept and ways to handle it and also asked to mention all the process scheduling algorithms.

4. LRU Cache Implementation ( <https://www.geeksforgeeks.org/lru-cache-implementation/> )

For Question 1, 4 have to write neat production code with all edge cases handled properly.

### Round 3:

Introduction of both of us.

1. In an n-array tree where each node can have an apple represented as 0(apple not present) or 1(apple present), then needed to find out path with maximum number of apples. Asked to optimize both time and space complexity.

Solved using Diameter of a Binary Tree technique with some modifications.

2. Given a bench with n seats and few people sitting, tell the seat number each time when a new person goes to sit on the bench such that his distance from others is maximum ( <https://www.careercup.com/question?id=5385816814125056> ). Here he extended this question by specifying that I need to find k such positions for k persons to sit. Needed to solve in optimal way. Solved this using Heap Concept.

3. Asked about Producer-Consumer problem in Operating System and the asked to write a neat code for both producer and consumer solving their synchronization problem using Synchronization Mechanism without busy waiting. And also asked to extend the code to work in distributed environment.

For Question 1, 2, 3 have to write neat production code with all edge cases handled properly.

### Bar Raiser Round:

Introduction of both of us.

1. Check for Majority Element in a sorted array ( <https://www.geeksforgeeks.org/check-for-majority-element-in-a-sorted-array/> )

Solved using Binary Search in O(logn) time.

2. Asked what happens when we enter a URL and how we are able to reach a site (Expected to explain about Domain Name System Concept).

For Question 1 have to write neat production code with all edge cases handled properly.

**Note:** For all the questions optimal solution is expected, hints are given if stuck to derive optimal solution. Similarly, for all the questions asked in interview they mentioned to write neat production code with all edge cases handled properly.

**Verdict:** I was Offered Full Time Employment (SDE 1) at Amazon.

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# Amazon Interview Experience | MNIT Jaipur

- Last Updated : \n19 Oct, 2020

**Round 1:** It was coding test in which two coding question and 28 mcq related to data structure and C++. There were different set of papers in my case one coding question is convert infix to prefix and another is find mean, median and sum in array. After this round 33 select for interview.

**Round 2:** It was first interview round in which interviewer first discussed related to project then asked two question. It was problem solving round.

1. Generate two number from given digit of array b/w 0 to 9 such that if length of array is even then number of digit in each number should be equal if odd the digit difference b/w number should be 1. Use count sort\ xc2\xa0 and in this case some edge case missed so detect that edge case (like 1000 in this 10, 0 digit is not equal but length of array is even). Write code on pan and paper.

2. Detect Cycle in Directed graph. Write code on paper.

**Round 3:** It was second Interview round she asked me three question related to data structure.

1. Search in infinite array First i told the binary search using fix upper limit as power of 2 and increment it. Then Interviewer asked me  $2^{1000}$  and  $2^{1001}$  there is huge diffrence b/w them so can you do it in efficient manner. I came with fix upper limit as multiple of 2. Interviewer was satisfied with my approach. She said write code on paper.

2. Find the intresection point in linked list direct from gfg . I told solution and she was satisfied.

3. It was related to min heap and write code on paper. I told solution and she was satisfied and said that we will come back for next round.

**Round 4:** He asked me three problem

1. Find Majority element in an array. I first told take map then he said extra space is not allowed. I gave second approach using sorting but he said do in  $O(n)$ . Then I come up with efficient solution in  $O(n)$  . He was satisfied and said Nice. But he asked, have you done it before? i said yes i have done it before 2-3 month then he was happy.

2. related to binary tree find maximum sum path i have done it using recursion.

3. circular patrol pump i told approach and then he said ok.

After this he discussed on dbms and operating system related to deadlock, semaphore, mutex, critical section, ACID property.etc.

**Round 5:** 4 student were select for this round. It was HR round in this he asked some question related to project and then asked np-complete problem, max heapify code, scc(strongly connected component).

The result was announced after some discussion only one from us selected Unfortunately i was not that one.

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# Amazon Interview Experience | On-Campus

- Last Updated : \n19 Aug, 2019

**Campus: NIT Jalandhar**

**Date: Aug 2019**

## Round 1:

It was a coding round, of 1hr 30 min, with two questions and 28 MCQ mostly based on data structures and concept of c/c++.

1. Throw dice problem. <https://www.geeksforgeeks.org/dice-throw-dp-30/amp/>
2. Evaluation of postfix expression. <https://www.geeksforgeeks.org/stack-set-4-evaluation-postfix-expression/>

## Round 2:

This round lasted for 60 minutes. It was a F2F round and the interviewer was nice. He asked me two problems.

1. there are n staircases and a person has to go to nth stair he can take any number of steps based on his age, for eg. if his age is 5 then he can take 1 step, or 2 steps or 3 steps or 4 steps or 5 steps. I gave the solution and then he asked for complexity and then asked me to optimize it.
2. There is a graph, we can go from one node to other node either for free or for a cost(that cost is the same for each path). Find the path which connects the source to destination with min cost. I answered it but my approach was not good enough so he helped me out for the same.

At last, he asked me to code the solution for both the question.

## Round 3:

This round was again F2F and lasted for 75 min.

The interviewer asked me a few ques about OS. and then two coding questions.

1. print the path between two nodes of the Binary Tree. I gave the approach but was unable to code.
2. how will you find a k largest elements in a file(containing integers) of the size of 1 GB.

## Round 4:

This round was F2F and lasted for 60 min.

The interviewer asked me 1 ques. <https://www.geeksforgeeks.org/print-a-given-matrix-in-spiral-form/>

I gave him approach and then he asked me to code it. I was unable to it.

Then he asked me that I have any question for him so I asked a few ques.

\xc2\x0

After this HR round was there but I was not selected for it.

It was a nice experience.

PS:- This year the amazon interview process is strict they are asking a new type of questions, not from the predefined set so its better have a new approach to solve a question.

I was selected in Round 2 only because my approach to the question was out of the league, I was unable to fully code it but the interviewer was highly impressed.

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# Amazon Interview Experience | On-Campus for Internship

- Last Updated : \n16 Aug, 2019

## Round 1:(Online Assessment \xe2\x80\x93 2 hours)

The online assessment consist of 4 parts.In first part we have to debug 7 codes in 15 minutes.The second part comprised of 24 logical reasoning question which had to be done in 35 minutes.The third part consists of 2 coding questions that had to be done in 70 minutes.The debugging part and the logical reasoning questions were very easy.

The 2 coding questions were

1:\xc2\xd0<https://www.geeksforgeeks.org/pair-with-largest-sum-which-is-less-than-k-in-the-array/>. I have done it in O(nlogn) by first sorting the array then using binary search.The solutions with O(n^2) time complexity were also accepted.

2:\xc2\xd0<https://www.geeksforgeeks.org/program-round-robin-scheduling-set-1/>.The second question was to find out the average waiting time of processes in Round Robin scheduling.It can easily be done using Queue data structure.

In the fourth part we were given some questions on work ethics which were to be answered honestly and carried a weightage.Some students who had done both the coding questions and had not answered these questions carefully were not shortlisted for the next round and the students who had answered this part carefully and had done only one coding question were shortlisted.

The online round was very easy and I had done both the coding questions .

Out of around 250 students 52 were shortlisted for next round.

## Round 2:(Face to Face interview \xe2\x80\x93 1 hour)

This round begins with a brief discussion on my project and the interviewer asked about the algorithms that i have used in it.He then asked me 2 coding questions

1:\xc2\xd0<https://techdevguide.withgoogle.com/resources/compress-decompression/>.The question was to decompress the compressed string.I solved it using a stack of strings.He then asked me to code my approach on paper so that all corner cases are covered.He then gave me 2 or 3 test cases and asked me to dry run my code on these test cases.He was very impressed by my approach.

2:\xc2\xd0<https://www.geeksforgeeks.org/topological-sorting/>.He then asks me another question which was an application of topological sorting in Directed Acyclic Graph and asked me to code topological sort algorithm on paper.

He then asked me whether I have an interest in Computer Networking or not.I said that CN is not one of my favourite subjects and my favourite subjects are OS and DBMS.He then start asking questions from OS and DBMS.

He asked the data structures that are used in DBMS, indexing concept in DBMS, insertion in B trees, ACID properties and the difference between thread and process in OS.He was satisfied by all of my answers as I had prepared all of core CS subjects for the interview.

After all these he asked whether i have any question for him and the interview ended.

I was very happy with my performance and was very confident of my selection.

Out of 52 shortlisted students 14 were selected for the summer internship and i was one of them.

I would like to thanks Geeks for Geeks which was a great help during my preparation for the interview.

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# Amazon Interview Experience | SDE-2

- Difficulty Level :\n[Expert](#)
- Last Updated :\n16 Aug, 2019

Usually Amazon SDE-2 interviews happens in 2 days schedule. On the 1st day there will be 3 rounds (PS/DS and design rounds). If the feedback is good you then will be called for remaining 2 rounds which are Manager and Bar raiser.

In my case date of joining was very close in some other org, so all 5 rounds happened on one day.

## Round 1 PS/DS:

Q1.

Given a binary tree you have to print endmost node in zig zag fashion.

Example:

```
1
/\xc2\x80\xc2\x80\xc2\x80\xc2\x80\xc2\x80 \\
2\xc2\x80\xc2\x80\xc2\x80\xc2\x80\xc2\x80\xc2\x80\xc2\x80 3
/\xc2\x80\xc2\x80\xc2\x80 /\xc2\x80\xc2\x80 /\xc2\x80\xc2\x80\xc2\x80 \\
4\xc2\x80\xc2\x80\xc2\x80\xc2\x80\xc2\x80\xc2\x80\xc2\x80\xc2\x80 5\xc2\x80\xc2\x80\xc2\x80\xc2\x80\xc2\x80\xc2\x80\xc2\x80\xc2\x80 6\xc2\x80\xc2\x80\xc2\x80\xc2\x80\xc2\x80\xc2\x80\xc2\x80\xc2\x80\xc2\x80 7
\\
8
```

Output should be : 1, 3, 4, 8

Soln: Level Order traversal using node count approach and using flag to decide which node end you have to print (leftmost or rightmost)

Q2. Given snake and ladder board you have to find minimum no. of move required to reach end of board.

Soln: BFS ([link\xc2\x80<https://www.geeksforgeeks.org/snake-ladder-problem-2/>](https://www.geeksforgeeks.org/snake-ladder-problem-2/))

## Round 2: PS/DS

Q1) Given following piece of code and two int arrays A & B of equal size n, explain what is it doing.

```
ans = 0;
for(int i=0;i<n;i++)
for(int j=0;j<n;j++)
for(int k=0;k<n;k++){
if(A[i]!=B[i] && A[j] != B[k] && A[k]!=B[k]){
ans = max(ans, A[i] + A[j] + A[k]);
}
}
```

Sol\xe2\x80\x99n: Basically this code is finding max sum triplet from A array such that value in those indexes of B array\xc2\x80 is different.

Next he asked me to re write this code with better time complexity.

Q2.\xc2\x80 Given a binary tree, find path in the tree such that the sum of nodes in path is equal to given K. Path can start from any nodes and can end on any nodes.

Example : for  $k = 10$ , there will be 2 paths:  $1 \rightarrow 3 \rightarrow 6$  and  $3 \rightarrow 7$

Use following concept:

<https://www.geeksforgeeks.org/find-subarray-with-given-sum/>

<https://www.geeksforgeeks.org/find-subarray-with-given-sum-in-array-of-integers/>

## Round 3: Design

Design Dominoes website. This was mainly focused on High level design and you have to mention all the major components like Delivery tracking system, User Signup/Login flow, Fulfillment service etc. You have to describe complete flow of a order until its delivery to customer. Interviewer also asked me to write schema details for few entities.

## Round 4: Manager

In the first of half of this round we mostly discussed about my work experience and role which is played in my current team.

In the second half he asked me to design Job management system where user submits a job and specify the time its should run just like Airflow app.

## Round 5: Bar raiser

This one was mostly discussion oriented to judge on the basis of Amazon leadership principles. You have to mention few scenarios about your work and how you have applied those leadership principles.

Few questions which I remember were why did I used Golang instead of Java, most challenging tasks which I have worked on.

Finally, after few days I received positive feedback from HR.

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# Amazon Interview Experience | On-Campus for SDE

- Difficulty Level :\n[Hard](#)
- Last Updated :\n19 Aug, 2019

**Date: 7th August 2019**

First-round was an online test consisting of 2 coding questions and 28 MCQ\xe2\x80\x99s on mettl. Level of coding questions varies from easy to medium. Everyone had different coding questions. Few which I remember are:

1. Inversion count in the array
2. Postfix evaluation\xc2\xa0(handle negative number also)
3. Mean median mode in array
4. Dice throw puzzle(DP)
5. Roots of quadratic equation
6. Linear equation in one variable
7. Longest common subsequence
8. Evaluate Infix operation (handle negative number also)

MCQ\xe2\x80\x99s were difficult and required deep knowledge of DSA and C C++.

Out of around 350 students 53 were called for interview.

\xc2\xa0

## Round 1:

Interview lasted for 25 minutes and had a detailed discussion on 2 questions. He directly started with a coding question.

1. given a string encode it. Eg. aaabb -> a3b2
2. there are n person with their height and weight given. You have to select maximum number of person that can stand in a queue with condition that height and weight of person in queue will always be less or equal to next person.you have to return persons not the count. (LIS)

This round went well and I was immediately called for next round.

## Round 2:\xc2\xa0

This round lasted for 30 minutes.

1. Given k arrays of size n each. You have to select one number from each of them such that the difference between them is minimum. Initially, the question was for 3 arrays, I told him the solution quickly then he changed 3 to k.
2. Implement AVL.
3. a question on designing a data structure I don\xe2\x80\x99t remember. I used hash for that. He asked me about hash worst time complexity, ideas to improve it.

4. A question on trie.
5. median of running stream of integers.
6. Given an array of n integers ranging from 1-n-2, in which every integer comes once and two integer comes twice, find both of them.

I had to write code for every question. This interview also went well and I was called for next round immediately.

### Round 3:

This round went for 90minutes. This was different from previous two. It was more of a discussion round.

1. Project discussion.
2. Range Sum query with update. I told him prefix sum. He wanted better approach. I told him segment tree.
3. He then asked range update in best optimised way. I told him Lazy propagation.\xc2\xa0 I had to write code for segment tree with lazy propagation.
4. 1 hour discussion on networks. (I told him I haven\xe2\x80\x99t revised but he kept on asking)

This round also went well. In networks he provided some input whenever I needed. Since it was late my next round was scheduled next day.

### Round 4(Bar raiser)

This round went for approx 1 hour.

1. Wildcard Pattern Matching. I discussed all corner cases and base cases along with recurrence relation. He asked me to write code in bottom up dp. He was really happy with my solution.
2. \xc2\xa0Design a data structure for running stream of string. You have to print a word if it has not come within 10 second else ignore it. You have to manage memory in most optimal way. I discussed the various approach using trie, hash, lru. When I told him my solution with queue and hash, He was surprised and told me that he didn\xe2\x80\x99t thought of that solution. He asked me to code it.
3. project discussion.
4. oops- How abstract class is implemented by compiler. When I told him the solution he said awesome.

I was sure of my selection as I had seen my remarks sheet and all my remarks were strength except for cs fundamental in 3rd round which was mixed, and also 4th round was good.

Result announced at 12:30 a.m. total 9 got selected for FTE and I was one of them.

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# Amazon Interview Experience | On-Campus for SDE-1

- Difficulty Level :\n[Hard](#)
- Last Updated :\n12 Aug, 2019

First round was an online test consisting of 2 coding questions and 28 MCQ\xe2\x80\x99s on mettl. Level of coding questions vary from easy to medium. Everyone had different coding questions. Few which I remember are:

1. Inversion count in array
2. Postfix evaluation\xc2\xa0(handle negative number also)
3. Mean median mode in array
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### Round 4(Bar raiser)

This round went for approx 1 hour.

1. Wildcard Pattern Matching. I discussed all corner cases and base cases along with recurrence relation. He asked me to write code in bottom up dp. He was really happy with my solution.
2. \xc2\x80Design a data structure for running stream of string. You have to print a word if it has not come within 10 second else ignore it. You have to manage memory in most optimal way. I discussed varios approach using trie, hash, lru. Whwn I told him my solution with queue and hash, He was surprised an told me that he didn\xe2\x80\x99t thought of that solution. He asked me to code it.
3. project discussion.
4. oops- How abstract class is implemented by compiler. When I told him the solution he told awesome.

I was sure of my selection as I had seen my remarks sheet and all my remarks were strength except for cs fundamental in 3rd round which was mixed, and also 4th round was good.

Result announced at 12:30 a.m. total 9 got selected for FTE and I was one of them.

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# Amazon Interview Experience| On-Campus Internship

- Last Updated : \n12 Aug, 2019

Amazon has visited our campus for 11 months internship for the role Data Engineer. The interview process had 3 rounds.

## Round 1: Online Test

Round 1 was an online test which consisted of about 65 mcq questions. Some questions had negative marking. Not all questions were of same marks, based on complexity the questions ranged from 1 mark to 4 marks. Questions were from topics like Java, DBMS, Linux, Big data and Aptitude. They were about 4-5 Aptitude questions which were easy to solve. Questions from Linux were mostly based on grep command. Most of Java questions were from threads, exceptions and inheritance. We were given code and we had to predict the output or find error in code. They were 5-6 Big data questions on topics like YARN. Most of SQL questions were based on joins. Out of 300 students they have shortlisted 33 students for next round.

## Round 2: Technical Interview

Round 2 was a one-to-one interview. The interviewer asked me to tell about myself and checked thoroughly my resume. He started asking me few python questions like exception handling as i mentioned python in my resume. He asked me to code operations on linked list like insertion, reverse. He also asked me about cloud computing and its advantages. He asked me about my projects and even asked me draw the database schema of my project. Then he started asking me questions in DBMS. They have concentrated mostly on DBMS topics and complex SQL queries. He asked queries like second largest salary, top 5 salaries and some questions based on joins. He also asked me about primary key, foreign key. He also asked me some questions on Data Mining and Data warehousing.

## Round 3: Technical + HR Interview

Round 3 was Technical and HR interview but the interviewer asked me mostly technical questions. First he asked me to tell me about myself and then asked about my goals and passion. He then asked me to code merge sort and Dijkstra's Algorithm for shortest path. Then he asked me some complex SQL queries based on joins.

Some of the other questions which were asked to my friends were sorting an array consisting of 0s, 1s, 2s (they were expecting dutch national flag approach), window functions in SQL.

All The Best!!

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# Amazon Interview Experience | SDE On-Campus

- Difficulty Level :\n[Easy](#)
- Last Updated :\n12 Aug, 2019

**Date:** (11th August,2019)

**Round 1:** Round 1 consisted of 2 coding questions and 28 MCQs.

The first question was given a single dimension array and 2 dimensions of a 2D array, convert the given single dimension array into the 2D array of the given dimension(it was given that it will always be possible to convert the 1D array to 2D array of given dimension), find the sum of row-wise maximum sum and column-wise maximum sum. It was pretty straight forward.

The second question was given a string like for eg. httpfoorux or ftpbarrusds convert the given strings into URL of the form http://foo.ru/x or ft://bar.ru/sds. This was also a pretty straight forward question. The MCQs were tricky and tested the candidate\xe2\x80\x99s C and C++ language knowledge.

The test was a 90 minutes test and was conducted on Mettl. bits/stdc++.h was allowed and the C++ compiler was g++ 5.4. Around 27 students cleared the first round.

**Round 2:\xc2\xd0** Round 2 was a direct technical interview. The interviewer directly moved on to the algorithm question and didn\xe2\x80\x99t ask about my projects etc.

The first question was to [Check if the given linked list is a palindrome or not](#). The constraints were that you cannot modify the given list and cannot use any auxiliary space.

The second question was to [Find all the nodes at k distance from a given node in a binary tree.\xc2\xd0](#)

The interview asked to explain the approach first. After successfully explaining the approach the interviewer asked to write the functions for the questions on paper with proper syntax with as minimum mistakes as possible.

**Round 3:\xc2\xd0** Round 3 was also a direct technical interview.

The first question was to find the minimum number of platforms required given the arrival and departure times of the trains. The given list of times will not be in sorted order and you are not allowed to sort the given time array.

Then he went on to ask me about heap. He asked me to write a code for heapify as a min-heap.

The interviewers were very helpful during the whole process. Finally, 12 students were selected for a 6-month internship at Amazon.

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# Amazon Interview Experience | SDE-1 On-Campus

- Difficulty Level : \n [Hard](#)
- Last Updated : \n 09 Aug, 2019

## Round 1:

There were 2 coding questions 28 mcq.

Ques1: [find inversion count](#)

Ques2: [find the longest common subsequence](#)(LCS)

MCQs were related to coding only.

The platform for this round was \xe2\x80\x98mettl\xe2\x80\x99. Don\xe2\x80\x9t go for recursive codes on this platform.

## Round 2:

There were 2 coding questions in this round.

Ques1: Two numbers \xe2\x80\x98a\xe2\x80\x99 and \xe2\x80\x98b\xe2\x80\x99 are given. Find the count of numbers which are divisible by both \xe2\x80\x98a\xe2\x80\x99 and \xe2\x80\x98b\xe2\x80\x99 and are less than  $10^{16}$ .

Ques2: People of Tribe A are living in a particular region. Then tribe B people shifted to the same region as of tribe A. People of tribe B doesn\xe2\x80\x9t like to see tribe A people. A person from tribe B wants to travel from the train which covers \xe2\x80\x98n\xe2\x80\x99 stations. You have been provided with an array of size \xe2\x80\x98n\xe2\x80\x99 in which each element represent the number of tribe A people who board the train at that station. Find the maximum number of stations the person can cover without seeing more than \xe2\x80\x98k\xe2\x80\x99 number of people of tribe A. Also find the maximum people the person can see while covering those number of stations. (Person can start and end at any station).

Hint: Basically the ques was to [find the longest subarray whose sum of the elements doesn\xe2\x80\x9t exceed k](#) (With some variation)

## Round 3:

There were 2 coding questions in this round.

Ques1:

We are provided with a number \xe2\x80\x98n\xe2\x80\x99 which denotes the number of opening and closing parenthesis. [Print all the valid combination of parenthesis.](#)

Then this ques was modified to find the total number of valid combinations possible for a given \xe2\x80\x98n\xe2\x80\x99.

Optimized Solution: Time complexity:  $O(n^2)$  and Space Complexity:  $O(n^2)$

Then he asked me to optimize space

Again optimized: Time complexity:  $O(n^2)$  and Space Complexity:  $O(2n)=O(n)$

Ques2:

We have a telescope and we can see an infinite number of stars(one by one). We have been provided with a method() that will calculate the distance of each star from us. So at any point print the closest \xe2\x80\x98n\xe2\x80\x99 stars which we can see.

Solution: use heap(priority\_queue)

## Round 4:

There were 2 coding questions and technical questions

Ques1:

Fill two instances of all numbers from 1 to n in a specific way

Technical questions related to OS, OOPS, Computer Networks

Ques2:

There are infinite number of people visiting the Amazon website. A person can visit the website several time. A stream of number are coming that represent id of the person visiting the website and a fixed number  $\text{xe2}\backslash\text{x80}\backslash\text{x98k}\text{xe2}\backslash\text{x80}\backslash\text{x99}$  is provided. At any particular time find  $\text{xe2}\backslash\text{x80}\backslash\text{x98k}\text{xe2}\backslash\text{x80}\backslash\text{x99}$  people who have most visited our website.

Solution: use map and heap(priority\_queue)

### Round 5: (Bar-raiser round)

Tell me something about yourself. Then questions on each term I was using.

Coding ques1:

Given an expression find whether it is valid or not.

This was implementation based ques and whether I am covering all the corner testcases or not.

This was the last round. 7 people were selected from my college.

Duration of each round was 60 to 90 minutes.

Be prepared to write code for each and every approach you are telling.

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## Amazon Interview Experience for SDE-2

- Difficulty Level : \nExpert
- Last Updated : \n06 Aug, 2019

### 1st Round :

Q 1. Given an input string ( $s$ ) and a pattern ( $p$ ), implement wildcard pattern matching with support for  $\backslash x\backslash a0\backslash ?\backslash \backslash x\backslash a0$  and  $\backslash x\backslash a0\backslash *\backslash ?$ .

$\backslash xe2\backslash x80\backslash x98?$  Matches any single character.

$\backslash xe2\backslash x80\backslash x98^*$  Matches any sequence of characters (including the empty sequence).

#### Example :

##### Input:

$s = \backslash xe2\backslash x80\backslash x9cadceb\backslash xe2\backslash x80\backslash x9d$

$p = \backslash xe2\backslash x80\backslash x9cab\backslash xe2\backslash x80\backslash x9d$

##### Output:

**Explanation:** The first  $\backslash xe2\backslash x80\backslash x98?$  matches the empty sequence, while the second  $\backslash xe2\backslash x80\backslash x98$  matches the substring  $\backslash xe2\backslash x80\backslash x9cdce$ .

Q 2. \xc2\xa0<https://www.geeksforgeeks.org/min-cost-path-dp-6/>

Q3 . Given an array  $\backslash xc2\backslash xa0_{nums}$  of  $\backslash xc2\backslash xa0_n$  integers, are there elements  $\backslash xc2\backslash xa0_a$ ,  $\backslash xc2\backslash xa0_b$ ,  $\backslash xc2\backslash xa0_c$  such

that  $\backslash xc2\backslash xa0_a + \backslash xc2\backslash xa0_b + \backslash xc2\backslash xa0_c = 0$ ? Find all unique triplets in the array which gives the sum of zero.

#### Example:

Given array nums = [-1, 0, 1, 2, -1, -4],

A solution set is:

```
[  
[-1, 0, 1],  
[-1, -1, 2]  
]
```

### 2nd Round

Q 1 Given an array A of strings, find any smallest string that contains each string in  $\backslash xc2\backslash xa0_A$  as a substring.

We may assume that no string in  $\backslash xc2\backslash xa0_A$  is substring of another string in  $\backslash xc2\backslash xa0_A$ .

#### Example 1:

**Input:** \xc2\xa0[\xe2\x80\x99cale\xe2\x80\x9d, \xe2\x80\x99cloves\xe2\x80\x9d, \xe2\x80\x99leetcode\xe2\x80\x9d]

**Output:** \xc2\xa0\xe2\x80\x99calexlovesleetcode\xe2\x80\x9d

**Explanation:** All permutations of \xe2\x80\x99cale\xe2\x80\x9d, \xe2\x80\x99cloves\xe2\x80\x9d, \xe2\x80\x99leetcode\xe2\x80\x9d,

\xe2\x80\x9cloves\xe2\x80\x9d, \xe2\x80\x9cleetcode\xe2\x80\x9d would also be accepted.

Q 2\xc2\xa0<https://www.geeksforgeeks.org/minimum-time-required-so-that-all-oranges-become-rotten/>

Q 3\xc2\xa0<https://www.geeksforgeeks.org/lowest-common-ancestor-in-a-binary-search-tree/>

### Round 3

Q1 Given an unsorted array, find the maximum difference between the successive elements in its sorted form.

**Input:**\xc2\xa0[3, 6, 9, 1]

**Output:**\xc2\xa03

**Explanation:**\xc2\xa0The sorted form of the array is [1, 3, 6, 9], either (3, 6) or (6, 9) has the maximum difference 3.

Q 2

Input binary is given

Example :\xe2\x80\x9c010\xe2\x80\x9d

replace

0 with 01

1 with 10.

given k, m

k is iteration, m is index

tell what is present at m index

example k= 2, m=3

010

iteration 1\xe2\x80\x93011001

iteration 2\xe2\x80\x93011010010110

ans : 0 ( value at 3rd index, 2nd iteration)

Q 3\xc2\xa0<https://www.geeksforgeeks.org/egg-dropping-puzzle-dp-11/>

### Round 4 (Design)

Design Amazon Locker

HLD, class diagram, Scaling, security issues. how will you handle security issues.

Also design amazon lockers reporting Manager tool for developers ( if developer wants to know any status of any locker\xe2\x80\x9d then a detail report should be provided for developer)

Detailed discussion went for around 1.5 hours.

Tip : Make your design Asynchronous

### Round 5 Hiring Manager

Q 1

Lot of Behavioural Questions

Biggest Achievement and failure

Conflict with Manager, how did you resolved

How can you improve your best work you have done till now

Q2

Design Snake & Ladder multiplayer game

HLD and LLD both were discussed in detail

How will you store your view on the server (Big discussion on it)

How will snake and ladders coordinates data will be stored on the server of current game session, if Snake and Ladder board is random for every game session (position of snakes and Ladders coordinate position should be random for every session of game)

## Round 6 (Bar Raiser)

Q 1 Lot of Behavioural Question

Q2 Design Inventory for 1000 employees in Amazon for any product of your choice(like laptops etc) class level diagram, HLD

Main Emphasis was on Design patterns used in class diagram

Q3

Given  $a[0 \dots n-1]$  array of numbers,  $a_0, a_1, a_2, \dots, a_{n-1}$ , where  $0 \leq a_i < 2^{31}$ .

Find the maximum result of  $a_i \oplus a_j$ , where  $0 \leq i, j \leq n-1$  and  $i \neq j$ .

$O(N^2)$  complexity was expected

**Example:**

**Input:**  $[3, 10, 5, 25, 2, 8]$

**Output:**  $28$

**Explanation:** The maximum result is  $5 \oplus 25 = 28$ .

**Result : Hired !**

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# Amazon Interview Experience

- Last Updated : \n31 Dec, 2019

## Round 1:

First round was an online test consisting of 2 coding questions and 28 MCQ\xe2\x80\x99s. Level of coding questions was unexpectedly easy. Everyone had different coding questions. Few which I remember are:

1. Inversion count in array
2. Postfix evaluation
3. Mean median mode in array
4. Dice throw puzzle(DP)
5. Roots of quadratic equation
6. Linear equation in one variable

MCQ\xe2\x80\x99s were difficult and required deep knowledge of DSA and C C++.

Out of around 550 students 40 were called for interview.

## Round 2:

Interview lasted for 40 minutes and had thorough discussion on 2 questions.

1. Locate all the permutations of a string in another string. All corner cases to be dealt with. Complexity should be minimized. Code should be explanatory and clear.
2. Count occurrences of an element k in sorted array in (logn). All corner cases to be dealt with. Complexity should be minimized. Code should be explanatory and clear.

## Round 3:

This was a 70 minutes long round and involved exhaustive discussion on\xc2\xa0 SNAKE AND LADDER IMPLEMENTATION\xc2\xa0 from scratch. Minimum number of moves that leads to victory need to be calculated. All possible methods and their complexity need to be explored in depth. Graphs, DP, Backtracking and trees were drilled and relative performance were compared.

I got eliminated after this round. \xf0\x9f\x99\x82

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# Amazon Interview Experience for SDE 2

- Difficulty Level :\n[Hard](#)
- Last Updated :\n05 Aug, 2019

## Round 1: DS

Implement a hit counter. Aim is to get number of hits in last 5 minutes and 10 minutes. Duplicate hits can also come at a particular time instance.

GFG Link:\xc2\xd0<https://www.geeksforgeeks.org/design-a-hit-counter/>

\xc2\xd0

Given an unsorted array of non-negative integers and a sum value, find the subarray whose sum of elements is equal to given sum.

GFG Link:\xc2\xd0<https://www.geeksforgeeks.org/find-subarray-with-given-sum/>

The question was further extended such that elements can be negative also and the given sum can be negative also.

\xc2\xd0

Some questions on projects I had worked on. He asked me about any task that was not satisfactory but still went into production. How did you talk to your manager and take initiative to fix it?

\xc2\xd0

## Round 2: Hiring Manager

Train reservation LLD \xe2\x80\x93 full discussion on various entities involved, their attributes and how you will serve the train search results.

Asked me about any conflict I had with any team member and how was I able to resolve it.

Asked me about something that was released into production and was modified later.

He asked me about some microservices I worked on, since I had mentioned them in my intro. He asked me to explain the design of some services that I was handling.

\xc2\xd0

## Round 3: Design

There was only 1 design question that was asked in this interview.

Food Delivery app design \xe2\x80\x93 Brief HLD was discussed but mainly I had to make and explain\xd0 the entire LLD \xe2\x80\x93 the entities involved, attributes, service classes for various flows like search, order, payment, track order, etc.

\xc2\xd0

## Round 4: Design + DS

Tinder design. Mainly he was interested in HLD and how will you implement various flows.

DS question 1: Find maximum sum in an array such that no 2 numbers are adjacent to each other.

DS question 2: Minimum length Substring in a string S that contains all chars of another string T.

\xc2\x0

## Round 5: DS

Asked me about projects I worked on. Also asked me to explain some recent thing I had developed.

Given a matrix of pixels(each pixel has colour code and brightness value associated with it), find a region with maximum brightness. A region is an area of only one colour.

Given a method `deploy(a, b)` which deploys all commits of project A from 1 to a and all commits of project B from 1 to b. `deploy(a, b)` gives true if all commits i.e. 1-a and 1-b are not faulty. Otherwise false. We are given that `deploy(a, b)` is failing and there is only 1 faulty commit. How will you find that faulty commit.

\xc2\x0

TIPS:

1. Practice writing code on paper. You are expected to write production ready and bug free code of all DS questions.
2. For design, focus on concepts rather than the exact design solution. It will help you be ready for any kind of design problem.
3. The interviewers give high attention to behavioural questions like that asked in Hiring Manager rounds. So make sure that you prepare for them beforehand.
4. You should also be able to explain clearly all the projects that you have done in your current organisation.

\xc2\x0

Besides that \xe2\x80\x93 Be confident, Believe in yourself and All the best.

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# Amazon SDE Interview Experience (3 Aug 2019)

- Difficulty Level : \n[Medium](#)
- Last Updated : \n05 Aug, 2019

## Round 1:

Ques 1:- Arrange the Array in alternate increasing decreasing order.

Ques 2:-\xc2\xa0[Kth smallest element in a row-wise and column-wise sorted 2d array](#)

## Round 2:

Ques 1:-\xc2\xa0[Print the path between any two nodes in a binary tree](#)

Ques 2:- A infix expression is given how will you evaluate the expression.

Step 1:- Convert infix expression to postfix expression.

Step 2:- Evaluate Postfix expression

## Round 3:

Ques 1:-\xc2\xa0[Check if a Binary Tree is BST or Not](#)

Ques 2:-\xc2\xa0[Find the height of Binary Tree](#)

Ques 3:- Two nodes of BST are swapped find the nodes.

\xc2\xa0

I have given the solution for all the problem except Ques 1 of Round 2, and Solution of Ques 3 of Round 3 is not optimal according to him.

\xc2\xa0

Final result;- After 3rd round HR told you didn\xe2\x80\x99t clear the interview.

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**Amazon SDE Interview Experience | On Campus 2019**

- Last Updated : \n05 Aug, 2019

## **Round 1:**

The round 1 was an online coding round. There were 2 coding questions and 28 technical mcq\x{e2}\x{80}\x{99}s to solved in 90 minutes. My coding questions were:-



## Round 2:\xc2\xa0

This was a face to face interview. The interview started with the normal question introduce yourself and then he said now we will do some coding. The first question he asked was, There is a hotel and there is a class reservation. Reservation class consists of user-id, check-in date, and check-out date. Find the day on which there are maximum users in the hotel. He wrote the function header in a paper and gave me. I told him an approach by maintaining an array with index as day number. He then said to optimize the space complexity. I then told him a solution using sorting. He was satisfied. He told me to write the code.

The next question he asked was, given a binary tree with one more pointer called parent pointer which points to the parent node. Now given any node of the tree, find it's first sibling. I first told him my approach, he said me too modularise it. I then wrote an recursive function for the same. then we discussed some edge cases. I was missing one edge case which I couldnt figure out. But he was satisfied so, he asked me the time complexity and the round was over.

<https://www.geeksforgeeks.org/find-right-sibling-binary-tree-parent-pointers/>

## **Round 3:**

Round 3 started with a description of my internship. He asked me several questions about it like what technologies you used. Then he asked me how good I am at operating systems. I said I am not much good. He then explained to me the importance of OS. I was patiently listening to him. Then he told me to write the code for drawing a circle given radius and assume center as 0, 0. I told him a method using sin and cos. He then told me if I can do something else. Then I told him another mathematical approach which included floating-point calculations. He told me to remove that. I then derived two conditions using which we can decide the next point. He was a bit satisfied. Then he told me the round was over. I was a little bit confused whether I will qualify or not, but I did.

## **Round 4:**

This was round was taken by an SDE2. He told me to consider there are multiple packages and

every package is dependent on some or none. For a particular package to be built, what is the optimal order in which the packages should be build.\xc2\x90 The answer is to use consider it as a graph and then use Topological Sorting. I told him Topological sort. He then told me to write the code for the same. After some discussions with him, I wrote a proper code for it.

The next question was Spiral Order Traversal of a Binary Tree. I first told him an approach by using more space. He then told me to optimize it. I then told him the solution using two stacks. He told me to write the code for it.

### Round5:

This round started with describe yourself. She then asked me about the difference between Inheritance and Composition in Java. She then asked conditions where Inheritance is a bad option and where good. She then asked me about traversals in a tree. I told her 4 traversals. She then told me to do spiral order traversal. I did it using two stacks. She then told me to use only one stack or any data structure but one. Then she told me to implement a C function. The next question she asked was an interleaving of an array. Then she told me to implement the same thing in a Linked List. She then told me given a String convert it into an integer. She then asked me some questions on networking like Virtual IP Address, how DNS works, IPv4 and IPv6, SLIP Protocol, etc. She then asked about applications of the graph. I told her Facebook. Then she asked apart from friends recommendation how facebook uses graphs. How google maps use graphs. What kind of database they have. Then the round was over.

Finally, after 6 hours of interview, I was informed that I am selected.

### Some Tips:-

Stay confident and humble. Even if you know the solution, first tell the brute force and then optimize it. That too discuss this with the interviewer. Keep on interacting with him. They will guide you to the solution. Tell them your thought process instead of telling the solution straightforwardly. Every time ask questions at the end of the interview. And never tell the solution at once. Discuss the solution with them at least in the case of Amazon, this proves to be great. Because if you know the solution they will consider it as a question asked. Stay confident and trust your instincts.

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# Amazon Interview Experience | On-Campus 2k19 MANIT

- Difficulty Level :\n[Medium](#)
- Last Updated :\n05 Sep, 2019

## Online Round:

This round consist of 28 MCQs and 2 coding questions. MCQs are mostly based on data structure and algorithm. Time is limited to 90 minutes.

Following 2 coding questions:

1. Inversion Count Problem.\xc2\x9a0<https://www.geeksforgeeks.org/counting-inversions/>
2. Permute the given array such that sum of absolute difference between adjacent element is minimised.\xc2\x9a0 \xc2\x9a0 \xc2\x9a0 \xc2\x9a0 \xc2\x9a0 Hint: just Sort the array

I solved both problems in around 10 minutes\xc2\x9a0and all mcq as well. From around 300+ student 25 is selected for next round.

## Round 1 (Technical):

This round goes around 40-50 minutes. Initially i was bit nervous as this was my first interview of my life but the\xc2\x9a0interviewer was very cool and supportive. He asked me for\xc2\x9a0water and make me feel comfortable by asking the formal questions like\xc2\x9a0Tell me about yourself and so on then we came to the coding problem as i said my interest is highly towards data structure and algorithm.

1. \xc2\x9a0<https://www.geeksforgeeks.org/design-a-data-structure-that-supports-insert-delete-search-and-getrandom-in-constant-time/>
2. <https://www.geeksforgeeks.org/zigzag-tree-traversal/>

Initially i shared my approach for each question then he asked me to code for each, finally i code them. He seems to be satisfied\xc2\x9a0and at last i asked him some questions.

Around 10-12 students were able to move to the next round .

## Round 2 (Technical):

The same resume was passed here so he had some knowledge about me so he directly jumped to the coding problems.

1. He asked me some blood relation problem which is similar to LCA(Lowest Common Ancestor) Problem but with some slight modification.
2. Kth maximum occurring number in a stream of numbers. Ex. For Input: 1 2 1 3 2 1 4 4 and k=3 Output:-1 -1 -1 (2 or 3) 3 3 (3 or 4) 4

He asked me to code for the 1st problem and asked the logic for 2nd problem. This round also goes well as i was able to explain both problems logic and coded for first one\xc2\x9a0and at last asked him some questions.

## Round 3(Technical):

In this round the interviewer was very cool and smart. He started interview with a formal discussions and jumped to coding part.

- Given the set of ip\xe2\x80\x99s and a ip, you have to make suggestion of ip\xe2\x80\x99s from a given ip. ex: ip\xe2\x80\x99s {192.168.0.101, 192.168.0.102, 192.168.0.113} and ip=192.168.0.11 then output: {192.168.0.113}. I gave him a TRIE based approach for which he asked me to code and i code it.
- \xc2\xa0Asked some concepts from OOPS (inheritance, polymorphism, overriding and overloading), DBMS(Normalization), OS(mutex and semaphore).
- Rotten Fruit problem.\xc2\xa0\xc2\xa0<https://www.geeksforgeeks.org/minimum-time-required-so-that-all-oranges-become-rotten/>\xc2\xa0 asked the code for it which i coded\xc2\xa0and at last asked him some questions.

#### Round 4(Bar Raiser):

As the last round goes till late night so this round was conducted next day. We were invited on amazon chime to give our last interview online. The interview started with a Tell me about yourself ? and goes to my project in detail as my project was not good here he was not satisfied with it. Then he gave me some livecode amazon link where he asked me to design YouTube Music App which also i don\xe2\x80\x99t know Here my interview was slipped, but i kept patience and told him that i am interested in coding part so he asked me following coding problem

<https://www.geeksforgeeks.org/find-first-non-repeating-character-stream-characters/>

I gave him hash based O(n) solution in which every query is O(1) but he want it to optimise more, then i tried but didn\xe2\x80\x99t find one and at last asked him some questions.

Finally 7 students get selected, in which 3 got FTE and 4 got 6 month Internship and i am one among them.

#### Tips:

- Initiate with your approach and if he seems satisfied then code.
  - \xe2\x80\x9cDo you any question for me?\xe2\x80\x9d, gives you best opportunity to show your interest towards company. So ask questions.
  - If you don\xe2\x80\x99t come with an optimal solution then at least give him a Brute Force approach.
  - Be smile and Confident.
  - Interviewers are really helpful, if you stuck anywhere ask them for hint.
  - Clarify the question before jumping to the solution and ask output for different Test Cases.
  - Do write neat and clean code and use proper variable name.
  - Practice to write code on paper or whiteboard.
  - Specially for Amazon go through the below link :
- [Leadership Principles](#)

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# Amazon Interview Experience for SDE-1

- Difficulty Level :\n[Medium](#)
- Last Updated :\n30 Jul, 2019

I have applied for the position of SDE-1 in Amazon India through a referral of an Amazon Employee.\xc2\xd0\xc2\xd0

**Round 1:\xc2\xd0**(Written Round) This round comprises of 20 MCQs on different topics and 2 coding questions to be solved in 90 minutes. Most of the MCQs are from data structures & operating system. The questions were easy. The coding questions are as follows:

1. \xc2\xd0<https://leetcode.com/problems/course-schedule/>
2. <https://leetcode.com/problems/reverse-string-ii/>

I was able to solve both the problems and most of the MCQs.

**Round 2:\xc2\xd0**(Technical Interview 1, 1 hour) This round begins with the introduction followed by **3 data structures and algorithmic problems** to be solved with pen & paper. Here I would suggest you ask questions if you have doubt about the problem. When you are stuck, the interviewer will probably give hints. If they ask you to write the code, you are on the correct path. I was stuck 2 or 3 times in the interview but able to solve all the problems. The problems were as follows:

1. <https://www.geeksforgeeks.org/convert-array-into-zig-zag-fashion/>
2. <https://www.geeksforgeeks.org/bottom-view-binary-tree/>. After writing the code, the interviewer asked me to print top or bottom view of the tree according to the user\xe2\x80\x99s choice without changing too much code.
3. [www.geeksforgeeks.org/sliding-window-maximum-maximum-of-all-subarrays-of-size-k/](https://www.geeksforgeeks.org/sliding-window-maximum-maximum-of-all-subarrays-of-size-k/)

It is a good thing if you have heard the question already. But I would suggest thinking on your own instead of remembering the solution in case you forgot the solution. Don\xe2\x80\x99t panic at all. Try to solve the problem as if you haven\xe2\x80\x99t heard it at all before.

**Round 3:\xc2\xd0**(Technical Interview 2, 1 hour) The interviewer was a little experienced. In this round, the interviewer discussed the **projects** I have written on my resume. Please mention only those projects that you can explain. I only wrote 3 projects. He asked me to choose 1 and explain. While I was explaining, there are some questions interviewer asked. I gave him a satisfactory reply. This is more like a discussion. This discussion was of around 20 minutes. Then there is a 5-minute discussion on my **internship** followed by a simple algorithmic problem.

[www.geeksforgeeks.org/find-minimum-element-in-a-sorted-and-rotated-array/](https://www.geeksforgeeks.org/find-minimum-element-in-a-sorted-and-rotated-array/)

After this, there is a 20-25 minute discussion on designing an optimal data structure for two types of queries.

1. Inserting a post office in a data structure. Details of the post office are in order: **Country, State, City, Town, Post office Name**. This order is always the same.
2. Printing all the post office in the given region. The region may only involve a country or a combination of country and state, etc. But remember for any state, the country will always be given. For any town, Country, State, and City are given.

Here, ask the questions to the interviewer. The problem statement is a little vague in this case. It involves **hierarchy**. So, anyone would have come with a solution of the tree. But remember, the

solution is how to store the tree. The adjacency list is not a good option here. Notice that the number of level in the tree is fixed. So, here we can store **each level as a hash map or BST**. The hash map is obviously better but as I have said BST as a solution. There was a discussion on BST too. So, BST was good in terms of worst time complexity while the hash map is good at average time complexity. There was a little more discussion as I was in doubt how to modify Data structure if there is one more level. But after the discussion, I got it. In the end, the interviewer said that it was a good brainstorming session.

**Round 4:\xc2\xd0**(Technical Interview 3, 1 hour) This round again begins with the **project discussion**. I explained to him the same project that I explained in previous interviews. But I faced some new questions regarding the project in this interview. Then he comes up with a data structure problem. I have given the solution to him but he stopped me to write the code when I told him\xd0the problem is very similar to the problem from the first round. However, the problem was:

<https://www.geeksforgeeks.org/print-binary-tree-vertical-order-set-2/amp/>

Then, he asked one problem again:

[www.geeksforgeeks.org/find-the-largest-subarray-with-0-sum/](https://www.geeksforgeeks.org/find-the-largest-subarray-with-0-sum/)

Here I came up with the solution that involves two traversals of the array. The time complexity is, however,  $O(n)$ . But he asked me to solve the problem in 1 traversal. At that point of time, I was not able to come up with the approach. So, he asked me to write the code. While writing the code, I came up with the solution in a single traversal. I told him the approach. Then again he asks some questions regarding the solution. Basically, these questions tell you where you are wrong and you are expected to correct your solution.

After this, he asked whether I know DBMS. I told that I learned it in my 2nd year. So, not very confident about it. But, I added that you can ask me the questions. He asked some questions related to transactions which lead to the discussion of **deadlocks and critical section**. The critical section and deadlock problems are basically in the Operating System. He gave me some situation. I solved all those problems using **semaphores**.

Problems:

1. How to manage the critical section if two processes try to access that part. This can be solved using one semaphore. He further asked what if there are more than two processes. The answer is still the same.
2. He asked how to get and update the value in array at a particular index can be handled if more than one process tries to update and get the value at the indices. Here we would need  $n$  number of semaphores. One semaphore for each index.
3. He further asked what will happen if we use the same set of semaphores for update and get. The answer was we can not get and update the same index at the same time. He also asked\xd0what will happen if we use the different set of semaphores for update and get. The answer was we may get ambiguous values if we update and get at the same time.

These technical interviews were onsite. After this, the final (Bar Raiser) round is to be held on the telephone. This interview held after a month.

**Round 5:\xc2\xd0**(Bar Raiser Round, 35 mins): This round starts with a simple introduction followed by some discussion on my internship. The collab edit link was shared with me. He asked me to solve a coding problem on the editor. I tell him the approach for the problem which was not fully correct but he was satisfied with the solution. Sometimes, it is more about your approach instead of correctness. So, being confident always helps. The problem was:

Given some equations involving the division of single-character variables like  $a/b = 2.3$   $b/c = 3$  etc, find the value of expressions like  $a/a$ ,  $b/a$  etc. Answer  $1$  if no solution exists. The problem can be solved using a directed graph where nodes are alphabets and edge  $u \rightarrow v$  gives the value of  $u/v$ . So, expressions can be solved by traversing from one node to another multiplying all the edges in the path. Find the edge cases and ask the questions to the interviewer whenever the question is not clear.

In all the interviews, in the end, the interviewer will ask you to ask any question if any. Ask some good questions.

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# Amazon Interview Experience | SDE Internship

- Last Updated : \n30 Jul, 2019

Amazon\xe2\x80\x99s selection process for SDE intern through Amazon Campus Mentorship Series.

## Round 1: Two Coding questions + 20 MCQ from computer basics

First Question \xe2\x80\x99s <https://www.geeksforgeeks.org/maximum-sum-such-that-no-two-elements-are-adjacent/>

Second Question \xe2\x80\x99s <https://www.geeksforgeeks.org/longest-increasing-subsequence-dp-3/>

Around 20 were selected among 300 from my college for the Amazon campus mentorship series in which we were divided into teams, and a mentor was assigned to us for a project for 4 months. We had monthly sessions and project reviews with the mentor. There were 30-40 students from other colleges as well with us.

After 4 months, we had an online test

## Round 2: Two Coding questions +6 Debugging questions + 20 Mental ability questions

1st coding Question \xe2\x80\x99s <https://www.geeksforgeeks.org/program-round-robin-scheduling-set-1/>

2nd coding Question \xe2\x80\x99s <https://www.geeksforgeeks.org/count-pairs-array-whose-sum-less-x/> (It was something similar to this)

Debugging and other rounds were easy

## Round 3:Project presentation which we had done for 4 months\xc2\xa0

The panel basically wanted to know about the concepts you learned while making the project and your involvement.

The online test and presentation marks were added and around 25 people were selected for final interview round.

I was one among them.

## Round 4- The interviewer for very friendly and asked me what data structures i am comfortable with

I said trees, graphs, linked list, stack queue etc

Then he asked me the following questions

<https://www.geeksforgeeks.org/a-program-to-check-if-a-binary-tree-is-bst-or-not/>

<https://www.geeksforgeeks.org/minimum-number-platforms-required-railwaybus-station/>

<https://www.geeksforgeeks.org/search-an-element-in-a-sorted-and-pivoted-array/>

<https://www.geeksforgeeks.org/given-an-array-a-and-a-number-x-check-for-pair-in-a-with-sum-as-x/>

In every question, he wanted me to reduce the time complexity, in the last question i gave him a solution using sorting but then he asked me to give another solution without sorting, i said hashing, he was satisfied with that.

For every question, he wanted me to look for corner cases.

The interviewer not only looking for answer, he wanted to see your problem solving abilities . In the 3rd question, I struggled a little but then after some discussions I was able to come to the correct answer.

After some days we got the results and I was selected for SDE Internship at Amazon  
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# Amazon Interview SDE-1 (Experience- 1 year)

- Difficulty Level : \n[Medium](#)
- Last Updated : \n30 Jul, 2019

**Round 1:** This round was online written test on hackerrank platform. There were two questions

1. Connect N ropes with minimum cost problem.
  1. Article : \n<https://www.geeksforgeeks.org/connect-n-ropes-minimum-cost/>
  2. Practice : \n<https://practice.geeksforgeeks.org/problems/minimum-cost-of-ropes/0>
2. Given Two arrays, first array represents the *forward distance* and second *return distance*. There is a maximum distance  $dist$ . Find all the pairs (first number from first array, second number from second array) such that sum of the pair values is less than equal to  $dist$  (*needs to find maximum possible sum pairs*). **Note :-** The sum of all the pairs should be same. So try to maximize the sum.

**For next round :-** You are suppose to write code on the paper and they expect you to write the production level code and multiple test cases will be given to do dry run on the code.

## Below are onsite interviews.

### Round 2:

1. Tell me about yourself ?
  2. Given A BST, decrease the value of node of even rank nodes by k, when you will do reverse inorder traversal(sorted in decreasing order)?
  3. Given a circle and there are  $n$  flags on the circle boundary each flag have a index value and it's length. And the flags do have a property  $F[i] > F[j]$  where  $i > j$  for every i and j. There is a number  $k$  ( $0 \leq k \leq n$ ), at index break the circle into the array, now find the minimum element in the array in  $O(\log(n))$ ?
1. **Article :-**<https://www.geeksforgeeks.org/find-minimum-element-in-a-sorted-and-rotated-array/>
  2. **Practice :-**<https://practice.geeksforgeeks.org/problems/minimum-element-in-a-sorted-and-rotated-array/0>

### Round 3:

1. Tell me about yourself?
2. Tell me about your current project?
3. Reverse a linked list in group of k. Solved this for all the possible **corner cases**.
  1. **Article :-**<https://www.geeksforgeeks.org/reverse-a-list-in-groups-of-given-size/>
  2. **Practice :-**<https://practice.geeksforgeeks.org/problems/reverse-a-linked-list-in-groups-of-given-size/1>

**Round 4:** This round was Hiring Manager round.

1. Tell me about yourself?
2. Any new initiative you took in your team?
3. Why do you want to join Amazon?
4. Tell me about your current project?

5. MVC in Angular?
6. Any challenge, you might have faced in your project?

### **Telephonic round :-**

**Round 5:** This was Telephonic round, there was a shared interface, where I had to code.

1. Tell me about yourself?
2. There is an array given of size N, in which next element is +K or -K of the previous element.  $A[i+1] = A[i] - \{0, 1, 2, \dots, K\}$  or  $= A[i] + \{0, 1, 2, \dots, K\}$ . Now you are suppose to search an element X in the array in less than  $O(N)$ .

1. Article :-<https://www.geeksforgeeks.org/searching-array-adjacent-differ-k/>

**After waiting for weeks I finally got mail from Amazon !xf0\x9f\x99\x82 . Thanks GeeksforGeeks.**

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# Amazon SDE Interview experience (July20, 2019)

- Difficulty Level :\n[Medium](#)
- Last Updated :\n24 Jul, 2019

I got call from HR through Naukri and scheduled on July 20, 2019. I went through three rounds of interviews.

## Round 1:Written Test

1. <https://www.geeksforgeeks.org/ways-paint-stairs-two-colors-two-adjacent-not-yellow/>
2. <https://www.geeksforgeeks.org/rearrange-linked-list-alternate-first-last-element/>
3. <https://www.geeksforgeeks.org/zigzag-tree-traversal/>

## Round 2:

1. <https://www.geeksforgeeks.org/print-nodes-distance-k-given-node-binary-tree/>
2. <https://www.geeksforgeeks.org/lru-cache-implementation/>
3. <https://www.geeksforgeeks.org/bottom-view-binary-tree/>

## Round 3:

1. <https://www.geeksforgeeks.org/trapping-rain-water/>
2. <https://www.geeksforgeeks.org/minimum-time-required-so-that-all-oranges-become-rotten/>
3. <https://www.geeksforgeeks.org/find-maximum-path-sum-in-a-binary-tree/>

I have given the approaches for all the problems and even wrote code, Had some problem at writing code for last question but approach was good however she rejected me. Hard Luck!!!

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# Amazon Interview | SDE-1 (On Campus)

- Difficulty Level :\n[Easy](#)
- Last Updated :\n22 Jul, 2019

**Round 1:** This round was an online round on mettl. There were 2 coding questions and 28 multiple choice questions. The time limit was 90 minutes.

Question 1: Given an integer n, and an integer array of size n, return the number of inversions in the array.  $0 \leq n \leq 1000$ . <https://www.geeksforgeeks.org/counting-inversions/>

Question 2: Given n and m and an integer array of size  $n*m$ , return the Maximum of sum of row + Maximum of sum of column if this array was a 2-d array of size  $n*m$ .

Example: n =2, m =2, Array [1, 2, 5, 6] return 19. Easy implementation question.

They shortlisted around 50 students for the next round. Those who had done both the coding questions and some mcqs correctly were shortlisted.

**Round 2:** This was a F2F technical round. The interviewer asked me to introduce myself, and then started with coding questions.

Question 1: Top View of a Binary Tree. <https://www.geeksforgeeks.org/print-nodes-top-view-binary-tree/>

Question 2: Given the arrival and departure time of trains, return the minimum number of platforms required such that no train has to wait.\xc2\xab0 <https://www.geeksforgeeks.org/minimum-number-platforms-required-railwaybus-station/>

First had to explain the approach and write the code on paper, after this he asks to dry run some cases on the code written. Then he asked me if I had any questions for him, after this the interview ended.

**Round 3:** This was also a F2F technical round. The interviewer asked me to introduce myself, and then asked me some questions on relational and non relational databases, acid properties and transactions. Then he gave me a coding question.

Given the head of a linked list of integers, and 2 integers, we had to swap the 2 nodes. I told him, as this is integer linked list, we can just swap the 2 integers and not the pointers, and then said, if this was not an integer array, but had some other data of big size, then we can swap the nodes and do. He asked me to explain the second approach, and then write the code for it.

He then asked me to explain some oops concepts like polymorphism, difference between objects and reference, etc. Then he gave me other coding question.

Given an array of integers, for all elements in the array, return the just greater element in the right side of the array.

Array : [5, 3, 5, 4, 7, 6, 9 ]

return [6, 4, 6, 6, 9, 9, -1]

This can be done using balanced bst, starting from the end of the array, start constructing a balanced bst or avl tree, and search.

Then he asked me if I had any questions for him, after this the interview ended.

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# Amazon Interview Experience (On-Campus)

- Difficulty Level : \n [Hard](#)
- Last Updated : \n 22 Jul, 2019

## Amazon On-Campus Hiring : 2019

\xc2\x0

### Round-1 (Online coding round):

It was 90 minutes long coding round on mettl test. It consisted of 2 coding questions and 28 MCQs. coding questions were easy to medium category. First question was to change one string into another with some modification (pretty much implementation question). In second question, you are given a string containing only 0 to 9\xc2\x0 and you have to return string number modulo 11.\xc2\x0 Around 60 people were selected for further rounds.

**Suggestion:** If you use c or c++ then please revise your pointer concepts because function inputs and return type are pointers on mettl. Also revise static and dynamic memory allocation because if you don\xe2\x80\x99t allocate memory using new or\xc2\x0malloc\xc2\x0 then your return pointer will point to NULL (many people got stuck ).

\xc2\x0

### Round-2 (Face-to-face interview-1):

The Interviewer was very nice and calm. He started with asking me to introduce myself.

**Q1.** You are given two linked lists. Every node contains a digit between 0 to 9. You have to make new linked list that contains sum of both linked lists. Also you can not modify given linked lists.

Example :

input1 \xe2\x80\x93 head->7->9->NULL.

input2 \xe2\x80\x93 head->3->6->2->NULL.

output- head->4->4->1->NULL.

**Q2.** Hotel XYZ wants to conduct N meetings on particular day. You are given start time and end time for each meetings. You have to return minimum numbers of rooms required in XYZ hotel.

Example:

input \xe2\x80\x93 N : 6, \xc2\x0 meetings timing \xe2\x80\x93 [9:00, 9:45], [9:30, 10:30], [10:40, 12:00], [11:00, 13:00], [11:45, 14:00], [16:00, 17:00]

output \xe2\x80\x93 3 rooms required.

He asked me to write down proper code for above questions. He tested it with some edge test cases. Then he asked me about different sorting techniques and questions like \xe2\x80\x93 for which cases quick sort runs O(n^2)\xe2\x80\x93d. This round lasted for an hour.

\xc2\x0

### **Round-3 (Face-to-face interview-2):**

The interviewer started with asking about myself and then moved to projects that I have done. After some questions on projects, \xc2\x0 he started with the data-structure questions. I have to write proper code for both questions.

**Q1.** You are given a binary tree. You have to print it\xe2\x80\x99s outer border anti-clockwise.

**Q2.** You have given N x M matrix. each element in matrix is either 0, 1 or 2.

\xe2\x80\x980\x980\xe2\x80\x99 digit means that place is initially empty. \xe2\x80\x981\xe2\x80\x99 digit means that place contains \xe2\x80\x9cgood\xe2\x80\x9d mango. \xe2\x80\x982\xe2\x80\x99 digit means that place contains \xe2\x80\x9cbad\xe2\x80\x9d mango. In one day iteration, \xe2\x80\x980\x9cgood\xe2\x80\x99d mango which is adjacent (up, down, left, right) to any \xe2\x80\x980\x9cbad\xe2\x80\x99d mango will become \xe2\x80\x980\x9cbad\xe2\x80\x99d mango. You start from first day and you have to find the minimum day when there will be no \xe2\x80\x980\x9cgood\xe2\x80\x99d mango or output -1 if it is impossible.

I took too much time in first question. So, I did not come up with optimized solution for second question and had to give brute force one.\xc2\x0 This round lasted for 45 minutes.

\xc2\x0

### **Round-4 (Face-to-face interview-3):**

I feel like this was the most difficult round for me but i got solution within some minutes.

**Q.**\xc2\x0URL requests are coming in some server. Now you have to design some type of data-structure such that at any point of time you can return top 100 frequently coming URLs.

I came up with solution using hashmap and heap. But I am not allowed to use STL so i have to write implementation for hashmap and heap. Then he asked me some questions about OS, OOPs, and DBMS. This round lasted for an hour.

\xc2\x0

### **Round-5 (Face-to-face interview-4):**

This was the last round. The person interviewing me was looking like some senior developer. He stared with asking me about my area of interests, projects I have done, \xc2\x0 etc. Then after some time he started DP question.

**Q1.\xc2\x0**You have given rod of length n and array containing rod length and price. Now you have to return maximum price by cutting rod optimally.

**Q2.\xc2\x0**You have given an array. You have to find next maximum for every index. -1 if there is no next maximum in array.

Then he started asking about OS questions like difference between process and thread, what is\xc2\x0thrashing, what is process table and how it is used, different kinds of CPU scheduling algorithms, what are indexes (DBMS) and why and where they are used, mutex vs\xc2\x0 semaphors, etc. Then he asked me two SQL queries. This round lasted for more than an hour.

\xc2\x0

After one and half days of process, I was selected for the Amazon Winter Internship.

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## Amazon Interview Experiences for Internship (on campus)

- Difficulty Level :[Medium](#)
- Last Updated :[22 Jul, 2019](#)

Amazon visited our campus(DAIICT) to recruit interns and FTEs. I'm sharing my internship interview experience. There were 2 rounds in all : 1 Online Round followed by 1 F2F Interview.

### Online Round(90 min ):

There were 24 questions based on Logical Reasoning, 7 questions based on Debugging and 2 questions of coding.  
The 2 coding questions were:

1. Sum of two number which is closest to K but the only condition is the sum of two number must be less than K. If there is more than one answer possible, print any.

Ex: Array: {2, 1, 4, 9, 2, 3, 8, 3, 4} and k = 18  
Ans: 9, 8

Ex: Array: {2, 1, 4, 9, 2, 3, 8, 3, 4} and k = 12

2. You are given an array A of size m\*n matrix. It contains 1, 0 where 1 means path is allowed and 0 means path is not allowed. One cell contains 1. You have to start with cell (0, 0) and find out whether it is possible to reach at the cell which contains 1. You have to start with cell (0, 0) and find out whether it is possible to reach at the cell which contains 1.

Ex: A: {1, 1, 0}... {9, 1, 0}... {0, 0, 1}... Ans : 1

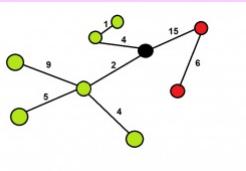
Ex: A: {0, 1, 0}... {9, 1, 0}...

**Out of around 250 students, 53 were shortlisted for Round 2.**

->**Doing MCQ (Logical Reasoning) was important.** Few students who solved both the coding question but didn't attempt the MCQs were not selected while some who could solve 80% of 1 question(8/10 test cases) and few MCQs were selected.

### Round 2: FTF Interview (Around 90 mins):

1. The interviewer asked me some HR questions like **Why Amazon?**, **Introduce myself**
2. [Reverse every k node.](#)
3. Then he asked me a question on the graph. I told him that I have not prepared for it, but I had a course called design and analysis in my semester 3 so I will try to recall that and try to answer your question. 1) given n cities and every city is connected via m roads. There is no cycle in the graph. Each road between city x and city y has some traffic denoted by weight of the edge. Each city has one stadium. Now suppose in one city, a cricket match is conducted and all other cities people come to that city to watch a match. Total traffic denoted by the sum of edges of all city. The task is to find maximum traffic coming to that city at any point in time.



- Suppose the match is in the city coloured with black. So traffic coming to that is from 3 sides. one from the group of three cities and traffic will be  $(9+5+4=20)$ , second will be from  $(15+6=21)$  and third will be  $(1+4=5)$ . so ans will be max of these and thus ans = 21.
- When he gave me this question I don't know the answer but I tried a lot. I gave him around 3 approaches and discussed with the interviewer but he said that my approach is wrong. But then I tried and never give up. Then he gave me the hint to do bfs and then dfs from neighbouring. I got a hint and answered the question and wrote code. Then, he asked me if I had any questions for him.

**Out of the 53 selected for the interviews, 13 were finally selected for the internship.**

**Verdict: Selected.**

### Tips :

1. Never lose hope and confidence.
2. If you don't know the ans then it's ok, try to solve that question and never give up and say that sir I can not able to do this.
3. Try your level best. Discuss with the interview. Interviewer always sees your patients and thinking ability.
4. And in case of a theoretical question, if you don't know the ans tell them sorry sir I don't know the ans rather than giving them wrong ans.

During my preparation geeks for geeks, indeed, was a great help. Almost all the questions asked in the interview were from geeks. A big thank you to other geeks as well for sharing their interview experiences as going through past experiences was the perfect way to end my preparations.

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# Amazon Interview Experience (SDE-1)| Off-Campus | Recruitment Drive

- Difficulty Level :[Hard](#)
- Last Updated :[07 Jan, 2020](#)

Hi All, Amazon conducted a drive for both SDE-1 and SDE-2 in July 2019 in Pune.I applied for the SDE-1 position.I got a call from a recruiter who specifically told me to brush up my coding and data structure fundamentals and told me to practice on paper.

## Round 1:

The first round was coding test on paper . We were asked to write code on paper for three questions.

1)When you ask Alexa to buy bananas, we query different catalogues (Prime, Whole Foods, Pantry etc).Each one of these come back with a sorted list of items that we need to merge together to have only one list.Write a function to merge the results and display top 10 items.Also mention the time and space complexity of your solution.

This question was similar to Merge K- sorted list when you can use the Priority Queue for maintaining top 10 items.

2)Given a tree of management chain of a company.Print the names of each employee who has specified number of reportees in the chain.

[Pic of management tree](#)

Input: 1

Output:

Lannister

Bronn

3)Implement a function to block a meeting room for a given time window.The meeting room cannot be booked for overlapping sessions.

Input:(11:00, 13:30)

Output:

Meeting booked(If no conflict with all existing meetings)

Meeting rejected(If conflict with any existing already booked meeting)

After an hour, they announced the result for the written round.

## Round 2:[Q2](#)

In this round the interviewer asked 4 questions .

1)[Count number of ways to reach destination in a Maze](#)

2) You are given n socks and color of each socks. You are also given the description of which socks to wear on which day. Find the minimum number of socks whose color have to be changed so that you the two socks color at each day must be same.

Example:

Color: 2 3 1 4 5

Sock : 1 2 3 4 5

Day \xe2\x80\x93 Sock no

1 \xc2\xa0 \xc2\xa0 \xe2\x80\x93 2, 3

2 \xc2\xa0 \xc2\xa0 \xe2\x80\x93 1, 5

3 \xc2\xa0 \xc2\xa0 \xe2\x80\x93 2, 4

Find minimum number of socks whose color we can change so that at any day both socks color is same.

This question can be solved by assuming the particular day socks as an edge of a graph.

[3\) Find a element in a sorted rotated array.](#)

4) Find number of connected components in a graph.

<https://www.geeksforgeeks.org/connected-components-in-an-undirected-graph/>

### **Round 3:**

In this round i was asked about my experience of working on microservices and the use \xc2\x00case of cache which i used in my project.

He asked me the Spring Boot Framework basic principles and difference between the Spring and Spring Boot.

He asked me to write a code to generate a random without using Java.lang.

### **Round 4:**

In this round the interviewer asked me questions on design.

1) Consider there are logs which consists of sequence of webpages visited by a customer. We have to find the most occurring sequence \xc2\x00of length k in the sequence of web pages of all customers.

Example:

Log 1- p1->p2->p3>p4->p5 \xe2\x80\x93 a6

Log2- p3->p4->p8 \xe2\x80\x93 a6

Log3- p2->p3->p10 \xe2\x80\x93 a6etc

so p2->p3 will be the most occurring sequence of web pages \xc2\x00of length 2.

He also asked how can i handle a sync when different log files are coming from different hosts in a

system.

2) Consider there is a book . I was asked to write code to find the min/max distance between an occurrence of a word in the book(distance here means the number of pages)

He asked me to write a data structure to define a book and the other data structure for defining an index as well.

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# Amazon Interview Experience | SDE-2

- Last Updated : \n16 Jul, 2019

## Round 1:

1. [Sort an array of 0s, 1s and 2s](#)
2. [Diameter of Binary Tree](#)
3. [Nodes at given distance in binary tree](#)

## Round 2:

1. [Count of different ways to express N as the sum of 1, 3 and 4](#)
2. [Find whether it is possible to finish all tasks or not from given dependencies](#)

## Round 3:

1. This round was design round. So interviewer given me problem statement to design an xc2xa0shuttle system. Interviewer was expecting xc2xa0 I should suggest some features and he was concerned about scalability and complexity ( not in terms of algo, in terms of what if traffic grows 100 times then will your system work).

## Round 4: xc2xa0

1. This round was bar raiser so most of discussion was around micro services architecture and database. He asked me some general questions.

## Round 5:

1. This round was hiring manager round so most of discussion about work which i have done in past. He was concerned about my approach to solve problem. You must be sure what are you saying.

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# Amazon Interview Experience | Off Campus for SDE-1

- Difficulty Level : \n[Hard](#)
- Last Updated : \n16 Jul, 2019

I took a referral from senior working in Amazon and got online test link. There were two coding questions and few MCQs based on OS and Networking and other CS fundamentals. Coding questions of 20 marks while each MCQ carry +3 for correct and -1 for the wrong answer. The coding questions were as following

**1.** There is a string let\x{e2}\x{80}\x{99}s say ABCDJHGDCBA. You can cut string once and append left part to right string. There is one rule while appending the string, i.e., at the joint of two strings characters keep canceling out each other till they match. So we have to print the minimum length of the string we can get after cutting and attaching the left and right half.

For example, we cut given string in AB and CDJHGDCBA then after addition, the result will be CDJHGDC. So minimum length we can get by ABCD & JHGDCBA. Basically, we have to find how much length is matching from left to right. And then subtract twice of matched length from the length of string.

**2.** Given some chocolate type id and their quantity. Also, it is given the priority order of chocolates in which you will eat chocolates. When you finish one type of chocolate then only you will eat other types. Also, you can eat only one type of chocolate on a given day. You have to eat at least one chocolate per day and at max, you can eat any amount. Given Q queries each consisting chocolate id and day number. You have to print YES if you can eat that chocolate id on given day else print NO.

I solved both coding questions and a few multiple choice question and my laptop shut down in between, so the test was terminated at that point. Still, I got an interview call.

## Round 1:

First Question

[Find the first circular tour that visits all petrol pumps](#)

Second Question

[Maximum sum such that no two elements are adjacent](#)

Wrote fully functional code for both.

## Round 2:

He asked which element will come at Kth place after sorting the array.

At first, I told him to use min heap of K elements then he restricted me to use extra space. Then I told him the quicksort method. Then he told to write the code.

[Kth Smallest/Largest Element in Unsorted Array](#)

Second question

There is BST and you will be given a number from it and a new number such that if you will replace the old number from new number BST properties will not change. So you have to write the code to clone new BST such that old number is replaced with new one such that we allocate minimum memory. There was lots of ambiguity the way he asked, So it took nearly 15 minutes just to clear the question.

Basically we have to write following code:

```

node* cloneNewBST(node* root, int oldVal, int newVal){
    if(root->data==oldVal){
        node* temp=createNode(newVal);
        temp->right=root->right, temp->left=root->left;
        return temp;
    }
    else if(root->data<oldVal){
        node* temp=createNode(root->data);
        temp->left=NULL;
        temp->right=cloneNewBST(root->right, oldVal, newVal);
        return temp;
    }
    else{
        node* temp=createNode(root->data);
        temp->right=NULL;
        temp->left=cloneNewBST(root->left, oldVal, newVal);
        return temp;
    }
}

```

### Round 3:

First question was to sort a linked list using merge sort.

Second question

[Trapping Rain Water](#)

Wrote code for both.

### Round 4:

There were two interviewers.

This round was a quite difficult one. Asked questions related to deadlock, LRU Cache algo indirectly (not mentioning LRU Cache but using another story which does similar to LRU cache).

- Splitwise algorithm  
<https://www.geeksforgeeks.org/minimize-cash-flow-among-given-set-friends-borrowed-money/> told the algorithm using heap for this question.

\xc2\xab

- [Boggle \(Find all possible words in a board of characters\)](#) In this question they wanted as much optimization we can.
- There is a city in which you have to assign aadhar numbers starting from 1. If one person dies then you can assign his aadhar number to another new person. You will assign the first possible aadhar number for any new entry. They discussed data structure and how will we do it efficiently.

### Verdict: Selected

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# Amazon Interview Experience for Quality Support Associate

- Last Updated : \n11 Jul, 2019

## Amazon Quality Support Associate Walk-in: May 2019(Chennai)

Initially there were 2 rounds.

### Round 1: GENERAL APTITUDE(MERITRAC)

Everyone will be given OMR Sheet to answer. There are 40 questions.

Section-A : English

In English, There are five comprehension and 15 grammar questions like preposition, articles etc.

Section-B : Logical Reasoning

In Logical Reasoning, topics like coding and decoding, five questions about seating arrangements and blood relations questions.

*Results are announced in next 20 minutes*

### Round 2: TECHNICAL FACE TO FACE

The hr asked about the following testing questions.

- 1.Regression Testing and explain with example.
- 2.What is SDLC?
- 3.Explain SDLC with any example.
- 4.Difference between SDLC and STLC.
- 5.What is Software Testing
- 6.What is black box and White box testing.
- 7.What is Defect Life Cycle with example.

*Results are not announced that day. They asked the candidates to leave for the day.*

After one month, June I got mail to come for further interview process.

### Round 3: TECHNICAL FACE TO FACE

The hr asked about some personal informations and he asked about the final year project details and questions like

- 1.why you choose testing instead of programming
- 2.what are the types of testing
- 3.Difference between Regression testing and retesting with example.

The HR asks some Logical questions like how you cut the cake which is not in shape etc.

*Results are not announced*

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# Amazon Interview Experience for SDE-2

- Difficulty Level :\n[Hard](#)
- Last Updated :\n16 Jul, 2019

## Round 1:

Time: 1hr

1. Introduce yourself.
2. Roles and responsibility at my current company.
3. How do you write code (first code then test cases or first test cases then code).

Then the interviewer shared a google doc and asked to write code and logic on that doc only.

1. Simple Binary tree based question.
2. Second question was also based on binary tree. Write full code and asked me to execute some given test cases.
3. [LRU cache](#). Again full code with test cases.
4. There was some time left so he asked me to provide another approach for 2nd problem.

## ***Got an onsite call for Hyderabad.***

By all these rounds the interviewer keeps a laptop with him and keeps on writing the feedback.

## Round 2:\xc2\xd0

### ***Project based discussion:***

1. Introduce yourself.
2. Explain the working of your current project. Draw it on the board.
3. Project based discussion:
  1. Have you ever had any conflicts within the team.
  2. Have you ever disagreed with your manager.
  3. Have you ever proposed your solution and made it happen.
  4. Have you ever proposed your solution and could not make it happen.
  5. How do you cover your code and make sure it is tested fully.
  6. Have you made any changes to make the system more efficient.

## Round 3:

### ***Coding Round***

1. Introduce yourself. What project you have worked on.
2. The questions asked were more of a competitive programming based problems.
3. I don\xe2\x80\x99t exactly remember but it was something there is an infinite number of students and I have to select the student who gives the unique answer first.
4. I proposed a solution. It will work fine.
5. Then asked to optimise it further. I gave another solution and he was satisfied with the solution and asked me write the code for it.

## Round 4:\xc2\xd0

### ***Coding Round : Bar Raiser Round***

1. Introduce yourself. How have your rounds been going.
2. [Given an array of integers and k number of swaps create the largest number possible.](#)
3. How do you write test cases. Write all the test cases including as many edge cases as possible before writing the code.
4. Proposed a solution. Again further optimise it.

#### **Round 5:**

#### ***High level System Design Round***

1. Introduce yourself.
2. Design a grocery store, which will uses the inventory of Kroger(third party inventories) at the backend but at the front end the customer sees Amazon only.

#### **Round 6:\xc2\xd0**

#### ***Low level System Design Round***

1. Gave me a sheet of paper with some code written on it and asked me to find bugs. Then asked me to suggest how it should have been written. What all is missing then add it.
2. Design Vending machine. (State Design Pattern)
3. Write use cases for the above and then write a fully working code on paper.

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# Amazon Interview Experience(2 years Experienced)

- Last Updated : \n16 Jul, 2019

I recently got interviewed in Amazon Chennai for SDE1.

**Round1:** Was a written round that contains 3 programming question. (Need to write an optimized code).

- [Given a sorted array and we need to make a balanced BST out of it.](#)
- [Given a boolean 2D matrix which is row-wise sorted. Need to print the line which contains maximum no of 1's.](#)
- [Next larger element](#)

**Round2:** Was a F2F interview.

- This round is started with the introduction and then a coding question.  
[From a given array print all the unique triplets which add up to zero.](#) The interviewer is expecting a solution in  $O(n^2 \log(n))$  or better.

**Round3:** Was a F2F interview.

- In this round Interviewer discussed in brief about the projects in my current company and about my role in the project.
- Coding question [Given a tree print all the nodes\(up and down\) which are k distance from a particular node.](#)

**Round4:** This is a bar raiser round.

- A brief discussion of my current role.
- Given a graph write a function to find if it a tree or not. (Also asked few more graph-related algorithms)
- Few puzzle questions.

**Round5:** F2F interview.

- Given a lot of strings write a function to find words which are mutually inclusive in most of the strings.
- Then asked a few more question related to the above question.
- Convert a float to a string without using any inbuilt functions.
- Few puzzle questions.\xc2\x97 And discussion of Projects.

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# Amazon Interview Experience | Off-Campus for SDE1

- Difficulty Level :\n[Medium](#)
- Last Updated :\n23 Jul, 2019

## Amazon SDE1 hiring (Off-Campus): June 2019

There were 5 rounds.

### Round 1: (Paper Coding)

Q1. A person is standing at the center(0, 0). He is facing north(N). There can be 4 possible commands \xe2\x80\x93 Turn left, Turn right, Move ahead, Move back. Find the final coordinates after a set of instructions. This is an easy implementation problem.

Q2. [Find longest palindromic sub string in a given string](#). This can be approached top-down or bottom-up (DP).

I had to wait 3 hours for the result of this round. Every round was an elimination.

### Round 2:

Q1. [Given a binary tree. Find if there is path from root to leaf with given sum X. After I answered the question, interviewer asked me to print all possible paths for the previous problem.](#)

Q2. [Given a binary tree. Add links in binary tree in such a way that all the nodes on a level form a linked list.](#)

Interviewer asked me if I have any questions.

### Round 3:

I was given a brief overview about the team for which hiring is going on \xe2\x80\x93 Amazon Payments Team.

Q1. This was somewhat related to modified [spiral traversal](#). I can vaguely describe the problem as printing even level nodes (starting node 0) right to left and odd level nodes left to right. Also, the order of printing levels is \xe2\x80\x93 0, 2, 1, 4, 3 \xe2\x80\x93

Q2. This was a question related to data structure design where interviewer told me that I just need to explain different approaches. Lets say DJ is using an application (something like Amazon Music) where he is getting requests from people and then he is picking Nth popular song among current requests. There are two functions \xe2\x80\x93 GetRequest() and NthPopular(). Discussed different approaches to store song requests and then ways to retrieve Nth popular by checking count. In these types of questions, it is very important to clarify the requirements and then start discussion.

I must say that interviewer was very supportive.

### Round 4:

Brief introduction about myself.

Q1. [Given a binary tree, a node N and distance K. We need to find count of all nodes which are at distance K from N.](#)

Q2. [A matrix is sorted row-wise and column-wise. We need to find if a number N exist in this matrix.](#)

I gave a O(MlogN) solution. We were already running out of time, so she hinted me and then I was able to come up with O(M+N) solution.

## Round 5:

The person interviewing me was senior development manager of some other team. Also, I had a feeling that this is a bar-raiser round.

I was asked to introduce myself. Then he asked me about projects in my current company. There were few questions like "Tell me about your most challenging work. Was there a situation where you faced any conflict and how did you resolve it? Was there a situation where you took initiative to do something? These questions are asked to examine Amazon's principles. Also, in this round, you are the one who is actually driving the interview. The moment you use a term, you can be asked different questions on it. The entire discussion took 1 hour.

Then, there was a programming question counting all pairs in an array whose sum is X. I answered an approach which stores count (maps) of all numbers and checking the count of (X - num) where num is an array element and then doing calculations. It appeared to me that he was not expecting this answer. Then I answered the approach of maintaining two pointers start and end. He said I could code any of the approaches. I coded the second approach but missed one test case.

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# Amazon Data Engineer Internship interview experience

- Last Updated : \n 29 Jun, 2019

## Round 1: Online round on HackerEarth

Most Amazon internships have an online round where generally 20 MCQs and 2 coding questions are asked for 90min. This time it was quite different. There were 65 MCQs related to SQL, DBMS, BigData, Hadoop, Java, Python, Aptitude, OS.

Some questions had negative marking, some didn't. Negative marks also varied for different questions.

In this round, most sql questions were on joins. BigData and Hadoop questions were very basic(if someone anytime studied bigdata). OS questions were theory based.

## Round 2: Technical Round Face to Face (~40 minutes.)

My interviewer was a chill person. The first question he asked me was 'Please tell me something which is not there in your resume?'. I did that. Please make sure you know everything about yourself :p .

We discussed about our projects and then he asked two questions.

**Question 1:** Coding. Given a file which has different numbers in each line. Read the file and if a number is divisible by 5 print('a'). if it's divisible by 3 print('b'). if it's divisible by 15 print('c');

It was easy. I used python and wrote the code.

**Question 2:** He gave me three tables and asked to write an sql query to get some data out of the tables. I had to use joins to get the data.

## Round 3: Technical + HR Face to Face (~50 minutes.)

He asked about my internships and projects in detail. He then asked me to write some sql queries.

**Question 1:** He gave me three parts in question 1 and difficulty level increased in each question. But still, there were basic questions.

He helped in the 3rd question a bit.

**Question 2:** Travelling salesman problem. He asked to code. I did it.

**Question 3: Get the same output as question 1 using Python.**

Using python libraries is allowed. I did it using pandas. (We can consider tables as csv files).

This was my interview experience. It was chill. I got selected too :p .

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## Why companies like Amazon, Microsoft, Google focuses on Data Structures and Algorithms : Answered

- Difficulty Level : [Medium](#)
- Last Updated : [25 Jun, 2021](#)

If you're preparing for a tech interview of any big tech company like Adobe, Amazon, Microsoft, Google, etc. most probably, you would have known about the importance of Data Structures and Algorithms to crack these interviews. Yes, most of the interviews for technical roles in these companies are focused on measuring the **Data Structures and Algorithms** knowledge of the candidates.

So the question arises: **Why do Product Based Companies place so much emphasis on Data Structures and Algorithms?**



Software Product Based Companies normally create products that are related to software. So it stands to reason that they require quality **Software Developers** to handle the development process for the software. The pay-scale of Software Developers has increased a lot in recent times globally. According to the report by Glassdoor, the average base pay of Software Developers in India is found to be around **12 Lakhs per annum**. The average base of software developers ranges from **Rs. 4,00,000** to **Rs 20,00,000** per year (With Product Based Companies occupying the higher end of the spectrum).

Image Courtesy: Glassdoor

### Software Development Engineer Salaries

5,121 Salaries Updated 22 Jun 2021

Average Base Pay



Image Courtesy: Glassdoor

However, there is an acute shortage of well-qualified Software developers in India. As per various standard reports, less than 10% of engineers are actually employable in software-related jobs. **That is where Data Structures and Algorithms come in.** They are so important in Product Based Companies interviews as they are the hallmark of any good Software Developer.

In addition to that, there are multiple reasons why **Product Based Companies** place so much emphasis on Data Structures and Algorithms as stated below:

1. Data Structures and Algorithms demonstrate the **problem-solving ability** of a candidate. There is no room to craft elaborate stories and this means that either the candidate can solve the problem or they can't.
2. Questions based on Data Structures and Algorithms can be **scaled up or down** according to the knowledge level of the candidate. This means that a variety of candidates can be tested using roughly the same problems.
3. Data Structures and Algorithms are used to test the **analytical skills** of the candidates as they are a useful tool to pick out the underlying algorithms in real-world problems and solve them efficiently.

4. Data Structures and Algorithms are the **fundamentals** of Software Development. They remain the same no matter what new technology is used and that puts the focus on the problem rather than the technology in the interview process.

## Learning Data Structures and Algorithms

Now as we have established that Data Structures and Algorithms are important for interviews in **Product Based Companies**, let's focus on learning them.

Bad programmers worry about the code. Good programmers worry about data structures and their relationships.

While learning Data Structures and Algorithms, it is best to start small with simple topics and then move on to more and more advanced topics. Some of the basic data structures are **Arrays**, **Linked Lists**, **Stacks**, **Queues**, etc. while some of the basic algorithms are **Sorting**, **Searching**, etc.

Some of the major problems that can appear while learning Data Structures and Algorithms are:

- **Lack of guidance:** There is no clear guidance while learning Data Structures and Algorithms. There are numerous topics within these umbrella terms with no specific guidelines about which topics would be more useful for different Product Based Companies. This situation can be quite confusing, especially for a beginner.
- **No idea from where to start learning:** Even if the necessary topics in Data Structures and Algorithms are known, the sheer amount of them leads to a lot of confusion. Most beginners have no idea from where to start learning or even what chronological order to follow while learning.

To solve the above problems, we at GeeksforGeeks have designed a number of online courses to learn Data Structures and Algorithms at affordable prices. One of the latest courses created by us is the [Complete Interview Preparation](#) course. This course covers **Data Structures and Algorithms** along with other subjects in order to completely prepare you for placements in your dream company.

To learn more about it, read on . . .

## Complete Interview Preparation Course

The [Complete Interview Preparation](#) Course is specifically designed for the **students and working professionals** to help them out in landing their dream job by providing them all the required stuff like premium lectures, theory notes, practice tests, assessment tests, etc. in a single place. In this course, along with **Data Structures & Algorithms**, you'll get prepared for other required subjects also like Computer Science Core Subjects, Programming Language, Reasoning & Aptitude, etc. Also, we know that the placement preparation requires some extensive research process and smart learning as not every subject holds the same weightage in the interview hence, this Complete Interview Preparation Course is extensively curated keeping this factor in mind.

Some of the prominent features of the Complete Interview Preparation course are listed below:

- Around 200+ algorithmic coding problems will be provided
- Track-based learning & Weekly assessment tests
- Premium **Video Lectures recorded by Sandeep Jain (CEO & Founder, GeeksforGeeks)** and other industry experts.
- Subject-wise Theoretical content & Objective Questions compiled by subject experts
- Lifetime access to the Course will be provided
- Course Completion Certificate & Internship Opportunities at GeeksforGeeks
- College Students will get the **year-wise weekly plan** for the course
- Free Access to Get Hired Premium at GeeksforGeeks Job Portal
- Dedicated TAs for the Doubt Assistance (Optional)

This course is originally priced at INR 9,999, but it is available at an **offer price of INR 6,999**. Also, if you want to add on the **doubt assistance** facility in this course, you'll be required to pay an additional amount of **INR 2,999** only. The Doubt Assistance facility will be valid for the complete 1 year from the registration.

## DSA Self Paced Course

In case you wish to focus exclusively on Data Structures and Algorithms, you can opt for our latest online course to learn Data Structures and Algorithms named [DSA Self Paced Course](#), which covers everything about Data Structures and Algorithms from the Basic level to the Advanced level. It offers a wealth of programming challenges that you may face at your next job interview. The course focuses mainly on Data Structure & Algorithms as it the key to selection in top product-based companies.

Some of the Key Features of the Course are:

- Well-organized tutorials on Data-Structures and Algorithms prepared by the experts
- Premium video lectures by **Mr. Sandeep Jain**, Founder, and C.E.O of GeeksforGeeks.
- Weekly Assessment Tests with Video Solutions.
- Course Completion Certificate & Internship Opportunities at GeeksforGeeks
- Lifetime access to the Course

The price of the self-paced online DSA course is **INR 2,799**. Also, if you want to add on the doubt assistance facility in this course, you'll be required to pay an additional amount of **INR 1,499** only. The Doubt Assistance facility will be valid for the complete 6 months from the registration.

## Geeks Classes \xe2\x80\x93 Live Session

Do you want to get live online classes on Data Structures & Algorithm to learn and master it\xe2\x80\xa6?? If yes, then we\xe2\x80\x99ve [Geeks Classes \xe2\x80\x93 Live Session](#) course for you. It will be an interview centric extensive online (live) program to build and enhance your DSA skills. The course is designed in such a manner that it will help you to improve your problem-solving and coding skills by enhancing your understanding of Data Structures & Algorithms. The primary goal of this course is to help you in the preparation for the Coding interviews of companies like Amazon, Microsoft, Uber, etc. As it will be an online live class \xe2\x80\x93 you can attend this class from any geographical location and can ask your doubts or queries as well to the instructor similar to an offline classroom program.

Some of the prominent features of this course are provided below:

- Doubt Solving Assistance (TA\xe2\x80\x99s)
- Limited Batch strength
- Course Completion Certificate
- 6 months access to recorded Live lectures of this course
- Other than that, you will also get complimentary access to the course content of the DSA Course.

This [Geeks Classes \xe2\x80\x93 Live Session Course](#) is being provided to you at a discounted price of **INR 10,999/-.**

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# Amazon SDE-I Interview Experience

- Difficulty Level : \n[Medium](#)
- Last Updated : \n22 Jul, 2019

\xc2\xd0

I attended the Amazon Recruitment drive for freshers in Bangalore.

First 3 rounds were F2F pen-paper coding rounds of 45 mins each.

## Round 1:\xd0

I was asked 3 questions in this round.

### 1) [Trapping the Rain Water Problem](#)

Suggested the solution by taking two arrays to store leftmax and rightmax for each element. Was asked to do it in constant space. I was able to do it by taking two pointers.

### 2.\xd0 [Maximum product Sub-array](#)

3.\xd0[Print nodes at a distance k from a given node](#). As a follow-up, was asked to print the nodes in sorted order.

## Round 2:

Two questions were asked in this round.

1)

Given an n-ary tree, it consists of some bad nodes and good nodes. Nodes having value 1 are good and nodes with value 0 are bad. Problem was to count all root to leaf paths having less than K bad nodes.

Suggested a bottom up recursive approach. Interviewer was convinced but told me a top-down approach would have been an easier approach

### 2.\xd0 [LRU cache](#)

## Round 3:

This was again a problem solving round only and 4 questions were asked.

### 1. [Search in a row wise and column wise sorted matrix](#)

### 2.\xd0[Count ways to reach the n\xe2\x80\x99th stair such that you are allowed to take only 1 or 2 stairs at a time.](#)

3) Find distance between leftmost leaf to rightmost leaf. I was told that by the interviewer that he will change the requirement and my code should be able to accommodate the changes.

Initially wrote a normal code counting the nodes from root to leftmost leaf and root to rightmost leaf. But he said he now wants to print the path. So wrote a recursive solution and interviewer was happy with the solution.

4) [Find 3 numbers in an array such that their sum is closest to a given number X](#). Sum can be less OR\xd0 more than X i.e absolute difference is to be considered.

After 3 rounds the HR told me that I had cleared all 3 rounds and 4th round will be a video call which will happen in a couple of weeks.

#### Round 4:\xc2\xa0

This was a Bar-raiser round and was taken by a senior person.

- 1) Initially was asked to introduce myself.
- 2) Then I was to explain my internship project and then a few counter questions over it.
- 3)\xc2\xa0Two problem-solving questions which I had to code on a code-pair sort of a platform wherein the interviewer was able to see my code. These were the two questions :
  - a) A variant of [Merge k sorted arrays](#) problem.
  - b) [Delete all duplicate nodes in an unsorted linked list](#). Do this in one pass.
- 4) Why Amazon?
- 5) Did you ever face any issue in your internship project and how did you solve it?

With this round, the interview process was over. I got a call from the HR after a couple of days telling that the feedback was positive and I was hired \xf0\x9f\x99\x82

Thank you GeeksforGeeks for all the invaluable content. If you have solved enough problems on GeeksforGeeks, the interview should not be a problem at all.

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# Amazon SDE I Off-campus Hiring

- Difficulty Level :\n[Hard](#)
- Last Updated :\n16 Jul, 2019

I have applied to multiple positions on LinkedIn. Finally, I got a mail stating that I can give my online test on Hackerearth platform.

## Round 1:

It was for 90 minutes, consisting of 20 multiple-choice(negative marks for wrong answers) and 2 coding questions. The questions were asked from Data Structures, Operating Systems, Computer Networks, DBMS, Time complexity and recurrence relations. Most of them were taken from Gate preparation guide from GeeksforGeeks. Some of the questions include,

1. Circular Queue: find the front and rear after specific operations?
2. Increasing RAM increases performance because?
3. CPU handles an interrupt by executing an interrupt service routine by checking what?
4. Binary search recurrence relation?
5. Quicksort worst-case complexity when the pivot is the  $n/4$  smallest element using an  $O(n)$  algorithm?
6. The best time complexity for finding the nth Fibonacci number?
7. Tightest upper bound for binary search tree insertion?
8. Given some statements about ER and relational models, find the false statements.
9. Given some statements about threads, find the true statement.

Coding Questions include,

1. [Chocolates distribution problem](#)
2. Check if any sub-string and its reverse exist in a given array of strings.

After three days, I got the result and I was told to come to Amazon Bangalore campus for further technical discussions.

## Round 2:

1. Tell me about yourself.
2. [Sort a given LinkedList.](#)
3. Find the number of disconnected components in the given directed graph.
4. Discussion about Dynamic programming and recursion.
5. Discussion about the team, that I was giving my interview for.

This round went for an hour and I was told to write the working code. I coded in Java writing all the necessary comments, importing all the necessary packages, handling all the exceptions and edge-cases. The interviewer was really impressed.

## Round 3:

1. Tell me about yourself.
2. [Given two nodes, find the shortest path in the given binary tree and binary search tree.](#)
3. Given an infix expression as a string, evaluate it. We need to handle invalid strings, operator precedence, space characters, non-numeric characters, etc. Much importance was given to data structure as well.
4. Given a 2D maze, a man with a starting position, list of possible moves and a number k, find the probability after k moves the man will stand inside the maze.

This round went for more than 2 hours. For all the above questions, I was told to handle all the edge cases, and the interviewer was focused on the optimal solution and working code for all the problems.

#### **Round 4:**

1. Tell me about yourself.
2. [Count ways to reach the n<sup>th</sup> stair](#)
3. [Print all Jumping Numbers smaller than or equal to a given value](#)
4. Questions on deadlock, handling, and its prevention.
5. Questions on Java Strings and string pool.
6. How SSH works?

This round went for more than an hour questions I was asked about the reasons for which I was using specific data structures for the about coding questions.

HR told me that I was doing really good and I was told that I will have one more round and that will be a bar-raiser. After two weeks I got a mail saying that I will have the next round in three days. It was on Amazon Chime.

#### **Round 5:**

1. Tell me about yourself.
2. Deep dive into my internship project and my individual contribution.
3. Questions on HashTable.
4. Deep dive into LRU, and its working in real computers like what is stored in the cache.
5. Questions on page faults, thrashing.
6. [Two numbers with sum closest to zero](#)

This round was with a Senior Manager and a recruiter from Jordan. All the questions were focused on the depth of knowledge I had.

The first four rounds, I did really well and I was able to impress the interviewers and they were also happy with my performance. I felt that I was not performed well in the final round. Make sure you have a really good Internet connection. Amazon considers each and every round before rejecting a candidate. Most of the rounds were focused on Data structures, algorithms, time complexity and problem-solving. I prepared for System Design questions, but I was not asked anything about it as I am a fresher.

Companies like Amazon has policies that state that if a candidate has appeared for the interview and if he/she is not selected, then the candidate cannot apply for the next six months. Also, once you are in the interview process, you will never know when the further rounds will be scheduled and you will not get ample time to prepare. So, before applying for jobs, make sure you have prepared well.

#### **Result: Selected.**

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# Amazon SDE 2 Interview Experience

- Difficulty Level :[Easy](#)
- Last Updated :[26 Nov, 2019](#)

## Round 1: Written Round (pen and paper based)

1- [Print binary tree in zig zag order](#)

2- Design deck of cards with 52 cards and standard suits, provide capability of shuffling classes using oops principal was expected.

3 Given an array find max ( $a[i] > a[j]$  ) such that

$i > j$ .

## Round 2: Problem Solving Round

1 Given [median of two sorted arrays of same size](#) ( log n solution expected)

2- n building are given their is a cost associated with each building for painting in 3 colours R, G, B, given that no two adjacent buildings can have same color find minimum cost to paint all n buildings ( most optimal space and time complexity expected )

## Round 3 Problem Solving Round 2 :

1 Given [sorted array of numbers find last occurrence of given number x](#) ( All test case need to be covered)

2- There are n bags with some gold coin, given a number k where k represents number of turns, for each turn we have to pick one bag take half coins and put back remaining in that bag, find maximum number of coins which can be collected after k turns ( max heap based solution, further more optimizations while inserting back coins in heap)

## Round 4 Design Round :

Discussion on my project design only HLD part,

Create HLD and LLD (oops based) of subscription engine ( eg. `user` where user can subscribe services like Netflix and Amazon prime).

## Round 5 HM Round

Deep discussion on my projects

Few leadership principal based questions

## Round 6 Bar Raiser

Discussion on why Amazon, why leaving current organization, few other leadership principals,

Design LLD Chess Board Game for 2 players using oops principal

### **Result : \xc2\xa0**

Rejected after this round, hr told lld was not good. I made few \xc2\xa0 mistakes in design rounds.

\xc2\xa0

### **Tips : \xc2\xa0**

1 \xe2\x80\x93 solve many questions for problem solving, while interview discuss your approach with interviewer they are very friendly and their small hints can lead you to exact solution

2 \xe2\x80\x93 prepare well for design rounds, discuss thoroughly everything about your design

3 \xe2\x80\x93 Prepare well for \xc2\xa0 Amazon leadership principals

\xc2\xa0

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## Amazon Interview SDE 2 (5 year exp)

- Difficulty Level :\nHard
- Last Updated :\n16 Jul, 2019

### Online Assessment Round :

Question 1. Given a matrix of 1 & 0. Where 1 is a valid path piece. Given a src and dst also. Need to find out minimum number of steps to reach destination from Source.

Question 2. Amazon transport centre ships there items in trucks of some size. And each item take some space. And for safety purpose we have to keep a some given space empty in truck.

We are given a array of size of items[10,20,30,40], size of truck(100) and safety space(40). We have to find a pair of items which can be shipped safely and utilising maximum space in truck.

So in given example we will ship pair(20 & 40) with keeping 40 space.

### Round 1: Telephonic:

Question 1. Given a matrix of 1 & 0. Where 1 is a valid path piece. Given a src and dst also. Need to find out minimum number of steps and path also to reach destination from Source.

Question 2. Given a function  $f(x) = y$ , where  $0 < x < 10000$  & if  $x_1 < x_2$  then  $y_1 < y_2$  for every  $x$ . Now we have to write  $f(y) = x$  function. Which will take input as some  $y$  and will return  $x$ .

### Round 2: Design LLD + HLD:

Question 1. Asked about my project and we discussed deeply about it\xe2\x80\x99s challenges for its features.

Question 2. Social Media Platform design. He asked me to give only 4 features. Post(Private and Public), Follow a user and Search.

It was HLD + LLD design. Asked me various approaches by giving multiple scenarios of follower and followee. Went deep in Microservices architecture design.

OOD Code was expected.

### Round 3: Coding and Problem Solving.

Question 1. Given a map where. 1->a, 2->b, 3->c and so on till 26->z.

Now we are given a number lets say 123. We need to print all possible ways to print it in alphabetical form using the map.

ex: for 123 we have (abc, Lc) where 12->L.

Question 2. We are given a number lets say 45312. We need to find next greater number with same integers.

Ex. for 45312 next number is 45321.

Question 3. We are given multiple sorted arrays. We have to merge these.

### Round 4: DS and Algo.

Question 1. [Given a Tree, Find Kth distance nodes from a node.](#)

Question 2. Given a Tree, Find cousin some of a given node.

Question 3. [Given sorted row and sorted column matrix. Find a number in o\(row size\) complexity.](#)

### **Round 5: Design Round.**

It was an open discussion on my project and any other project which i previously discussed.

After discussion, Interviewer asked me to design a Multiplayer Chess Game with scale around 10 Million users and world wide popularity. Discussion went very long for various Database schema and HLD design of Master slave and (Consistent Hashing)Ring Design for Database.

### **Round 6: Hiring Manager.**

He asked me about difficult project i have worked on. I chose my latest project to discuss.

Then we discussed deeply about its features. My project discussion went for aorund 30 mins.

After it, He asked me a file upload and changes done on one of the devices and sync on multiple device design problem.

### **Round 7: Bar Raiser.**

It was a telephonic round. Interviewer introduced himself and asked me about project.

There were many behavioural questions. like Why Amazon ? Why are you leaving previous company ?

Apart from these asked me to implement Decorator Design Pattern for my project.

And asked Amazon Principle related questions like

\xe2\x80\x9cTime when you had to push back customers requirement\xe2\x80\x9d

\xe2\x80\x9cTime when a feature request was not feasiable.\xe2\x80\x9d

At last he asked me a algo question \xe2\x80\x9cThere is a sentence find all the anagram word in it.\xe2\x80\x9d Asked me complexity also.

that\xe2\x80\x99s it.

After 2 days i got call from HR that i am selected.

\xc2\xab

I would like to give some suggestions for Amazon interviews. You must think about customers before answering and designing anything in interview.

Amazon is the world\xe2\x80\x99s most customer centric company and they expect engineers to be the same.

\xc2\xab

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# Amazon interview experience | SDE-1 | 2.5 years experienced

- Difficulty Level :\nMedium
- Last Updated :\n16 Jul, 2019

A few nuggets before going in:

Prepare well. Work hard. Speak confidently. Be fast (dont by-heart the answer though!)

## Round 1 (Telephonic):

Got a call from a person in the team for which the interview was being conducted. Questions were on my project, and basic concepts like SSL etc. (this differs from team to team I believe)

## Round 2 (Online \xe2\x80\x93 AMCAT):

The first question was essentially based on <https://www.geeksforgeeks.org/given-sorted-array-number-x-find-pair-array-whose-sum-closest-x/> but there were two arrays given, you had to pick one element from each such that the sum is closest to X.

This was framed as a problem where there is a plane with a given fuel capacity (X) and one array containing the fuel consumption values for certain destinations (A) and another array containing the fuel consumption for going to another location after going to the location in the previous array (B). Now we need to find max A+B such that A+B <= X

The second question was essentially based on: <https://www.geeksforgeeks.org/find-k-closest-points-to-the-origin/>

It was framed something like a delivery person wants to deliver to the k nearest locations

## Round 3 (Face-to-face, Problem solving):

These questions were asked. Focus is on your problem solving skills rather than on actual Data structure or algorithm knowledge.

<https://www.geeksforgeeks.org/word-ladder-length-of-shortest-chain-to-reach-a-target-word/>  
<https://www.geeksforgeeks.org/split-the-number-into-n-parts-such-that-difference-between-the-smallest-and-the-largest-part-is-minimum/>

## Round 4 (Face-to-face, Data structures and algorithms):

Here knowledge of data structures and algorithms is a must. Look for edge cases and be quick if possible. Questions asked were:[Diameter of Binary Tree](#) , [Cutted Segments](#) followed by a modification <https://stackoverflow.com/questions/44149463/how-to-solve-rod-cutting-problem-with-limit-on-maximum-no-of-cuts-allowed>

## Round 5 (Face-to-face, Hiring manager interview):

Questions of how you would approach a problem technically etc. Focus is on how you exhibit the Amazon leadership principles. Prepare beforehand and think of situations in life where you have exhibited them

## Round 6 (Via Amazon chime, Bar raiser):

Deep and end-to-end knowledge of your current project is tested. There may be coding as well

depending on the requirement.

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# Amazon Interview Experience | SDE-2

- Difficulty Level :\n[Medium](#)
- Last Updated :\n16 Jul, 2019

## Round 1:

Implement Find command in Linux.

Asked to review a piece of code that was already written.

Some behavioral questions

## Round 2:

[Assembly Line Scheduling](#)

[Connect n ropes with minimum cost](#)

## Round 3:

Design stack overflow along with its Notification system.

## Round 4:

Complete discussion on the current project architecture, implementation and few scenario based questions.

Amazon principles related questions

[Find the pairs whose sum is nearer to zero in a given array of both negative and positive integers.](#)

## Round 5:

Behavioral and project discussion.

Amazon principles related questions

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# Amazon Interview Experience | SDE-2

- Difficulty Level : \n[Medium](#)
- Last Updated : \n15 Jul, 2019

## Round 1: (Technical)

\xe2\x80\x93 Given a building as a 2D matrix with three possible values at each cell: P for Person, W for Wall and E or Emergency Exit. For every personal we need to find the minimum number moves to reach to (nearest) exit.

\xe2\x80\x93 Given a stream players with player number and score. At any point of time, given a rank we need to return player. Implement data structure to support add player and get rank in optimum time.

Example:

add(P1, 25), add(P2, 15), add(P3, 20), add(P4, 40)

rank(1): Return P4

rank(2): Return P1

## Round 2: (Technical)

\xe2\x80\x93 [Given an array of numbers, print all the numbers if there are at least two numbers greater than element](#)

\xe2\x80\x93 [Snake ladder game](#)

\xe2\x80\x93 Find the minimum prefix required for each string

Input: \xe2\x80\x9cdog\xe2\x80\x9d, \xe2\x80\x9cdock\xe2\x80\x9d, \xe2\x80\x9czebra\xe2\x80\x9d, \xe2\x80\x9ccat\xe2\x80\x9d, \xe2\x80\x9ccord\xe2\x80\x9d

Output: dog, doc, z, ca, co

## Round 3: (System Design)

\xe2\x80\x93 What was the quality improvement you have done in your team

\xe2\x80\x93 \xc2\xaa What was the decision you have taken in the absence of your manager

\xe2\x80\x93 Design Online Chess Game: Functional & Non-Functional Requirements, HLD, LLD and DB Entity Schema

## Round 4: (Hiring Manager)

\xe2\x80\x93 Why are you changing

\xe2\x80\x93 Why Amazon

\xe2\x80\x93 What was the thing you felt is sub-optimal when you were using Amazon site

\xe2\x80\x93 Given a class with 25 members and a constraint is not to have an object in memory with partial members set and caller should have easy way of creating an object (Answered with Builder Pattern)

\xe2\x80\x93 Design Alert System for Price Down of a Product

### Round 5: (Bar Raiser)

\xe2\x80\x93 Why are you changing

\xe2\x80\x93 Why Amazon

\xe2\x80\x93 Most recent technical challenging work

\xe2\x80\x93 Team concern you solved

\xe2\x80\x93 Situation where you had a conflict with your manager

\xe2\x80\x93 What did you improve in your team

\xe2\x80\x93 Innovative work done

\xe2\x80\x93 Why Amazon asked again at the end of the round

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# Amazon off campus ( All India campus hiring ) SDE 1

- Difficulty Level :\n[Medium](#)
- Last Updated :\n15 Jul, 2019

## Online Coding Round: (hackerearth, 1.5 hr)

1) Good Ranges:

Input : N, M (M no of queries)

Constraints :  $1 \leq X \leq 4 \rightarrow 1+4 \rightarrow 5$

$2 \rightarrow [1, 1][2, 4] \rightarrow 1+1+2+4 \rightarrow 8$

$3 \rightarrow [1, 1][2, 2][3, 4] \rightarrow 1+1+2+2+3+4 \rightarrow 13$

$4 \rightarrow [1, 1][2, 2][3, 3][4, 4] \rightarrow 1+1+2+2+3+3+4+4 \rightarrow 20$

Link: <https://ideone.com/jzulOL>

2)

A tree with N vertices and N-1 edges is given. The value of the nodes given in the array where the  $i^{th}$  element in array gives the value of the  $i^{th}$  node (here array index starts from 1). Relation between parent and child node is given. Q queries will be given in the format of L X. Find the node which lies at level L mod (Maxdepth + 1) and has value just greater than or equal to X. Answer to query is the smallest value of such node and if no answer print -1. (Maxdepth Maximum depth of the tree)

20+ candidates were shortlisted. F2F interview happened.

## Technical round 1:

- 1) Tell me about yourself
- 2) [Majority candidate](#)
- 3) [Zig zag traversal](#)

## Technical round 2:

- 1) [Remove duplicates from a sorted linked list](#)
- 2) [Merge k sorted arrays](#) <https://www.geeksforgeeks.org/merge-k-sorted-arrays/>
- 3) Heap insertion, deletion and heapify

## Technical round 3:

- 1) [K th largest element in a tree.](#)
- 2) [LRU cache](#)
- 3) Challenges faced in FYP.

## Technical round 4:

- 1) Questions regarding projects I have done
- 2) Practical usage of stack and queue in computers (ex- stack -> recursion, queue -> process scheduling)
- 3) OS -> process, thread, difference b/w them.
- 4) DBMS -> normalization, De-normalisation, deadlock, deadlock avoidance.

Verdict : selected

## Tips :

- 1) Should able to write code clearly on paper
- 2) Should cover all edge cases before submitting to them.

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# Amazon Interview -SDE 1 Interview Experience

- Difficulty Level : \n[Easy](#)
- Last Updated : \n15 Jul, 2019

Amazon had come for a drive in Pune.

They took 3 rounds on the day of drive and rest of the rounds were taken after that.

## Round 1:

This was a pen and paper round .There were approximately 40 candidates and following questions were asked to code on paper.

1. [Create a binary search tree from a given sorted array.](#)
2. [Find the row with maximum number of 1s in the given matrix.](#)
3. [Find next greater element in O\(1\) time complexity.](#)

## Round 2: F2F Interview

1. Triangle frog puzzle.
2. [There is a sorted rotated array of numbers where each number appear in pair except one. Find the element which do not appear in pair in O\(logn\) time complexity.](#)

## Round 3: F2F interview.

1. [Given a string find the longest substring consisting of non-repeated characters.](#)

2. [Find the island of largest 1s in a given matrix.](#)

## Round 4:[F2F interview](#)

1. Half an hour general discussion on current project, technology used, hurdles faced during projects, failure if any.
2. [Merge k-sorted arrays.](#) (Gave min-heap solution, they were satisfied with this solution).

## Round 5: Managerial round over skype.

1. A lot of behavioral questions were asked like challenges faced so far, how did you overcome them, any failures you have faced till now, what could you have improved in your current project etc

(this went for around 45 min ).

2. General discussion around projects, about factory design pattern and its implementation as I had used one in one of my projects.

Prepare behavioral questions well as they put a lot of stress on this . Below is a link which you can refer to while preparation :

<https://simpleprogrammer.com/ace-behavioral-interview/>

I got a call\xa0 from HR 2-3 days after the\xc2\xa0 hiring manager round that I have been selected for app-store steam in Amazon Banglore.

Thank-you geeks for geeks for helping me prepare all this while.\xc2\xa0 \xf0\x9f\x99\x82

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# Amazon Interview Experience | SDE-2

- Difficulty Level :\nHard
- Last Updated :\n15 Jul, 2019

## Amazon Interview Experience

### Coding

Spiral tree traversal

Design card for shuffling

Find max diff between two array element  $a[j]-a[i]; j>i$

### Round 1(PS)

Given an array of integers(pos/neg) in sorted order, return an array of elements square in sorted order.

Given an array of wine prices, any given year you can sell a bottle of wine only from either of the ends. Bottle of wine increases every year. Find max profit after selling all.

### Round 2(PS)

Given a uni-directed graph with numbers find maximum root to leaf sum with using only internal data structure.

Given a dictionary of words and a string, state if the string if broken into multiple words consists of dictionary words.

Other project and work related questions?

### Round 3(Design)

Question related to design of projects I have worked on.

Design HLD and LLD for salon booking app.

### Round 4(HM)

Behavioural questions

Leadership questions

Question related to conflict handling issues faced and solution

How do you approach a design architecture?

Design payment page

Design and question on currently working projects.

Why Amazon

Any offer, etc

Code review related questions

### Round 5(BR)

Design of project

How do you approach a problem

Management skills related questions

Code reviews related questions

Why Amazon

Do you lead people, how many?

Some more team/tech/design related questions

**Result:** Got rejected after debrief

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# Amazon Written Test May 2019 Software Development Engineer I

- Difficulty Level :\nBasic
- Last Updated :\n09 May, 2019

There are a total of n courses you have to take, labeled from 0 to n-1.

Some courses may have prerequisites, for example, to take course 0 you have to first take course 1, which is expressed as a pair: [0, 1]

Given the total number of courses and a list of prerequisite pairs, is it possible for you to finish all courses?

**Examples:**

**Input:** 2,

**[1, 0]**

**Output:** true

**Explanation:** There are a total of 2 courses to take.

To take course 1 you should have finished course 0. So it is possible.

**Input:** 2, [[1, 0], [0, 1]]

**Output:** false

**Explanation:** There are a total of 2 courses to take.

To take course 1 you should have finished course 0, and to take course 0 you should also have finished course 1. So it is impossible.

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# Amazon Campus Interviews

- Last Updated : \n16 May, 2019

Amazon campus recruitment process basing on the past selection process.

Amazon campus recruitment process #1:

In this process, there are 4 rounds.

Written Round:

- The Written round consists of 3 sections, Aptitude, Verbal ability, and Technical.
- There are 30 Questions in the Aptitude section. The important topics include Time, Speed and Work, Percentages, Profit and Loss, Ratio and Proportion, Probability, Triangles and Function
- There are 30 questions in the Verbal Ability section. The important topics include Reading Comprehension, Sentence Correction, Identifying the error in a sentence, Synonyms, and Antonyms.
- There are 44 questions in the Technical Section. The important topics include C, Data Structures and DBMS.
- The allotted time to solve the questions in these sections is 120 minutes. There is no negative marking in this round.

Technical Round 1:

- In the technical round, some of the subjects that you will be tested include C, Data Structures and DBMS. Along with these, prepare on two more subjects from your branch.
- In most of the technical interviews, the interview panel questions you on your favorite subject and in this case, you can speak about the subjects that you have prepared.

Technical Round 2:

- This round is for elimination in most of the cases. This is another technical interview but under pressure.
- Confidence matters a lot in this round as the interview panel is going to check whether you are able to manage the stress or not. When you are pushed out of your comfort zone, keep calm and answer the questions that you know.
- If you don't know the answer, don't give up, try attempting it with your knowledge.

HR Round:

- In the HR round, the interview panel questions you everything/anything related to your personality, family, education, hobbies, internships, work experience (if relevant), general knowledge, etc.

To know more, \xc2\x80[Amazon | Campus Selection Process 2017](#)

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# Amazon SDE II Interview Experience

- Last Updated : \n15 Jul, 2019

## Round 1:

Was with a higher level manager and he asked about the current project (or any project you are comfortable with), challenges involved, your contribution (please note its YOUR, not your teams).

\xc2\x9a0

Went deep into the project asking questions on why its done like this, if you are given another opportunity will you do it differently. Is there any situation you faced where you did something out of your work and proved that you are correct.

## Round 2:

High level design \xe2\x80\x93

Design Swiggy. The different components of the system, databases, apis, notification systems, payment system.

One problem solving question:

[Given a set of integer pairs as below, find the range/s where the count is maximum.](#)

example : (1, 5) (2, 7), (3, 10), (11, 14), (13, 15)

answer : range between 3 to 5 : has highest count of 3 occurrences

## Round 3:

\xe2\x80\x93 [Find median in a stream of integers](#) and code for it.

-If there is a very huge array of sorted numbers, find the start and end index of a particular number.

Code for the solution.

Example : 1, 1, 1, 1, 2, 3, 3, 3, 3, 3, 3, 3, 3, 5, 5, 5, 100, 100, 100, 100

If the number is 3, the answer should be 5 \xe2\x80\x93 start index and 12 end index.

## Round 4:

Low level design round

- Design an elevator system. This round involves, writing the classes, variables, member functions, the interactions between different classes, design patterns used, which class is responsible for what.

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# Amazon Interview Experience March 2019 (Off-Campus - Cloud Associate 1)

- Difficulty Level :\nEasy
- Last Updated :\n13 May, 2019

Received a Mail from off-campus recruiter, to take a online test for the role of cloud support associate 1. Had Registered and applied in Amazon website .

**Round 1: Online Test** : duration 1.5 hours . Contained 4 sections . General Aptitude, Technical round 1( concepts of OS, Computer Networks, DBMS, all of them in depth ), Technical round 2((Concepts of Big Data, Hadoop, Javascript, Data Science ), Coding ( 2 Questions Easy ) .

Aptitude + Technical round 1 is very important . Some people who hadn't got coding questions were also selected .

**Round 2: Technical Interview 1:** The interview process went on for about more than 1 hour, The interviewers was very cool . He started asking me to tell me about myself . He just gave me simple coding question to sort the characters in array . Then he started asking me questions about Networks, how do you check if your internet is working right, he asking me TCP/IP layer protocols (in depth), 3 Way Handshaking . OS (boot process) and trouble shooting process i would follow if the boot doesn't happen properly . He then asked me about DHCP and other protocol .Know everything about troubleshooting process .

**Round 3: Technical Interview 2:** This interview went for 40 minutes, Detailed 3 way Handshaking, Detailed working of DNS, Detailed working of other application layer protocols, FTP, SMTP etc . Different types of firewall, how it can be used to block various activities

They were hiring for 2 different profiles, Some candidates were good with Networking, Some were good with OS (Linux/Windows ). But be prepared for both in detailed manner . You can be hired for any profile, so if you are not good with one you might get rejected .

**Round 4: Managerial Round :** This was mostly an informal conversation about the challenges i faced during my work/ internship, how i tackled them . if i had stepped out of my comfort zone to do anything extra . What priorities i had Long term or short term goals . So i had to substantiate each of them with examples .

**IMPORTANT :** Stick to [Amazon Leadership Principles](#)

**Round 5: HR :** It was again about amazon leadership principles and why i wanted to join Amazon and normal HR stuff .

It was a long Day, process went on till 8 at Night . All the rounds went well, the interviewers were very friendly, it was more of a discussion, and they used to give hints and helped me through the process . They reverted back after 4 days with an Amazon Intent to Offer.

All the best !!!

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# Amazon SDE 1 Interview Experience

- Difficulty Level :\n[Basic](#)
- Last Updated :\n15 Jul, 2019

## Round 1: Written round,

1. [Convert Sorted array to BST.](#)
- 2.[Return row from the 2-D array which has maximum Number of 1.](#)
- 3.[Print next greater element](#)

input-4 5 25 13 6 12

output -5 25 -1 -1 12 -1

## Round 2: F2F

1. [Find the missing number from 1 to N.N=12](#)

0 1 2 3 4 5 10 12

output\xe2\x80\x946

## [Binary search](#)

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# Amazon SDE-2 interview experience

- Last Updated : \n15 Jul, 2019

Just attended a lateral hiring for Senior Development Engineer, Amazon at Amazon, Gurgaon. Was asked the following questions.

## Round 1

Q1 [Find the max of each window of size k in a given array.](#)

Q2. [Given an even length expression consisting only of \xe2\x80\x98{\xe2\x80\x98 and }\xe2\x80\x99, find the min. number of edits needed to make it a valid balanced expression.](#)

## Round 2

Q1. [Given a text and a search string, find the shortest substring of the text containing the anagram of the search string.](#)

i/p : text \xe2\x80\x93 abcdabcba, search string \xe2\x80\x93 abb

o/p: abcb

Q2. Given a map that maps two integers such that the key is the source level, and value is the max level reachable from the source level, find the min. steps needed to reach the last level beginning from the first level.

eg: i/p: 1->4, 2->3, 3->6, 4->5, 5->8, 6->7, 7->8, 8->-1 (-1 indicates that last level has been reached).

o/p : 3 [1->4, 4->5, 5->8 = 3 steps]

Q3. Given a list/ array of sentences (consisting of alphabetical words), print the sentence(s) that has/have at least as many consonants as it has vowels, and which contains the word that occurs most frequently amongst all the given sentences.

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## Amazon Interview Question

- Difficulty Level : \n[Easy](#)
- Last Updated : \n29 Apr, 2019

### Round 1:

There is an unsorted array of size n.

Given a key k find m nearest elements to k.

Example

Array :\xc2\xa0 \xc2\xa0-10, -50, 20, 17, 80.

key k :20

m : 2

Answer 17, -10.

Solution : [Find k closest numbers in an unsorted array](#)

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# Amazon summer internship (Hospitality, Work, Learning and Perks)

- Last Updated : \n 18 Jan, 2022

I joined Amazon, Bangalore in India on 24th May 2017 for 2 months Summer Internship.\xc2\xab  
There are three Amazon offices in Bangalore separated by few kms\xc2\xab

## Hospitality\xc2\xab

All the travels and accommodation facilities were taken care of by Amazon.\xc2\xab  
We had the option to choose our flights and they booked it along with cab service from the airport to the hotel. So my journey started from Ranchi to Bangalore with a lot of expectations. Out of the 9 selected Amazon Interns from our college- NIT Jamshedpur, we were 4 friends traveling from Ranchi to join Amazon in Bangalore as Interns. The journey was a pretty decent one. We reached Bangalore in around 2:30 hrs.\xc2\xab

They had booked a separate cab for everyone from the airport to the hotel. I stayed in a 5-star hotel for the first 15 days which was booked by Amazon. Every new employee/intern was allotted a single room. Among the many overwhelming facilities during the stay at the hotel included an awesome breakfast and cab service to/from the office.\xc2\xab

After 15 days we were required to move out on our own. So I stayed in a nearby PG for the rest of the days. They returned the amount spent up to 7k for this relocation.\xc2\xab

They also provided Sodexo coupons each month which was enough for one-time meal daily at the Amazon canteen. The office was great and well maintained. They had a very good security system.\xc2\xab

## Work;\xc2\xab

So my team was Shipment Data Platform.\xc2\xab

The first day was all about the orientation programme, Bootcamp session and an informal meeting with the manager, mentor, and my teammates. We were 8 members in the team. We were provided with some Amazon goodies and T-shirts during the orientation. We were also given a Mac to work on. From the second day, I started watching some courses about the Amazon Systems (how things work there, what guidelines are followed, etc.). The courses were very interesting and interactive. Every course was followed by some set of quizzes at the end.\xc2\xab

I spent my first week at Amazon attending Boot Camp session and setup of my desktop. We had sprint plans to discuss and plan our works every 3\xe2\x80\x93 weeks. So my first sprint was planned by my mentor as I was not having any idea about my project then.\xc2\xab

The working hours were pretty relaxed.\xc2\xab

It was around 8 office hours daily including 6 hrs of work. The remaining two hours were for meetings and other purposes. Working days were \xe2\x80\x93 Monday to Friday.\xc2\xab

There was not any hard and fast in/out time. You can come anytime and leave anytime. All that was required was 6 hours of work daily. We were also allowed to take occasional work from home if required. One of my teammates was staying at Hyderabad and he joined the meetings over the voice meetings we had on Amazon Chime. Occasionally, some were also sent to Seattle in the US for the work.\xc2\xab

I did my project well before the deadline and was able to take up some other tasks as well during a couple of my ending weeks there. In the end, we were required to give a presentation in front of many teams and also submit our Intern Performance Review document.\xc2\xab

## Learnings\xc2\xab

Now Coming to the key learnings, by working at Amazon, I learnt a lot. Before this, I knew how to write codes but after working at Amazon, I learnt how to write meaningful codes for a software

company. Well, Amazon is one of the \xe2\x80\x9cBig Fours\xe2\x80\x9d. I got to know about how it manages scale. I mean I got to know how it works at such a large scale spanning different countries and regions worldwide. I learnt new Technologies like Spring, Mockito and DynamoDB. I got to know how the code structure generally looks like at a company and how it is managed at Amazon.\xc2\xa0

I have got the Pre-Placement Offer from Amazon and will be joining as a full-time employee this year. This is me in the blue t-shirt with some of my teammates and manager on my last day at Amazon.\xc2\xa0

## **PERKS:\xc2\xa0**

\xc2\xa0

- The stipend is pretty good. (40000 rupees per month is on the higher side of industry standards as far as internship stipends go)\xc2\xa0  
\xc2\xa0
- We used to get a separate 1100 rupees per month in the form of cash vouchers as food allowance.\xc2\xa0  
\xc2\xa0
- We got free plane tickets for our onwards and return journey. This was my first air travel experience, and hence will always remain memorable. \xf0\x9f\x99\x82\xc2\xa0  
\xc2\xa0
- On the first day, you get a water bottle, a diary and a T-shirt.\xc2\xa0  
\xc2\xa0
- A 15 day accommodation is provided in a\xc2\xa0*very luxurious 4 star hotel.*\xc2\xa0I come from a rather simple family background, so I wasn\xe2\x80\x99t accustomed to such posh environments, so it was a bit overwhelming, in a good way, especially the attention, and the facilities. Breakfast was complimentary.\xc2\xa0  
\xc2\xa0
- Travel for interns, to and from the office was completely free and provided by the company.\xc2\xa0  
\xc2\xa0
- There were free coffee vending machines inside the office with a large assortment of beverages like soups, hot chocolate and whatnot. If there\xe2\x80\x99s one thing I learnt the hard way was that, espresso is\xc2\xa0*really bitter.*:p I don\xe2\x80\x99t know how people enjoy that stuff. I used to mainly enjoy the hot chocolate.\xc2\xa0  
\xc2\xa0
- There were recreation rooms with foosball, cricket, PS4, XBOX ONE, pool and a few other games.\xc2\xa0  
\xc2\xa0
- Interns are also provided with a Macbook that you can carry with you during your time at Amazon.\xc2\xa0  
\xc2\xa0
- There are a few team outings and lunches/dinners as well.\xc2\xa0  
\xc2\xa0

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# Amazon Interview Experience for SDE2 (3 years exp)

- Difficulty Level : \n [Hard](#)
- Last Updated : \n 15 Jul, 2019

I started with Amazon Interviews from Jan\xe2\x80\x98 and ended in March\xe2\x80\x99. This is not because there was delay from Amazon\xe2\x80\x99s recruiter side but it was scheduled according to my convenience. In my case recruiter from Amazon connected with me on LinkedIn/Email followed by conversation over the phone.

\xc2\xa0

## ***Round 0 \xe2\x80\x93 Online Test***

There were 2 questions which were easy and medium respectively. Please have some practice over input gathering and some STL fluently as it would consume most of your time if you are out of touch from competitive programming.

I would recommend you to practice a few problems(easy/medium- Ad-hoc/String) on LeetCode/Hackerrank/any other website before giving this test.

## ***Round 1 \xe2\x80\x93 Face 2 Face Problem Solving/Data Structures***

The round started with introduction from either side, in my introduction I was asked deeply about my projects and some situational questions like (Have you ever countered your manager\xe2\x80\x99s design/ideas when you felt another approach could be better?). There were more such questions which went for about first 15 minutes.

Below DS/Algo questions were asked in this round. I was asked to write working code(cleanly) including any auxiliary function that I was using. Also was asked to explain my solution\xe2\x80\x99s complexity.

Some Tips: Writing clean code and covering edge cases is very important in these rounds and missing some of them can add some flags to your review for the round.

[Merge k Sorted Arrays](#)

[Check if subtree](#)

\xc2\xa0

## ***Round 2 \xe2\x80\x93 Face 2 Face Problem Solving/Data Structures***

This round was similar to first round and review of first round was agnostic as it happened back to back. In this round too the project I was working on was asked in detail.

[Word Break Problem](#)

[Merge K sorted linked lists](#)

\xc2\xa0

## ***Round 3 \xe2\x80\x93 Face 2 Face-\xc2\xxa0 Managerial/Design***

The round was around knowing in detail about my entire experience in accordance with

Amazon's principles. Before this round it is highly advised to know all Amazon's principles and recall all your experiences that match with them. You would be asked all the situational questions like

1. Share any instance when you conflicted with your manager.
2. You were conflicted by manager/peers
3. Learned anything apart from projects which was not directly applicable to your work.

The round also covered some design of my projects and some tested some of my concepts around design like scaling/caching/sharding.

\xc2\xd0

#### ***Round 4 Face 2 Face-Sr.Managerial***

This round was partially similar to earlier round beside focusing whether I was fit to few more Amazon's principles like whether I can invent and simplify any process while working and whether I was curious to learn new things.

I spoke about 80-90 percent of the time in this round and I explained all the small projects/initiatives I had taken in my experience which were in accordance with these principles.

#### ***Round 5 Face 2 Face Design (Low+High)***

I was asked to **Design a room booking system.**

This included discussion around both high level and followed by low level. You need to clearly ask questions and limit your discussion to features which the interviewer cares. Since this is quite subjective round you need think aloud and have the expertise in what you speak. After all these rounds,

5-7 days later, I got a call from recruiter who confirmed my selection.

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# Amazon Interview Experience for SDE2

- Difficulty Level : \nExpert
- Last Updated : \n15 Jul, 2019

## Round 1:

There were around 30 to 40 people in this round, all of us were given a question paper and sheets . There were three algorithm questions and we had to write syntactically correct code within an hour.Below are the question.

1.[Print left view of binary tree.](#)

2.[Find two nodes whose sum in equal two given sum in a Binary Search Tree in O\(n\) time and O\(log n\) extra space.](#)

3.[Find k numbers with most occurrences in the given array](#)

## Round 2:

This was a face to face discussion focused on algorithm design .

1. Given a map with roads, all roads in the map are straight lines . These road may intersect with each other at any angle .\xc2\xa0 Calculate total distinct roads in the map . He was expecting to see how i represent the map as data structure, ask for questions on any ambiguity and devise an algorithm then code the solution on paper . I was able to give optimized solution on first try .Basically i used two dimensional array to represent the map . The array will have only 0\xe2\x80\x99s or 1\xe2\x80\x99s as elements . Continuous sequence of 1\xe2\x80\x99s will represent a road.Do a depth first search on this array to find the total no of continuous 1\xe2\x80\x99s.Tricky part was to determine roads in case we encounter an intersection.From intersection if we can move in same direction as the direction from which we came to the intersection we consider it as same road any road from the intersection to a different direction from which we came to intersection is considered as a different road.
2. [Print a matrix in spiral order. Syntactically correct code was expected on paper.](#)\xc2\xxa0

## Round 3:

This was design round.This round went on for about an hour and a half.

1. Asked about my current project, its design and architecture . Then asked me to draw the architecture of my project on white board and asked specific question on which component of the system did what and how they were implemented.
2. Object oriented design of a parking lot . I gave a design\xc2\xa0 and made use of Template method pattern, Strategy pattern and Abstract Factory pattern. Was asked counter question on my choices and their pros and cons . Be prepared for pros and cons questions on the choices that you make, and also gave me some changes in my design\xc2\xa0 and asked whether it was a good idea or not . Then asked how this system would be deployed on parking lots .

## Round 4:

This was again focused on algorithm design.

1. Given a log file in the below format .

[19-10-2019:10:20:22] <some logs>

```
[19-10-2019:10:20:23] <some logs>
[19-10-2019:10:20:24] Memory usage = 10 MB
[19-10-2019:10:20:25] <some logs>
[19-10-2019:10:20:26] <some logs>
[19-10-2019:10:20:27] <some logs>
[19-10-2019:10:20:28] Memory usage = 18 MB
[19-10-2019:10:20:29] <some logs>
[19-10-2019:10:20:30] Memory usage = 22 MB
[19-10-2019:11:20:31] <some logs>
[19-10-2019:11:20:32] Memory usage = 10 MB
```

There are logs of memory usage present in the log file. As in above example the memory usage logs are 10, 18, 22, 10. Question was to find the maximum increase that has occurred in the memory usage . In the above example the maximum increase that has happened is 12 starting from 10 MB and ending at 22 MB

2. There are two source code repositories app01 and app02 which gets deployed at 7 PM in production every day . You are given below function to deploy the code from app01 and app02 in production up-to a given commit id.

```
boolean deploy(int commitId_app01, int commitId_app02)
```

if we call deploy(10, 12) then every commit from id 1 to 10 from app01 and every commit from 1 to 12 from app02 will be deployed in production and the function will return either true if deployment is successful or false if deployment failed .

A deployment is made (i.e deploy(n, m)) and deployment failed because of a faulty commit you need to write an algorithm to find the faulty commit using the deploy method in least number of deployments.

3. Given a set of integers find a subset with given sum.[Subset Sum Problem](#)

#### **Round 5:**

This was Hiring manager round . He first introduced himself and then explained the project that he is hiring for and other details about the company.

1. Tell me something about yourself which is not there in your resume.
2. Explain the architecture and design of your current project. Then asked counter questions on my project design and why we were doing things in one way and not the other . Also asked about the limitation and problems that are there in my project architecture and design and what can be done to solve those.
3. Asked why we were using third party tool in my current project rather than developing one by ourselves.
4. Asked about the recent work i did in my company(recently i worked on API gateway integration with rest services) .Asked what change would you have to make in order to expose web services and UI to public on internet . I explained about security issues that could arise on exposing to public and how we can handle that . Also explained about handling high traffic using API rate limiting and distributed rate limiting . Then asked how we can implement it .
5. Asked if i had any questions.

#### **Round 6:**

Principle engineer round. Mainly focused on the design of work i have done till now and algorithm design.

1. A brief intro about the interviewer his experience and the projects he has worked on.

2. What is the toughest project you have ever worked on ? Why was it tough ? What did you do to solve the problem ? How did you design it? What choices you made and why?
3. Gave me a single algorithm design problem and asked me to mail solution with all corner test cases to him in 30 mins.\xc2\xa0 Find total number of turns in path between two node in a binary tree. You are given two node you need to find the path between these two nodes in binary tree and calculate the no of turns in the path . For example consider a binary tree where \xe2\x80\x98a\xe2\x80\x99 is the root node and \xe2\x80\x98b\xe2\x80\x99 and \xe2\x80\x98c\xe2\x80\x99 are left and right child of \xe2\x80\x98a\xe2\x80\x99, also \xe2\x80\x98d\xe2\x80\x99 is right child of b. The no of turns in path from \xe2\x80\x98a\xe2\x80\x98d\xe2\x80\x98 to \xe2\x80\x98c\xe2\x80\x98 is 2 . The no of turns from b to c is 1 and no of turn from a to c is 0.

After few days i got a call from HR that i was selected, in few days they also sent me an offer which was more than what i was expecting .

#### Tips:

1. Its not just about solving the problem its about solving it quickly, so practice as much as you can.
2. Its not just about solving the problem its how you approach the problem\xc2\xa0 that is also very important. So think out loud . Let the interviewer know how you are approaching the problem. It will also help the interviewer in giving you hints.
3. Always keep a lookout on the ambiguity in the problem statement and keep asking questions on that . The ambiguities are deliberately introduced in the question to check if you can find the ambiguity and ask clarification questions.
4. Take the hints . Interviewers are always helpful and they will give you precise useful hints if you get stuck. It is important to catch the hint as fast as possible and proceed with the solution . if you are not able to catch the hint it is a big red flag.
5. Never say that you cannot do it . Even if there is problem that you have not solved before or seems that you cant solve it, keep attacking the problem from different angles, interviewer will give you hints . But if you would say that you cant solve the problem it is a big red flag and you might end up getting rejected.

A big thanks to geeksforgeeks one stop shop for all interview preparation :).

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# Amazon Interview Experience (On Campus for SDE-1)

- Difficulty Level : \n[Medium](#)
- Last Updated : \n26 Jul, 2019

Amazon visited IIIT Noida for on-campus process in 2019.

## Round 1\nc2\xa0(Online Coding Round- 90 minutes on HackerEarth):

This round consisted of 2 coding questions and 20 MCQs. The difficulty level of the coding questions was easy, and the MCQs tested the knowledge of CS Fundamentals (OS, DBMS, CN, OOPS etc).

The coding questions were:

1. [Given an integer N. You have infinite number of 3, 5 and 10 denomination coins. Print the no of ways you can form a sum of N by using the coin denominations. Soln: Standard DP coin-change problem.](#)
2. Given profits of a company for N days and Q queries. Each query contains two integers L and R. For each query, print the number of days on which the profit is greater than or equal to L and less than or equal to R. Soln: Sort the profits, and for each query, use binary search to find the upper-bound for R and lower-bound for L. Time Complexity:  $O(n\log n + Q\log n)$

Some of the MCQs which I can remember:

1. Time complexity for  $T(n) = 4T(n/2) + n^2$  (options :  $O(n^2)$ ,  $O(n\log n)$  etc)
2. \nc2\x0Given: Prefix expression. Which of the following is the corresponding postfix expression.
3. Calculate the number of page faults that will occur, Given: OS uses FIFO for page replacement, no of pages per frame given. And system uses x pages in a specific order, and then some y pages in reverse order.
4. Purpose of Ping in networking.
5. Some questions on SQL commands (add column to a table etc)
6. In OOP, which of the following is used to achieve runtime polymorphism. Options: Friend function, operator overloading, function overloading etc)
7. If a machine sorts x entries in y seconds, how many entries will it sort in z seconds. Given: bubble sort is used for sorting.
8. Postorder traversal of tree given, which of the following is in-order.
9. Questions on deadlocks, semaphores etc
10. No of nodes in a complete binary tree with N leaves.
11. Although the questions were easy, the cutoff was very high. Out of ~400 students, 30 were able to clear this round.

## Round 2\nc2\xa0(Face to face Interview- 1 hour):

The interviewer was very friendly and started with \xe2\x80\x9ctell me about your projects\xe2\x80\x9d. It sounded like a formality, I gave a very brief answer and then he started with the questions.

Q1: [Print all triplets in an array that sum to a given number k](#). The catch here was that ALL such triplets have to be printed. For e.g. if the given array is {1, 1, 1, 1, 2, 0} and k = 3, the output should be: {(1, 1, 1), (1, 1, 1), (1, 1, 1), (1, 1, 1), (1, 2, 0), (1, 2, 0), (1, 2, 0), (1, 2, 0)}

I started thinking and was explaining my thought process to the interviewer as I was thinking. First, I talked about sorting the given array, then for each element A[i] in the array, I found all pairs that sum

to  $k - A[i]$ . For finding the pairs, I fixed one pointer at  $A[i+1]$  and one at  $A[n-1]$  (if  $n$  is the size of the array). I had to modify the solution such that all possible pairs get printed, and the interviewer himself gave 2-3 hints for that.

Time Complexity:  $O(n \log n + n^2) = O(n^2)$

Extra Space:  $O(1)$

Then he asked me to code the solution, which I did, and after performing a dry run, submitted the solution. The interviewer told me to re-check my code. I analyzed it, a case was missing, which I added and then he was convinced.

\xc2\xa0

Q2: Given an array in which for all  $i$ ,  $A[i+1] =$  either  $A[i] + 1$ , or  $A[i] \times 2$  1. In such an array, find a number  $k$ .

Ans: It can be done in  $O(n)$  using linear search. But it can be optimized by performing jumps. For example if  $k = 10$  and the first element is 5, we can jump 4 elements because the 4<sup>th</sup> element can be at max 9. And so on \xe2\x80\x96

Then the interviewer modified the question. Now,  $A[i+1] =$  in the range  $\{A[i] \times 2, A[i]+t\}$ .

Ans: size of the jump will be modified.

Then he asked me to code the solution which I did.

\xc2\xa0

It took me approximately 30 minutes per question, and I reached at the solutions gradually with the help of hints from the interviewer. It might sound counter-intuitive, but the interviewer giving hints is a positive signal (as long as you are able to catch those hints and arrive at the solution he wants you to arrive at).

### **Round 3\xc2\xa0(Face to face Interview- 45 minutes):**

Question: Implement the algorithm of split-wise app (Algorithm, not system design). Given transactions in the format: A->B 45, meaning A owes Rs.45 to B. Reduce the transactions to a minimum.

I started by drawing a graph of the transactions, and I figured that if we detect all cycles in the graph, then we can reduce one transaction per cycle. The interviewer asked me to code it, which I started doing. Then he stopped me in between and told me to come up with a different solution. He gave me a hint to think about how much net amount does each person owe/is owed. Using that hint, I was able to come up with a greedy solution: form two sets of people, those who owe some net amount and those who are owed. Then from those who owe, select one and give to one from those who are owed. But I was not sure about the order in which elements from the two sets had to be chosen. He hinted that I choose the ones with the largest values. I tried to prove it mathematically, and then proceeded with the solution. Then I used max-heaps to extract elements from both the sets.

Time Complexity:  $O(n \log n)$

Extra Space:  $O(n)$

Then he asked me to code the solution. In the solution, I had used heapify and percolate-up as functions for heap, he made me code them as well.

#### **Round 4 (Face to face Interview- 1 hour):**

Question: [Given a BST, find the kth largest element. Size of the BST not given.](#)

Ans: Using reverse-inorder traversal. Kept counter to keep track of no of elements visited.

Then the rest of the interview was based only on projects and my internship. I was also asked some subjective questions like, what was the most challenging project you worked on and why? which technology do you like the most etc.

The interviewer asked in-depth questions about my projects, but since I had mentioned only simple projects which I had made myself, I answered all questions confidently.

\xc2\x0

#### **Round 5 (Face to face Interview- 1 hour):**

There were two interviewers in this round. In this round they asked a lot of theoretical questions of CS Fundamentals. I am not good with theoretical subjects, and was only able to answer the questions partially.

Some of the questions were: Discuss semaphores and how do they work, what is critical section, what is race condition, what is the difference between a thread and a process, what is scheduling, discuss some scheduling algorithms, explain the working of round robin scheduling. What are atom properties of transactions, discuss normalization, 1NF, 2NF, etc, What is a DNS server, can two DNS servers communicate with each other, What happens when we type a web URL etc.

In one question, I was given a code segment in JAVA and asked whether critical section will be violated or not.

I don't know how much knowledge of Fundamentals is expected by Amazon, but I got through by answering only some of these questions. I was able to confidently answer some questions. For some questions, I gave partial answers, as much as I could recall. For some questions, like working of round robin, atom properties etc, I was not able to answer at all.

The round had not went well till this point, but as the interviewers were very friendly, I requested them to ask me some question on DS/Algo. Then they asked me to check if two BSTs are the same (i.e. have the exact same elements, the structures might differ).

Soln: Store in-order traversals of both trees in arrays and check if the two arrays are the same.

Time complexity:  $O(m+n)$ , Space Complexity:  $O(m+n)$

The interviewer told me to optimize the space, and gave a hint to think about some other way to perform in-order traversal. Then I performed the inorder traversals using stack instead of recursion. I kept two stacks, and kept removing the same elements from both stacks, when they appeared in both. And this stack will have at max  $O(\log n)$  elements (or  $O(\text{height})$  elements), so space complexity is reduced. Then I was asked to code the solution which I did.

\xc2\x0

#### **Suggestions:**

- Start with a brute-force solution and then keep optimizing it for as long as you can. You need to reach the optimized solution eventually, and it's perfectly fine if you start with a very simple solution and optimize it gradually.
- Try to prove every part of your logic mathematically, don't make wild guesses. If you form any hypothesis, don't proceed with it without proving it.

- Clarify the questions from the interviewer, ask him the output for some random test cases to be sure you have understood the question properly.
- Practice writing code on paper. It is very different from writing it on your computer, since you cannot edit much on paper.
- Always state the time and space complexity of your solution.
- Perform dry runs before submitting your code to the interviewer.

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# Amazon Pune Pool Campus Interview

- Difficulty Level : \n[Medium](#)
- Last Updated : \n15 Jul, 2019

Amazon pool campus placement drive was conducted in March 2019. There were total five rounds, first round being an online coding round was held on Hackerearth followed by three technical interviews and one bar raiser cum technical round.

## Online Round

There were 2 coding problems and 10 MCQs related to Operating System and DBMS.

## Technical Interview 1

### Problem 1

[You are given two integers n, k, and an array a of size n. Find out the frequency of k in the array a.](#)

### Solution

My first solution was to hash the frequency of the entire array in array h and then print h[k]. The time and space complexity are both O(n) in this case. The interviewer asked me to improve the space complexity.

In my next solution, I just took an integer variable count and incremented it every time k occurred while traversing the array a. This space complexity reduced to O(1) and time complexity still O(n).

He told me that if the array is sorted and now I have to reduce the time complexity as well. I could simply use lower\_bound() and upper\_bound() functions in C++ to find the first and last occurrence of k in array a. Now the space complexity is O(1) and time complexity is O(log(n)). He told me to write the code.

Instead of using upper\_bound() and lower\_bound() directly I thought it would be better to implement them. So, I wrote two binary search codes, one for lower\_bound() and other for upper\_bound(). He was satisfied and moved on to next question.

### Problem 2

Create a binary search tree from a sorted linked.

### Solution

My first solution was an obvious skewed tree. He was impressed and told that it is indeed very easy and simple solution but now he wants a height balanced tree. This the [solution](#). He told me to write the entire code which I did somewhat correctly with his help.

## Technical Interview 2

My second round was conducted by a very pretty and intelligent young lady. She helped me a lot, by

giving suggestions and ideas to improve my solution.

## Problem 1

You are given a binary tree and two integers k and d. Print all the nodes at a distance of d from k.

## Solution

My first solution was to find the distance of every node from node k using LCA and then print only those nodes whose distance is d. This is my [idea](#). The time complexity of my solution was  $O(n \log(n))$ . She wanted it in  $O(n)$ . She helped me build all the logic and finally I was told to write the code.

## Problem 2

You are given an array a which consists of only 0, 1 and 2. You have to sort the array.

## Solution

My first solution was to hash the frequency of the array in one traversal and then fill 0s, followed by 1 and then 2s in second traversal. She was satisfied but wanted it in single traversal. This is the [solution](#). I was told to write the code.

## Technical Interview 3

This was more of a general discussion on various fields of computer science rather than problem solving round.

## Problem 1

You have two files a.txt and b.txt having two numbers with upto billion digits. You have to calculate the sum of two numbers.

## Solution

My solution was to first move the file pointer of the both files at the end and then start adding the digits and carry and consequently moving backwards and store the result into a new file. Finally create another file and save the reversed contents of previous result file. He was satisfied but then restricted the backward traversal. I told that we can use recursion to return the carry. He asked if any data structure can be used for this problem. I replied with linked list, because large amount of continuous memory cannot be allocated but linked list does not use continuous memory.

## Problem 2

You are given a grid of alphabets. You have to print the coordinates of all the starting points from where word \xe2\x80\x9cAMAZON\xe2\x80\x9d can be formed. You can move up, down, left and right.

## Solution

I gave a solution using DFS and DP. It was difficult to explain but I tried my best. I guess he was expecting a more simpler [solution](#) but he was satisfied. He told me to write the code my idea.

# Technical cum Bar Raiser Round

I was told give brief description about myself and my projects. He asked my role in the project. After which he gave two problems to solve.

## Problem 1

You are given a binary tree and a node k. Find out if the left sub tree of k is a mirror image of right sub tree or not.

## Solution

The idea was a modification of [this](#).

## Problem 2

You are given a character array. You have to return a character array in which each alphabet x is present min(frequency(x), position of x in alphabetical ordering)).

## Solution

This was a simple implementation problem. I was told to write the code properly with class.

Finally, total of 9 people were selected. Out of which 6 were from **Army Institute of Technology Pune**. I was fortunate enough to be one of them.

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# Amazon Interview Experience (Pool campus- March 2019) Pune

- Difficulty Level :[Medium](#)
- Last Updated :[15 Jul, 2019](#)

Recently, Amazon held a Pool Campus drive at Pune in which students from various colleges in the city had appeared.

## Job Profile: Software Development Engineer (SDE-1)

### Round 1: (Online coding test on Hackerearth):

First, there was an online coding test hosted on Hackerearth consisting of 2 easy coding questions and 5 mcqs (easy).

Around 300 people were shortlisted for the final interviews.

There were a total of 4 face to face technical interview rounds. All the rounds were elimination rounds.

### Technical Interview (Round 1):

It started with a detailed discussion about my projects.

Then straight away jumped to problems.

#### Problem 1:

You are building a website in which users have to enter usernames. If username exists append a number in the following way and return the new username.

Example:

If first input is \xe2\x80\x9cabc\xe2\x80\x9d, \xe2\x80\x9cabc\xe2\x80\x9d itself should be returned as it isn\xe2\x80\x99t already existing

If the next input is again \xe2\x80\x9cabc\xe2\x80\x9d, the string \xe2\x80\x9cabc0\xe2\x80\x9d has to be returned similarly you\xe2\x80\x99ve to append numbers in an increasing manner as mentioned, if username already exists.

More examples,

If next input was \xe2\x80\x9cabcd\xe2\x80\x9d, \xe2\x80\x9cabcd\xe2\x80\x9d itself should be returned

Followed by \xe2\x80\x9cabc\xe2\x80\x9d, output should be \xe2\x80\x9cabc1\xe2\x80\x9d (Because \xe2\x80\x9cab\xe2\x80\x9d and \xe2\x80\x9cab0\xe2\x80\x9d, both were taken)

And so on..

So given any input string give the output username.

#### Solution:

I suggested that it can be done using the Trie data structure. I was then asked to write the code on paper.

#### Problem 2:

Given an array of N integers find the sum of all numbers whose number of set bits is at least two.  
Expected time complexity: O(N) strictly

## Solution:

Problem reduces down to finding the sum of numbers that are not an exact power of 2. Now to check if any number is an exact Power of 2 in constant time, bitwise operations can be used. For any number N, it is a perfect power of 2, if  $(N \& (N-1))$  equals to 0.

I qualified and was called for the next round.

## Technical Interview (Round 2):

This was also a DSA round.

### Problem 1:

This was the problem asked. <https://www.geeksforgeeks.org/vertical-sum-in-binary-tree-set-space-optimized/>

### Problem 2:

#### [Alien Dictionary](#)

Fully space optimized and time optimized codes were expected.  
Cleared the round.

## Technical Interview (Round 3):

Again, another DSA round. Here are the problems.

### Problem 1:

#### [LIS of array](#)

### Problem 2:

#### [Find number of Triplets with given sum](#)

## Technical Interview + Hiring Manager (Round 4):

This was a technical plus hiring manager round.

The round started with a detailed discussion about my projects followed by 2 DSA questions:

1. Code to check if a given linked list of characters is a palindrome or not ([Link](#))
2. Given the cost of stocks on each day and you can buy and sell exactly one stock you have to maximize the profit. ([Link](#))

Later, I was asked questions like:

Why Amazon, why should we hire you, will you be able to relocate, etc and also a small discussion about the [Ashwin-Butler Incident](#) as it turned out that the interviewer was also a cricket follower \xf0\x9f\x99\x82

Overall, I would like to say that the interviewers were really friendly and always provided hints when needed. It was more like a discussion rather than an \xe2\x80\x98interview\xe2\x80\x99.  
Don\xe2\x80\x99t hesitate in asking hints, they\xe2\x80\x99re always there to help. All the best.

Finally, got the offer after a week. \xf0\x9f\x99\x82

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# Amazon Interview Experience | Software Development Engineer II

- Difficulty Level :\nHard
- Last Updated :\n15 Jul, 2019

Interviewed for Amazon SDE \xe2\x80\x93 II with total experience of 1.5 years.

## Round 1 (Telephonic Screening):\xc2\xa0

Q1. Given a number \xe2\x80\x98n\xe2\x80\x99 find the total number of binary string of length \xe2\x80\x98n\xe2\x80\x99 such that there should be at least one pair of consecutive 1s in a string. Example: for n = 5, 10011, 11101, 11111 are valid and 10101, 10001 are invalid.

Q2. Design classes for the problem, there can be \xe2\x80\x98m\xe2\x80\x99 states and for each state there can be \xe2\x80\x98n\xe2\x80\x99 political parties. Currently the counting of votes is happening, define functions for following operations (expected complexity O(1)):

1. updating the total votes for a party in a state
2. get leading party for a state at current time

Onsite Rounds:\xc2\xa0After 3 weeks of telephonic screening.

## Round 2 (Algo and DS):

Q1. All nodes at distance K from a given node in a Binary tree. <https://www.geeksforgeeks.org/print-nodes-distance-k-given-node-binary-tree>.

Q2. Given k sorted arrays, you need to select one element from each array such that the difference of maximum element and minimum element of the selected elements is minimum. Example for k = 3  
1 13 27 30

16 20 29

2 3 14 18 19 22 25 28

**ans:** 2\xc2\xa0selected elements (27, 29, 28)

Most optimal solution plus neat code on paper was expected for both problems. I took half an hour each for both the problem. The interview went well.

## Round 3 (LLD):\xc2\xa0

Design Chess, make neat class diagram for each entity, explain relation between the entities, explain how the complete follow will take place i.e. which class/function will take the input, how that input is processed and what values will be returned.

Interviewer dug deep in some classes and asked to write complete function definitions for some functions.

The interviewer was very interactive, gave hints wherever he wanted to dig deep. At the end I created pretty good design. This round also went well.

## **Round 4 (HM):**\xc2\x80

There were two interviewer both of them were of manager rank, one of them asked me the question and the other shadowed the interview.

He started with a lot of behavioural questions:

1. One time I took an initiative in my team.
2. An idea i had which improved customer experience
3. An idea disapproved by the team
4. How is code review done and many more\xe2\x80\x86

Go through the amazon leadership principle, they are very obsessed about them and try to ask to question around them only, do have an experience prepared for some of the crucial ones like customer obsession, dive deep, earn trust, have backbone; disagree and commit from your previous projects.

Then he asked to design HLD of library system, what should be the DB structure, which type of DB should be used (NoSQL or SQL) and why?

I answered all the questions with great confidence (do remember to answer behavioural question with confidence, your body language matters the most in HM rounds). This round also went pretty well.

## **Round 5 (HLD and LLD):**

Design Railway Booking System, both HLD and LLD is expected in this round. What should be the different components in the system, do we need micro services, how these will interact? what should be the DB structure and classes in the system. I really got confused in this round and went way off road. After a lot of struggle I managed few classes and a DB structure but it was not end to end. This round was bad.

## **Round 6 (Bar Raiser):**

He again started with a lot of behavioural questions, most of them were on customer obsession.

HLD for Instagram, What should be DB structure, kind of Database should be used, sharding policy and some other design related questions.

He also asked an Algo question:

Given a list known ratios, find ratios for the query list.

### **Input:**

Given ratios:

A B 0.3 (means A/B = 0.3)

B C 0.2

D A 2

### **Query List:**

A C (Find A/C)

B D

## Output:

0.6

1.67

\xc2\x0

After the bar raiser, the HR told me that response from my interviewers are good and thats it for the day. After 4 days i got a call from her, she congratulated me as I made it and **the offer was extended** to me. The overall experience was very good. The HR was very supportive and guided me time to time, telling me what to prepare, how to answer, which leadership principle to focus on for each round.

## Tips:

- For SDE 2, Amazon don't focus on algo and DS much, just go through the standard question on G4G and that will be sufficient.
- Do prepare design well, both LLD and HLD is expected out of you. Educative.io is a very good source for it, its not free but its worth it.
- For LLD prepare list for standard questions which you can find easily in Amazon experiences and try to create solution first by your own then just search them online.
- Be very confident in HM round, if HM finds you fit for the role, he will fight for you even if all other are against you.
- Most important of all, Prepare the Leadership principle very well, keep a story ready for at least few of them.
- Last but not the least, believe in yourself anything is possible, almost everyone told me that they not gonna hire a 1.5 year experienced guy for SDE II, but they did, so trust yourself and go grab it.

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# Amazon Internship Interview Experience

- Difficulty Level :\nEasy
- Last Updated :\n15 Jul, 2019

## Round 1:Online Test

The coding round had two questions 1 was quite hard which was DP problem no one was able to solve it other was easy can be done applying simple sorting logic

Aptitude questions contained questions related to java SQL and basic c/c++ knowledge and programming

A total of around 150 students sat for the test out of which 19 were shortlisted

\xc2\xab0

The HR came and explained to us about the format and internship opportunity job description and location

There were two technical interviews and No HR interview

## Round 2: Technical round

Given a sorted array in which each element is repeated twice and one element is repeated thrice find that element in O(log(n)). I gave O(n) solution.

Give a sorted array find all the pairs having given sum

\xc2\xab0

After this round I was rejected.

Thanks to geeksforgeeks team for putting such good content on website. I would advice to go through problems on website as it improves thinking and approach. It helped me a lot in every thing be it subjects, coding problems or practicing the questions.

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# Interview Experience of Amazon |x80|x93 SDE2

- Difficulty Level :  
[Medium](#)
- Last Updated :  
15 Jul, 2019

Some time ago a recruiter by Amazon(Bangalore) contacted me, to schedule an interview for SDE-2 . This is the story of the hiring process.

First of all, the hiring process takes a long time. They are not slow, since the procedure is made of different phases:

1. Problem Solving Rounds
2. Manager Round
3. High Level Design
4. Low Level Design

I've been through all the 7 rounds at Amazon and it took me 4 visits(one month) to onsite for attending all the rounds, So one has to be patient with the Amazon's interview process. But sadly I got feedback saying Not Performing Well in LLD round and they will consider my profile soon again .

## Problem Solving Round 1:

**Time:** 45min

**Interviewer:** SDE3 (Panel of 2)

**Question1:** You have given a numbers in a triangular fashion, you need to print maximum sum of a path from root .

**Question2:** Generate random number from 1 to 8 with 1/8 probability.

## Problem Solving Round 2:

**Time:** 45min

**Interviewer:** SDE2

**Question1:** You have given a matrix of 0's and 1's where 0 represent Home and 1 represent Hospital, you need to return edge distance matrix with shortest distance of each houses to the nearest hospital.

**Question2:** You have given two vectors say  $a_1x+a_2y+\dots$  and  $b_1x+b_2y+\dots$ . Find best way to store these vectors and return vector sum of given vectors.

## Manager Round:

**Time:** 45min

**Interviewer:** Senior Manager of Alexa, India.

**Question1)** Tell me about a time when you had a conflict with your manager and how did you handle it .

**Question2)** Tell me about a time when you could not deliver a task in time.

**Question3)** Detail about current projects and challenges faced.

**Question4)** Design Facebook Timeline (Higher Level Design)

**Question5)** Tell me about a time when you faced a challenge

## **High Level Design \xe2\x80\x93 1:**

**Time:** 60min

**Interviewer:** SDE2

**Question1:** This Question was from my project where I need to explain server side architecture of Bi-Directional Syncing framework.

\xc2\x01 \xc2\x01 \xc2\x01 \xc2\x01 \xc2\x01 \xc2\x01 Then, we discussed on \xe2\x80\x98How to Scale it for multi-million users\xe2\x80\x99.

**Question2:** \xc2\x01 Design Amazon Flash Sales System .

\xc2\x01 \xc2\x01 There is a Amazon Sale is going on for a day in India and USA using same inventory (shared b/w India and USA ).

\xc2\x01 How you will handle Transactions, concurrency etc .

## **Higher Level Design \xe2\x80\x93 2:**

**Time:** 30min

**Interviewer:** SDE2

**Question1:** Design BookmyShow .

## **Low Level Design \xe2\x80\x93 1:**

**Time:** 30min

**Interviewer:** SDE2

**Question1:** Design BookmyShow with all the classes and relations .

\xc2\x01 \xc2\x01 Adding up to above question, later interview asked \xe2\x80\x98How you can modify your code to take care of events booking along with movies\xe2\x80\x99.

\xc2\x01

## **Low Level Design \xe2\x80\x93 2:**

**Time:** 45min

**Interviewer:** Software development Manager, PrimeVideo and SDE3 (Panel of 2)

**Question1:** Design File Convertor like converting xml to Json, etc with all the classes and relations .

There are some behavioural questions as well like \xe2\x80\x98Why you want to join Amazon\xe2\x80\x99, etc .

#####

I feel that I was not able to perform well in the last round to gather requirements from Interviewer and got baffled in the final round.

#####

I am sharing few resources which i have used while preparing for tech interviews for companies like Amazon or Google.

## **Problem Solving:**

1) LeetCode \xe2\x80\x93 Did Solve Top 150 questions of Google + 50 written Mock interviews .

2) GeeksforGeeks \xe2\x80\x93 To understand concepts behind LeetCode problems .

## **Low Level Design:**

\xc2\x01.Grokking Object Oriented Design Interview

\xc2\x02.Head First Design patterns

## **High Level Design:**

\xc2\x01.Grokking System Design Interview

\xc2\x02.HighScalability Blog \xe2\x80\x93 All time favorites section

\xc2\x03.Youtube Channel by TechDummies-Narendra L

**Pramp:**

In-person Mock interviews \xe2\x80\x93 15

#####

I haven\xe2\x80\x99t been through head first design pattern book before the interview but currently going through it . So, I feel this book will definitely help you in developing thought process of Low Level Design.

Practice is the key, make sure you give 2-3 hrs of day time for interview preparation sincerely .

**Note:**\xc2\x03You can know more about me\xc2\x03[www.xcodedoctor.com](http://www.xcodedoctor.com)

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## Amazon Interview Experience (Telephonic Interview)

- Difficulty Level :\n[Medium](#)
- Last Updated :\n15 Jul, 2019

**Question1:** Introduce yourself

**Question2:** Can you tell me about any scenario where you have taken an initiative in your previous jobs to do something/ solve something that was not strictly required of you.

**Question3:** Coding on shared editor (no compilation of code required but no pseudocode)

There is a village with two kinds of people- villagers (represented by 0) and defenders (represented by 1). When enemy attacks the defenders stand in front as shown below:

```
110000\r\n100000\r\n111000\r\n110000\r\n
```

The enemy will attack in that row which is most vulnerable (i.e. has the least number of defenders). Write a program to find the row where the enemy will attack.

When I provided an  $O(m \times n)$  solution I was asked to provide a better solution. And  $O(m+n)$  solution is possible.

Practice [here](#)

**Question4:** Design a basic LRU cache using basic data structures.

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# Amazon Interview Experience \xe2\x80\x93 Application Engineer

- Last Updated : \n15 Jul, 2019

## Round 1 \xe2\x80\x93 Written Coding(C++ or Java or Python) and Scripting(Perl or Unix or Ruby)(1 hour)

Programming:

Given a number. Find next highest number with same set of digits

I/P \xe2\x80\x93 12345

O/P \xc2\xa012354

\xc2\xa0

Given an integer list. Output should be the product of next remaining digits

I/P \xe2\x80\x93 {1, 2, 3, 4, 5}

O/P \xe2\x80\x93 {120, 120, 60, 20, 5}

\xc2\xa0

Scripting:

Script to change owner of a file

Script to grep \xe2\x80\x9cAmazon\xe2\x80\x9d \xe2\x80\x9camazon\xe2\x80\x9d \xe2\x80\x9cAMAZon\xe2\x80\x9d from a given text file

Script to list the processes running in a server

One more question based on cut command

\xc2\xa0

## Round 2 \xe2\x80\x93 Face to face Programming(45 mins)

A program to spirally traverse a matrix

I/P:

1 \xc2\xa02 \xc2\xa03 \xc2\xa04

5 \xc2\xa06 \xc2\xa07 \xc2\xa08

9 10 11 12

13 14 15 16

O/P:

4, 3, 2, 1, 5, 9, 13, 14, 15, 16, 12, 8, 7, 6, 10, 11

Time complexity for the written program for above problem. Is there any better approach

\xc2\xa0

Print a given list in a matrix in x form. list length is assumed to be always odd

I/P:

1, 2, 3

O/P:  
1 . 1  
. 2 .  
3 . 3

\xc2\x0

A few questions about the project currently working on

\xc2\x0

### **Round 3 \xe2\x80\x93 Face to face scripting(45 mins)**

cut commands, grep commands, awk commands

How will you make sure that an application is running fine. What all will you do to make sure of that.  
Asked about all steps in details and asked to write exact commands for each.

\xc2\x0

### **Round 4 \xe2\x80\x93 Manager round (1 hour)**

In full detail about the current working project and tasks which you do. Next 20-30 mins about the project work which you say

2 to 3 scenario based question on how to handle specific situations

According to you, what are the top 3 issues you face in irctc website and a detailed approach of how will you handle it

\xc2\x0

### **Round 5 \xe2\x80\x93 Hiring Manager(1 hour)**

Again, in full depth about the project currently working on.

Few java logical problems

Scenario based questions

How did you handle a situation where you had communication issues with a customer

All answers will be asked in depth. Like what approach did you make technically. How did it resolve it. How did you measure the success. What are other possible approaches

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# Amazon Internship Interview Experience

- Difficulty Level : \n[Medium](#)
- Last Updated : \n16 Dec, 2019

## Aptitude and Coding Round

The coding round had two questions 1 was quite hard which was DP problem no one was able to solve it other was easy can be done applying simple sorting logic

Aptitude questions contained questions related to java SQL and basic c/c++ knowledge and programming

A total of around 150 students sat for the test out of which 19 were shortlisted

## Interviews

The HR came and explained to us about the format and internship opportunity job description and location

There were two technical interviews and No HR interview

### Interview 1

The Interviewer was very nice calm and composed he told me the basic of how the interview will be and asked for any doubts.

The first question was to [write a code for balancing brackets in an equation](#)

I was shocked to hear it but it was the one I asked him again whether its the right question and he said yes

I wrote the code checked he was overlooking it and grabbed the paper when he understood that I knew the logic and proper syntax

The second question was to find the longest increasing subarray

[Longest increasing subarray](#)

The solution was similar to this approach I went through my code and found a mistake corrected it and then gave it to him

The point checking your code/ answer the interviewer is not in a hurry, so take your time check and then submit it

The last question was quite tricky I had never seen it

It was based on group theory and dependencies

Lets say there \xe2\x80\x99s a relation A = {B, C, D}

B = {Z, X}

i.e. A is dependent on B C and D and consequently on Z and X

So relations of A are

A -> B, A-> C, A->D, A->Z, A->X

So the question was to find the dependencies of all the variables

I used an approach of Hash tables which was not full proof and efficient but the interviewer helped me work out a better solution which was not efficient but correct

And that was it for interview 1 I asked a few questions about the life in Amazon and then I left the room

9 students were shortlisted for the round 2

### Interview 2

Interviewer welcomed asked me some general questions about myself it was kinda pseudo HR interview in the beginning. He asked me to tell about myself wrt to coding. I told about my encounters with coding my projects and research projects.

He asked me whether I\x99m good with Theory of Computation I said I\x99m not

confident sir

The same he asked me for JAVA and replied the same answer I was not happy with this but I had decided to tell the truth no matter

He then asked about OOP I said sir I can try and he asked about Virtual Memory

I was able to answer the question and explain the concept

The next question was to write a code to traverse a binary tree in alternate even level order traversal

If a tree has levels starting from 0, 1, 2, 3 and so on print the even levels

i.e. print 0th level, 2nd level and so on

<https://www.geeksforgeeks.org/print-all-the-levels-with-odd-and-even-number-of-nodes-in-it-set-2/>

I requested for some time and after 5 mins I thought about using zigzag level order traversal by using a proposed solution

We will traverse the tree in a zig zag manner and store the levels in hash table

And at the end we print even level entries.

He was satisfied with the answer and said instead of using two queues use only single queue

He helped me in devising a solution and we got an approach.

I was not asked to write the code for it.

And that's it the second interview was also done

After 18 hours TPO mailed and I was selected for the Amazon Internship for SDE 1 position along with 6 others from my college VJTI

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# Amazon Interview Experience SDE1

- Difficulty Level : \n[Medium](#)
- Last Updated : \n14 Nov, 2019

Drives were conducted at Pune, Gurugram, Hyderabad and Bengaluru.

**Round 1:\xc2\xd0** There was a mixed panel including some SDEs and HM. My first round was with the HM. It was a real-time scenario faced at Amazon. We had a discussion for about an hour which started with my resume and past experience and quickly moved onto the problem. The discussion was apparently to see how you respond to some issues that might arise and if you are quickly able to decide the trade-off for handling that situation and how correct can you be. The discussion had less technical part, more on problem-solving skills. So, for this round, just keep your cool and try to go into the problem as the interviewer describes and don't hurry on the interviewer, take genuine time and ask for hints. Such rounds are more discussions than interviews.

**Round 2:\xc2\xd0** 2 SDEs were there to conduct this round for me. This was more of a Data Structures and Algorithms round.

Q1. [Find the kth largest element in an array](#). A simple priority\_queue(heap) question.

Q2. [Find the middle of a linked list](#).

Q3. I do not exactly remember the question, but I solved it using the algorithm for sum of k-max elements in an array, adding if the element is larger and subtracting if the element is smaller. It wasn't exactly that question but a good variation of that.

The interviewers were asking about different solutions, edge cases, optimisations in all of these questions, but they were simple questions.

**Round 3:\xc2\xd0** In this round I was interviewed by a senior developer in the team. We had a short chat about my work experience and hobbies, then we jumped straight into questions.

Q1. You have to find cost for setting up electricity connection in a city where setting up electricity costs 1 unit and if the house is connected to any other house which already has an electricity connection, then there is no cost for that. The network of houses is given as a grid of 1s and 0s, where 1 represents a house and 0 represents no house and you can set up connections in all eight directions.

Can be solved simply using [DFS](#). The interviewer was very specific about the working on all edge cases and also the code written.

Q2.\xc2\xd0<https://www.geeksforgeeks.org/efficiently-implement-k-stacks-single-array/>

2nd question was where the interviewer only wanted to see my approach and no code. In all other rounds and questions based DS, Algo I had to write code on a paper. There were some variations from this article, but reading this will give you good understanding of the core concept he was looking for.

**Round 4:\xc2\xd0** After round 2, elimination had started. And during the drive only 3 rounds were conducted and people shortlisted after all 3 rounds were then contacted for the final round which was through video conferencing. I was lucky enough to get shortlisted.

The interviewer was right on time and we started off with a little discussion about the hiring team and

their work. Then we moved onto my introduction and work-ex. After that I was asked a question on Boggle-Solver with direction option limited to up, down, right and left. I did it using trie and submitted the code.

Happy to share that after 2 weeks I got my offer.

Amazon interviews are more about keeping your head still and using your knowledge to understand the problem and return the solution. Also, don't think too hard about the interviewer and include him in the questions and hints required(genuine). They are here to help you get hired and not torture you. Just stick to your basic fundamentals that you have learned. And GeeksforGeeks is a great source of knowledge so use it to the fullest and never give up :P.

All the best!!!

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# Amazon Interview | (On-Campus For Internship)

- Last Updated : \n15 Jul, 2019

It was a great experience with Amazon. The articles on GFG are really very helpful.

It consists of two rounds.

## 1) Online Coding Round

Online assessment: It consists of four sections:

\* \xc2\xa0Code debugging section (**20 minutes**): 7 questions were asked in this section. (Simple code)

\* \xc2\xa0Reasoning ability section (**35 minutes**): 24 questions were asked in this section and you will not be able to skip and return to problems.

\* \xc2\xa0Coding section (**70 minutes**) : 2 Question:

1. **Find all pair in an unsorted array with sum less than k.** Initially, I tried to solve in order of O(n) but failed to do. There were no constraints, so I solve this question using brute force (without TLE).
2. **The second problem was a bit similar to [rat in the maze problem](#) but the destination can be anywhere.** There are multiple approaches to solve this problem. I used backtracking to solve this problem.

\* \xc2\xa0Workstyle survey (**10 minutes**): Fill this seriously, who knows this also counts.

Totally 15 people got selected.

## 2)\xc2\xa0Technical interview:

There were 4 different interviews panels, I was among the first one whose name was called. We shook hands and exchanged greetings. The interviewer was doing something on his laptop. So, I asked some random question about him (I think that left a good impression).

He asked me to introduce myself. Then we talked about projects and my participation in GSoC (he wasn't aware of GSoC), open source and what was my job as GCI (Google Code-In) mentor, how I introduced open source to GCI students and all that stuff). He asked me about my participation in competitive programming contests. I told him, I am not a regular competitive programmer but participate occasionally.

Then he asked the first question, Check for [Symmetric Binary Tree](#). He first asked the approach. I told him about my approach using the queue data structure. Then he asked me to write code on paper. And he was continuously asking me, if you get stuck then ask me. He even offered me coffee (of course I rejected it). After writing code, he pointed about what is this node and I missed one corner test case too. So, then I defined the structure of the node and considered the corner test case. Again, he asked me to write a code of recursive method (this is too easy). We discussed the complexity of both methods. He also asked me about the different version of the GNU compilers and some in-built functions that are available for the queue data structure in STL and their complexity and implementations.

Then he asked a second question, [Next Greater Element](#). He explained this question wrong. So my new question became for each A[i] : output will be min(A[i+1] to A[n]) >= A[i].

For example:

Input: {13, 6, 7, 14, 9, 10}

Output: { 14, 7, 9, -1, 10, -1}

I took the time to solve this question. He gave me a hint but finally, I solved this problem using an ordered map (he gave a hint to do from stack data structure). He was a bit confused when I used the map but I explained it to him everything. Then he asked me to write code (did this without any error) and the internal working of the ordered map and difference between ordered and unordered map. We discuss the complexity of each function of both data structure.

He asked whether I have a question for him or not. I asked about the intern projects and in which team I will go if selected. We discussed work culture at Amazon. We also had 5 minutes discussion on delivery services and how to improve it.

**Suggestions:** Be confident in your approach and try to make conversation with the interviewer as they are sure to help you out. If you don't know anything then say no to them instead of bluffing. Practice code on the paper because they really need good code without any error (try to have a good indentation and define class if you are using). Put only those projects on the resume which you had done genuinely (at least don't get caught if you fake it) and make sure you know everything about your projects in great depth and details. For Amazon, the best way for practice is GeeksForGeeks Amazon internship experiences archive. It helped me a lot at the last moment. Also, be sure you can speak about all the things you have done. They may ask the purpose of your project, why this framework is used instead of other and even ask to write code.

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# Amazon Interview Experience (Pool campus-2019)

- Difficulty Level : \n[Hard](#)
- Last Updated : \n15 Jul, 2019

This year Amazon has visited Chandigarh University for pool campus drive. Since there is no restriction on colleges, Nearly 2500-3000 students appeared for the test.

Package Offered: CTC: 28.75 Lakhs (Base: 13 LPA\nc2\xa0 + 1st Year Sign On Bonus: 3, 50, 000 + 2nd Year Sign On Bonus: 2, 25, 000 + Restricted Stock Units vested over 4 years: 10 Lakhs (5%+5%+40%+40%) )

Job Profile: Software Development Engineer

Courses Eligible: B.Tech/M.Tech (CSE/IT/ECE/EEE/EE)

## Round 1: Online Test on Hackerrank

The test consisted of 20 MCQ\xe2\x80\x99s and 2 coding questions. MCQ\xe2\x80\x99s were from various concepts related to Operating Systems, DBMS, DS & ALGO, Aptitude, Coding Output Questions.

Coding Questions:

1. [Longest Increasing Subsequence](#)
2. [Maximum sum such that no two elements are adjacent](#)

Nearly 150 candidates are shortlisted for the interview round. Nearly all the students who solved both the coding questions were shortlisted for the further round.

## Round 2: Technical Interview(Total:4)

Since I don\xe2\x80\x99t remember questions asked round wise, I am sharing all the questions that I remember. These questions were asked in the interview with various students.

1. [Print Left View of a Binary Tree](#)
2. [Print Right View of a Binary Tree](#)
3. [How to check if the given tree is a BST or not?](#)
4. [Snake and Ladder Problem](#)
5. [Check whether the given tree is a perfect binary tree or not?\xc2\xxa0](#)
6. [Bridge Building \(DP\)](#)
7. [Median of Stream of Running Integers](#)
8. [Kadane Algorithm](#) (Also with slight modifications in it Like count number of elements which form maximum sum in the array. You can delete one number in the array, find maximum sum of contiguous array elements)
9. [Clone a Linked List](#)

10. [Stack from Queue](#)
11. [LRU Cache Implementation](#)
12. [Check if a tree is a mirror of itself](#)
13. [Given a Binary Tree, Count how many subtrees are possible which are BSTs](#)
14. [Detect loop in linked list](#)
15. [Find Closest Palindrome Number](#)
16. [Find smallest Palindrome nearby given number](#)
17. [Given a string, Is it possible to shuffle characters to make it a palindrome](#)
18. [Given a string, Is it possible to arrange characters such that no same chars are adjacent](#)
19. Given a BST, Find out the no. of pairs of nodes whose absolute difference is less than k without using extra space (I guess only the interviewer know the answer for this problem :-P) If someone found a solution for it please share it.

In total, you have to go through 4 technical interviews in order to get selected and the major skills that you must possess are Excellent Problem Solving and Coding skills. Some of the interviewers also asked questions from operating systems and SQL queries. In total 15 candidates were selected.

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# Amazon Interview experience | Hyderabad (8 months experienced)

- Difficulty Level :\n[Easy](#)
- Last Updated :\n15 Jul, 2019

Amazon called for an interview for Hyderabad campus.

**Round 1:** It was telephonic round where I was asked to code on a shared document during the call. The interviewer was friendly and provided hints when struck in between.

Questions asked were:

- Find the longest contiguous sum in an array. ([Kadane's algorithms](#))
- [How will you find if there is a loop in linked list and extended to find its starting point](#) along with mathematical proofs.

**Round 2:** After one week they called for a face to face interview at their Hyderabad campus. There were two technical rounds. Questions asked in the first technical round here were:

- Given an array where adjacent elements in array differ by +1 or -1. Write a program to search a given number in the array. I answered with O(n) solution, he asked me to optimize further.
- [Given a number, write a program to find the square root of a number.](#) I provided with O(logn) solution.

**Round 3:** In continuation to the previous round they conducted next technical round consisting of two questions.

- [Find kth largest element in binary search tree with optimizations and other manipulation.](#)
- [Gives length of pipes in array. Find the minimum cost of joining these pipes to form a single pipe given the constraint that the cost of joining two pipes is equal to sum of lengths of both of them.](#)

**Round 4:** It was a HR round, where the project manager briefed about the team I would be joining if selected which went around 10 minutes and later moved on to behavioral questions.

It's better to be honest here as they will grill through every detail you speak. The round went for almost 1hr and consisted mostly of standard HR questions. There was also some discussion on my projects as well.

\xa0

**Round 5:** It was CS fundamental round mixed with few HR questions and 2 basic coding questions. They asked about Pointers, heap memory allocation, dangling pointers, paging from operating systems. There were few behavioral questions as well in between. The coding questions asked here were not difficult and looks like formality.

\xa0

**Verdict:** Selected.

I thank geeksforgeeks for providing a platform for all computer geeks and bring awareness about lot of things they have to know.

\xa0

## Tips:

- Make a habit of putting code on the paper.
- Be thorough with DS and Algo.
- Make sure that you have knowledge of at least one subject other than DS and Algo for interviews.
- Practice a lot. It makes you comfortable during the interviews.

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# Amazon Interview experience (Off-Campus 2019)

- Difficulty Level :[Medium](#)
- Last Updated :[15 Jul, 2019](#)

Hi all, Amazon conducted a pool drive in January 2019 in Gurugram. We were shared a link for the test hosted on HackerEarth. The pattern of the test was 20 MCQ\xe2\x80\x99s and 2 Programming Questions.

## Online Test:

20 MCQ\xe2\x80\x99s based on OS, Network, COA, DBMS, OOPS.

Q1: Given a NxM Grid. The grid consists of only 3 integers(0, 1, 2)

- 0 denotes empty cell.
- 1 denotes a cell containing plant.
- 2 represents a cell where you are standing currently.

You can move to adjacent cells (Up, Down, Left, Right). Find the length of the shortest path to reach one of the boundaries without stepping on a plant.

Length of the path is the number of moves you make.

Q2: You are given some rules (<=26) an integer K. You can make several permutations of the rules while keeping the given rules fixed.

Write a program to find the Kth lexicographically smallest permutations of the rules.

Eg.

### Input:

bcd (Rule)  
xyz (Rule)  
1 (K)

### Output:

axyzbcd~~efghijklmnopqrstuvwxyz~~

### Explanation:

Alphabets b, c, d have already been mapped to be represented x, y, z respectively. Now we need to find the lexicographically smallest (K=1) permutation of the alphabet. This is done if we assign each remaining alphabet to the earliest possible position in the permutation. Hence, the answer is xc2\xaxyzbcd~~efghijklmnopqrstuvwxyz~~.

I got the first question complete and the second question partial which was enough to qualify for the face to face interview.

## Round 1:

Q1: [ZigZag Tree Traversal](#)

Q2:[Binary Tree to DLL](#)

I answered them both.

The interviewer first asked me to think of the approach and explain that approach to him. Once he was satisfied with the approach, He asked me to write production level code.

## Round 2:

Q1: Given a list of IP addresses [192.12.23.45, 234.23.56.89, 192.168.1.1]. Remove duplicate IP's in the list.

Sol: I gave the first answer that store the IP addresses in a set while iterating and if IP is found in set, remove it.

However, Interviewer wasn't satisfied with the space complexity so he told me to reduce the space complexity.

I came up with a tries based solution where instead of storing an IP in set, I store it in Trie.(Space complexity is reduced as Node in Trie doesn't take up space unless allotted a value as well as instead of creating a new node for every IP, in Trie a node can be reused if even half of the IP is same).

Q2: [Maximum path sum](#)

(Without Space Complexity)

Solved the first question completely but took more time, so couldn't solve the second question on time.

**Verdict: Rejected**

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# Amazon Interview Experience Off Campus \xe2\x80\x93 Bengaluru

- Difficulty Level :\nEasy
- Last Updated :\n15 Jul, 2019

There was no test \xe2\x80\x93 directly interviews.

## Round 1:

The interviewer was pretty cool, looked like a 20 yo guy.

Q1. [Convert a tree into its sumtree in place](#)

Q2. [Clone a linkedlist with random pointer](#)

Q3. [Given arrival, departure time of trains, find the number of platforms required so that no train have to wait for arriving at the platform](#)

## Round 2:

Given a min heap find second largest element in it.

[Print a 2d matrix in spiral order](#)

After this round, the HR told me I didn't got through.

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# Amazon SDE 2 Experience (3 Years Experience)

- Difficulty Level :\n[Medium](#)
- Last Updated :\n12 Jul, 2019

## I got interview call via LinkedIn.

Round 1: 1st round was coding round on some coding platform(I don\xe2\x80\x99t remember the name as it is not well known).

2 questions were there. They were very basic questions which requires little knowledge about how lists within list works. I solved them by brute force method and it worked fine.

After 1 month I got call for F2F rounds.

## Round 2: F2F (only DS round 1 hour)

For all DS rounds Interviewer/s will first ask the approach and complexity of the solution and if it is not\xc2\xa0 a optimal solution they will ask to further optimize it. They might also suggest some alternative approaches\xc2\xa0and ask to compare your approach\xc2\xa0with their approach. Then they will ask you to write production quality code i.e. covering all corner cases, optimized loops, no code repetition etc (They take these points seriously\xc2\xa0:))

1. [Length of largest region in a matrix](#)
2. [Detect Cycle in undirected graph](#)

\xc2\xxa0

## Round 3: F2F (DS + Design 1.5 hour)

1. Find first non repeating character from a stream of characters  
[Find the first non-repeating character from a stream of characters](#)

2. Design tiny URL

Most of the discussion was on HLD. Different approaches and there advantages and disadvantages were asked.

Discussion was mainly around services involved, failures, recovery, and little bit about database (sql vs nosql).

Suggestion: In HLD discussions don\xe2\x80\x99t directly start with tech terms like kafka, zookeeper etc etc(It is good to know about these technologies). Start with block diagram and identify the micro-services of your system and how they are calling each other. If the interviewer asks you about technologies then you can tell.

\xc2\xxa0

## Round 4: F2F (DS + Design 1 hour)

1. Given a partially filled Sudoku. Write a code to check if that partially filled Sudoku is valid or not.
2. Design all-in-one messenger system.

\xc2\xxa0

## Round 5: F2F (Bar Raiser 1 hour)

Discussion\xc2\xxa0about current work and projects. Too many behavioral\xc2\xxa0questions it is good if you come prepared with.

1.\xc2\x80 Design food delivery app (HLD + Class diagram + Sequence Diagram)

\xc2\x80

### Round 6: F2F (DS + Design 45-50 mins)

1. [Print matrix diagonally](#)
2. Design book my show (HLD and Only high level discussion)

Verdict: I got selected.

Suggestion for design rounds:

HLD: come up with high level and basic block diagram first then identify the micro-services of your system.

LLD: Identify the classes of the system. Try to put functions/responsibilities in correct class(interviewers checks that thoroughly). Try to design reusable classes i.e. it could be used by some other similar apps also. Then you should have good idea about the object flow i.e. which would be the main controller class and how the different classes calls each other.

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# Introduction to Amazon Elastic Container Registry

- Last Updated : \n27 Feb, 2019

**Amazon Web Services** is a subsidiary of Amazon.com that provides on-demand cloud computing platforms to individuals, companies, and governments, on a paid subscription basis.

## Cloud Computing:

Cloud computing is the on-demand delivery of compute power, database storage, applications, and other IT resources through a cloud services platform via the internet with pay-as-you-go pricing.

## **What Is Amazon Elastic Container Registry?**

Amazon Elastic Container Registry (ECR) is a managed AWS Docker registry service. Amazon ECR is a secure and reliable AWS service. Just like any other cloud computing service, we can scale it up or scale it down based on our requirements. Amazon ECR uses AWS Identity and Access Management (IAM) to enable resource-based permissions for private Docker repositories. Through the Docker command line interface (CLI) we can push, pull, and manage images.

## **Components of Amazon ECR:**

Amazon ECR has the following components:

- **Registry:**

Each AWS account has an access to Amazon ECR registry. In registry, we can create image repositories and we can also store its image.

- **Authorization Token:**

Before pushing and pulling of images, your Docker client must authenticate to Amazon ECR registries as an AWS user. The Amazon web services command line interface (CLI) has a command called *get-login* which provides the user with an authentication credential to be passed to docker.

- **Repository:**

The docker image is contained inside the Amazon ECR image repository.

- **Repository Policy:**

The repository policies enables the users to have control on the access to their repository and the image within it.

- **Image:**

The user can very easily push or pull the docker images to their repository. The user can use the image of the repository on their local system or it could be used in Amazon ECS task definitions.

## **List Of Available Commands:**

- batch-check-layer-availability
- batch-delete-image
- batch-get-image
- complete-layer-upload
- create-repository
- delete-lifecycle-policy
- delete-repository
- delete-repository-policy
- describe-images
- describe-repositories
- get-authorization-token

- get-download-url-for-layer
- get-lifecycle-policy
- get-lifecycle-policy-preview
- get-login
- get-repository-policy
- initiate-layer-upload
- list-images
- list-tags-for-resource
- put-image
- put-lifecycle-policy
- set-repository-policy
- start-lifecycle-policy-preview
- tag-resource
- untag-resource
- upload-layer-part

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## Amazon auto signup script

- Last Updated : \n21 Sep, 2021

Scripts are very powerful as they give us different features with which we can manipulate web apps and websites. Javascript being the most popular scripting language also has these features with which we can manipulate the contents of websites and web apps. In this article, we will make use of simple javascript code(script) which will allow us to fill the Amazon registration form without manually filling in the details. We will make use of JQuery which is a javascript library with which DOM(Document object model) manipulation becomes much easier.\xc2\xab0

## Step 1:

Go to the link: [Amazon-Signup](#) and paste the javascript code given below in the Developer tools console window.

**Note:** To open javascript console in developer tools press *Ctrl+Shift+k* on windows or *Command+Option+K* on mac.  
\\xc2\\xa0

## How it works:

The code given below will automate the process of amazon signup once you put it inside the web console, with all the values like name, email being picked automatically from the code and then you can edit the phone number section manually and then the password similarly.

## javascript

## Explanation:

The above code is divided into four sections(1-4) with each doing different things.\xc2\xa0

## Section 1:\xc2\xa0

The first section is about creating a DOM element which we name as `\xe2\x80\x98script\xe2\x80\x99` and then set the `\xe2\x80\x98type\xe2\x80\x99` and `\xe2\x80\x98src\xe2\x80\x99` of this element using the DOM `setAttribute()` method which adds the specific attribute to an element, and gives it the specified value. This element is basically the script which we are trying to run(`iQuery code`) and in the last line of this section, we append this element into the DOM body.`\xc2\xa0`

## Section 2:\xc2\xa0

The second code section contains two arrays \xe2\x80\x98nameArr\xe2\x80\x99 and \xe2\x80\x99emailArr\xe2\x80\x99 which contains several names and emails which we can iterate over and randomly choose values from. These randomly chosen magic takes place in code section 3, while the assigning to the DOM in code section 4.\xc2\xxa0

### **Section 3:\xc2\xa0**

In this section we are making use of Math.floor() and Math.random() methods provided by the Math Object in javascript. Math.random() method is used to return random numbers or elements from an array, notice we are multiplying it to the array length so that it covers the entire array. Then we make use of Math.floor() method which is to round off. Then we assign the values obtained to a variable which we will later pass to the DOM elements which will ultimately get inserted into the form `\xc2\xa0`

#### **Section 4:**

In the last code section, we are basically assigning values to the DOM elements that we extract using the JQuery \xe2\x80\x99\\$.\xe2\x80\x99 sign which demands

a selector inside it and then it performs some action on it. Here we are just selecting and assigning values and then finally a setTimeout() method.\xc2\x80

**Output:\xc2\x80**

\xc2\x80

```
 Inspector Console Debugger { } Style Editor » ⌂ ... ×
Filter output Persist Logs
'Jeevan Rudraraju',
'Sawan Tasha',
'Kuberchand Raman Sadaram',
'Sugriva Ahsen',
'Deviprasad Muqtedar',
'Mulkraj Lokesh',
'Yashodhara Rasiah',
'Mukul Latian',
'Dushyanta Darsha',
'Mayank Agarwal',
'Priyabrata Manavendra Jai',
];
// list of emails
let emailArr = [
  'ishanimalavika1561@yourdomain.com',
  'gautambibekchimmay4851@yourdomain.com',
  'amshulaharku841651@yourdomain.com',
  'immukullatiyan@yourdomain.com',
  'vidyacharanhariramviram55686@yourdomain.com',
  'siddhikusagra948151@yourdomain.com',
  'lakshavenkateswaran6815531@yourdomain.com',
  'lalitamohanapujitasai651124@yourdomain.com',
  'vedivarahabhotla5451521@yourdomain.com',
  'janakiraviprabhashreeyash8415@yourdomain.com',
];
/*-- Code section 3 --*/
let ranName = nameArr[Math.floor(Math.random() * nameArr.length)];
let ranEmail = emailArr[Math.floor(Math.random() * emailArr.length)];
console.log('script ran');
/*-- Code section 4 --*/
$("#ap_customer_name").value = ranName;
$("#ap_email").value = ranEmail;
$("#ap_password").value = 'mypass';
$("#ap_phone_number").value = '805'; // Enter your own valid phone number
setTimeout(function () {
  $("#ap_phone_number").focus();
}, 8000);
script ran
debugger eval code:43:1
← 659
»
```

\xc2\x80

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## Create Account

Your name

Priyabrata Manavendra Jai

Mobile number

IN +91 805

Email (optional)

lalitamohanapujitasai651124

Password

\*\*\*\*\*

i Passwords must be at least 6 characters long.

We will send you a text to verify  
Message and Data rates may apply

Continue

Already have an account? [Sign in](#)

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# Amazon Interview Experience (On-Campus for SDE-1) 2019

- Difficulty Level : \n [Hard](#)
- Last Updated : \n 25 May, 2021

Amazon conducted a pool placement at our college in the month of feb 2019. We were shared the link for a test hosted on HackerEarth which contained 20 MCQs (technical \xe2\x80\x93 OS, DB, TOC etc from GeeksQuiz) and 2 Programming problems which had sectional cutoff.\xc2\xab

## Prelims\xc2\xab

\xc2\xab

1. [Tiling Problem](#)
2. Given a String of the form ab2c3 where the string preceding the integer is repeated that many times, you are supposed to find the Kth character of the string. Eg: ab2c3 => ababc2 => ababcaababc

## Round 1:\xc2\xab

The interviewer was friendly and he asked me to relax. He went through my resume and asked me about the apps that I had built at hackathons and how they worked. After that he gave me a simple problem.\xc2\xab

\xc2\xab

1. *Given an array of positive and negative integers, print x if +x and -x are present in the array.* I asked for some clarifications whether I should print all distinct \xe2\x80\x98s or if I should print an x if a pair of +x and -x is encountered. The first approach I told was to use a map and I was keeping a flag for +x and -x if it\xe2\x80\x99s found once. Later he asked me to print all pairs, so I stored the frequencies of all the elements in the map and iterated through the negative elements and for each element x , I would print x min(count[-x],count[+x]) times. He said he can\xe2\x80\x99t afford that much space and he wanted me to optimise space further. So I told him a 2 pointer approach where I sort the array once and then keep two pointers to the start and end. I would move the start pointer forward if the sum is less than 0 and I\xe2\x80\x99ll move the end pointer backward if the sum is greater than 0. He was fine with the solution and asked me to code it in a paper. I wrote the code and walked him through it.
2. *Design the logic for minimising cash flow in an app like \xe2\x80\x98Splitwise\xe2\x80\x99.* Here the interviewer told me about an app called splitwise which i had used once. In the application each user adds the amount he spends and how it\xe2\x80\x99s shared by other users of the app. The aim is to minimise the number of give and take operations. I initially thought of a very naive approach where I wanted to create classes for each person and expenditure and iterate through the expenditures of other people to find how much a person should give or take. When I took a closer look I got the idea of modelling it as a directed graph and adding directed edges for transactions. With the graph I though of taking the difference between the pair of edges between two people to reduce a give and take operation to a single give/take operation. There was a catch, if A has to give B Rs.10, B has to give C Rs.10, and A has to give C Rs.10, the minimum operation to do is to give Rs.20 from A to C. B is not involved here as he has to spend all he gets. So I said we could preprocess the graph with the numbers on the incoming and outgoing edges. If the total flow is 0, we could remove that node. He seemed convinced with the approach. He gave me a graph after all the preprocessing done and finally asked me how to minimise it. So I used a greedy method. I was settling the amount of the person who has to get the largest amount by giving the amount of the people who has to give lesser amounts and he said that\xe2\x80\x99ll work.

## Round 2:\xc2\xa0

At the beginning of this round, the interviewer asked me about the data structures I knew. Linked lists, trees, graphs, arrays etc. was my answer. He asked me how well I knew Dynamic Programming. I said I wasn't strong in that and he said he would ask me a question on dynamic programming for sure.\xc2\xa0

\xc2\xa0

- Given a generic tree, find the count of all special nodes. A node is a special node if there is a path from root to that node with all distinct elements. The input was not a pointer to a tree. He gave me an adjacency list and an array of values where the value of  $i$ th node in the adjacency list is the  $i$ th element in the values array. He asked me not to create a tree out of the given information and rather do it with the adjacency list itself. I suggested to do a depth first search keeping a set which contains all elements upto a given node. Once I reach a particular node, I check if it's already in the set. If its already in the set, I return because that element has already been visited and is not a special node. Otherwise I increase the count of a global variable by 1 and push that element to the set. Then I go through the adjacency list of that element and call this function recursively. Once I return from the element after visiting its neighbours, I pop the element from the set . I told him the approached and he asked me to write the code for it. He was convinced with the approach and he liked the code.
- Given an integer array, find the longest subsequence with adjacent numbers having a digit in common. Eg: 1 12 44 29 33 96 89 . The longest subsequence here is { 1 12 29 96 89} and the answer is 5. I initially tried a 2D DP solution where  $dp[i][j]$  indicates the length of longest sequence with ending at  $i$  containing  $j$  as a digit. It's a NX 10 DP matrix. Interviewer asked me why I needed a 2D DP solution and I struggled to convince him. I wrote the code for it. It wasn't completely correct. I was missing something. After thinking for a while I narrowed down to a solution containing only 10 elements  $dp[0], dp[1], dp[2].. dp[9]$  which is updated everytime I see a new number. I take a number, I go through all digits in the number , and find  $val = 1 + \max(dp[d] \text{ for all digits } d \text{ in the number})$  . Set this  $val$  to  $dp[d]$  for all digits in the number. He gave a hint to take the max.

Although I couldn't completely solve it without a hint, I was confident in the direction I was going and I was continuously interacting with the interviewer. I was selected to the next round.\xc2\xa0

## Round 3:\xc2\xa0

The interviewer asked me if I was comfortable with the interview process so far and how the previous interviews were. I said it was good and he gave me the first problem to solve.\xc2\xa0

- Given a binary tree, modify the tree satisfying the following constraints:\xc2\xa0
  - Value at root must be the sum of left child and right child (not subtrees).
  - You can't reduce the value at any node. You can only increase it.
  - Value of root node must be minimum. I drew a few trees and asked him the output for those examples. He asked me to say it myself and I did. I thought of doing a post order traversal as we need to visit root's left and right child before visiting root. In the post order traversal, we keep the sum of root's left and right child in a variable sum. We take the difference of this sum and root's data. If the sum is greater than root's data, we replace root with the sum. Otherwise we have to distribute the root's value to root's left and right child so that all the three conditions are satisfied. (We can't reduce the value at any node). He asked me to write the code for it and I did. After that he gave me another problem.
- Given an array of 0s 1s and 2s, sort this array in one iteration.
- How a web page is displayed when you enter a URL in the browser ?

I solved both the problems and wrote code for them. The interviewer asked me about my projects. He was focusing on one machine learning project that I had done and asked a lot of questions about it. I was selected to the next round.\xc2\x9a0

#### Round 4:\xc2\x9a0

The interviewer asked me some CS fundamentals in this round as well as some behavioural questions.\xc2\x9a0

\xc2\x9a0

1. *Difference between threads and processes.*
2. *Deadlocks and its prevention*
3. *Cost of polymorphism in OOPs*
4. *Implementation of virtual methods, dynamic binding, vtables etc.*
5. *Implementation differences between sets and maps.*
6. *Compressed Tries*
7. *Implement a Trie data structure and write functions to insert and search for a few words in it.* I wrote a class to implement a character Trie using a vector of nodes as children. He asked me to improve on space. So I used a hashmap to store the child nodes only if a child exist. I wrote the code for insertion and finding a word and walked him through.
8. [Check if two words are anagrams.](#) I implemented it first by sorting two strings and comparing them. He asked me to write a better approach. So I used a hashmap to do it.
9. Some behavioural questions like what would you do if you\xe2\x80\x99re recently joined and your boss is out of station, what would your friends tell about you (good and bad), why amazon etc.

This round was difficult as compared to the previous ones. After a discussion with the entire panel, they hired two from the drive. I was one among them.

\xc2\x9a0

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# Amazon Interview Experience SDE1

- Difficulty Level : \n[Medium](#)
- Last Updated : \n15 Jul, 2019

Amazon Interview Experience SDE-1

This was a hiring drive at the Chennai office. Around 40 people attended.

Day 1 interviews

Round 1: Written Round

[Longest Palindrome in a String](#)

[Transform to Sum Tree](#)

[Reverse a Linked List in groups of given size.](#)

Round 2: Tech Round

[Maximum sum such that no two elements are adjacent](#)

Questions on Dynamic programming \xe2\x80\x93 Overlapping subproblems and Optimal substructure property for the above questions

Full Code, Time and Space complexity

Round 3: Tech Round

Question 1: [k-th distinct \(or non-repeating\) element in an array.](#) \xe2\x80\x93 Code

Question 2: XOR Linked list \xe2\x80\x93 discussion and tracing an example

Question 3: [Group Anagrams Together](#)

Given Hash-based and Trie based approach and code for Hash-based implementation

Question 4: Check whether N is reachable with numbers a and b instead of 0 and 1 using Fibonacci series. (-INF<=a, b<=INF) Full code.

Question 5: [Convert a given Binary Tree to Doubly Linked List](#)

Day 2 \xe2\x80\x93 Interviews

Round 4: Bar Raiser

- 1.Projects Discussion
- 2.More Behavioural questions and Scenario-based question(Regarding Cloud Architecture)
- 3.Design patterns \xe2\x80\x93 Singleton, Builder, Prototype, Factory.
- 4.Questions involving REST API\x80\x99s.
- 5.Finally a problem: Pseudo code and tracing an example

[Median in a stream of integers \(running integers\)](#)

Suggested 3 ways of solving the above problem comparing their time and space complexities

Round 5: Hiring Manager Round

- 1.More discussion on projects
- 2.Still more behavioural questions and Scenario-based questions.
- 3.Discussion on Restful Web Services.

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# Amazon SDE-2 Experience (6.5 Years Exp)

- Difficulty Level : \n[Medium](#)
- Last Updated : \n15 Jul, 2019

I went through Amazon interview experience. This is my Exp

## Round 1(telephonic):

1. [Print nodes at K distance in BT](#)
2. Sort array when it is away at most by K distance
3. Implement priority queue

## Round 2(f2f):

Code to implement file system name by integer where you can add/delete file by lowest integer val available

Implement arraylist

## Round 3:

Design commenting system which can support different type of clients let\xe2\x80\x99s say Facebook zomato any type of client which can have their requirements.

## Round 4:

Design subscription based sports website which can display scores, game status, history for any games hld and lld

## Round 5(HM):

How to improve website performance discussion on cache, proxy, connection pool

Implement connectionPool

## Round 6(BR):

Behaviour

Given n print all valid parenthesis

## Round 7(HM):

Behaviour

Design Netflix

Round 2-5 happened in bangalore and 6-7 in hyd.

Round 5 was not upto mark and I was looking for hyd location so they had 1 more extra round.

Verdict \xe2\x80\x93 Selected.

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# Amazon Interview Experience SDE 1 (2.5 Years Experienced)

- Difficulty Level : \n[Medium](#)
- Last Updated : \n15 Jul, 2019

Got a message from HR on Linkedin that my profile has been shortlisted for SDE-2 profile

He sent me Invite for Interview in Amazon Gurgaon Office

\xc2\xd0

## Round 1 (Written Round)

\xc2\xd0

[Return Nth Node from the back of the linked list](#)

\xc2\xd0

[Zigzag Traversal of Tree](#)

\xc2\xd0

[Max length path between any two points in the given N\\*M \xc2\xd0matrix such that all elements in that path are in increasing order](#)

\xc2\xd0

## Round 2 (DS/Algo Round)

\xc2\xd0

[Find the node in the linked list having a cycle where the loop starts.](#)

\xc2\xd0

I gave him well known slow and fast pointer solution instantly.

Then he told me to do the calculation and derive the formula why the above solution works.

I did the same.

\xc2\xd0

[Find two nodes where the sum is equal to a given sum in a BST.](#)

\xc2\xd0

I didn't know the stack solution so I thought in other direction.

I asked him can I modify the tree to which he replied YES.

I told him that we can convert the BST into DLL and then traverse the DLL taking two pointers one from each side and get the nodes with the given sum.

Since the time complexity was O(n) in this case so he got satisfied.

\xc2\x0

### **Round 3( Design Round)**

Asked me about my projects in the current company.

Asked me to design High-level design for Latency Management System.

Asked me to design Low-level design for Library Management System.

Since I didn't do well in design round, they considered me for SDE-1.

\xc2\x0

### **Round 4 (DS/Algo Round)**

\xc2\x0

[Edit Distance Problem of DP](#)

\xc2\x0

[Water Trapping Problem](#)

\xc2\x0

[Find maximum element in the sliding window of k elements in an array](#)

Then I was told by the HR to fly back to Chennai next week for further rounds. He arranged everything from flight tickets to accommodation.

\xc2\x0

### **Round 5(Managerial Round)**

\xc2\x0

Discussed my current profile and projects in my current company.

Why I want to leave my current company.

Long Discussion about my projects.

One of my projects was to develop a notification service.

He found it of his interest and asked for a detailed explanation. He asked the difference between a service and program.

What is thrashing?

My 3 most challenging tasks I have worked on.

My 3 most boring tasks I have worked on.

My 3 strengths.

My 3 weaknesses.

Do you have ever faced a situation in which you have to stretch yourself?

As a child how did you see your future?

What is your favourite data structure and why?

What is O(n) and what\xe2\x80\x99s its use?

Will you be able to relocate to Chennai?/ Do you have issues with relocation?

\xc2\x0

There was a lot of cross-questioning and he noted everything whatever I was saying.

\xc2\x0

### **Round 6(Bar raiser)**

\xc2\x0

Discussed my current profile and projects in my current company.

Do you have issues with relocation? He told me a lot of candidates come here and then try to relocate back to other locations.

He took a deep dive into one of my projects and asked me questions like

What challenges you faced while doing this project and how you resolved them.

Why do you want to join Amazon?

\xc2\x0

In the end, he gave me a simple question to solve.

[There is an array of integers, replace every number with its next greater element.](#)

\xc2\x0

Verdict: Got selected \xf0\x9f\x99\x82\xc2\x0

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# Amazon Interview Experience SDE-1

- Difficulty Level :\n[Medium](#)
- Last Updated :\n15 Jul, 2019

This was a hiring drive at the Chennai office.

## Round 1: Written Round

Question 1:\xc2\xd0[Longest Palindrome in a String](#)

Question 2:\xc2\xd0[Transform to Sum Tree](#)

Question 3:\xc2\xd0[Reverse a Linked List in groups of given size.](#)

## Round 2: This was a F2F round.

Question 1 : [Variant of Maximum\nc2\xd0 Sum Subsequence problem.](#)

Question 2:\xc2\xd0[Trapping Rain Water](#)

## Round 3: This too was a F2F round.

Question 1:\xc2\xd0[Top View of Binary Tree](#)

Question 2: [LRU Cache Implementation.](#)

## Round 4: Hiring Manager

1. Questions on Amazon Leadership Principles.
2. [Smallest Positive missing number](#)

## Round 5: Bar Raiser

This happened a\xc2\xd0 few days after the drive.

1. Deep dive into projects.
2. [Maximum path sum](#)

Got the offer after a couple of days \xf0\x9f\x99\x82

All thanks to GeeksForGeeks

\xc2\xd0

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# Amazon Interview Experience SDE Off Campus

- Difficulty Level : \n[Medium](#)
- Last Updated : \n15 Jul, 2019

## Written Round: (1 hour)

1. Given a linked list and K, print the last K nodes in reverse order.  
example: 1->2->3->4->5->6, K = 3 output: 6 5 4
2. [Find out whether the given tree is BST or not.](#)
3. Rotate Given matrix by 90 clockwise.

## Technical Round: (1 hour)

1. [Given an array, for every element in the array, you need to print the product of all except the ith element itself.](#)
2. [Given N train with their arrival and departure timings, you need to find the minimum number of platforms are required to accommodate all. The condition is, no train has to wait to get the free platform.](#)

## Technical Round: (1 hour)

1. Define your own data structure that should do two operations at its best complexity.
  - **insert(num):** insert num into the data structure.
  - **find(sum):** return a pair(a, b) such that a+b = sum, if no such pair exists return -1.
2. Give a graph find out whether it is a tree or not.

## Managerial Round: (1 hour)

1. Long discussions on my projects.
2. Have you disagreed with your manager's opinion?
3. Technical Challenges faced so far in the current role?
4. Any technical solution provided by you to your team? Why your solution was better? and what was the outcome?
5. Why are you looking for opportunities?
6. Why Amazon?

## Bar Raised Round: (1 hour)

1. Long discussions on my project and current role?
2. Long discussion on the **trie data structure**, comparison with other data structures.
3. Why are you leaving your current role?
4. Why Amazon?
5. Given an array of integers, find out the range of contiguous elements with Largest sum.  
**(Kadane's algorithm)**

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# Amazon Interview Experience SDE II

- Difficulty Level :\n[Hard](#)
- Last Updated :\n15 Jul, 2019

Thanks to my friend who told me all this.w

## Round 1:

Tell me about yourself.

[Trapping Rain Water](#) :Given n non-negative integers representing an elevation map where the width of each bar is 1, compute how much water it is able to trap after raining.

[Print left the view of a binary tree.](#)

Discussion :\xc2\xa0give two approaches one with DFS and other with level order traversal.

He asked to compare two approaches and implement the efficient one. DFS is the efficient one because in level order, you need to store all the nodes at each level, some of them may not be a part of the left view of BT.

\xc2\xa0

## Round 2:

Tell me about yourself.

[Find the sum of n elements after a kth smallest element in BST](#). Tree is very large, you are not allowed to traverse the tree.

Discussion : Since the array traversal is not allowed so one need to do some preprocessing over the tree, something like storing the sum of all its predecessor nodes.For finding kth smallest element, use order statistics approach:

[Given a sorted array which has been rotated n number of times.](#) Find the value of n. It is similar to below post where you need to find only the pivot element. If you have the Index of pivot element, you can get the number of times the array is rotated.

\xc2\xa0

## Round 3:

[Count ways to reach nth stair](#).It is similar to the fibonacci series. Interviewer asked various ways to implement the same -Recursion, 1-D array, with 3 variables and complexity of each.

Design recommendation engine.

It\xe2\x80\x99s like an auto suggestion. Give the trie approach. The interviewer seemed fine with this approach and asked to write full code with time and space complexities. [Implementation of Tries](#)\xc2\xa0

## Round 4(Managerial Round \xe2\x80\x93 Over video call)

Tell me about yourself.

Current work

Which project you liked working the most.

Any case where you had a conflict with your manager.

Any idea/technology suggested by you to your team which then got implemented and worked out.  
Any case when you had to work out of your comfort zone.  
The most critical feedback received from your manager/team members.  
What do you do to enhance your technical knowledge apart from your project work.  
And many more.

\xc2\x0

## **Round 5(Final Round \xe2\x80\x93 Telephonic)**

Initially, They will ask questions about the work done, the projects the person did and some managerial questions.

Ques : Print all the non-repeating words out of two given sentences.

Eg. Statement 1: I have a blue pen.

Statement 2: I got a red pen.

Output : have blue got red

Discussion : Suggested the hashing approach. The interviewer asked to implement the same.

\xc2\x0

\xc2\x0

**THAT IS ALL FOR THIS ARTICLE.  
HOPE THIS HELPED YOU.**

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# Amazon Interview Experience SDE (On Campus 2019)

- Difficulty Level : \n[Medium](#)
- Last Updated : \n05 Nov, 2020

Qualification : currently pursuing B.E. Electrical and Electronics Engineering.

**Round 1:** After general introduction, the interviewer asked me if I was good with arrays. I said \xe2\x80\x98Yes\xe2\x80\x99 and then he asked me two problems on arrays/vectors and then one problem on BST.

**Problem 1 :** [Given two arrays\(A & B\), can you tell if its possible to swap an element from A with an element from B and make the sum of both arrays equal ?](#)

**Answer :** Sort the arrays. Calculate sum of both arrays and take out difference of the sum. If difference is odd \xe2\x80\x93 it is not possible to do the required exchange(return 0), else if it is even \xe2\x80\x93 (lets say difference is 8) divide it by 2 (= 4 ) and then traverse both the arrays(this can be done by different methods \xe2\x80\x93 I used binary search with some modification) and find a pair which has difference = 4. If found \xe2\x80\x93 it is possible(return 1), else return 0.\xc2\xa0

**Answer :** This is how I told explained him the solution. After a minute of thinking I said, \xe2\x80\x93 first we will calculate initial sum of both the arrays, and then take out their difference. If the difference was odd \xe2\x80\x93 it means it is not possible to make the sum same by swapping two elements. Interviewer asked me why the difference needs to be even? I told him that any transaction resulting from swapping two elements will always result in even increments or deductions in the sum value. He was convinced and told me to continue. \xe2\x80\x93 So if difference is even we will divide it by two and then take two pointers to traverse both arrays in parallel. So yeah it will help if we also sort the arrays so then we can use binary search. If a pair is found we return 1 else we return 0.\xc2\xa0

He told me to write the code for the same and I did while simultaneously explaining some assumptions I was taking to avoid corner cases for now and conditions. (like both vectors have elements in them, and sum of A initially is greater than B).\xc2\xa0

He read the code and asked some doubts which I explained nicely and he was convinced.

**Problem 2 :** \xc2\xxa0<https://www.geeksforgeeks.org/coin-game-of-two-corners-greedy-approach/>\xc2\xxa0

I told me the exact solution approach and he countered with some examples but couldn\xe2\x80\x99t find a flaw in that. He asked what if the number of coins initially are odd. I told him that the game would be unfair then, but he said lets make it unfair, now how will you win ? I told him that if the sum of odd elements now is greater than even ones then only I can win otherwise its not possible for me to win in this situation. He countered with some examples but was convinced by the end.

**Problem 3 :** [Given a BST replace every node with sum of all nodes which are greater than that node. replace the maximum value node with 0.\xc2\xxa0](#)

Answer : Pretty easy recursive approach. I struggled with two flawed solutions before presenting the third correct one.

**duration :** 1-1.5 hrs.

**result :** selected for round 2.

**Round 2:** Friendly and encouraging interviewer. He asked me two problems, one on Binary Tree and another on vector and maths.

**Problem 1 :** Given a Binary tree, print the maximum depth of a left node.( the node needs to be a left child ) (if the node is right child of the left child of the root node then it wont count as a left node) It took me some examples to realise what the question was. He himself told me to clarify the ques by asking any example so I took different scenarios and asked him what the answer will be in those cases. He told me what do you think the answer should be ? I told him the answers to trial cases according to my understanding of the problem and finally concluded I had understood the problem

correctly.\xc2\xa0

Answer : It is very simple recursive approach. Just keep track of maxDepth of all the left nodes. To check if the node is left or right child just pass a integer argument while calling to recursion ( say 1 for left and 2 for right).

function will look something like this (C++)

CPP

Interviewer was convinced with my approach and quickly moved to second question.

**Problem 2 :** Given a list of songs and a random number generator that generates any random number from 1-INT\_MAX, return a shuffled playlist.(in place)

**My Approach :** list of songs = vector A;

```
int size = A.size();
```

int j=0; // iterator over the array

CPP

Interviewer was convinced by my approach but he had some different approach in mind and kept questioning the stability of this solution and told me to do a dry run over it once. It was correct so he didn't question any further.

**duration :** 1 hr approx.

**result\|xc2\|xa0** : selected for round 3.

**Round 3:** This was the most difficult round and the interviewer was tough and not that friendly. He asked me two questions both of which I wasn't able to answer but struggled a lot and went with far my approaches.

**Problem 1 :** Given a two numbers n and k. Can  $n = \sum_{i=0}^{k-1} 2^i$  be broken down using powers of 2 ? If yes, return a possible set.

**Example :** n = 9, k=3 \|xc2\|xa0 \|xe2\|x80\|x93 answer : YES,  $4+4+1 = 9$ ;

No, it cannot be done by binary conversion of the number and then combining the powers of two there (which I tried instantly). I wasn't able to explain the working

**Problem 2 :** Given  $n$  vectors of different sizes and an integer  $k$ , find max possible set of 3 numbers from distinct arrays in which the difference of max-min  $\leq k$ . (once you find a triplet, it cannot be counted in other sets). It was a complicated question \|xe2\|x93 I used sorting, min heaps, three pointers, and what not. My solution used three nested loops with individual sorting in each and creating min heap and taking difference every time and minimizing the difference of max-min and increasing the min pointer of one array if condition didn't meet or increasing the pointer of all the arrays if it did. This went very complex and the interviewer was confused as to what I was writing. He questioned me a lot of times on how it will work in each step. Sometimes I explained while other times I too struggled. He asked me complexity of the solution which I figured was somewhat like  $O(n^2 * m^2 * \log(mn))$  and he wasn't convinced with anything I just told. \|xc2\|xa0 I was grilled enough to believe that I am out of the process after that.

**duration :** 1.5-2 hrs.

**result :** selected for round 4 !!! (maybe they don't judge you only on basis of your solution)

**Round 4 : This was hiring manager round mostly.**

He asked me to introduce myself which I did nicely with my prepared answer.

He then asked me if I had any weakness or any criticism I received for something last year ?

After that he asked me about my projects and internship experience. I told him honestly what I did and knew and when he asked about anything related to the projects like database, I told him till what extent I did the project and used it and don't know in depth concepts of databases. He asked me about my extra curriculars activities which I had mentioned in my resume.

He then asked what all data structures I knew? I told him every data structure I was aware of. I forgot to mention linked lists and so at the end I said \|xe2\|x9d and yes, linked lists tool and then he told me then that he will be asking a question on linked list. (I don't know if he had planned that whichever data structure I say last will be the topic of questions, because psychologically it will be our weak point \|xf0\|x9f\|x98\|x9b and as a matter of fact linked lists were somewhat my weakness ). \|xc2\|xa0

The question was easy and a very common interview problem \|xe2\|x93 Merge two sorted linked list.

I didn't know the  $O(1)$  space complexity solution before so I did with arrays first, then he asked me if I can do it in  $O(1)$  space. So after a minute of thinking I was able to figure that out too.

Then I wrote the code and the interviewer was satisfied.

**Duration :** 20-30 mins.

**Result : SELECTED.**

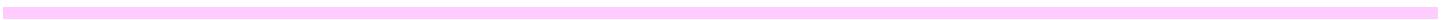
\|xc2\|xa0

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## Amazon internship interview experience (on campus)

- Last Updated : \n16 Oct, 2019

## **Round 1: (1 hour and 20 minutes)**

The first round was online test it was conducted in Hacker-rank Environment. It consists of the following sections:

- Technical aptitude \xe2\x80\x93 20 Questions
  - Coding Question \xe2\x80\x93 2 Questions

\xc2\xa0

1. Input = {1, 0, 1, 1, 1, 0}

Where 1 represent the student standing and 0 represent the student sitting.

There is only one neighbour for left end and right end student remaining have two neighbours. If the neighbour of the two persons is sitting next time the person became standing. If the neighbour of the two persons is standing next time the person became sitting. The iteration repeats for N number of time.

Output = {0, 1, 0, 1, 1, 1}

\xc2\xa0

2. <https://www.hackerrank.com/contests/dakshonline/challenges/yule-ball>

I do only one coding question correctly with first output and 20 MCQ Questions.

\xc2\xa0

## **Round 2 (1 hour 30 minutes)**

Around 15 students were shortlisted for this Round.

- Construct a binary search tree from a linked list. (<https://www.geeksforgeeks.org/sorted-linked-list-to-balanced-bst/>)
  - Staircase problem.
  - Input arr[ ] = { 10, 20, 30, 40}

$$x=1, y=2, z=-10$$

Find the sub-array with the maximum sum such that multiply the x, y, z value with the sub array and find the maximum sum.

Output :  $(-10 * 10 + 2 * \lceil \frac{2}{2} \rceil) * 40 + 1 * 30 = 10$  (Maximum sub array sum).

I do 2 problems with the optimised solution and third problem with brute force solution  $O(n^3)$ . He wants only the optimised solution. He help me a lot to solve the problem but I can't able to solve it.

There is one more Technical Round I did not get through the round \xf0\x9f\x99\x81 .

## [REJECTED]

The reason for rejection is not well and good in data structures and Algorithm concepts. Please refer the Geekforgeeks (<https://www.geeksforgeeks.org/must-do-coding-questions-for-companies-like-amazon-microsoft-adobe/#More%20Questions%20on%20Arrays>) to strong in data structures and algorithm and Time complexity.

Practice all these problem in the following link.  
(<https://ravindrababuravula.com/interviewpreperation.php> )

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# Selection Process for Amazon ACMS 2019-2020

- Last Updated : \n 28 Feb, 2022

Amazon Campus Mentorship Series is an initiative by AMAZON to help women get is a diversity initiate to help women in tech to integrate into business through a series of workshops, training\xe2\x80\x99s and business communication.\xc2\xab

Amazon visited my campus in December 2018 offering this mentorship program to all female students in their sixth and eighth semester. The selection process included a vigorous online test conducted on HackerEarth to test an applicants\xe2\x80\x99 basic understanding of fundamental computer science basics and his/her ability to code in C++/Java.\xc2\xab

Initially there was a seminar by Amazon where they explained their history and what to expect from ACMS after which 1.5 hours selection test took place. The basic concepts covered in the test were:-\xc2\xab

**Computer Networks:** The OSI model, different types of delays (propagation delay and transmission delay)\xc2\xab

**Computer Architecture:** 8085 processor\xe2\x80\x99s architecture and timing diagrams\xc2\xab

**Pointers in C++:** concepts of pointer to a pointer, function pass by values versus pass by reference.\xc2\xab

**Linked List:** deletion operation and addition operation performed on a link list\xc2\xab

**Data structures:** searching in binary search tree\xc2\xab

**Time complexity:** different ways to compute time complexity, average and worst time complexity of different types of searching and sorting algorithms (in my case they asked for the difference of average and worst time complexity of quick sort)\xc2\xab

**Object oriented Programming:** concepts of inheritance, virtual classes and functions, polymorphism in functions, difference between oops and procedure oriented programming\xc2\xab

**Logical thinking:** basic mathematic problems to test the logical ability of a candidate\xc2\xab

All the questions were multiple choice questions. 1 point was awarded for correct answers and no points for wrong answers.\xc2\xab

Also there were two programming questions. Programming language could be C, C++ or JAVA. The questions were:-\xc2\xab

**Question 1:** Given two arrays: ARR1 with n elements, ARR2 with m elements and three number D, A and B.\xc2\xab

the task is to count the total no of ways such that any element in ARR1 can be converted into any element in ARR2 by performing the following operations: you have to subtract D from the element from ARR1 and after that you can subtract or add numbers A and B any number of times. This question was worth 20 points.\xc2\xab

**Question 2:** The question and the solution of this problem can be found at

<https://www.geeksforgeeks.org/minimum-steps-to-reach-any-of-the-boundary-edges-of-a-matrix/>. This question was worth 30 points.\xc2\xab

The selection criteria was that top 10% percentile of the students would be selected. Over 180 students participated in this drive.\xc2\xa0

Verdict: I got selected along with 10 other female students from my college.

\xc2\xa0

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# Amazon Interview Experience SDE 1

- Difficulty Level :\n[Easy](#)
- Last Updated :\n15 Jul, 2019

Amazon conducted interviews for SDE-1 for its Chennai Location. The interviews were conducted at their Bangalore Office. Around 50-60 peoples participated in this drive.

## Round 1:

This is a written round on paper for everyone. 2 out of 3 must be correct covering every single edge cases to qualify for next round and only most optimal solution will be considered.

1. \xc2\xd0[Largest Contiguous Sum of an Array.](#)
2. [Connect n ropes with minimum cost](#)
3. [Print left view of a Binary Tree](#)

## Round 2:\xc2\xd0 \xc2\xd0This is a f2f round with Amazon Pay Team.

1. Print all three nodes in a binary tree such that sum of all these three nodes is greater than given x and these three nodes must hold the relationship of grandparent-parent-child. Expected Complexity \xe2\x80\x93 O(n)

2. [Maximum sum\xc2\xd0 in an array such that no elements are adjacent with a constraint that there is a loop in array.](#)

I did very well in first two rounds. So there was no third round for me but other candidates had their third round as well.

## Round 3: Hiring Manager Round

1. Tell me about yourself.
2. Why are looking for a change, you recently joined a company and now again you are giving interviews.
3. Explain your last company product line.
4. Mutex vs Semaphores with an real life example.
5. Normalization.
6. REST, Why REST API
7. Rabbit MQ and Kafka.
8. Write a shell script to parse a log file.

I didn't mention anything like Rabbit MQ, Kafka, Database in my resume but still he was keep asking me these questions. I mentioned that I am familiar with the shell scripting in my resume but could not able to write the script as I don't remember the syntax and that's a learning for me that don't mention anything about anything if you are not very good about it.

Verdict : Rejected

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# Amazon Interview Experience (For Internship On-campus)

- Difficulty Level :\n[Medium](#)
- Last Updated :\n15 Jul, 2019

I applied for internship in Amazon through college placement cell. The process took 1 whole day. I interviewed at Amazon (New Delhi) in September 2018.

## Round 1:

First they took Online round on AMCAT platform, having majorly 4 sections.

- Debugging
- Reasoning and Aptitude
- Coding Round(2 questions)
- Personality Test

All sections had to be done in that particular sequence only and you cannot jump in between sections. Also if one completes the round before the stipulated time then remaining time will NOT be added into next round.

On basis of this round they shortlisted about 35 students and called them for personal interviews.

## Round 2:

In this interview for first 20-25 mins, interviewer discussed about my Machine Learning Project and asked me all the questions related to my project. You just need to be cool and calm and always listen carefully to the questions asked by the interviewer. Don't panic and do not stammer, it gives a negative impact on the interviewer.

Then he asked me a coding question on Binary Search Trees.

### 1. Coding Question \xe2\x80\x93

Given two Arrays and you need to form BST from them respectively. Find whether **the structure and values** at corresponding places are same or not i.e, whether two BST are same or not.(Assuming first element is always the root)

Eg. Array [5, 3, 6] and Array [5, 6, 3] will give you same BST **BUT** Array [5, 2, 3, 6] and Array [5, 3, 2, 6] wont give you same BST.

**Solution:** [GeeksforGeeks Link](#)

I solved the problem and he checked the solution and gave me some edge cases for it. Also he asked me to code the whole solution on paper. I solved the question on paper and he checked the code and was pretty satisfied with the code and its complexity( O(n) ).

He asked me whether I have any question for him and I asked all usual questions.

## Round 3:

The TnP cell told me that I have no further rounds and hence I can leave. They said they will mail the results to the successful candidates.

**VERDICT: Got The Offer.**

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another question.

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# Amazon interview experience for Experienced

- Last Updated : \n15 Jul, 2019

Below are the questions asked in amazon interview for 3yr experienced guy in java technology.

## Round 1 (Telephonic) :

1. I was asked two DS questions in this round.

You are given an array containing length of the pipes. ith pipe has length  $a[i]$ , and length = cost of pipe. The array is unsorted, you have to combine pipes till there is only one pipe left and have to minimize the cumulative cost as well.

**Solution:** ([Connect n ropes with minimum cost](#))

2. Given a linked list, you have to reverse k alternate nodes.

**Solution:** ([Reverse alternate K nodes in a Singly Linked List](#))

## Round 2 (Face to Face \xe2\x80\x93 Technical) :

The came in asked questions about the **projects** I did. I was able to explain him as I only mentioned what I did and was confident about the pros and cons of it.

Besides projects, they asked one more question to find out first non repeated character in a character stream and the solution has to be optimal.

**Solution:** ([Given a string, find its first non-repeating character](#))

## Round 3 (Face to Face \xe2\x80\x93 System Design) :

- You have to design a game called wordament where you will generate 4\xc3\x9774 matrix containing characters with each character holding a score. You have to design the gameplay, the game will stop automatically in 2 mins.

**Round 4 (Face to Face \xe2\x80\x93 Behavioral) :** This round mainly focused on:

- The work done so far in my career.
- The approaches I adapted in different situations, what would have been my decision under certain conditions and why?
- How would I have tackled those situations.

The system design round became the hindrance for me to clear the interview process and resulted in rejection. Other wise there would have been 2 more rounds.

Best of luck \xf0\x9f\x99\x82

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# Amazon Interview Experience | SDE-1 offcampus

- Difficulty Level : \n[Hard](#)
- Last Updated : \n15 Jul, 2019

I am a 2018 b.tech(CSE) graduate and contacted a recruiter through LinkedIn, drive happened at Gurgaon office and gave an interview for a Bangalore team.

**Round-1 : f2f( 1.15 hr)** Interviewer scanned my resume and then directly jumped on to the problem solving.

## 1. [Trapping Rain Water](#)

**Note:** optimized solution [ O(1) space] in above link may fail for some cases, so after giving O(n) space solution you can try with o(1) solution to impress the interviewer :p

## 2. [Minimum time required to rot all oranges.](#) ([Solution](#))

**Note:** can be solved using bfs and queue

**Round-2 : f2f (1 hr)** After waiting for 10-15 min recruiter called me for the 2nd round, interviewer without scanning the resume and after the introductions directly jumped on to the problem solving.

- Given n pair of strings where both strings in the pair are synonymous, Also given a single input string s. Find all the synonymous string corresponding to s.

**Example:**

**Input:** { {\xe2\x80\x9cram\xe2\x80\x9d, \xe2\x80\x9cshyam\xe2\x80\x9d}, {\xe2\x80\x9cram\xe2\x80\x9d, \xe2\x80\x9crahul\xe2\x80\x9d}, {\xe2\x80\x9crahul\xe2\x80\x9d, \xe2\x80\x9ckaran\xe2\x80\x9d}, {\xe2\x80\x9cital\xe2\x80\x9d, \xe2\x80\x9cgital\xe2\x80\x9d} } , String s= \xe2\x80\x9cram\xe2\x80\x9d

**Output:** ram, shyam, rahul, karan

([Solution](#))

**Round-3 : Hiring manager(45 min)**

1. Had some general discussion regarding work in the current company and past internship experiences.
2. Question on LRU(indirectly, scenario based and its implementation), probably due to one of my project on \xe2\x80\x9ccache algorithms\xe2\x80\x9d

**Note:** Be genuine in what ever you tell about your current and past experiences, make the interviewer feel that you are always up for learning and exploring new things.

**Round-4: Bar Raiser(1 hour)**

1. Interviewer was 15+ year experienced guy and **took note of everything that i told him.**
2. Questions regarding the work done in internships.
3. [Find maximum number possible by doing at most k swaps](#) ( was able to solve partially)
4. Behavioural questions(This part has a great importance, they come prepared with number of behavioural questions, if you are not able to answer some of them or haven\xe2\x80\x99t been in situations related to the questions asked, you can ask them to change the question. **In my**

**case interviewer was friendly and supportive)**

**Be Specific:** To every behavioural question asked, tell them the real examples or situations from your life rather than mugging up stories(they expect you to be short, crisp and specific).

### Important Advice

1. Keep clear with all the topics of DS/Algo(**GeeksForGeeks/Narasimha Karumanchi are good to refer**) and practice interview experiences for Amazon.
2. In all the rounds above, Writing full production level code along with time and space complexities on paper(no language barrier) was must so **practice well with pen/paper**.
3. After understanding the question, **never directly jump on to the solution**(even if you have done it earlier).Keep calm, discuss the approach with the interviewer(don't spend much time on brute, just tell a brute force approach and then move on to the efficient solution).
4. **Never be a Yes Man**, be confident and have a healthy discussion(argument). ALL THE BEST !

**Verdict :** Selected !

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## Amazon interview experience for SDE II

- Difficulty Level :\n[Medium](#)
- Last Updated :\n15 Jul, 2019

**Round 1 (f2f):** Interviewer was very young and directly jumped into the question after introduction.

1. [Given an array find the maximum element for all the subarrays of size K](#)
2. [Given two strings s1 and s2 compute the minimum number of operations required to convert s1 to s2.](#)

### Round 2:

1. [Given a string of integers ex:123405678 find all the valid IPV4 addresses that can be formed from the string given that you always start from the starting index i.e all IP address should start with index 0 in this case 1.](#)
2. There is a tank of infinite capacity and the tank is connected to a pipe of a finite length and the pipe is connected to a house\xe2\x80\x99.that house is connected to many houses with pipes of different length and finally drain in to a drainage\xe2\x80\x99..Compute the maximum amount of water drained into the drainage at any given instance\xe2\x80\x99([DFS](#) approach and find the minimum at every path and sum all the minimums\xe2\x80\x99.if sum of all the minimums is greater than the source pipe volume return source pipe volume else return the sum)

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# Amazon Interview Experience (On-Campus)

- Difficulty Level : \n [Hard](#)
- Last Updated : \n 07 Jan, 2020

Amazon visited our campus for FTE as well as internships for SDE-I.

Initial **coding test** was conducting on hackerearth with:

1. About 18 MCQ\xe2\x80\x99s based on CPP and time-complexity.
2. 2 coding questions:

- Finding shortest subarray which contains all distinct characters of that string.
- To find maximum occurring element in an array between L and R(indexes), which has been concatenated k times.

Completing a single coding question with good score in MCQ\xe2\x80\x99s was enough to get shortlisted for the next round.

About 16 students were selected after the coding round.

**Round 1:** The interviewer was young and friendly. He asked me to introduce myself along with my internship project. Then he started with the coding questions:

1. Finding sum of all nodes with odd values in the path connecting two nodes. My solution approach was to store the paths for both nodes in vectors, and then take the sum of all nodes after the LCA.
2. Implementing sqrt (using Binary Search).

The interviewer was satisfied with my answers and asked me to code them and then dry run them.

**Round 2:** The interviewer started straight with coding questions. He gave me some standard questions like top view of binary tree, maximum area in histogram and minimum cost to connect ropes. The last question was to:

Find all pairs such that  $A[i] > A[j]$  &  $i < j$  for an array. For example: arr[] = [5, 7, 8, 2, 1], the answer should be: (5, 2)(5, 1)(7, 2)(7, 1)(8, 2)(8, 1)(2, 1) total : 7

I realized that it was basically: <https://www.geeksforgeeks.org/counting-inversions/> .

**Round 3:** The interviewer was a very experienced person and was the manager of some major department. This round seemed like a HR round as he was asking me questions like \xe2\x80\x99the moment I felt most important in previous 1 year, difficulties faced during my internships and all.

Finally he gave me a Design question to implement Google Maps. I came up with different approaches and finally gave him the solution with greedy approach. He then told me to code Djikstra\xe2\x80\x99s algorithm which I did. He also wanted to come up with an algorithm to get second shortest path.

**Round 4:** The interview started with introduction and he gave me some coding question. First question was to find inorder successor for a given Node, given a pointer to that node alone. I asked him if I can make some assumptions, so I came up with an approach using parent pointer. The next question was based on Graph. For a given directed graph, find the shortest path from source to destination, if we can add a edge in between any two un-connected nodes. I gave him a solution approach by forming a connected matrix, finding all-pair shortest path(Floyd Warshall) and then checking for all intermediate nodes between src and dest nodes.

He was satisfied by the solution approach, but asked me if I could come up with a better approach. He finally gave a solution approach based on BFS, even though there were many loop-holes in it.

All the students were asked to leave and wait for the results.

Finally they shortlisted 3 students and I was one of them \xf0\x9f\x99\x82 .

**Tip:** Coming up with a solution approach was not enough. They wanted to a fully-functional coded solution, with all corner cases covered as well.

I would like to thank GeeksForGeeks for the extensive questions as well as solutions available on it. I am not a competitive coder, but different websites like Leetcode, Interviewbit and GfG, definitely helped me to solve and learn a wide range of problems.

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# Amazon Interview Experience SDE 2

- Difficulty Level :\n[Easy](#)
- Last Updated :\n12 Jul, 2019

The whole process took 1 month. Started with a hiring drive.

First there was a coding round.

**Question:**\xc2\xa0[First non repeating character using one traversal of string](#)

Candidates who cleared it were called for F2F rounds.

## Round 1:

1. Given set of coins [10, 5, 2, 1], how do you generate change value x from it. (not min number of coins.)

**Solution:** ([Perfect Sum Problem](#))

2. Diagonal view of a tree

## Round 2:

- [Connect n ropes with minimum cost](#)

## Round 3:

- Design RedBus, add some features from OLA and UBER.

## Round 4 & 5:

Hiring Manager and Bar Raiser: They will basically go through all the amazon leadership principles. Will deep dive into one of your project, challenges faced with it etc.

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# Amazon Interview Experience for Spring Internship ( On-Campus)

- Difficulty Level :\nEasy
- Last Updated :\n12 Jul, 2019

## Round 1: Online Test (2 hours)

The online test was conducted on the Aspiring Minds platform. The test had the following sections:

1. Code Debugging
2. Aptitude
3. The verbal and logical reasoning
4. Coding
5. Workplace survey
6. Feedback

The code debugging questions were fairly simple. Aptitude, verbal and logical reasoning sections were of moderate difficulty level. Coding round was medium-hard ( judging by the coding platform and time constraints). Workplace survey and feedback sections were given equal importance for shortlisting. There were 200 students who appeared for the test out of which 15 students were shortlisted.

## Round 2: Technical Interview (2 hours)

There was only one face to face round. The interviewer introduced himself and then asked me to introduce myself. We had some discussion about my hobbies for 15-20 minutes and then we started discussing some Data Structures and Algorithms problems. Following were the problems asked in the interview.

1. Given two linked lists, where each linked list represents a number ( each node contains one digit), you have to design an algorithm to add these two numbers and store the result in another linked list.

I told him that I have already seen this problem, so he quickly asked my the approach to solve it. Then he asked me to solve it with various constraints (you cannot reverse the linked list, no extra space, cannot use recursion, etc.). I gave all the approaches that I could think of and then we discussed the time and space complexities of each approach. The discussion went on for 5 to 10 minutes.

2. Give an x n matrix, where each cell contains a distinct integer, you can start from any position and then move to an adjacent cell ( shares side) if the number in the adjacent cell is one greater than the current cell. You have to find the length of the longest path in the matrix. I gave a BFS + minHeap approach. I did not consider the constraint that all the elements in the matrix are distinct, so the interviewer asked me to optimize the approach and clarified that all the elements are distinct. Then I gave simple BFS approach and we discussed the time and space complexities of all the approaches that we discussed. After discussing the solution, he asked me to write a code for the exact solution that we discussed. It took me 5-10 minutes to complete the code. He kept the code aside and reviewed it at the end of the interview. Then we moved on to discuss some more problems.

3. Given two strings, find the longest common subsequence. This was a standard problem, so he asked me to explain everything about DP ( recursion, base case, optimal substructure, overlapping subproblem, memoization, etc.) We discussed DP concepts for some time and then we analyzed the time and space complexity of the LCS problem.

4. He asked me some core concepts of hashing like the hash function, probing techniques, load factor, etc. Then he asked me what would I do to improve the performance of hashing if I am implementing it in my own project. The interviewer was looking for the word \xe2\x80\x9ccustom hash function\xe2\x80\x9d, I came to that point after 5 minutes and then we moved on to the next question.

5. Given a binary tree, write an algorithm to connect nodes at the same level. This was again a

standard problem and I gave the solution instantly. Then he added some more constraints( without using recursion, with recursion, full binary tree, general binary tree, etc.), I was not able to solve it using recursion, so he gave me a hint by asking about different types of traversal. I was able to solve it using post-order traversal after the hint.

He reviewed my code and he was satisfied with it, so we did not discuss much on it. Then we discussed the work culture at Amazon and other IT companies, what is the role of an SDE, etc. I was particularly curious about the team sizes at Amazon and how they collaborate to work on a project.

Verdict: Selected \xf0\x9f\x99\x82

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## Amazon SDE intern experience

- Difficulty Level :\n[Medium](#)
- Last Updated :\n12 Jul, 2019

**Round 1:\xc2\xb0** The first round was an online **coding + aptitude + debugging** test.

- There were 2 coding questions \xe2\x80\x93 is path possible in 2 D matrix and the other one was very similar to a linear search in a 2D matrix.
- 70 minutes were provided for these questions.
- The debugging questions were also fairly easy, simple replacement of || operator by && types.
- The aptitude questions were also simple and ample time was provided for them.
- Candidates had to solve both coding questions, all debugging questions and perform well in the aptitude section also to qualify for the next round.

**Round 2:\xc2\xb0** The second round was an interview round. My interviewer asked me 4 questions and also asked me to code all of them after discussing the solution. Below is the list of questions asked:

- The first question was to [Find the Next Greater Element](#), optimized solution was expected.
- The second question was to [find the mirror tree of a given binary tree](#).
- The third question was similar to the first question, the interviewer thought of the question on the spot but if someone knew the answer to the first question then this question would not be a problem.
- The last question was to [find the min cost of joining n rods](#).

There were no more rounds conducted for the candidates, amazon selected the candidates on the basis of these 2 rounds.

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# Amazon Interview Experience (On Campus for 2 Month Internship)

- Last Updated : \n12 Jul, 2019

**Online Round:** An online screening test was organized on Hackerearth. This test consisted of **20 MCQs (+1, -0.25)** and **2 coding questions(+100)**. The MCQs were questions about output, pointers, programming basics, data structures and DBMS. One of the coding questions was:

**Question:** [Given a matrix with one source and multiple destinations, calculate the minimum and maximum distance between source and a destination.](#) Apart from source and destinations, there were cells which you couldn't go to.

There was partial marking in coding questions based on the number of test cases passed.

25 were shortlisted from 160+ candidates.

## Round 2:

1. Find the starting node of loop in a linked list. ([Solution](#))
2. Rearrange characters in a string such that no two adjacent ones are same ([Solution](#))

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# Amazon Interview Experience SDE2

- Difficulty Level :\n[Hard](#)
- Last Updated :\n12 Jul, 2019

## Round 1:

1. [Left View Of Binary Tree](#)
2. [Largest Sum Contiguous Subarray](#)
3. [Search in a row wise and column wise sorted matrix](#)

## Round 2:

1. [Minimum number of platform required in a railways bus station](#)
2. [Print all nodes at distance k from a given node](#)

## Round 3:

1. Find Triplets in BST . You are given one number X . You need to print all A, B, C ( $X == A+B+C$ )
2. [Print all palindrome strings \(length > 1\)](#)
3. [Partition a set into two subsets such that the difference of subset sums is minimum](#)

## Round 4:

1. Discussion about project and challenges.
2. Conflicts that raise after your design proposal in your previous projects.
3. Design BookMyShow.

## Round 5:

1. Discussion about project and challenges.
2. Innovation that help current company.
3. Ability for code reviews.
4. Netflix and [LRU caches design](#).

## Round 6:

1. Discussion about project
2. Design Amazon Locker

## Round 7:

1. Discussion about project
2. Amazon sell physical product, if amazon starts selling the services and user start buying the services from\nc2\xa0 different vendors (Airtel/Netflix/ ..).

Amazon should start auto renewal of such services at the time of service expiry .

**Ex:-** Customer buy service for car cleaning from any seller (register with amazon) for 300Rs for 30 days . then at the time of its expiry this service should auto renew\nc2\xa0 for next 30 days.

\xc2\xab

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# Amazon Interview Experience | ( 6 Months Intern for SDE-1 )

- Difficulty Level :\n[Expert](#)
- Last Updated :\n12 Jul, 2019

Amazon had visited our campus in August for hiring 6 months intern for final year and summer interns for pre final year (SDE-1). The drive comprised of one online round and maximum two F2F interviews

\xc2\x0

**Round 1 (online):** The online round consisted of 2 coding problems and around 20 MCQ\xe2\x80\x99s

Problem 1 :\xc2\x0[Reach a given score](#)

In the above mentioned link they have considered that order does matter but in the online round they had specified that order does not matter .

Problem 2 :\xc2\x0[Length of the smallest sub-string consisting of maximum distinct characters](#)

**31 students were shortlisted for further rounds.**

**Advice :** The problems that are asked in online round are not that tough, anyone with little bit of practice can clear it with ease . So keep practicing \xf0\x9f\x98\x80\xc2\xa0

\xc2\x0

**Round 2 ( F2F-1\xe2\x80\x99s.100 mins ) :** The interviewer was cool and he made sure that I was comfortable and then he started.

He just had a look on my Resume and then started giving me problems

**Problem 1:** Given M and N.Calculate the number of ways to form M digit number such that value at any digit can be at most N and value at current digit is at least twice the value at previous digit(The condition should be satisfied at every digit index, for example if M=3 and N=9 then 136 is a valid number and 135 is invalid)

He said that N can be anything and the final number can contain more than M digits if you are thinking in decimal number system.Basically he wanted to say that don\xe2\x80\x99t restrict yourself to decimal number system consider a ideal number system with maximum digit value N.

Hint-Dynamic Programming.

\xc2\x0

**Problem 2:** Given a number N ( $1 \leq N \leq 10^5$ ) . Find out if N can be expressed in terms of  $a_1^{n_1} + a_2^{n_2} + a_3^{n_3} + \dots + a_k^{n_k}$  (  $a_1, a_2, a_3, \dots, a_k$  are bases and are  $> 1$  and  $n_1, n_2, n_3, \dots, n_k$  are exponents and are  $> 0$  )

if yes count such sequences

Hint \xe2\x80\x99s precompute all the powers and then apply dynamic programming

\xc2\x0

**Problem 3 :** Given N points in 1-D plane (x -axis) with their co-ordinates and M boxes. Place M boxes (every box should be placed on one of the N points ) in such a way that the minimum distance out of distances of every pair of adjacent boxes get maximized ( i.e make minimum distance as large as possible )

Hint-Binary search on answer

\xc2\x0

I was able to solve all the above 3 problems but i found them very difficult . It took quite a bit of time and scratching of head to solve them. Interviewer was always supporting and he was motivating me to solve problem and he kept on giving me hints through out the interview.

Advice- Be confident and take your time and keep on telling interviewer about what you are thinking and what your thought process is .He is more keen to see your thought process rather than your final solution.

\xc2\x0

**Round 3(F2F-2 \xe2\x80\x99 50-60 mins):** The interviewer was very chill .He just told me to assume as if I am giving an interview to one of my close friend.Then he started the interview

\xc2\x0

Problem 1 :\xc2\x0<https://www.geeksforgeeks.org/shuffle-a-given-array/>

Problem 2 :\xc2\x0[Find next greater number with same set of digits](#)

Problem 3 :\xc2\x0[Wildcard Pattern Matching](#)

\xc2\x0

Then he shifted his focus towards computer science fundamentals . He asked me to explain normalization in DBMS and all the normal forms also.

After this he asked me to explain how and why hashing is done ( a small discussion on it )

then he asked me about Map and some STL function on about how they are implemented in c++\xc2\x0 i.e internal working and a little code explanation of them

\xc2\x0

In this round the interviewer was more sort of interested in my approach not the solution and he didn\xe2\x80\x99t expected me to solve all the problems just was motivating me to approach nicely.

**Round 3 over .** Now comes the best part . I was given SLI\xc2\x0 ( 6 months intern )at Amazon India and my happiness was sky high.

**Final Advice \xe2\x80\x99** Practice makes a man perfect.Keep on practicing and your hard work\xc2\x0will always be rewarded.You just have to be patient and confident.

\xc2\x0

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# Amazon Campus Drive (For Semester-Long-Internship)

- Difficulty Level : \n [Hard](#)
- Last Updated : \n 12 Jul, 2019

## Round 1: Online Test (Duration : 2 hours 30 minutes)

- It had around 20 Multiple Choice Questions related to fundamentals of Computer Science and 2 Programming questions.
- The Programming questions were :
  - 1) [Find the length of the smallest substring consisting maximum number of distinct elements.](#)
  - 2) [Find number of ways to denominate a given amount using coins of 3, 5 and 10.](#)
- Around 30 students were selected for the second round.

## Round 2: 1st F2F Round (Duration : 50-55 minutes)

- Started off with the usual \xe2\x80\x9cTell me something about yourself.\xe2\x80\x9d The Interviewer was very friendly.
- He asked me about several types of Tree-based Data Structures and their properties. (T\xe2\x80\x99s, BT\xe2\x80\x99s, BST\xe2\x80\x99s, AVL\xe2\x80\x99s, etc.)
- He asked me to write a function that takes the Root Node of a Tree as an input, returns 1 if the tree is a BST and 0 otherwise.
  - I gave him a linear approach with O(n) time-complexity and O(log(n)) or O(height of the tree) extra stack-space complexity. He was satisfied with it.
- He gave me an array consisting of only 0\xe2\x80\x99s, 1\xe2\x80\x99s and 2\xe2\x80\x99s and asked me to sort it.
  - I gave him the counting sort approach with O(n) time-complexity and O(1) extra space. He asked me if I could do it in one pass.
  - I tried for some time and with the help of few hints I was able to code-out a segregative approach. Related Articles ([3-Way QuickSort \(Dutch National Flag\)](#))
- He gave me a weird array of size N where N-1 elements occur K times. The remaining one element occurs only 1 time. Find that one element which occurs only 1 time.
  - I gave him a hashing based solution with time and extra-space complexity of O(n). He then asked me how std::unordered\_map and std::map are implemented underneath. I briefed him about them. He then asked me if I could do the problem in O(n) time and O(1) extra-space.
  - He told me to think in terms of bits. Then by taking some examples I was able to arrive at the solution. An example where K = 3 ([Find the element that appears once](#))
- He then asked me some questions related to Gujarat (my native place). How good is food, tourist places, traveling and all. This discussion went on for 10 minutes. Then he asked me about some good places to eat in Jaipur (my college was in Jaipur). I gave a few suggestions. He was very friendly and even told me that I\xe2\x80\x99m sending you for the second F2F round.

## Round 3: 2nd F2F Round (Duration : 50-55 minutes)

- The usual \xe2\x80\x9cTell me something about yourself.\xe2\x80\x9d I told him I was the best Counter-Strike player of the Batch and he was intrigued. He asked if I knew how the game worked. I was able to give him satisfactory information.
- He asked me to brief him about my previous round, what were my approaches to the questions.
- He asked me about the basic idea of Dynamic Programming. He asked me about my thoughts

on \xe2\x80\x9cWhere? and How? are Graphs useful in tackling real world problems.\xe2\x80\x9d

- He asked me whether I know about Segment Trees and Fenwick Trees or Binary-Indexed Trees and about their implementations. He didn't ask me to code them.
- He gave me an Graph in the form of Adjacency Matrix and a separate array A for values of the nodes. He told me to transform the array A according to the following transformation :
  - The new node values should be equal to the sum of product of the sum of odd-value nodes and the sum of even value-nodes in the sub-graph of that node and the node-value itself.  
i.e. ( $\text{new\_node\_val} = \text{old\_node\_val} + \text{PRODUCT}(\text{SUM}(\text{odd\_node\_value nodes in the subgraph}), \text{SUM}(\text{even\_node\_value nodes in the subgraph}))$ )
  - A gave him a simple DFS approach. He told me that I was the first one who gave me the solution and was satisfied.
- He told me that we want to answer Q queries ( $Q \leq 1e4$ ). In each query, we will be given a number N ( $N \leq 1e4$ ) and we have to return 1 if N can be expressed as sum of powers of numbers less than X ( $X \leq N$ ). Also anything power 1 is not allowed (Otherwise there's no point in solving as N can always be expressed as  $N^1$ ). E.g for N = 242 and X = 7 : return 1 (as  $242 = 1^2 + 3^2 + 6^3 + 2^4$ ).
  - He gave me a hint to see how many numbers in total can you can use to express N. Total Numbers =  $(2^2, 2^3, \dots, 2^{\lfloor \log_2(N) \rfloor}, 3^2, 3^3, \dots, 3^{\lfloor \log_3(N) \rfloor}, \dots, X^2, X^3, \dots, X^{\lfloor \log_X(N) \rfloor})$ . This turned out to be very few.
  - At this point I was able to reduce the problem to finding a subset with a given sum (here N). I gave him DP solution and he was satisfied. Related Articles [Subset Sum Problem](#)
- Around 7 people were selected and I was glad I could make it. It turned out to be great experience from my side. The Interviewers were very friendly and helpful.

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# Amazon SDE-2 Interview Experience

- Difficulty Level : \n [Hard](#)
- Last Updated : \n 12 Jul, 2019

## Round-1 (Telephonic)

The first round comprised of 3 questions:

1. There are n balls of different weights, we need to melt all the balls to make a new big ball. The cost to melt two balls is equal to sum of their weights. \xc2\xa0 We need to melt the balls with minimum cost.

For example if we are given 4 balls of weights 4, 3, 2 and 6. We can melt the balls in following ways.

- 1) First melt balls of weight 2 and 3. Now we have three balls of weight 4, 6 and 5.
- 2) Now melt balls of weight 4 and 5. Now we have two balls of weight 6 and 9.
- 3) Finally melt the two balls and all balls have melted to a big ball.

Total cost for melting all balls is  $5 + 9 + 15 = 29$

This is a variation of connecting ropes question on geeks: <https://www.geeksforgeeks.org/minimum-cost-to-connect-all-n-points/>

2. Find k largest/smallest elements in an infinite stream of integers. Elements in the stream can be in any order.

[Kth largest element in a stream](#)

[Kth smallest element](#)

## Round-2 (F2F Round-1)

1. [Clone a linked list with next and random pointer](#)

Working code was expected on the paper. We discussed many approaches to solve the questions. He picked one out of those and asked me to write a production ready code. He was very happy with the code and left without asking another question \xf0\x9f\x98\x80

Tips :- Take your time and thought through the code you are about to write. THINK ALOUD!! Write a rough pseudo code before the actual code so that you get an idea of all the variables you will be needing and maintain modularity of the code. Do dry run the code with the edge cases.

## Round-3 (F2F Round-2)

- 1) LLD of a system in which players can play in a tournament of matches. A match is played between 2 players. Assume you have sufficient  $2^k$  registered players ready for a tournament.

Match Flow:

Player 1 and 2 rolls a dice one by one and a single chance is given to each player. There is an umpire who also rolls dice after the two players and he calculates the absolute difference between the number on the dice with the two players. The player having minimum diff with the umpire score wins the game. If there is a tie, then umpire chooses to throw a coin and the two players get to choose a face, and decides the winner.

2-3\xc2\xa0behavioural questions.

I screwed up this interview. I created an average design. He didn\xe2\x80\x99t seem happy about it.

Tips: Don\xe2\x80\x99t get disheartened. You will get two more design rounds to ace the process.

## Round-4 (F2F Round-3)

- 1) There were two interviews in this round. They asked me to design a movies reviews aggregator

system. Data should be fetched from movie rating providers like imdb, rotten tomatoes, etc. We had a lot of discussions regarding the issues you might face if the reliability of the movie rating providers goes down/up or you remove a provider or you add a new provider. eg you consider imdb to be more reliable(some factor) than rotten tomatoes in your rating calculations. How you will keep the data. How you will perform search. Is it a NRT data or you will do the data processing offline. How do you rank your listing of movies. Lot of factors were discussed and we end up with a good design. Both of the interviews seemed happy.

Tips: Don't lose your calm if any of the round goes average or even below average. They will tell you very genuine drawbacks in your design and you need to evolve your design. This is what they are looking for.

### **Round-5 (F2F Round-4) Hiring Manager**

1) All together there were 10-15 behavioural questions to check the candidate's alignment towards the amazon leadership principles. It's a must to enter into Amazon. Use STAR(Situation, Task, Actions, and Results) approach to answer each of these questions.

eg. xxx was the situation. yyy are the tasks you identified. you executed the tasks. zzz was the result.

2) There is a device like kindle where you can buy books and read them. You can read the same content using Kindle app on other devices as well like on your phone, tab etc. There was a problem in that and he need a design to solve this. The problem is suppose I was reading an xyz book and I was on a specific page let's say at 60. Now I closed the app on the device and I opened the same book on other device. The same page should open where I left on the other device. How will you handle the actions user take when he is offline. Lot of discussion around this.

He was very happy about the design. I solved it using operational transformation being used by the websites for online collaboration like google doc, collabedit etc.

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# Amazon Web Services(AWS) Interview Experience (On-Campus)

- Difficulty Level :\nEasy
- Last Updated :\n27 Aug, 2018

AWS hiring process has 5 rounds.

## First Round:

First round is online test, which has four sections.section-1 has quantitative aptitude, logical reasoning questions.sections-2 has technical questions related to c, c++, java, dbms, os and networks.section-3 has 2 coding questions.section-4 has technical questions related to bigdata, cloud computing and data science.time given is 2 hours.They shortlisted 41 students out of 450.

## Second Round:

Technical round:asked general questions about networking, os and troubleshooting.

- 1.What are the advantages of having virtual memory?
  - 2.How to trouble shoot windows system which has booting problems?
  - 3.gave one simple code to implement and some general questions
- 16 students shortlisted for the next round.

## Third Round:

Technical round:asked all networking questions.

- 1.What are the softwares you have used?
- 2.How to prevent SYN DDoS attack?
- 3.How to indentify fake IPs?
- 4.What is the difference b/w private IP and Public IP?
- 5.questions related OSI and TCP layers
- 6.Port numbers of different protocols
- 7.What happens when you type on your browser?
- 8.questions related to DNS

to clear this round you have to be master in networking.

12 students shortlisted for the next round.

## Fourth Round:

Managerial Round

## Fifth Round:

HR Round

## They selected five members for FTE+Internship

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# Amazon India SDE III Interview Experience

- Difficulty Level :\n[Hard](#)
- Last Updated :\n24 Aug, 2018

## Round 1:

This was on HLD, I was asked a question on how to design an online chess game. The questions asked were how will you assign a player to another player who wants to play. You need to think about how to divide your players into multiple groups of ratings, so that a newbie is not playing a grand master, rather with someone who is of his level only. Then the question was how will you design your system when a player comes in and say I want to play, and the max wait time is 1 min, you need to find a player suitable for his level and think about multiple race conditions.

## Round 2:

This was DS round and I was asked two questions

Question1:\xc2\xa0<https://www.geeksforgeeks.org/find-the-row-with-maximum-number-1s/>

Question 2:\xc2\xa0You are given 2 words with equal number of characters. Find an algorithm to go from first word to second word, changing one character at each step, in such a way that each intermediate word exist in a given dictionary.

Example:

Words are pit, map. A possible solution:

pit, pot, pet, met, mat, map

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# Amazon On-Campus Interview 6 months Internship (SDE)

- Difficulty Level : [Hard](#)
- Last Updated : [12 Jul, 2019](#)

## Round 1: Coding round + MCQs

There were 2 coding questions and 20 mcqs of variable marks such as 4, 6 and 2 and no negative marking.

1. [Stock span problem.](#)
2. [Zig-Zag tree traversal.](#) The only catch was the tree was given in the form of array like 3, 2, 4, 5, null, null, 1, 1, 2, 12. All internal nodes would have either a value or null. Leaves could be empty. It was more of implementation tester.

24 students were shortlisted. (Mostly based on MCQs because the coding was done by many ).

## Round 2: Tech Round (Purely based on GeeksForGeeks DSA)

I was asked about the test and how I solved the questions. Then I was asked [Maximum profit by buying and selling a share at most twice](#) problem. First I was asked my algorithm and then I was asked to code it all on paper.

Then he asked about my hobbies.

13 Students made it to Round 3.

## Round 3: Tech Round ( GeeksForGeeks and Problem solving skills tester )

1. [Given a graph create a tree with minimum depth.](#) I was not asked to write the code but the discussion went on for about 5 to 10 mins.
2. Then I was asked [Median of stream of Running Integers.](#)
3. Next question was [LCA in a Binary Tree.](#)

Then using that solution find [Distance between two nodes A and B in a Binary Tree.](#)

4. Then [swap alternate elements in the Linkedlist.](#)

\xc2\x0

Finally after a whole day of Process 9 Students were selected for Internship and I was One of Them.

**PS- GeeksForGeeks is the go to site for Amazon Interviews !!!**

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# Amazon Internship Interview Experience On-Campus

- Difficulty Level :\nMedium
- Last Updated :\n12 Jul, 2019

Recently **Amazon** visited our college for hiring 2 months summer interns.

**Round 1:** It was Online round on HackerEarth consisting of 20 technical questions and 2 Coding questions.

The Coding Questions were as follows:

1. [Shortest Path between two cells in a grid](#)
2. [Length of smallest substring consisting of maximum Distinct characters.\xc2\xa0](#)

Technical Questions were also quite easy.

But there is Sectional cutoff in Amazon Shortlist.

## Round 2:

After Online Round 40 students were selected for Interview. And there were only 2 technical Interviews.

In my First Interview Round Interviewer asked me followings:

1. Tell Me about yourself.
2. Then he gave me\nc2\xxa0 coding questions. Given a\nc2\xxa0Binary\nc2\xxa0Search\nc2\xxa0Tree (BST), modify it so that all greater values in the given BST are added to every node.\nc2\xxa0<https://www.geeksforgeeks.org/add-greater-values-every-node-given-bst/>\nc2\xxa0.I asked the interviewer that what about the Integer limits while adding. and this made a quite good impression on him.
3. [Reverse words in Given String.](#) Example: Let the input string be \xe2\x80\x9ci like this program very much\xe2\x80\x9d. The function should change the string to \xe2\x80\x9cmuch very program this like i\xe2\x80\x9d.

But the string is not stored in Normal Character Array. *Here each character is a node in Linked List (including\nc2\xxa0 \nc2\xxa0space too).*

4. [Then he asked me about LRU Cache. and asked about How it is Implemented.](#) i was not able to answer quite correctly but somehow i came up with Linked List approach.

This round lasted about 45 minutes.I was asked to write code on Paper. The Interviewer was quite helpful.

## Round 3: Guys who did good in 1st interview were called for 2nd interview.

The interviewer asked me what questions i was asked in 1st round.

1. [Given a Binary Tree check whether it is sum tree or Not.\xc2\xxa0](#)
2. Then he asked to design a Data Structure for KeyBoard. Given the layout\nc2\xxa0 of keyboard implement it. I initially gave him matrix based solution but he told me to think better then i gave him graph based solution.
3. Then He asked me about my project. Donot write any fake project only do write your project on

Resume if you have done it and you know the basics related to project very well.

And this Interview also lasted about 40 Minutes. And Finally 15 students were Selected and Luckily I was One of them

last thing i would like to say is Be Confident.

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## Amazon QA role & Support Engineer Intern interview experience

- Difficulty Level :[Medium](#)
- Last Updated :[12 Jul, 2019](#)

**Round 1:** First we took an online test(20 mcq\xe2\x80\x99s and 2 programming questions) in our college. After 3 days Amazon recruiters came to our college. On that day they asked us to write 2 programs.

1. Given a string containing alphanumeric characters. Find the sum of the numbers in that string.

```
\r\nInput:- aal123bb4\r\nOutput:- 127\r\n\r\nInput:- bbb5cc5dd12\r\nOutput:- 22\r\n
```

**Solution:** [GeeksforGeeks Link](#)

2. Given an array containing numbers 1\xe2\x80\x99s and 0\xe2\x80\x99s. Sort the array without using sort function.

```
\r\nInput:- 1 0 0 1 0\r\nOutput:- 0 0 0 1 1\r\n\r\nInput:- 0 0 1 0 1 1\r\nOutput:- 0 0 0 1 1 1\r\n
```

**Solution:** [GeeksforGeeks Link](#)

We have to write the solutions on paper for the above two programs. The shortlisted candidates are called to round 2.

**Round 2:** This is a face to face round. In this round you are interviewed for almost 1 hour. In this round they will give you some programs and you have to write codes for them.

Some of the programs they asked me in the interview are:

1. Given two binary strings. Perform addition for that.

```
\r\nInput:- str1 = "1010", str2 = "1111"\r\nOutput:- 11001\r\n
```

**Solution:** [GeeksforGeeks Link](#)

2. [Given a binary tree. Check whether it is a binary search tree or not?](#)

3. [Perform binary search](#)

4. Find the peak elements(the value should be greater than the previous element and the next element in the array) in the array.

```
\r\nInput:- 5 4 8 6 9 1 10\r\nOutput:- 5 8 9 10\r\n
```

**Solution:** [GeeksforGeeks Link](#)

After qualifying in this round u will be shortlisted for round 3.

**Round 3:** In round 3, depending upon the panel they will ask you about your project.

Basic and advanced linux commands that are used for testing.

If you had done a project they will ask you like \xe2\x80\x9d how do you test your project\xe2\x80\x9d. Basic concepts in OS and DBMS.

- What is cache memory.
- What is IPV4 and IPV6.
- How will gmail authenticate your passwords?
- In which memory your laptop password is being saved?
- Deadlocks.

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## Amazon Interview Experience

- Difficulty Level :[Medium](#)
- Last Updated :[16 Oct, 2018](#)

### Round: I

An Array arr={7, 7, 8, 8, 9, 1, 1, 4, 2, 2} has numbers appearing twice or once. Duplicates appear side by side everytime. Might be few numbers can be occur one time and just assume this is a right rotating array (just say an array can rotate k times towards right). Aim is to identify numbers that occurred once in array.

```
#include <stdio.h>
int main()
{
    int a[] = { 7, 7, 8, 8, 9, 1, 1, 4, 2, 2 }, i = 1, m = 10;
    // int a[]={7, 8, 8, 9, 1, 1, 4, 2, 2, 7}, i=1, m=10;
    if (a[0] == a[m - 1]) {
        a[0] = a[1];
        m--;
    }
    for (i = 1; i < m; i++) {
        if (a[i] == a[i + 1]) {
            a[i] = a[i + 1];
            m--;
        }
    }
    printf("%d\n", a[m - 1]); // For cases like { 7, 7, 8, 8, 9, 1, 1, 4, 2, 3 }, a[] = { 7, 7, 8, 8, 9, 1, 1, 4, 4,
}
```

Input:

7, 7, 8, 8, 9, 1, 1, 4, 2, 2

Output:

9

4

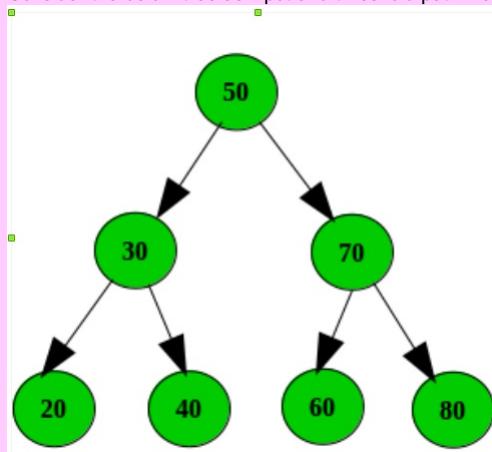
### Round II:

In second round a question asked was regarding BST. Sum of key elements in individual path of BST (just say this sum as path\_weight) and threshold path weight is given as input. If any of the pathweight is less than oversold path weight then that should be deleted from the tree.

Example :

Input:

Consider the below tree as input and threshold path weight is 110.



Output:

Below are the no of paths the input tree can make

path 1 : 50 -> 30 -> 20, Sum = 100

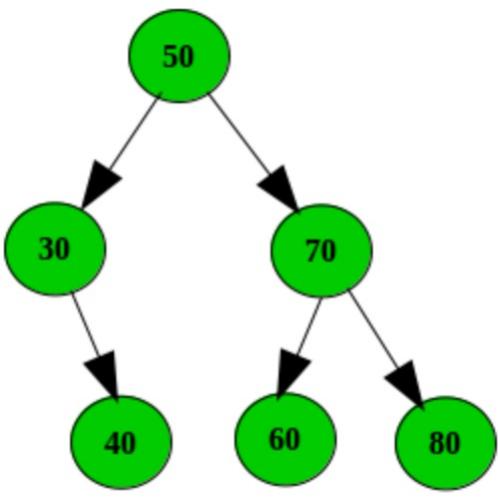
path 1 : 50 -> 30 -> 40, Sum = 120

path 1 : 50 -> 70 -> 60, Sum = 180

path 1 : 50 -> 70 -> 80, Sum = 200

In the current scenario path is less than the threshold path weight ( $100 < 110$ ), So we have to destroy the path 1.

Tree after destroying the path 1.



Program for above task:

```

#include <stdio.h>
#include <stdlib.h>
struct node {
    int key;
    struct node *left, *right;
};
struct node* newnode(int element)
{
    struct node* temp = (struct node*)malloc(sizeof(struct node));
    temp->key = element;
    temp->left = temp->right = NULL;
    return temp;
}
struct node* insert(struct node* root, int element)
{
    if (root == NULL)
        return newnode(element);
    if (element < root->key)
        root->left = insert(root->left, element);
    else if (element > root->key)
        root->right = insert(root->right, element);
    return root;
}
void inorder(struct node* mynode)
{
    if (mynode != NULL) {
        inorder(mynode->left);
        printf("%d\t", mynode->key);
        inorder(mynode->right);
    }
}
struct node* minValueNode(struct node* node)
{
    struct node* current = node;
    while (current->left != NULL)
        current = current->left;
    return current;
}
struct node* deleteNode(struct node* root, int key)
{
    if (root == NULL)
        return root;
    if (key < root->key)
        root->left = deleteNode(root->left, key);
    else if (key > root->key)
        root->right = deleteNode(root->right, key);
    else {
        if (root->left == NULL)
            return root->right;
        else if (root->right == NULL)
            return root->left;
        struct node* temp = minValueNode(root->right);
        root->key = temp->key;
        root->right = deleteNode(root->right, temp->key);
    }
    return root;
}

```

In addition to the existing code for BST in geeksforgeeks and below function will implement the above task.

<https://www.geeksforgeeks.org/binary-search-tree-set-2-deletion/>

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**Amazon Interview Experience | Set 435 (For SDE-2)**

- Difficulty Level :Hard
  - Last Updated :12 Jul, 2019

This interview was for Alexa team in Bangalore. They were on a recruitment drive in Delhi.

## **Round 1: Written**

This was a written round on paper. There were 9 questions in total (5 single choice + 4 subjective)

5 single choice questions were on Collections framework and Multi-threading in Java. These were pretty simple.

4 subjective questions are as follows:-

1. How will you analyse Out of memory exceptions in your application?
  2. How will you analyse Deadlock in your application?
  3. Write a custom unchecked exception.
  4. Write a program that will cause StackOverflowException.

## Round 2: Face to Face (DS Algo)

1. Largest Sum Contiguous Subarray
  2. Given a list of transaction between friends who have to give or take some amount of money from one another. Now, they have to settle up with minimum number of transactions. Also, you have return a list of all the transactions.  
For example  $\text{B} \rightarrow \text{A} = 200$  :  $\text{B} -> \text{A} = 200$ .  
Similarly, if  $\text{C} \rightarrow \text{B} = 200$ .  
So the minimum number of transactions is 1 and that should be :  $\text{C} \rightarrow \text{A} = \text{Rs. } 200$

### **Round 3: Face to Face (Hiring Manager)**

1. \xc2\xa0He started with some behavioural questions.
  2. *Design question:* There is a passport office with 3 desks (Desk A, Desk B, Desk C) and 1 token machine. A person comes in and takes token from the token machine. He has to visit every desk in sequence whenever his token number is displayed on the particular

desk.\xc2\x0He just asked me to write the classes for the same.

#### Round 4: Face to Face (Design round)

Design a online chess game. HLD and LLD was required.

It supports 3 mode:

1. Player vs. AI
2. Player vs. player\xc2\x0 (Offline)
3. Player vs. player (Online)

Unfortunately, I\xc2\x0 was unable to clear this round.

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# Amazon Interview Experience | Set 434 (For SDE-2)

- Difficulty Level :\n[Hard](#)
- Last Updated :\n12 Jul, 2019

## Round 1: Face to Face

Approach in the interview: \xc2\x0Start with explaining the approach-> then improve solution if interviewer asks to do so\xc2\x0-> then finally you need to write working code on Paper.

1. [Given a binary tree, print all the boundary nodes in an anti-clockwise direction starting from the root.](#)
2. [Deletion Operation on Doubly Linklist, Cover all the test Case.](#)

## Round 2: Face to Face

1. [Stock buy and sell problem to maximize profit.](#)
2. [Boolean Matrix Question.](#)
3. Design auto-suggestion search box/engine, discuss on trie data structure.
4. How will you approach\xc2\x0if a website is slow? (TPS/Load Balancer concept)

## Round 3: Telephonic

1. There were two Data Structure & Algorithms problems, I only remember one question.
2. [Merge Overlapping Intervals](#) \xe2\x80\x93 Solved using a stack.

## Round 4: Face to Face

1. [Minimum iteration required to root all oranges.](#)
2. [Count distinct elements in every window of size k, expected time complexity O\(n\).](#)

## Round 5: Hiring Manager(F2F)

Most of the questions asked were behavioral.

1. Tell me about yourself and current project discussion.
2. Have you ever had disagreed moment with your manager on any technical discussion/project?
3. Have you mentored anyone?
4. Have you worked on a project where you interacted with other teams and worked with them?
5. Have you done anything that improved customer experience?

\xc2\x0

In short hiring manager covered some Amazon Leadership principles such as customer obsession, disagree and commit, dive deep, develop and hire the best etc.

\xc2\x0

## Round 6: Design Round(F2F)

1. Current Project discussion.
2. Design ESPN-Cricinfo website Backend, discussion on HLD and LLD and Load Balancer.

\xc2\x0

## Round 7:\xc2\x0Bar Raiser Round(F2F)

1. Design BookMyshow website backend and discussion on HLD, LLD and DB schema. There were discussions on various issues like Scalability, What database should be used; SQL-NoSQL, Concurrency etc.
2. Have you done something in the team that improved team productivity?
3. Have you delivered something in tight deadline?
4. Why are you looking for a change?

\xc2\x0

Overall the technical bar was good and if one practices DS/Algo questions along with HLD/LLD and some concepts of System Designs, then he/she can easily crack the rounds.

Some tips/links.

1. Be confident and solve the problem honestly.
2. I used to attend at-least one mock interview at interviewbit which immensely helped me in getting confidence and know how to approach different problems.

After this long amazing process, I got a call from HR after seven days stated that \xe2\x80\x9cHi, Congratulations you are selected and cleared all the rounds and we\xc2\x0are happy to offer you SDE-2 position\xe2\x80\x9d.

\xc2\x0

Tips for the interview: Good hands on towards problem-solving and algorithm, practice from Geeksforgeeks, HLD and LLD, prepare well for Amazon\xe2\x80\x99s leadership principles.

\xc2\x0

All the Best Guys!

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# Amazon Interview Experience | Set 433 (SDE 2 for Experienced)

- Difficulty Level :\n[Hard](#)
- Last Updated :\n12 Jul, 2019

## Round 1

1. What is caching and how it is used. Types of cache eviction policies. Any cache you might have used for your project. Explain.
2. [Implement LRU cache](#).  
We first had discussion over different ways for implementation and then wrote the code using circular dll and map.
3. Any tradeoffs you have made in your past in any of your projects. Explain

## Round 2

1. Design gaming platform. A number of games can be hosted on this platform. User can login and select a particular game. Discussed both HLD and LLD.

## Round 3

1. Discussed on last mile delivery challenge in case of peak seasons. LLD for third party delivery vendor for registration and notification system .
2. Any good practice that you have introduced in your team.

## Round 4

1. [Search an element in a sorted rotated array in a single pass](#).
2. Extension of [rat in a maze problem](#). Maximum cheese the rat can eat in a maze.
3. Discussed in detail project from all my previous company.

## Round 5

1. Discussed the current project in detail.  
Asked to redesign the current project to make it more scalable.
2. Redesigned the database of current project.
3. Design Swiggy.
4. Discussion on a previous project where i used spark and discussion on alternatives i consider before using spark to solve that problem.

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# Amazon Recruitment Process

- Difficulty Level : \n[Medium](#)
- Last Updated : \n08 Aug, 2021

## About Company:

Amazon is an American electronic commerce and cloud computing company based in Seattle, Washington that was founded by Jeff Bezos on July 5, 1994. The tech giant is the largest Internet retailer in the world as measured by revenue and market capitalization, and second largest after Alibaba Group in terms of total sales. The [amazon.com](#) website started as an online bookstore and later diversified to sell video downloads/streaming, audiobook downloads/streaming, software, video games, electronics, food, toys, and jewelry. The company also produces consumer electronics\xe2\x80\x94Kindle e-readers and Echo \xe2\x80\x94 and is the world\xe2\x80\x99s largest provider of cloud infrastructure services (IaaS and PaaS). Amazon also sells certain low-end products under its in-house brand AmazonBasics.

In 2015, Amazon surpassed Walmart as the most valuable retailer in the United States by market capitalization. Amazon is the fourth most valuable public company in the world (behind only Apple, Alphabet, and Microsoft), the largest Internet company by revenue in the world, and after Walmart, the second largest employer in the United States.

[Know more about Amazon >>](#)



## Recruitment Process:

Amazon conducts 5-6 rounds to select freshers as SDE (SDE-1) in their organization. The following rounds are conducted:

- Written Round
- Online Coding Round
- Multiple Technical Rounds
- Hiring Manager Round
- HR Round

## Written Round:

The Written round majorly consists of two sections namely Aptitude / Logical Test and technical test. The technical test contains questions mainly from C, C++, Operating System, Data Structure, inheritance, functions. Generally in MCQ format with a given time frame of about 30 minutes.

## Online Coding Round:

This round is hosted online and the candidates are presented with 3-4 coding questions, the questions are of intermediate difficulty, mainly from Arrays, strings, and matrices. To clear this round, one should have a strong understanding of these data structures.

## Telephonic Round:

This round is purely algorithmic based with around 2-4 questions ranging from arrays, trees, to dynamic programming problems. You are to present algorithm and in some questions, the code also if necessary. Apt candidates are selected for further rounds.

## **Technical Round 1:**

Technical rounds are face-to-face algorithmic rounds in which candidates are presented with 2-4 questions, all from data structures. The most commonly asked DSs are the matrix, binary tree, BST, Linked list.

## **Technical Round 2:**

Same as previous round, however the difficulty is increased and more questions from Trees, BST, and Tries are asked. One should have a clear knowledge of tree-based recursion, and the standard questions based on it are a must.

## **Hiring Manager Round:**

This is generally the most technical-intensive round, with questions ranging from the projects you have done, the technology used in them, design problems and DS/Algo problems and tricky puzzle-like questions.

## **HR Round:**

You can expect HR questions like :

1. Tell me about Yourself, your family
2. How do you see yourself five years from now?
3. What are your strengths and weaknesses?
4. Some technical questions can also be asked from topics like OOPs.

## **Questions asked in Amazon:**

1. [Kadane's Algorithm](#)
2. [Angle b/w hour and minute hand](#)
3. [Inversion of array](#)
4. [Paranthesis Checker](#)
5. [0-1 Knapsack](#)
6. [k Largest elements](#)
7. [Longest Palindromic](#)
8. [Array to BST](#)

[More>>](#)

## **Interview Experiences:**

[Amazon interview experience | SDE 1](#)

[Amazon interview experience | SDE 1](#)

[Amazon interview experience | SDE 1](#)

[Read all Amazon Interview experiences](#)

## **Where to apply?**

[Amazon Careers](#)

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# Amazon Interview Experience | Set 432 (SDET Off Campus)

- Difficulty Level :  
[Hard](#)
- Last Updated :  
12 Jul, 2019

My friend in Amazon referred me for the job . I was approached by the HR and after lots of delay (1 month), I was scheduled a Telephonic Interview.

## Round 1: (Telephonic Interview ) : 1h

A screen was shared (Notepad) where I will be writing codes and doing other rough work. I was doing conversation with him on phone.

1. Given n sized stairs and we can take 2 or 3 steps at a time. How many ways are there to climb the stairs? Question was pretty straight forward. I was able to answer quickly.  
[Count ways to reach the nth stair](#)
2. [Given an array with adjacent numbers differing by an absolute value of 1](#). A number is given and we have to search it (They do not expect the trivial linear search O(n) ). I was able to figure out the algorithm for it pretty quickly.
3. [Given a time hh:mm format. We have to find out the bigger angle between the hour and minute hands. I took some time to figure out the formula for it and had to show the derivation of the formula to the interviewer on the screen.](#)
4. This was a testing related question. The amazon site (some specific functionality) was working very well one day before but because of something, that functionality is slow and customers are complaining. I had to tell how will I debug this.

The interviewer was pretty impressed by my coding skills but not so much with my testing skill (I guess :P). Anyways, I got the call for my next rounds. There were **four** of them at **Hyderabad** itself. Amazon took care of all the travelling and stay (Awesome nah :D)

## Round 2: (Software development Manager 1) : 45 mins

Asked questions like:

1. About myself and went through my CV
2. Why I am ready for testing (because my CV displayed Developer kind of profile)
3. Biggest challenge faced in my one year of job and how I fixed it.
4. Testing question: Given a web page with a text box where we can write what html component to display and it will display on the screen. I had to test this and also had to write code for one of the test cases.
5. Some new tool/technology that I have learned in very less time and applied .

## Round 3:(Software development Manager 2) : 1h

Asked questions like:

1. About myself and went through my CV
2. Why I am ready for testing (because my CV displayed Developer kind of profile)
3. About my project, my role in that. That interviewer was going very deep into the tools/technologies used in it. Anyways I was able to explain well.
4. Testing question: Test an API (from one of my projects (test cases)).
5. Test whether maps are working right or not.

### **Round 3:\xc2\xa0(Software development Engineer) : 1h**

Asked coding questions (Nailed it AF):

1. [Convert a binary search tree to Greater sum tree.](#)\xc2\xxa0 Asked both recursive and iterative solutions.
2. [Print a matrix in spiral order.](#)\xc2\xxa0
3. Given two arrays. One is for tasks (Processes) and each element depicts the amount of cores required to run the task. 2nd array is an array of CPU where each element depicts the no of cores in it. We have to tell how many maximum number of tasks can be allocated.\xc2\xxa0  
Example: Task:\xc2\xxa0 [3, 5, 7], Cores: [1, 3, 5] . Here only task 0 and 1 can be allocated to CPU 1 and 2 . So, answer=2.

### **Round 4:\xc2\xxa0(Quality Assurance Engineer) : 1h**

1. Design a framework for the testing the Cart service of Amazon.\xc2\xxa0 We can\xc2\xxa0 Add, delete and update the elements in the cart.
2. Write unit test cases to test an add Address page in Amazon.
3. What advice as an SDET will I give to a developer and what precautions will I take.

Well, Guess what, I was not selected for the role. They were quite impressed by my coding skills and not so much with my testing skills. Fair enough !

**Tips for Aspirants:**\xc2\xxa0Study geeks well (mostly the Data structures part and in Algo mostly the DP part). Go through other interview experience of Amazon

. \xc2\xxa0<https://www.geeksforgeeks.org/amazon-interview-preparation/>\xc2\xxa0For testing, I don\xe2\x80\x99t have much idea.

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# Amazon Interview Experience | Set 432 (For SDE-2)

- Difficulty Level : \nHard
- Last Updated : \n12 Jul, 2019

This interview was for the SDE-2 position for logistic management department of amazon. I had applied for this job on naukari.com.

## Round 1:

There was an online coding test on Hackerearth. Two questions were asked. I don't remember them now.

## Round 2:

After two weeks they scheduled a telephonic round.

Question 1: Given a matrix of \xe2\x80\x980 \xe2\x80\x99 and \xe2\x80\x981 \xe2\x80\x99, find the largest Iceland (i.e area of \xc2\xd0 \xe2\x80\x981 \xe2\x80\x99s)

Question 2. Design a data structure with constant time for insert, delete, search and getRandom.

I had given solutions for the both.

## Round 3 :

This was onsite interview at Hyderabad.

First he asked about my past projects and challenges faced. He then asked if I had designed anything on top of current a system.

Next a technical question was given;

Given an array of integers \xc2\xd0 and a window size \xe2\x80\x98k\xe2\x80\x99, find first negative number for each possible window in the array.

I first gave him a two queue approach(was not optimal), he told to code it on paper. After I wrote the code, he asked to optimize it further. Finally after few iterations, I gave him an optimal two pointer approach.

My suggestion here is; do not hurry to present your solution to interviewer, \xc2\xd0 first try to come-up with best optimal solution. For SDE-2 positions they expect optimal solution at the very first place from you.

## Round 4 :

This was all project and HLD related round.

There were two interviewers. The first introduced themselves and told about what their group does at amazon.

He then asked about my role at previous company and past projects I did in brief. Then asked if I have done something like adding new functionality or suggested some improvement for the project that was not asked by customer or manager.

He then asked me to draw HLD for meeting calendar system. Then there was discussion on various issues on it like scalability, what database should be used; SQL-NoSQL, concurrency etc.

\xc2\xa0

All the best guys!

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# Amazon Interview Experience | Set 430 (For SDE2)

- Difficulty Level :\n[Hard](#)
- Last Updated :\n12 Jul, 2019

## Round 1:

1. Given an array and an operation -> foo(index, value), the value can be either 1 or -1, if \xc2\xxa0foo(index, value) is called, it will add \xe2\x80\x98value\xe2\x80\x99 to all elements from index till end of the array, find minimum number of operation to make all array elements 0.
2. Don\xe2\x80\x99t remember completely, but it was something like finding a deadlock in a BST.

## Round 2:

1. [Trapping Rain Water](#)
2. [Longest Possible Chunked Palindrome](#)

## Round 3:

Design round:

1. Design a scalable meeting room booking system.

## Round 4:\xc2\xa0

Managerial round, lot of project and Amazon\xe2\x80\x99s leadership principle related questions.

## Round 5:

Bar Raiser: Lot of behavioral and leadership principle questions, then asked a design question, design a load balancer\xe2\x80\x99s algorithm so that it redirects the traffic between three services s1, s2, s3 by 50%, 30% and 20%. further clause added to handle various clients calling to specific services.

\xc2\xxa0

**Tips for the interview:\xc2\xa0** Good hands on towards problem solving and algorithm, HLD and LLD, \xc2\xxa0 prepare well for Amazon\xe2\x80\x99s leadership principles.

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# Amazon Interview Experience | Set 429 (For SDE 2)

- Difficulty Level :\n[Easy](#)
- Last Updated :\n12 Jul, 2019

## Round 1: Telephonic Round\xc2\xd0

1. There is a university with certain sets of courses. You can take a course in any semester but you need to finish its prereq course (if prereq is given for a course) before that. Design the whole university structure and suggest the Algo. He then changed the question bit, if you can take up a course and its pre req in the same semester how will your code change. [Topological sort](#)

\xc2\xd0

## Round 2: Face to Face interview\xc2\xd0

1. \xc2\xd0[Convert a roman number into an integer number.](#) He provided me with a set of rules.
2. \xc2\xd0Explain your Project
3. \xc2\xd0Most challenging thing in your project.
4. \xc2\xd0Do you review code. what all code changes you have suggested till now.
5. \xc2\xd0 Any big enhancement suggested by you to make your code better.

## Round 3: Face to Face interview\xc2\xd0

1. Explain your project
2. Few question related to my project\xc2\xd0 and some behavioral questions.
3. [A running stream of numbers is coming you need to keep track of top K elements](#)

It was not a coding question only. He expected me to write a Heap interface and using that implement min heap or max heap. And also write the heapify code

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# Amazon Interview Experience | Set 428 (For SDE-2)

- Difficulty Level : \n[Expert](#)
- Last Updated : \n08 Aug, 2021

I was interviewed for customer returns team for Hyderabad campus. I had 1 year and 9 month experience at the time of getting interviewed. Less experience was something which was worrying me a lot. They generally ask for 3-5 years of experience, but come down to 2 years if you are good.

## Round 1 : Telephonic

- A brief introduction
- [Clone a Binary Tree with Random Pointers](#)
- [Write a program to calculate pow\(x, n\)](#)

## Round 2 : Technical Round

- A brief introduction
- [Program for Best Fit algorithm in Memory Management](#)
- Design a deck of card (only the model classes)
- NoSQL vs a SQL database (when to choose which)

## Round 3 : Manager Round

- A brief introduction
- Almost 15 minute discussion about what Customer Returns Team in Amazon does
- A very detailed description of technical challenge faced (it includes HLD, LLD and the solution offered)
- Design Promo Code API taking Amazon\xe2\x80\x99s customer traffic into picture (HLD and LLD was discussed \xe2\x80\x99s including in memory databases)
- Which areas of yours would you like to improve upon? (Both technical and non-technical)

## Round 4 : Technical Round

- A brief introduction
- Variation of\ xc2\x a0[Topological Sorting\ xc2\x a0](#): You have been given a set of inter-dependent tasks along with the time taken to execute them. We have more number of parallel processors available than the number of tasks given. There could be multiple starting tasks. There could also be cyclic dependencies.\ xc2\x a0Calculate the minimum time required to complete all the task. Complete end to end production ready code was expected.

## Round 5 : Bar Raiser

- A brief introduction
- Responsibilities in the current company
- Why do you want to change your company
- Anything which makes me different from somebody else (technical and non-technical)
- Any project which I\xe2\x80\x99m proud of. What\xe2\x80\x99s so special about that particular project.
- [Arrange given numbers to form the biggest number](#)
- What difference does having a docker makes if compared to directly deploying applications on the VMs?
- When did you feel that you are not liking the status quo of a workflow? Any past experiences.

- Discussions about a mongoDB cluster vs an elasticsearch cluster (from my projects)

## Round 6 : Design Round

1. What is so special about typescript that both Angular and React included it in the recent versions. Tsc compiler, final output, difference between java, JS and TS were discussed. Any live project use case where TS helped more than JS (I come from a pure JS background that's why this question was asked)

2. Design a vending machine with following functionalities

- Three types of Users : User, Operator, Admin
- User can select and buy multiple items at a time. Money can be inputted multiple times (you will get the item if there is a time gap > 30 secs). He can also do window shopping (see only the prices of items and buy nothing)
- Operator can load the items and mark the items as expired if needed, gets notified if a product goes out of stock.
- Admin can own multiple vending machines, he should have a analytics report of the items purchased in a month. He can also change the prices directly and it should reflect in all the vending machines which he owns.
- Exception handling in all the edge cases

Both HLD and LLD were expected.

Round 2 to 6 were done in Amazon Hyderabad campus. All interviews were back to back. It started from 11 AM to 5:30 PM with just half an hour lunch break. Before I could even step out after completing one round, other interviewers would already be waiting outside. Interviewers were very helping, but only if your are thinking in the right direction. HR also was very supportive. He was coming and motivating me after every round. Some advices here

- If you couldn't solve a problem, don't carry forward negative thoughts into next round. It will affect the next round as well.
- If you have prepared well, importance of keeping calm and cool should not be ignored. Trust me, you won't survive the stress of whole day otherwise.
- All the codes you would be asked to write down on paper and designs on the white boards, so practise accordingly.
- Prepare for the design interviews well, they play a big role for SDE 2.

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# Amazon Interview Experience | Set 427 (SDE-2)

- Difficulty Level : \n[Medium](#)
- Last Updated : \n12 Jul, 2019

It was a recruitment drive at Pune, for Kindle team (Chennai).

## Round 1 (Screening):

Two common questions were given to all. We were supposed to discuss the approach to the problem with the interviewer first and then implement it after the interviewer is convinced with your approach.

1. [Postfix expression evaluation](#)
  - Expected to handle all exceptions like invalid expression, invalid symbol in the expression, etc.
2. [Sort an array of 0s, 1s & 2s](#)
  - I gave him the counting solution and another solution (both linear), but he wanted me to solve it in single pass, was expecting \n[Dutch National Flag Algorithm](#). fortunately still got shortlisted :))

## Round 2 (Problem Solving):

1. [Convert Postfix expression to Infix](#)
  - And there should not be redundant/unnecessary parenthesis like  $(a*b)$ ,  $(a+b)+c$ ,  $(a*b)+c$  etc. are invalid. But  $(a+b)*c$  is valid.
2. [All anagrams of a given string](#)
  - Later asked me to modify the program to return the list of all the strings rather than printing them.
  - Also asked me to dry run the code for a sample input.

## Round 3 (Problem Solving):

1. [Rain water trapping problem](#)
  - I was stuck here, but finally able to get a solution.
2. [Print right view of binary tree](#)
  - Can be done by level order traversal of tree.
3. [Clone a linked list with Next and Random pointer](#)
  - Given the solution using  $O(n)$  extra space (using hashmap).
4. What's your biggest achievement in last 6 months?

After clearing these rounds, I was invited for on-site interview to Chennai for further rounds.

## Round 4 (Design):

1. Asked me to explain the architecture of one of the project from my resume.
  - Explained using class diagrams.
2. Design a Whatsapp like service.
  - Given the high level design first, then dived deeper explaining load balancing, splitting into microservices and communication between them, notification service, message queuing, database sharding, etc.
  - Asked me how to maintain the sequencing of messages, since client timestamp would be unreliable.

### 3. Class diagram for a standalone Chess board game.

- Discussion on the my design like, why this class/relationship is needed, why this method is in this class rather than that, etc. Convinced him for few of them, giving proper reasons, and made changes in the design for other few.
- Pseudo code for all the possible moves of any piece.

After this the HR informed me that the feedback of my design round was quite good and also gave me suggestions to perform well in rest of the rounds.

### Round 5 (Bar raiser):

Few questions to evaluate me on [Amazon's leadership principles](#). I can't remember them all

- Have you ever mentored someone?
- Any change/improvement you introduced in your previous organisation.
- Reason for leaving the previous company
- Reason for joining Amazon.
- Are you aware of kind of projects being done at Amazon?
- One of your biggest technical mistake.

And one algorithmic problem at the end. [Diameter of a binary tree](#)

- Asked me to return the 2 corresponding nodes (at the end of diameter) instead of the diameter.

### Round 6 (Hiring manager):

- Some discussions about my previous companies and projects.
- One algorithmic problem.
  - Given a result of a competition among all the students of a class, write a program to make students stand in a order such that every student must have lost to the student in his/her immediate left and won against the student to his/her immediate right.
- Some leadership questions. Again can't remember them all.
  - Most challenging technical task and how did you solve that.

**Note:** In problem solving rounds, you're supposed to write a **working code** in any language of your choice, handling all the **corner cases**.

Finally got an offer after 3 days!! All the best!! (y)

[All Practice Problems for Amazon !!](#)

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# Amazon Interview Experience | Set 426 (For SDE-1)

- Difficulty Level :\n[Easy](#)
- Last Updated :\n12 Jul, 2019

## Round 1: Written Round had 3 questions:-

1- [Sum of two linked lists](#)\xc2\x90

Don\xe2\x80\x99t remember the other 2.

## Round 2:\xc2\x90DS algo\xc2\x90

1-[Find pair with given sum in bst](#)

2-[Transpose of the matrix](#)

## Round 3:\xc2\x90problem solving

1-[Find top view of binary tree](#) (Iterative approach)

2nd question was on matrix don\xe2\x80\x99t remember exactly

## Round 4: HR round

Question on Amazon leadership principle. Why leaving current company. Question on tasks handled. Behavior based questions around amazon leadership principle

## Round 5 : Designing round

1- Design a chess game. Form a structure of gamePlan.

2-There is a room with guard sitting there, he is noting the booking time. For eg:-

a) 0200 hrs to 0430 hrs

b)0315 hrs to 0545 hrs

c)0600 hrs to 0800 hrs

You have to check how many are valid bookings with no conflict.

(Invalid booking are those which are having conflict with any booking)

In above example a) & b) are having conflicts so no valid booking. c) is valid booking.

\xc2\x90

[All Practice Problems for Amazon !](#)

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Amazon Interview Experience | Set 425

- Difficulty Level : \n[Medium](#)
  - Last Updated : \n19 Nov, 2019

## **Round 1: Technical Face 2 Face.**

1. [Write a program to find the range of majority elements in array\(non-descending\)?](#)
  2. [Write program to print all the permutation of String?](#) Example Input : AB, Output : { \$, \xe2\x80\x9cA\xe2\x80\x9d, \xe2\x80\x9cB\xe2\x80\x9d, \xe2\x80\x9cAB\xe2\x80\x9d};
  3. [Write program to transform a tree from give tree, such that each node will have the sum of child nodes plus itself.](#) (Write recursive function)

To best of me i have given answer to all the three programs(little doubtful with 2nd one).

No Selected. \xf0\x9f\x99\x81

For first question my approach was:

Explanation: Solved in  $O(n)$  time complexity. In order to improve the complexity we can use divide and conquer strategy(Modified version of Jump Search or interpolation Search)

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## Amazon Interview Experience | Set 424 (For SDE 2)

- Difficulty Level :[Hard](#)
- Last Updated :12 Jul, 2019

### Round 0: Online Coding Test (90 Min | 4 Coding Questions)

#### 1. Run length encoding

```
\r\nInput : aaaaabb\r\nOutput : a5b2\r\n\r\nInput :aaaaabccc\r\nOutput :a5bc3\r\n
```

#### 2. Linked List pair sum count

```
\r\nInput : list = 0 -> 2 -> 5 -> 7 -> 4 -> 6 -> 10 -> 20 -> -10 -> Null\r\nSum = 10\r\nOutput : 3\r\nExplar
```

#### 3. Rotate Doubly Linked List by N time

```
\r\nInput : NULL <= a =><= b =><= c =><= d =><= e =><= f =><= g =><= h => NULL\r\nNum = 4\r\nOutput : NULL <
```

[GeeksforGeeks Link](#)

#### 4. Given Binary Tree, find level of x node if x is present otherwise return 0.

[GeeksforGeeks Link](#)

After 1 month recruiter called for f2f rounds. There were 4 rounds on the same day.

### Round 1: Hiring Manager Round (Behaviour + Design)(1.5 Hrs)

Intro, Project & Lot of Behaviour Questions

1. Project Biggest Challenge and how did you solve it ? (Choose recent & best)
2. Tell me a time when you mentor someone ?
3. Tell me a time when your manager was not there and you had to take up some important decision ?
4. Tell me a time when you have to deep dive into something on your own ?

Lot of other behaviour questions. Finally gave a design problem to solve.

Design:

Do integration for Splitwise app with Amazon Pay (or Paytm)

- 1) where a person can pay to another person and money directly gets deposited into other person's bank account.
- 2) A person can also send reminder to another person for owning money.

### Round 2: Design Round (1.5 Hrs)

1. Detailed discussion on project and design of it, how will you scale your project to support n number of users. Focus was on scalability & distributed design.
2. Design a job scheduler, scalability, fault tolerance, high availability, how scheduler picks up job,  
how will you take care where one job can run for 30 min and one for 30 hour, how will you distribute jobs on servers.  
Based on frequency & time how will you execute them ?  
How will you notify back the user about start/stop or completion of a job ?  
How will your system know if a job is killed / terminated due to unknown reasons ?

### Round 3: Coding Round (1.5 Hrs)

1. Given array and a Linked List where elements will be from the array but can also be duplicated.  
Sort the linked list in the order, elements are appearing in the array. O(n) complexity was expected. Complete running code on paper was expected. All boundary condition checks were expected.

```
\r\nInput : arr = {5, 1, 3, 2, 8}\r\nlist = 3 -> 2 -> 5 -> 8 -> 5 -> 2 -> 1 -> X\r\nOutput : 5 5 1 3 2 2 8\r
```

[GeeksforGeeks Link](#)

### Round 4: Coding Round (1.5 Hrs)

1. Given a n-ary tree, basically a graph but connected and doesn't contain cycle.  
every edge is given a weight, identify all paths from all vertex to all vertex & then sum of all paths.  
Give final result as sum of all paths.

```
\r\nEx:\r\n10\xc2\xa0 \xc2\xxa0 \xc2\xxa0 \xc2\xxa0 \xc2\xxa0 \xc2\xxa0 20\r\nA-----B-----E\r\n30/ \\'40\xc2\xxa0 \xc2\xxa0 \xc2\xxa0 \xc2\xxa0
```

First write the data structure to solve this problem, then efficient algorithm, then complete working code on paper.

\xc2\xxa0

Overall it was a positive experience, recruiter kept me informed about the progress and about next rounds. First four rounds went well but I wasn't able to solve 5th round problem, and was eliminated after then.

Thanks a lot to geeks for geeks for having such a great amount of collection to practice on.

\xc2\xxa0

Advise:

- Please do prepare for behaviour questions as well. Have one or two example ready for all the questions. Most of them are available here :<http://kraftshala.com/how-to-raise-the-bar-in-the-amazon-interview/>
- Prepare for design rounds seriously, they look for scalability, high availability & distributed system architecture in your design.
- For coding prepare your basics and have them thorough, practice using pen & paper for writing code.

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# Amazon Interview Experience | Set 423 (For Cloud Support Associate)

- Difficulty Level :\nEasy
- Last Updated :\n26 Feb, 2018

**Round 1:** The first round was an elimination round, i.e.the online test.The test comprised for\xc2\xao sections-the general aptitude and English(easy to moderate difficulty), then came the technical section which mostly focused on OS and CN mcqs(can be solved well if one has really good knowledge of both subjects), and the final section was of programming(2 ques, around 30 min-but the questions weren\xe2\x80\x99t difficult).

**Round 2:** The\xc2\xao next round comprised of 2 technical interviews.Questions were asked from OS, CN, troubleshooting\xc2\xao of network etc(in-depth\xc2\xao concepts). Also a few programming questions were asked to some candidates.These 2 rounds and the managerial\xc2\xao round were more of elimination rounds.

**Round 3:** The final round comprised of 2 more interviews-managerial and HR.The managerial interview questions were related to project work, various difficulties faced and various scenario/situation-type questions.The HR interview was also about life experiences and scenarios.The trick is to be completely honest and have a solid justification for all the answers.

The interviewers were quite co-operative and understanding.It was really a great experience.

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# Amazon Interview Experience | Set 422 (For SDE II)

- Difficulty Level : \n[Medium](#)
- Last Updated : \n12 Jul, 2019

## Round 1: Telephonic round.

1. [Find max 1 in a row of a 2D array.](#)
2. [Find the biggest square in a 2D array.](#)

## Round 2:

On site Interview:

1. Design BookMyShow. Very interactive interview. Enjoyed it. Went well.
2. A challenging task you have done till now in your project.

## Round 3:

1. Design VLC.

## Round 3:

1. Design Tiny URL.
2. Architecture of your challenging work you have done so far.
3. He was writing down every thing i was saying.

\xc2\x90

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# Amazon Interview Experience | Set 421 (For Internship)

- Difficulty Level :\n[Medium](#)
- Last Updated :\n13 Oct, 2020

Recently Amazon visited our campus for Internship and Full time.\xc2\xab

**Coding Test:**\xc2\xabWas an online test which comprised of 2 coding questions and 20 MCQs.\xc2\xab

MCQs were basically based on pointers, output related, OS etc. For pointers and output related questions one should practice from [www.geeksforgeeks.org/quiz-corner-gq/](http://www.geeksforgeeks.org/quiz-corner-gq/) which is quite enough if one\xc2\xathorough through most of the questions. One of the coding questions was based on Dynamic Programming and other on String manipulation. The questions were more on moderate to difficult level, even if you are not able to devise the most optimal solutions go for the most naive solution as marks are allotted for each test case. (Some people even used if-else statements to run the most trivial test cases and it worked for them).\xc2\xab

Around 70 students sat for the test and 10 were selected for the next round. I attempted around 17 MCQs and I think 13 or 14 of them were correct while I partially did the 2 coding questions using the naive approach.\xc2\xab

**Round 1:** In the first round, the interviewer asked me to introduce myself, and some projects I wrote in my CV. (Just don\xe2\x80\x99t blabber anything in your CV).\xc2\xab

Question 1-: [Zig Zag traversal in a binary tree.](#)\xc2\xab

Question 2-:<https://www.geeksforgeeks.org/next-higher-palindromic-number-using-set-digits/>

Question 3-: There was one more question based on maps\xc2\xab

Question 4-: [Difference between map and unordered\\_map](#)\xc2\xab

**Round 2:** Asked to introduce, and what projects I have done till now\xc2\xab

Question 1-: [Finding complement and 2s complement of a binary number](#) (Didn\xe2\x80\x99t have to code it just find it for say 100011)\xc2\xab

Question 2-: Some questions based on DBMS (basic queries)\xc2\xab

Question 3-: A variant of Binary tree traversal. I was given a tree and the output was given had to identify the type of traversal and then code it out.\xc2\xab

It was right\_subtree->left\_subtree->root\xc2\xab

Question 4-: [Stock buy to sell to maximize profit problem](#)\xc2\xab

Followed by some random discussion about amazon and its products.\xc2\xab

In general, interviewers were friendly and ready to help whenever I got stuck.\xc2\xab

Cheers!

[All Practice Problems for Amazon!](#)\xc2\xab

\xc2\xab

\xc2\xa0

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# Amazon Interview Experience | Set 420 (For QAE)

- Difficulty Level :\n[Easy](#)
- Last Updated :\n12 Jul, 2019

I got a referral from an employee for the QAE position at Chennai and after applying I got call from Amazon the very next day. They scheduled the phone call interview. The interviewer didn't show up on the scheduled date.

So we scheduled again to a new date.

## Phone Interview:

- 1) Asked test cases for Amazon Shopping Cart.
- 2) You are hosting a web app in your server which is accessible only to a particular set of people. But on an unusual day, all the people are able to access your web app. How would you troubleshoot this issue?
- 3) [Given an array, find the largest product of two consecutive elements.](#)

Phone interview went well and I got a call from Amazon within a week for scheduling onsite rounds. 4 onsite face to face interviews were scheduled.

## Face to Face 1:

- 1) Test cases for analog alarm clock.
- 2) Test cases for lift.
- 3) You are hosting a game in your server. All the users are connected to the game. When one user tries to connect to the multiplayer game he gets Error Occured message. How would you troubleshoot this scenario?

## Face to Face 2:

- 1) Asked about my current project in depth.
- 2) Given an integer, find the nearest palindrome to that number.  
Eg1. I/P : 115 O/P : 111  
Eg2. I/P : 117 O/P : 121

- 3) [Given an array, find the first duplicate element.](#)

Eg. I/P : [1, 2, 4, 4, 1, 3, 7, 5, 5, 2]

O/P : 4

- 4) Given a sentence, reverse all the words in that sentence.

Eg. I/P : This is sample text

O/P : sihT si elpmas txet

- 5) Asked all test data for the amazon login page.

## Bar Raiser Round:

- 2) How would you test Whispersync feature in Kindle.
- 3) [Given two sorted linked lists, merge the lists in a sorted manner with constant extra space.](#)
- 4) Asked all possible behavioral questions like
  - a) What is the most challenging/complex job that you did?
  - b) Any misunderstanding scenario with you manager and teammates?
  - c) Why are you interested in QAE?

d) How would you handle pressure?

Managerial Round:

- 1) Asked about my current project in depth.
- 2) Again asked all possible behavioral questions to test whether I can handle pressure situations and How do I handle prioritization of jobs and about my testing strategy.
- 3) [Given an integer, find sum of digits of that number until sum becomes single digit](#) and asked the test data for the same.

Programming questions were easy. They do stress much on test cases and troubleshooting.  
All the Best!!!

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## Amazon Interview Experience | Set 419

- Difficulty Level :\n[Easy](#)
- Last Updated :\n12 Jul, 2019

### Round 1: There were three questions in first round:-

1. How to find all boundary node of a tree. [GeeksforGeeks Link](#)
2. How to reverse a string using without any other variable. [GeeksforGeeks Link](#)
3. From an array, Need to find an index in which sum of left elements & sum of right elements are same. [GeeksforGeeks Link](#)

\xc2\xd0

### Round 2:\xc2\xd0\xc2\xd0

1. Sort an array arr = {1, 0, 0, 0, 1, 0, 1, 1, 1, 1} with o(n) complexity. It is also called segregation of an array. [GeeksforGeeks Link](#)

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# Amazon Interview Experience | Set 418 (For SDE 2)

- Difficulty Level :\n[Medium](#)
- Last Updated :\n12 Jul, 2019

I applied through recruiter, i was having 4 year exp while appearing for this interview, overall it was quite lengthy process.

I shared my resume to recruiter and later was scheduled a telephonic discussion

## Telephonic Round 1:

Brief Intro from both the side then he asked the technical question,

1. [Topological sort](#) (there are lots of modules are given which are dependent on other modules, find the build sequence).
2. [Median in running stream of integers](#). (solved using min and max heap) [GeeksforGeeks Link](#)

Then there was gap of almost 3 weeks with no clue on feedback then suddenly recruiter contacted me stating the positive feedback from telephonic discussion and invite for In House interview at Amazon Gurgaon office since i was in NCR region.

## Round 2:

This was completely technical round, i was asked to three technical question, not much tough

1. LCA of two nodes [GeeksforGeeks Link](#)
2. Stock buy and sell problem [GeeksforGeeks Link](#)
3. Finding if there exist a sum X of two elements from an array having positive and negative numbers [GeeksforGeeks Link](#)

## Round 3:

This was kind of mix of technical and some behavioral questions

Initially interview asked some of the questions from resume then jumped to the technical questions,

1. Maximum sum subarray from array having positive and negative numbers both. [GeeksforGeeks Link](#)
2. [LRU implementation](#)

## Round 4:

This round was completely design round (LLD and HLD)

Design Debugger then in between he moved to design Meeting scheduler

In last 10 minute he asked me to give HLD of Clock Room

## Round 5:

This was taken by some senior developer,

He asked few question related to previous work, its challenges then moved to technical question

1. Finding missing number in array, i gave XOR approach then he deep dived into how XOR work given a tree having unique nodes and given n and k value, find n node and then print all nodes having distance of k from nth node in both the direction [GeeksforGeeks Link](#)

Then again some behavioral question,

1. Why amazon?
2. Why leaving current org?

This type of questions.

These all rounds happen on the same day, then i was asked to leave for the day and wait till next week for getting the feedback and next steps if any.

After 1 week, i got mail stating that, we would like to proceed further and scheduled my bar raiser round.

### **Round 6 (BR):**

It was telephonic discussion,

Interviewer judged me on Amazon leadership principles,

And i believe i just slips on one of the principle but overall he was satisfied with my responses.

And he asked me to explain HLD for Automatic Parking System.

This interview stretched for long since there was some network connectivity issue with my cell network,

In last he asked me to explain just the approach of solving a technical problem,

Exact question i don't remember but it was related to merging k sorted array.

### **Round 7 (HM):**

Nearly next week this interview was scheduled since Hiring managers were not available due to their busy schedule,

Majority of the time this interview was around behavioral questions and Amazon leadership principles.

In last he asked me to design Game Studio like amoeba game zone.

amoeba game zone

### [\*\*All Practice Problems for Amazon !\*\*](#)

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# Amazon Interview Experience | Set 417 (For SDE- 2)

- Difficulty Level : \n [Hard](#)
- Last Updated : \n 20 Sep, 2019

## Round 1:

1. [Distance between two nodes in a binary tree.](#) I was asked to write the optimal approach for this.
2. A group of people are seated in a circular table. After a while , each member takes a chit and writes his name along with the next person name (anticlock wise.) \xc2\xa0 \xc2\xa0. If such chits are given , re draw the table. An optimal approach was expected. eg. A \xe2\x80\x93 B \xe2\x80\x93 C- D \xe2\x80\x93 E \xe2\x80\x93 A  
chits will be written as A-B  
B-C  
C-D etc
3. Same questions as above . if each member takes a chit and writes his neighbors name . re draw the table.

## Round 2:

1. [Given a Binary tree with root\(R\) , a node\(N\) and distance \(k\). find all the nodes at k distance from N.](#) Optimal solution was expected.
2. [Given a linked list with next pointer and random pointer. Clone the linked List.](#)

O(1) space solution was expected.

## Round 3:

1. Given a string of arrays \xe2\x80\x9ccat,dog,god,act\xe2\x80\x9d. Print all the anagrams which comes first in list.  
eg.\xc2\xa0 output is cat ,act,dog and god. Means all the similar anagrams should be printed together and the next print should be the one which comes earlier in the list.  
[Group Anagrams Together](#)  
hint : Trie approach was expected here.
2. [Given a stream of input Integers, at any time get the median of those numbers.](#)

## Round 4:

1. Design Bookmyshow : HLD, LLD and different race conditions discussion and scalability discussions.

## Round 5:\xc2\xxa0

1. [Given a input String and a patterns string. return all the start index of the input string whenever the anagrams of the pattern match with input string.](#) eg.  
in : abcbaabba  
pat : ab  
output : index 0  
index 3  
index 5  
index 7
2. Design\ xc2\xxa0RedBus kind of app\xc2\xxa0: HLD, LLD and different race conditions discussion

and scalability discussions.

### **Round 6(Hiring Manager):**

- 1.\xc2\xa0\xc2\xa0Behavioral questions : conflicts, challenges, innovation
2. Project Discussions. Please make sure you know everything about your project.
3. Reverse a stack using recursion.

### **Round 7(Bar raiser)**

\xc2\x01.\xc2\x0\xc2\x0Behavioral questions : conflicts, challenges, innovation

2. Project Discussions.
- 3.\xc2\x0Next Greater element.  
<https://www.geeksforgeeks.org/next-greater-element/>

[All Practice Problems for Amazon !](#)

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# Amazon interview Experience | Set 416 (On Campus for Internship)

- Difficulty Level : \n[Medium](#)
- Last Updated : \n12 Jul, 2019

## Coding Round

There were 2 coding questions (10 marks each) and 20 MCQ\xe2\x80\x99s from various core concepts ( OS,DS,Algorithms,DB,C language etc ).

- **Question 1 :** \xc2\xa0<https://www.geeksforgeeks.org/given-a-string-print-all-possible-palindromic-partition/>\xc2\xa0Given a string, find all possible palindromic partitions of given string.
- **Question 2 :** \xc2\xa0[You are given with a large paragraph and N words. You have to find a min length subparagraph of the paragraph which contain all those N words in any order.\(Case Insensitive\)](#)

22 students were shortlisted for the interviews.

## Interview Round 1

The interviewer asked to introduce myself and then he asked to explain my [projects](#), one of them in detail.\xc2\xa0Then he gave me 2 coding questions

**Question 1 :** \xc2\xa0Given a sorted array of integers(might contain duplicates), you should write a function which returns the first index of an element.

E.g. \xc2\xa0arr = [1,2,2,2,3,3,3,4] val=3 ; ans = 4

**Answer :** \xc2\xa0It is a basic [binary search](#) except for the condition that you will \xc2\xa0check not only if the current element is mid, but also if its previous element is less than it(if a previous element exists) and only then return mid.

Else recur on the left part till the above condition is met.

**Question 2 :** \xc2\xa0Given a binary tree check if its a binary search tree or not? [Check for BST](#)

It is very important to write neat code on paper. The interviewer dry runs a few examples on the code.

## Interview Round 2

The interviewer asked me about my previous interview and its questions.

Later he gave me 2 coding questions.

**Question 1 :** \xc2\xa0Given an array of integers with the property that arr[j] \xe2\x80\x93 arr[j-1] is either 1,0,-1 and a search value, provide an efficient search mechanism.

**Answer :** \xc2\xa0The naive approach is to perform linear search which is O(n). Then I thought along lines of binary search but, as such we cannot divide and recur because of the array\xe2\x80\x99s property.

After some time, I came up with a method which starts with the first element and compares each element with the search value and increment its location by absolute difference of the current value and search key.

This is a worst case O(n) algorithm, but does far better than linear search in generic case.

**Question 2 :** \xc2\xa0[Given an array of integers\(duplicates allowed\) return if it is a set of contiguous integers or not?](#)

Input: 5,2,3,6,4,4,6,6 Output: Yes (as it is from set of [2,3,4,5,6])

**Answer :** First, I gave him a hashing based approach. Initially, make a hash of all the elements and then pick the first element and increment in  $1 \times e2 \times 80 \times 99s$  till you find a value not present in the hash. Similarly decrement in  $1 \times e2 \times 80 \times 99s$  from the first value and get the count. If the count equals hash size it is true else it is false.

It is  $O(n)$  time complexity and  $O(n)$  space-complexity.

He asked me to improve the space complexity to  $O(1)$ .

I tried a lot but didn't get to solution. Then, he simplified the problem by giving hints and making it a [duplication detection problem in a array](#) without using any additional space provided the numbers are in the range [ 0,length\_of\_array -1 ].

This can be done by accessing element at index j as  $arr[j] \% n$  and as make  $arr[arr[i]] = arr[arr[i]] + n * arr[i]$ . So if at any stage  $arr[j]/n$  is  $> 1$  implies we have visited it earlier. He was satisfied with this solution.

## DS Questions

1. Give use cases when you will prefer Hash table instead of BST and vice-versa?
2. What happens in case of duplicate insertions in Hash table and BST. What is its effect on the complexity of search?

I answered these and he was happy with the answers.

The interviewers are very comforting and give clues to direct us to solution.

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# Amazon interview Experience | Set 415 (For SDE-2)

- Difficulty Level :\n[Hard](#)
- Last Updated :\n20 Aug, 2021

## Written :

1. Given a string and pattern with (\*, ?) Check if it can match the string.
2. Find an element in first increasing and decreasing array. [GeeksforGeeks Link](#)

## Round 1 :

1. Given an array of strings. Find all pairs which form palindrome. O(N) [GeeksforGeeks Link](#)
2. Celebrity problem. [GeeksforGeeks Link](#)

## Round 2 :

1. Given a set of dependent tasks, find order for dependent tasks. Variation of [topological sort](#).
2. Count of paths from top left to right bottom in an array containing 0/1. Here 1 means blocked shell. You are allowed to move right or down. [GeeksforGeeks Link](#)

## Round 3 :

1. Project discussion (Hint : Prepare your project well, with all ins and outs)
2. find maxsum in a binary tree. (node can have -ve numbers as well) [GeeksforGeeks Link](#)

## Round 4 :

1. [Design Bookmyshow](#) : HLD, LLD and different race conditions discussion. scalability discussions
2. Given an integer array, find the number of merge operations required to make it a palindrome [GeeksforGeeks Link](#)

## Round 5 :

1. Behavioral questions : conflicts, challenges, innovation
2. Project discussion
3. Design Restaurant booking application HLD and LLD. Write an algorithm to optimally assign tables for bookings.

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# Amazon Interview Experience | Set 414 (For SDET-1)

- Difficulty Level :\nHard
- Last Updated :\n12 Jul, 2019

I applied through an employee referral for SDET-1 position. I was interviewed at Amazon Chennai(SP Infocity).I faced 5 face to face rounds.

On October 11th, I faced the first round which was mainly related to problem solving and coding.

## Round 1:Problem Solving and Coding Round(1 hr)

The interviewer just started with a formal question of introduce yourself.Then she asked me about my final year project which I clearly explained and sketched it on the board.

Then she asked me two coding questions.

1. Simulate an android pattern lock.
2. Generate all words that can be formed with the given pattern. The keypad specification is the mobile keyboard.I will explain it clearly

If the given input is 2 3 6.

2 corresponds to abc. 3 corresponds to def. 6 corresponds to mno.

Suppose if we have to generate all combinations of 2,3,6 the output should be a set of strings

adm,adn,ad0,bdm,bdn,bd0,\xe2\x80\x9a6..

I gave a recursive and an iterative solution to print the combinations.

Then the interviewer modified the question slightly.She asked me to validate the generated strings with a dictionary.

I gave two approaches for maintaining the dictionary. First I suggested a hash table approach which takes O(1) average time complexity for insert delete and search operations.

Then since the generated strings have common prefixes I suggested a trie approach for the dictionary.

The interviewer was pleased with my solution and asked me to code the solution completely.

After a few days I had 2 face to face rounds.

## Round 2:Testing and Automation round(1 hr)

The interviewer just started out by asking whether I had previous knowledge about testing and testing environments to which I replied no.Then we discussed about the types of testing and the different phases and the testing procedures that are associated with it. Then she asked me two simple test case generation questions.

1. Generate all possible test cases for an add function which takes two strings as input and returns an integer which is the sum\xc2\xd0 of the two numbers that are given as string input.

I gave around 10 test cases for the question as it was pretty much straight forward. And I coded a

few by using JUnit testing which is really simple.

2. Given a open file module in an editor what are the possible scenarios in which the open file module might give errors.

I gave a list of cases which we clearly discussed about the ins and outs of each one.

This round was quite easy since I prepared the testing part the previous day.

### **Round 3:Data Structures and Algorithms Round(1hr 15 mins)**

Two guys interviewed me this round. We just started out with a formal introduction. Then they asked me two questions.

1. [Knight walk problem.](#)

Given a  $n \times n$  chessboard and a knight which is placed at any one corner, Generate all possible paths following which the knight can cover all the squares.

I started with a approach using BFS. But there was a flaw in my approach which was that the knight would not escape from a cell if all the possible points the knight can go from that given point was explored previously.

Then I gave a solution using Backtracking.

Start with a corner. For each and every possible point the knight can reach make recursive calls to those using a simple for loop. Once the count reaches  $n \times n$  (Example in a  $8 \times 8$  chessboard, if the count is 64), Print out the traversed path that can be easily maintained in an array. This solves the flaw in my previous approach as we are able to go back to the other possiblity if a dead path is reached.

The interviewer was happy with my approach and asked me to code the solution. I coded it and then we moved on to the next question.

2. [Given a linked list find the intersection point of two linked lists which converge at a common point.](#)

I gave a brute force  $O(n^2)$  approach at first then optimised it to  $O(n)$  time and  $O(n)$  Space approach. Then I finally gave a  $O(n)$  time  $O(1)$  space solution by finding the absolute difference of the lengths of the two lists. Then they asked me to code the solution which was pretty much straight forward.

After this I had the final two rounds on October 31st.

### **Round 4:Hiring Manager Round(1hr)**

The interviewer asked me to brief about myself. We then settled down on my project for the first few minutes and then the interviewer asked about the interviews that I had attended earlier and how the process went through. Then he started asking about testing and the use of testing corresponding to some given scenarios. After a few minutes of discussion he asked two questions regarding data structures.

1. [Given an array of integers print the pairs that add upto a given sum.](#)

I gave a  $O(n\log n)$  approach at first to find the pairs and print them. The approach was to sort the array and keep two indexes(at each end) left and right and find whether pairs that add up to the given sum and print them until the left and right pointers cross.

Then he asked me if I can optimize it further. I gave a  $O(n)$  approach using hashing. I maintained a

hashset of integers. Put the first number in the hashset, start from the second element and for each number in the array check whether (Given sum  $\sum$  Current element) is present in the hashset. If so print the pair.

## 2. Given a binary tree print the bottom view of it.

After a few minutes of thinking I came up with an approach by using the horizontal distance of the nodes from the root. We have to keep note of the last node at a particular horizontal distance while traversing using level order traversal. I used a Hashtable to store the last visited node at each horizontal distance.

This approach uses  $O(n)$  time and  $O(n)$  space.

He then asked a puzzle.

In a room of 30 people, find the unique number of handshakes given a condition that each one in the room should have shaken hands with everyone.

I just used a simple logic. In a room of 2 people, there is only one unique hand shake (First person has 1 unique handshake whereas the second one has none). If we consider three people,  $n = 3$  (A, B, C)

A has two unique handshakes B, C. ( $n-1$  handshakes)

B has 1 unique handshake C. ( $n-2$  handshakes)

C doesn't have any unique handshake.

total number of handshakes =  $n-1 + n-2 = 2n-3$  (which is the sum of first two natural numbers)

Similarly for  $n$  persons the unique handshakes would be the sum of first  $n-1$  natural numbers.

For  $n = 30$ , Total number of unique handshakes is  $29*30/2 = 435$ .

That's a wrap. He was happy with the way I approached the solution.

He asked if I had any questions for him. I asked about the culture and working environment at amazon.

## **Round 5: Bar Raiser Round(1hr)**

Two members entered the room and introduced themselves and we just started out with my introduction and my project.

They asked me how many rounds I had before the current one. They just asked a few questions about testing at first. Then they asked two coding questions.

### 1. Given a binary tree print the Kth largest element in it.

I just instantly started with a brute force solution by finding the inorder traversal of the tree. Then sort the array and find the kth largest in the sorted array which is the  $(n-k)$ th element from the start index of the array, where  $n$  is the total number of nodes in the tree. This uses  $O(n \log n)$  time and  $O(n)$  space.

They asked me to optimize it further.

I gave a  $O(n \log n)$  time and  $O(1)$  space solution by converting the binary tree into doubly linked list

and then finding the kth largest in a doubly linked list which can be done in  $O(n\log n)$  time.

But there is a better solution for this which I couldn't think of during the interview. Just construct a minheap of k elements, Insert elements into the heap by traversing the tree using any traversal.

If the heap root element is smaller than the current node in the tree remove the root element from heap and insert the new element to the heap. At last after the complete traversal of the tree the kth largest element will be at the root of the heap. This uses  $O(n\log k)$  time and  $O(k)$  space.

But they were happy with my approach as they said me to optimise it either by space or time. I gave a constant space approach so they were satisfied.

## 2. Given a directed graph, find whether there exists a cycle or not. If it does exist print it.

I gave a solution using BFS. I put a node in the queue and then added all possible nodes that can be reached from the current node. While we traverse the nodes we just mark the node as visited in the hashmap in order to avoid indefinite looping between nodes. They were satisfied with my approach.

Finally they asked how HashMap is implemented and how it works (especially how hashCode and index are computed). I designed my own hash function and explained the way get and put functions work in a hashmap. They were happy with my explanation and then they asked how would you modify your hash function in case of collision and discussed in brief about collision handling techniques.

They asked if I had any questions for them. I just asked the same question I asked the previous round.

P.S: For each question we have to write the code clearly. Don't just dive straight into the coding part, explain your approach clearly. Be confident and they don't want the optimized solution for the question, they see how the candidate approaches the question.

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# Amazon interview Experience | Set 413 (SDET-1 On-Campus Internship)

- Difficulty Level : \n[Medium](#)
- Last Updated : \n12 Jul, 2019

This was a pool campus conducted by amazon for internship.

**Online Round:** There were 20 mcq(+1 for each) and 2 coding questions(+30 for each). MCQ had more networking and DS problems.

1. Given three linked list, add them. [GeeksforGeeks Link](#)

Input will be of this format

1->0->1\r\n8->9->9\r\n5\r\nOutput: 1->0->0->5\r\n

Solving above problem in python is easier than C++. I solved it in C++ using deque(30/30 points).

2. [Given an array of size n consisting of positive integers, choose three integers\(not necessarily contiguous\) such that they are in ascending order and their product is maximum.](#) Input was given in this format.

\r\narray = {5, 3, 6, 8, 9, 10}\r\nOutput: array = {8, 9, 10}\r\n

Many people(including me) ignored the ascending order part and got 20/30 points. Later during interview, interviewer asked me to explain my code and told me the corner case.

Note: Input was given exactly like I said in both problems. It was a bit different from usual problems. You first have to break strings to integers then solve the problem.

## Round 2:

1. [Tic-Tac-Toe](#)

This was on paper round. I have heard there is another easier solution using magic square. 8 were selected from this round.

## Round 3:

### Technical Interview Round 1

The interview started with the most common questions \xe2\x80\x9ctell me about yourself\xe2\x80\x9d and \xe2\x80\x9cProjects/Internship\xe2\x80\x9d. Then there were few theory questions like what is binary tree? What is binary search tree? Then 2 coding questions.

1. [Level order traversal](#)
2. [Find next greater number with same set of digits](#)

Instead of digits, it was string of alphabets. There was a bug in my code. Interviewer gave me a test case and asked me to test it. Changed the approach and solved it by sorting. He asked which sorting and why? First I said merge sort because of nlogn complexity. Then I said since range is small(1-26), we can use count sort. He asked if we really need sorting? Then I said

that reversing the second part was sufficient because it was in descending order.

## Round 4:

### Technical Interview Round 2

Again discussion on Tell me about yourself and Projects/Internship.

#### 1. [Maximum of all subarrays of size k](#)

He first asked how will you solve this problem. Gave 3 different approaches. Then finally asked to write code for deque approach.

I was asked few more theory questions from DS and DAA. Like what are some algorithmic paradigm? Difference between Greedy and DP? Questions on Dijkstra(Complexity, greedy or dp). And finally I was given a problem based on graph and was asked which algorithmic paradigm will be used to solve it? Answer was backtracking.

Interviewers were friendly. They helped us giving hints wherever we got stuck.

My advice is read past interview experiences from GeeksforGeeks and practice those problems on [GeeksforGeeks judge](#). Brush up your CS fundamentals like Data structures, Algorithms, Networking and Database.

Thank you GeeksforGeeks for helping me during my interview preparation. ↴

[All Practice Problems for Amazon !](#)

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## Amazon interview Experience | Set 412 (SDE II)

- Difficulty Level : \n [Hard](#)
- Last Updated : \n 12 Jul, 2019

Overall process time : 2 months (Sep \xe2\x80\x99 17 to Nov 17)

Overall 60+ people

Total Rounds : 6

Overall Difficulty : 2.5 \xe2\x80\x99 3

### Round 1:

(3 codes on paper )

- Given a set of yesterday Amazon stock prices {2, -3, 5, 8, 1} Write a code to buy and sell those stocks at maximum profit. \xc2\x90 Before sell, you must buy it at minimum price. \xc2\x90 \xc2\x90 \xc2\x90 \xc2\x90 There should be one minute gap between buy and sell. Gain maximum profit by buying and selling 1 unit (very simple need to find min and max, I did it using thread join) [GeeksforGeeks Link](#)
- [Convert a BST to a sum tree](#)
- Given a 1D Array. Return True if there exists an element where  $a[i] + a[j] = 0 \ \&\& \ i \neq j$ . Reference : \xc2\x90 [Find Pair Given Difference](#)

```
Input: arr=(2,-3,4,1,-6,-4,1)\r\nOutput: True\r\nInput: arr={2,3,4,1,-6,4,1}\r\nOutput: False
```

### Round 2:

- Regular Expression parser like [finite state automata](#)  
Example:  $a^*, aab^*, abcb^*c, ba^*c^*$ , a.b, a\*b etc etc and edge cases
- Design a ranking system. We have an infinite supply of words ending with \xe2\x80\x98. \xe2\x80\x80 We need to implement a reader program that ranks words on the basis of certain criteria
  - \xc2\x90 \xc2\x90 \xc2\x90 \xc2\x90 \xc2\x90 Example: \xc2\x90 \xc2\x90 This is my cat.
  - \xc2\x90 \xc2\x90 \xc2\x90 \xc2\x90 \xc2\x90 \xc2\x90 This house belongs to my uncle
  - \xc2\x90 \xc2\x90 \xc2\x90 \xc2\x90 \xc2\x90 \xc2\x90 An amazing country with so many tourist places And so on..
- Ranking System criteria : rank the words on the basis of occurrence, for example  
Output : This:2, is:2, my:2 \xe2\x80\x99 highest rank (sorted asc or desc based on \xc2\x90 provided flag)  
Design it completely and scalable Ranking System.
- Design a debugger

### Round 3:

- Explain your greatest accomplished [project](#) and what big you achieved? \xe2\x80\x99 Details of flow and architecture
- Find a [longest palindrome String](#)
- Design Amazon Cart System. (HLD and LLD ) Discussion on solution.

### Round 4:

- Given a Binary Tree, Replace every node with its larger Same as sum tree [GeeksforGeeks](#)
- Print min & max (both) of all sub array of size k  
\xc2\x90 [Reference](#) :
- Given an integer array and find first k largest elements. Focus was on complexity of the code [GeeksforGeeks Link](#)
- Given an integer array and an integer value X, return three elements in that array such that sum of them equals to X.  
[GeeksforGeeks Link](#)

This was the last round for the day as team had to return to Bangalore. HR shortlisted me along with other two candidates. \xc2\x90 Due to Diwali they were falling short of staff for managerial rounds, So it took a month for other two rounds which happened in their Gurgaon office on VC

### Round 5:

Bar Raiser: (Duration : 1.15 hours)

- Tell me about yourself
- What were the important projects you have worked on
- What was your contribution
- Explain Architecture, Design and detailed discussion
- What were challenges you faced and how did you solve them
- Design a notification system \xe2\x80\x99 \xc2\x90 \xc2\x90 \xc2\x90

### Round 6:

Hiring Manager : (Duration : 1.15 hours)

- Introduction & very detailed project discussion

#### Behavioral Questions \xe2\x80\x93

- Did you encounter any conflicts with colleague or manager and how did you solve them
- Have you ever delivered more than expectations
- Have you ever completed project before deadline
- Have you have handled a client/customer efficiently and what did you
- Did you ever design a system/process
- What were the most critical projects you have worked on
- How did you handle a critical situation or helped a colleague
- Tell me about a time when you had to work on a project with unclear responsibilities
- Have you mentored someone? What were challenges you faced and how did you resolve
- What important technical decisions did you take and how did it help your team?
- Why Amazon

I recommend GeeksForGeeks for technical coding rounds, educative.io for design and <http://kraftshala.com/how-to-raise-the-bar-in-the-amazon-interview/> for behavioral.

Pretty much covers all the details. They announced result after a week and I was selected \xf0\x9f\x99\x82

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[All Practice Problems for Amazon !](#)

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# Amazon interview Experience | 411 (SDE-1)

- Difficulty Level : \n[Medium](#)
- Last Updated : \n12 Jul, 2019

## Round 1:

It was F2F round(DS and algorithms). They asked about me and my experiences in previous company. I have created couple of open source projects. Mentioning about them really impress the interviewer if it is really a good one. Then he continued with some data structure questions. I had two questions.

Question 1:

Given a tree asked to print the path of the tree which has the highest number of bends. Then he modified the question and asked me to code for both.

Question 2:

Given a tree with each node having numbers. Path from root to a leaf node forms a number like (root(1)->left(2)->leftLeaf(3) = 123). He asked me to code to add all the number for root to leaf.

This round went pretty well.

## Round 2:

It was F2F round(Problem solving). There were two\xc2\xa0interviewers. They directly went for the process after introducing them. This round had 5 questions and was bit hard.

Question 1:

[Given 2D array for characters and a string, asked to find whether the string follows the pattern of the dictionary.](#) I will explain the pattern below.

2D array

|a|b|c|

|b|c|a|

|b|b|a|

String: bababbac

\xc2\xa0

The pattern is, the words in the dictionary should be present in the string in same order and the letter taken by one word should not be the part of other dictionary word. We should find whether all the dictionary words can be formed or not in the given string.

Answer:

Let me index the string bababbac \xe2\x80\x93 (1,2,3,4,5,6,7,8,9)

1st word in dictionary \xe2\x80\x93 abc follows 457

2nd\0 word in dictionary \xe2\x80\x93 bca follows 268

2nd\0 word in dictionary \xe2\x80\x93\0 bba follows 134

Question 2:

It was from dynamic programming in string stuff

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# Amazon Interview Experience | Set 410 (On-Campus Internship)

- Difficulty Level : \n[Hard](#)
- Last Updated : \n24 Jun, 2021

## Online Round:\xa0

It consists of 20 MCQs and two coding questions and MCQs got the negative marking . One for the correct answer and -0.25 for each wrong answer.\xa0

\xa0

- Given a string. [Find all the palindromic partitions of the string.](#) (Number of way the string can be partitioned so that all the partitions are palindrome) ( Case\xe2\x80\x93Insensitive )\xa0

Examples:\xa0

\xa0

Input : NITIN \nOutput : 3\n\nInput : AAa\nOutput : 4

1. \xa0
2. [You are given with a large paragraph and N words. You have to find a min length subparagraph of the paragraph which contain all those N words in any order. \(Case Insensitive\)](#)

Only 32 students got selected for Personal Interviews Rounds.\xa0

## Round 2(Technical Interview I):\xa0

First the Interviewer introduced himself and then asked me to introduce yourself.\xa0

He asked me 3 questions related to Data Structures and Algorithms.\xa0

\xa0

1. Given a n-ary tree print all the possible paths of the tree.\xa0

Firstly I gave him the approach using queues.\xa0 Then he asked me to optimize the code for space complexity of O(1). Then I gave him the approach using recursion and a long in depth discussion followed on it. Then he asked me to write the code.

2. Given the no. of stairs as the input and a person can step forward either 1 or 2 or 3 steps at a time. Find the total no of possible ways person can climb the stairs.\xa0

\xa0

Input : 3\nOutput: 4

1. **Solution:** [GeeksforGeeks Link](#)\xa0

\xa0

2. Given a 1-D array having equal no even and odd numbers. Arrange the numbers in such a way that all the even no get the even index and odd no get the odd index. Required space complexity and time complexity was O(1).\xa0

**Solution:** [GeeksforGeeks Link](#)

Only six students were selected for the next round.\xa0

## Round 3(Technical Interview II):\xa0

This round was similar to the previous rounds. Firstly the Interviewer introduced himself and then

asked me to introduce yourself.\xc2\xa0

He asked me 2 questions related to Data Structures.\xc2\xa0  
\xc2\xa0

1. [Print all the continuous sub-arrays where the sum of the sub-array becomes zero. Required space complexity was O\(n\).](#)
2. Given a string containing parenthesis. Find the total no of reversal of parenthesis to make the given output as balanced one. This question followed a detailed discussion and interviewer gave me different no of inputs to test the code.\xc2\xa0

**Solution:** [GeeksforGeeks Link](#)

After the coding questions. he asked me some basic questions related to Operating Systems like Deadlocks and Semaphores.\xc2\xa0

At last 3 students got the internship offer from Amazon.\xc2\xa0

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# Amazon interview Experience | Set 409 (For SDE-I)

- Difficulty Level :\nHard
- Last Updated :\n11 Jul, 2019

## Telephonic round:

[Maximum profit by buying and selling a share at most k times](#)

### Round 1:

You have two lane road and there are two sensors,

1. Sensor A only covers Right lane.
2. Sensor B covers both Left and Right lane.

Input of the function is two arrays filled with 24 hours of data and value/item of array is tuple having direction and time. find following things,

1. Total no of cars on Right and Left lane.
2. Min and Max speed at sensor A.
3. Min and Max speed at sensor B.

Finding no 1 is easy.

Only issue is with 2,3 as we don't have any unit of distance given anywhere. I asked him he told that's a problem ?

This what we can do without distance we can at-least find the minimum and maximum time for sensor A and B just traversing an array but after that finding a distance that's still a mystery to me ? in last few minutes he told me take a guess and do it but no enough time.

### Round 2:

Build an UBER platform no code discussion about how will you do it,

1. How will handle locations (most updated) of the driver ?
2. How will update the location of the driver (architecture of app or service to update) ?
3. Find nearest driver ? (We can filter all drivers based on location)
4. What if two cities are merged like Redmond and Bellevue then other car might be close but in second city where city filter want work ?
5. How do you scale same app to other countries (like china) ?
6. Once you find the nearest driver how do pick them ? (I said ratings)
7. What would do consider as good ratings ?
8. Once you have 10 driver with 4.8 ratings how will you send the request ?
9. What will you do if all 10 drivers receives and accepts 10 request simultaneously ?

### Round 3:

Build Eclipse IDE. Told me to write down class diagram of all components.

1. How will you handle Character Set ?
2. How will you handle up key ?
3. How will you handle code pre compilations ? different highlighting rules ?
4. Where will be text render events in editor or page and why ?

### Round 4:

<https://www.geeksforgeeks.org/find-duplicates-in-on-time-and-constant-extra-space/>

No offer by the way.

In SDE-I two designing questions. I didn't expect that. Even though I have done some designing over past 2 years but never attempted problem as big as an IDE.

Hope this helps and PEACE.

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# Amazon Interview Experience | Set 408 (Internship)

- Difficulty Level :\n[Easy](#)
- Last Updated :\n11 Jul, 2019

Most importantly they look for

1. Problem solving skills i.e. [algorithm](#)
2. [Coding skills](#)
3. Knowledge of [DS](#)

## Round 1:

The round 1 consisted of 20 [MC Quizzes](#) which are of [GATE level](#) and two coding questions.

As far as I remember the first coding question\xe2\x80\x99s logic was to [find GCD of an array of number](#) which I solved using recursive approach.

I cleared the round 1.

## Round 2:

It was a F2F round where 3 members were assigned to a particular member. They gave us 2 questions and write the pseudo code for them in 1 hour during which we also can interact with them.

I asked them where I had doubt and after I say logic to him he asked me that if I can optimize it, explain the code so on.

As I gave him all the optimisations he asked algorithmically , I was not able to write a clean code because of lack of time.

I selected as 8th candidate.

## Round 3:

This was also a F2F round and it is one to one. Where his first question was that why did I not write any code in previous round and then asked \xe2\x80\x9d Tell me about yourself\xe2\x80\x9d

Then he shoted me with coding questions. His first question was a popular question(which I came to know later) [rainwater problem](#), and the next one was [printing the nodes of a binary tree in zig Zag manner](#).

Then he asked me some questions from OS i.e. internal fragmentation vs external fragmentation to which I replied \xe2\x80\x9cI don\xe2\x80\x99t remember the topic but please let me try\xe2\x80\x9d then I got correct answer to one question and wrong to second one. Then he asked about process life cycle.

Then he asked that if I have any questions and then he asked \xe2\x80\x9d why Amazon?\xe2\x80\x9d That was it.

We were said to wait and luckily \xc2\xaa01 was selected.

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# Amazon Interview Experience | Set 407 (Internship)

- Difficulty Level : \n [Hard](#)
- Last Updated : \n 12 Jul, 2019

This was a pool campus conducted by amazon for internship .based on the internship performance students will be give pre-placement offers or pre-placement interview.

**Online round:** online round was conducted at respective colleges in batches there were 20 technical mcq's on DBMS, OS, CN,C, OOPS,DS,input/output questions, mostly from [geeksquiz](#) and 2 coding questions which were considerably easy.time given 1 hr 30 minutes.

1. [Given a point  \$\(x,y\)\$  which is position of a friends house on a coordinate plane. and a person starts from  \$\(0,0\)\$ , and can move only on x-axis. each time he moves double the steps from previous step and in opposite direction.he starts by taking 1 step in positive x axis. each step he takes 1 second. given a time n. we have to find the distance between his friends house and his position after n seconds.](#)
2. Given a string and an integer m that denotes number of changes that can be made on the given string.we have to find maximum length of a sub string that can be formed by doing m number of changes such that all alphabets in the substring are same.

**Solution:** [GeeksforGeeks Link](#)

Online was conducted on hackerearth platform. MCQs had negative marking +1 and -0.25. there was no detection of points for wrong submission in coding questions.

From my college 13, students were selected for 2nd round, and in total 70 students from my city.they did not reveal any cut off criteria but student who solved atleast 1 coding question completely and atleast 8 to 10 (just an assumption) mcq's correctly were selected for next round.

**Round 1:** This was face to face technical interview coudted for all the colleges together. they gave 2 questions and we were asked to write the entire working code and to optimize the solution, the interviewers were friendly and helped us if we got stuck anywhere.after this round 30 students were selected for next round out of 70.

1. [Convert a tree into its mirror tree](#)
2. [Print a binary tree in vertical order](#)

this round took around 1 hr 15 min.

**Round 2 :** This round was also a face to face technical interview.the interviewer asked me to introduce myself while he was entering some details in his lappy.then he asked me who took my 1st round. i din knew the name of my 1st round interviewer.he was smiling and said \xe2\x80\x9crelax, i was just casually asking\xe2\x80\x9d. i was given 2 coding question. for the 1st question he just asked to explain the approach and optimize it and for the 2nd question he asked to write the entire working code and explain it.this round took around 45 min.

1. Given an array we have to find the [median of the array when it is sorted but we should not sort it.](#)
2. [Find Maximum possible stolen value from houses.](#)

**Round 3:** This round was conducted only for those students for whom they were doubtful.

fortunately i was selected in 2nd round itself.

Interviewers were friendly. They helped us giving hints wherever we got stuck.

My advice is be confident. don't give up, if you are stuck anywhere. Tell them atleast a brute force approach and they will give you hints to optimize it. Don't be scared, practice questions from geeksforgeeks, almost all of them were asked from geeksforgeeks collection.

Please write comments if you find anything incorrect, or you want to share more information about the topic discussed above.

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## Amazon Interview Experience | Set 406 (Off-Campus Internship)

- Difficulty Level :[Medium](#)
- Last Updated :[11 Jul, 2019](#)

### Round 1:

The first round consists 20 mcqs and 2 coding questions. The MCQs are focused mainly on Operating systems, data structures and algorithm analysis and DBMS.

each question consists +1 and -0.25 for the wrong answer

### Round 2:(TECHNICAL ROUND 1)

It started with the self introduction and brief chat about Vizag(interview held in Vizag). He is so friendly and encouraging

1. Rearrange nodes in the given linked list as follows

input : a → b → c → d → e  
output: a → e → b → d → c

**Solution:** [Rearrange a given linked list in-place.](#)

2. Given an array of integers, print pairs(positive value and negative value of the number) that exists in the array.

\r\nInput : [1, -3, 2, 3, 6, -1]\r\nOutput : [-1,1] \r\n [-3,3]\r\n

**Solution:** [GeeksforGeeks Link](#)

this round happened for one hour

### Round 3 (TECHNICAL ROUND 2):

This round started with discussion on projects and then questions on technical concepts like

1. deadlocks
2. mutex vs semaphores
3. multithreading vs multiprocessing
4. TCP protocol
5. DNS
6. 3-way handshake in TCP
7. discussion on OSI layer
8. ACID properties
9. models in DBMS(ER, network)
10. discussion on ER model

Then he started coding part :

1. [Given row wise and column wise 2d matrix, find minimum element.](#)
2. Given an array and a window size and window moves from left to right till the rightmost side of window hits the other side of array, print max element in the window for each step in the process.

**Solution:** [GeeksforGeeks Link](#)

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# Amazon Interview Experience | Set 405 (SDE-II)

- Difficulty Level : \n[Medium](#)
- Last Updated : \n11 Jul, 2019

## Round 1: Online Coding Test (Duration: 1 hour 30 minutes)

**Question 1:** [Given a matrix of n\\*n size, the task is to print its elements in diagonally pattern.](#)

**Question 2:** Lazy Bartender

There are N number of possible drinks.(n1,n2..)

Has C number of fixed customers.

Every customer has fixed favorite set of drinks.

Bartender has to create least possible number of drinks to suffice need of all the customers

Example:

Cust1: n3,n7,n5,n2,n9

Cust2: n5

Cust3: n2,n3

Cust4: n4

Cust5: n3,n4,n3,n5,n7,n4

Output: 3(n3,n4,n5)

[Discussions about Lazy Bartender on Career Cup](#)

The online coding round was supposed to be taken from home. HR shared the link and gave 3 days of time to attempt once and submit.

I solved first problem and got selected for Interview Process.

## Round 2: Technical Round (Duration: 1 hour)

**Question 1:**

[Next Greater Element](#)

I started with naive approach and finally we discussed the solution using stack.

We also discussed about complexity of each of the approaches.

**Question 2:**

Interviewer: Do you know HashMap?

Me: Answered all the information related to HashMap. Explained how singly linked list is maintained internally for each bucket. Discussed about complexity of insertion and retrieval.

Interviewer: Order of insertion is not maintained in HashMap. Write code to maintain the order of insertion.

Me: We can directly use LinkedHashMap in Java. This Data Structure suffices the requirement.

Interviewer: How does LinkedHashMap work internally?

Me: Explained the internals of LinkedHashMap. Elaborated how it maintains doubly linked list to maintain the order of insertion on top of HashMap mechanism. [This is helpful to know internals of Java Data Structures](#)

**Question 3:**

Have you ever faced conflict in your team? For example, if your team member is trying to implement sub optimal solution and you don't want him/her to do so. How have you handled this situation?

#### Question 4:

##### Largest Sum Contiguous Subarray

Discussion included naive approach, solution using maintaining single variable and complexity of each.

For questions 1 and 4, interviewer asked me to write production ready code on paper. Expectation included to cover all the corner cases and input check and all.

#### Round 3: Technical Round (Duration: 1 hour)

Interviewer: Tell me Data Structure of your choice. I'll ask questions on that.

Me: Can we have questions on Linked List?

#### Question 1:

This interviewer also started with Hashmap. Again we had all the discussion which I had in Round 3 Question 2.

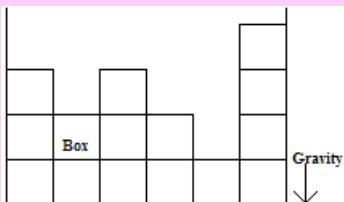
Design your own Data Structure for LinkedHashMap and write production ready code for insertion of elements.

#### Question 2:

Why Amazon?

#### Question 3:

Imagine we have a big box open at top and some small boxes are put inside it. The one of the side view of the box be like.



Now, as shown in the image, currently gravity is acting downwards.

Some environment change happens and now gravity starts acting rightwards of the shown image. Let us consider initial data in an array. For example, the array content from the figure would be [3,2,3,2,1,4].

Think of final positions of the all boxes (Final elements in array) and design algorithm to solve the problem. We can just discuss the algorithm. No need to write code.

We discussed about final positions of boxes on paper and finally I figured out that it is nothing but a sorting of array. I answered to have to go with Merge sort. Interviewer asked me why not Quick sort? We discussed about complexity of both the algorithms and issues occurring due to selection of pivot in Quick sort.

#### Round 4: Design Round (Hiring Manager) (Duration: 1 hour)

#### Question 1:

Interviewer asked me to choose area from which he can ask design question.

1. Online Gaming
2. Inventory Management
3. Taxi services like Ola, Uber.

I chose second option.

Interviewer asked me to Design automated parking lot

We started with classes to be used. Discussed database structure. Many other aspects like what if I own many parking lots. What if only one vehicle is coming at a time? What if I have multiple lanes to enter parking. What if many vehicles are coming at a given time?

We discussed synchronization of thread, thread pooling, thread queuing.

**Question 2:**

Tell me about your current work.

**Round 5: Behavioral Round, Bar raiser (Taken by two highly experienced people) (Duration: 1 hour)****Question 1:**

Introduce yourself.

**Question 2:**

Discussions about my previous project with previous employer.

**Question 3:**

1. Discussions about my current work with current employer. They asked me complete in and out about my current project. I answered the question with inclusion of many design patterns which are implemented in my project.
2. Tell us something which you have contributed to project. I had implemented some IPC on the top of available framework. They asked me how IPC work internally? How will you implement it if infrastructure is not provided. I explained the OS concepts behind IPC.
3. If trade off needs to be done on quality of product being released or to follow release date, which one will you choose.
4. How do you handle conflict in your team?

**Question 4:**

Do you know furniture? If yes, design one. (Too vague question)

We discussed more about requirements as I was not clear about it at all. Came up with some classes of furniture.

Write a SQL query to retrieve furniture from database whose dimensions(Width,Height,Length) match with the given dimension. Initially, I wrote a strict SQL query to match exact dimension. Then, interviewer asked me how Google search will work if you search for furniture with above dimension. I answered that it gives other furniture with similar dimension as well. I modified my earlier query to have something similar to Google result.

**Result:** I got selected.

Note:

1. Each interview started with brief introduction of the interviewer and mine.
2. Each interviewer was friendly and supportive. There was no pressure, tension at the time interview. It was like a normal technical discussion. Interviewer gave hints to find the answers whenever required.
3. We discussed about interviewer's work at Amazon in each round.
4. After every round, I asked for area of improvement in me. Like it can be anything, what should I read more, which skill should I develop. (It is not something about interview feedback, as I know that it is always kept confidential from interviewee).
5. Don't start solving problem as soon as interviewer gives you one. Ask questions if you are not clear about the requirement.
6. Round 5 was meant for checking interviewee's behavior in different situation.
7. Most of the times, interviewer is not expecting the correct answer but is evaluating your thought process. Keep talking whatever is going on in your mind. Most important prepare your resume very well.

Thank you GeeksforGeeks for helping every candidate like me to aspire good career opportunities. This article is contributed by **Sujata Kulkarni**. If you like GeeksforGeeks and would like to contribute, you can also write an article using [contribute.geeksforgeeks.org](http://contribute.geeksforgeeks.org) or mail your article to contribute@geeksforgeeks.org. See your article appearing on the GeeksforGeeks main page and help other Geeks.

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# Amazon Interview Experience | Set 404 (On-Campus Internship)

- Difficulty Level : \n[Medium](#)
- Last Updated : \n11 Jul, 2019

## Online Round

It consists of 20 MCQs and two coding questions where MCQS got the negative marking, One for the correct answer and -0.25 for each wrong answer.

1. Given a string. Find all the palindromic partitions of the string. (Number of ways the string can be partitioned so that all the partitions are palindrome) ( Case \xe2\x80\x93 Insensitive )

Examples:

```
\r\nInput: NITIN \r\nOutput : 3\r\n\r\nInput : AAa\r\nOutput : 4\r\n
```

[Link for the following question](#)

2. [You are given with a large paragraph and N words. You have to find a min length subparagraph of the paragraph which contains all those N words in any order.](#) (Case Insensitive)

Only 33 students got selected for the next round

## Round 2( Technical Interview )

First, the Interviewer introduced himself and then asked me to introduce yourself

He gave me only one question

[Given a positive number and you have to find all the no. that holds the property of all the digits with an absolute difference equal to 1 to its adjacent digit below that given number.](#)

```
\r\nInput : 40 \r\nOutput : 10 12 21 23 32 34\r\n
```

I gave a brute force solution first and then he asked me to optimize it. We had a long discussion then he asked me to code the solution.

Only 6 students got selected for the next round.

## Round 3( Technical Interview )

The interviewer started with the most common questions \xe2\x80\x93 Tell me about yourself\xe2\x80\x9d, in which I explained my projects, my achievements, and my strengths.

The round started with long discussions on following Questions of Operating Systems.

1. What is deadlock? and a situation where you have faced deadlock.
2. Scheduling Algorithms.
3. Code LRU Cache
4. Banker\xe2\x80\x93s Algorithm.
5. Paging, Segmentation, etc.
6. How compiler compiles the interlinked libraries. ( Using Topological Sort ) and asked me to code for the same.

One Coding was asked in last

## Trapping Rain Water

In the Last interviewer winded up the interview with \xe2\x80\x9cAny questions for me?\xe2\x80\x9d

Verdict: Selected

Only 3 students were offered internship

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# Amazon Interview Experience | Set 403 (On Campus for Full Time)

- Difficulty Level :\n[Hard](#)
- Last Updated :\n11 Jul, 2019

## Coding round (90 min):

20 objectives from DS, OS, DBMS, Networking and 2 coding questions:

1. <https://www.hackerrank.com/contests/dakshonline/challenges/yule-ball>
2. <https://www.hackerearth.com/practice/data-structures/arrays/1-d/practice-problems/algorithm/i-demand-trial-by-combat-13/>

## ROUND I:

1. Given a binary string (e.g. 01, 101, 011), in each iteration 0 becomes 01 and 1 becomes 10, find kth character in the string after nth iteration. [GeeksforGeeks Link](#)  
 \xc2\xa0\xc2\xa0simple approach, time complexity, express time complexity in terms of n only  
 \xc2\xa0\xc2\xa0efficient approach, explanation, time complexity
2. Given n ropes of different lengths, connect them into one rope. cost to connect two ropes is equal to sum of their lengths. connect the ropes in minimum cost :  
 \xc2\xa0 [GeeksforGeeks Link](#)
3. When and why merge sort is preferred over quicksort \xe2\x80\x93 time/space complexity

## ROUND II:

1. Project discussion
2. Make binary tree symmetric \xe2\x80\x93 which all cases are possible, which traversal is used and why
3. Make half of the linked list reverse (iterative, recursive) and some questions from linked list
4. Recursion, data structure that is used in recursion
5. C++ string, overloading of + operator in string class

## ROUND III:

1. Design a data structure to show most frequently purchased item to a customer, show items that are frequently purchased in a given time span [GeeksforGeeks Link](#)
2. Priority\_queue, map/unordered\_map, sliding window concept
  - [Priority Queue](#)
  - [Sliding Window Technique](#)
  - [Unordered Map](#)
3. Search a given word in a dictionary (approach, time complexity, cost of insertion/deletion of new word in different data structures) [GeeksforGeeks Link](#)
4. Binary search tree, AVL tree (Rotation, Insertion, Deletion), Trie data structure
  - [BST](#)
  - [Avl tree \(Insertion\)](#)
  - [Avl tree \(deletion\)](#)
  - [Trie](#)
5. Search a pattern in given string (Simple approach & Using KMP algorithm), handle all the cases [GeeksforGeeks Link](#)
6. LRU Cache Implementation

## ROUND IV:

1. Introduce Yourself
2. Project discussion
3. Convert a given Integer to its corresponding Roman numeral [GeeksforGeeks Link](#)
4. Hamiltonian cycle & few graph questions (Cycle in directed/undirected graph) [GeeksforGeeks Link](#)

In between they asked some questions from OS, DBMS, Networking:

\xc2\x80 \xe2\x80\x93 Belady\xe2\x80\x99s Anomaly, Context Switching, Conflict Serializability, Functions of some OSI-layers etc..

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# Amazon Interview Experience | 402 (Experienced for SDE 2)

- Difficulty Level :\n[Easy](#)
- Last Updated :\n11 Jul, 2019

## Round 1

1. Write code for Sudoku Validator in most optimal time and space complexity ?  
**Reference:** [GeeksforGeeks Link](#)
2. Write a code to verify BST Tree and print non-compliant node.  
**Reference:** [GeeksforGeeks Link](#)

## Round 2:

1. [Find duplicate character in a String O\(n\) time with no extra space.](#)
2. [Write code to do three-way partitioning similar to quick-sort.](#)

## Round 3:

1. Design App-Store.

## Round 4:

1. Design Netflix.
2. Why Amazon ?

## Round 5

1. Question specific to Resume and Software Process.
2. Question for Leadership principles.

Offered !

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## Amazon Interview Experience | 401 (3+Years Experience for SDE II)

- Difficulty Level :[Hard](#)
- Last Updated :[11 Jul, 2019](#)

Recently I was interviewed for **Amazon SDE II** for Amazon Pay Team. Below are the Questions :

### Round 1 : (Written : Pen & Paper) (3 Questions)

- Given a 1D Array. Return True if there exists an element where  $a[i]+a[j] = 0 \ \&\& \ i \neq j$ .

**Reference :** [GeeksforGeeks Link](#)

```
\r\nInput : arr = {2,-3,4,1,-6,-4,1}\r\nOutput : True\r\n\r\nInput : arr = {2,3,4,1,-6,4,1}\r\nOutput : False\r\n
```

- Related to Buy and Sell of stock and gain maximum profit. Only 1 unit to buy or sell at a time.

**Reference :** [GeeksforGeeks Link](#)

- Given a Tree (it was a BST), replace the data of all nodes which have data  $\geq$  the node's data.

**Solution :** [GeeksforGeeks Link](#)

(Even the example was same from above link ;))

### Round 2 : DS and Algo (F2F) (3 Questions)

- Program for the 99th node from the end of a Linked List

**Solution :** [GeeksforGeeks Link](#)

- Print min & max (both) of all subarray of size k

**Reference :** [GeeksforGeeks Link](#)

Note : The reference link is just for min or max. Here we need both min and max in one program.

- Find the k most frequent words from a file (or a stream of input)

**Solution :** [GeeksforGeeks Link](#)

Result : I was eliminated due to some basic mistakes I did (in Q3), which I just realized after leaving the Interview room. It was a nice experience.

I would also like to share few more Questions those were asked to other candidates over there :

- Design Debugger (Asked to almost everyone in 2nd Round)

- Design Uber App

- [Print all nodes at distance K from given node](#)

- [Connect nodes at same level](#)

- [Minimum number of jumps to reach end](#)

The Interviewers were very friendly and helpful. They will help you whenever you get stuck (with Hints), but they will also check how much grab you have on basics.

Thank You!!! Hope this will help the aspiring candidates.

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# Amazon Interview Experience | Set 400 (For SDE 2)

- Difficulty Level :\n[Hard](#)
- Last Updated :\n11 Jul, 2019

## Round 1 : Telephonic

1. [Serialize \xe2\x80\x93 Deserialize a binary tree](#)
2. [Rotate a M\\*N matrix by k elements in place.](#)

## Round 2 : Hiring Manager ( F2F )

1. General introduction about team and work.
2. Discussion on my project.
3. Design a Music Player application [ many use cases were covered ] eg : support for SD card  
All class diagrams were required on a whiteboard

## Round 3 : DS Algo Round

1. [Topological Sorting](#)
2. [Rearrange a given linked list in-place](#)

## Round 4 : DS Algo Round

Detailed discussion on project

1. [Gold Mine Problem](#)
2. [Vertical Sum in a binary tree](#)

## Round 5 : System Design Round

1. Detailed discussion of project
2. Design a Distributed LRU Cache
3. Design Gmail \xe2\x80\x93 consider scalability , redundancy, brief discussion on CAP Theorem,  
class diagrams,  
Database schema ( SQL vs NOSQL ) , how to handle attachments

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# Amazon Interview Experience | 399 (On Campus for full time)

- Difficulty Level : \n [Hard](#)
- Last Updated : \n 19 Sep, 2019

Amazon came to my campus in the last week of July 2017.

The online round was hosted on HackerEarth platform.  
It had 2 coding questions and 20 MCQs.

1. [Given an unsorted array A, find the largest value of i-j such that A\[i\]>A\[j\].](#)
2. [Given an unsorted array A and a number k, find the maximum sum sub string in the array such that its sum is divisible by k.](#)

MCQs:

1 mark each and 0.25 negative mark.

Few MCQs were based on data Structures, algorithms, oops and Operating Systems, 1 or 2 from logical reasoning, networking and DBMS each.

Every interview round started with the cliche \xe2\x80\x9ctell me about yourself\xe2\x80\x9d and ended with \xe2\x80\x9cdo you have any questions\xe2\x80\x9d.

## Round 1:

1. Given a log file with product id and corresponding customer id for the products searched on Amazon, you need to find the most viewed product at the end of the day. If a product is viewed multiple times by a single customer its view count is increased only by 1. The number of products is very large so sorting, heap or hashing of product Ids is not feasible.

**Solution**\xe2\x80\x93 Use Trie data structure. After 10 minutes of discussion, I could come up this.

Production level code for insert and search in a trie was required.

What if k max viewed products were required.

During my discussion, he also asked me to write a hashing function.

## Round 2:

1. [Dfs of a graph.](#)
2. [Dfs of a n array tree. \(Code was required\)](#)
3. [Given a string s and a file with each word on a separate line, find all the words in the file which are anagrams of the string s.](#) The interviewer asked me to tell all the possible solutions irrespective of the complexity. This continued for 10 min.
4. Given a m\*n matrix find the number of paths from (0,0) to (m-1,n-1), at every block we either move 1 step down or 1 step right. Print all paths for the above question. A dp solution was required.

**Solution:** [GeeksforGeeks Link.](#)

## Round 3

1. Given a n\*n matrix with distinct elements from 1 to n^2, find minimum number of bombs required to destroy all cells of the matrix. If we bomb a cell with value i, a cell with value i-1 if 4 adjacent to it will also be destroyed. (Code was required)

- What if the numbers were not unique.
2. [Find majority element in an unsorted array.](#)
  3. [Find majority element in sorted array. \(logN solution was required\).](#)
  4. [Print the elements of a tree diagonally.](#)
  5. Find shortest distance between two nodes of a tree where every node also has a pointer to its parent node and we can also directly jump from a node a to node b, where b is the mirror image of a and a and b belong to the two sub trees rooted at the root of the given tree. The mirror image may or may not exist.
  6. [Find the time required to pass information from root to all the nodes of the tree.](#)

The interviewer then asked me which other noncoding subjects do I like. I said OS. So he asked me several basic questions on OS.

What is-

1. os
2. [Thrashing](#)
3. [Bdady anomoly.](#)
4. [Page Fault.](#)
5. [Threading.](#)
6. Multi processing
7. [Difference between threading and multiprocessing.](#)
8. Scheduling Algorithms.

#### Round 4

The famous Amazon\xe2\x80\x99s Bar Raiser Round

1. My internship experiences.
2. Detail discussion about my summer internship project.
3. What is your favorite algorithm and why.
4. Toughest thing you did in college.
5. What are some leadership principles you learnt during your summer internship.
6. What was the non technical thing you learnt at your internship.

This was a telephonic round and went on for 34 minutes.

I recommend every one to prepare from InterviewBit, Hackerearth CodeMonk, Hackerrank, [System design Interview Questions](#), <https://ashayraut.wordpress.com/interview-preparation-best-100/> and geeksforgeeks.

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# Amazon interview experience | Set 398 (On-Campus)

- Difficulty Level :\n[Hard](#)
- Last Updated :\n06 Sep, 2017

The online round was hosted in HackerEarth platform. It had 20 MCQ\xe2\x80\x99s of 1 mark each and 0.25 negative mark and 2 coding questions of 10 marks each. The MCQ\xe2\x80\x99s was mostly from Data Structures and Operating Systems, and few questions from networking, DBMS and 1 Java question.\xc2\xa0

After clearing online round there were 3 technical round and 1 bar raiser round.\xc2\xa0

Resume was taken before interviews.\xc2\xa0

## Round 1:\xc2\xa0

In this round, the interviewer asked about my coding and scholastic achievement.\xc2\xa0

- 1.\xc2\xa0Favorite subject and questions on that topics.\xc2\xa0\xc2\xa0
2. Basic question on space and time complexity\xc2\xa0
3. Write a program to print all permutations of given string and discuss its working as well as space and time complexity in detail. <https://www.geeksforgeeks.org/write-a-c-program-to-print-all-permutations-of-a-given-string/>. \xc2\xa0
4. Write a program to find number of shapes in Boolean matrix. <https://www.geeksforgeeks.org/find-number-of-islands/>. \xc2\xa0 He asked me about time complexity and space complexity. At the beginning space complexity of my solution was O(mn). I presented 4 methods and reduced its complexity to O(1). I solved it by both dfs and bfs.\xc2\xa0

## Round 2:\xc2\xa0

In this round, the interviewer asked me to introduce myself and short discussion on my resume project\xc2\xa0

1. Write a program for Lowest Common Ancestor in a Binary Tree. <https://www.geeksforgeeks.org/lowest-common-ancestor-binary-tree-set-1/>. \xc2\xa0
2. Write programs for Fractional Knapsack and 0/1 knapsack code of recursive solution and its optimization (concept of dynamic programming). <https://www.geeksforgeeks.org/knapsack-problem/>. \xc2\xa0
3. Write a program and approach for Minimum no. of iterations to pass information to all nodes in the tree. <https://www.geeksforgeeks.org/minimum-iterations-pass-information-nodes-tree/>. I was very close to the solution and he was very impressed by my approach of recursion. He interrupted me between the solution and asked further questions.\xc2\xa0
4. Approach for K smallest element in array. <https://www.geeksforgeeks.org/k-largestor-smallest-elements-in-an-array/>. I presented 3 solutions and heap solution then he asked me about heap and its time and space complexity.\xc2\xa0
5. Approach for Largest Rectangle in Histogram. <https://www.geeksforgeeks.org/largest-rectangular-area-in-a-histogram-set-1/>. I presented two solutions na\xc3\xafve solution and stack

based solution.\xc2\xa0

### Round 3:\xc2\xa0

In this round, the interviewer asked me about my resume project and deep discussion on my projects.\xc2\xa0

1. Write a program to find position of an element in a sorted array of infinite numbers.

<https://www.geeksforgeeks.org/find-position-element-sorted-array-infinite-numbers/>. I presented 3 solutions in most optimized way.\xc2\xa0

2. Question on computer science fundamentals. Detailed explanation of virtual memory, paging page faults etc.\xc2\xa0

3. Write a program for Minimum Number of Platforms Required for a Railway/Bus Station.

<https://www.geeksforgeeks.org/minimum-number-platforms-required-railwaybus-station/>. \xc2\xa0

4. Write a program to count set bit of a number. <https://www.geeksforgeeks.org/count-set-bits-in-an-integer/>. I presented 3 solutions and he was impressed by my last solution of using concept of last bit set using formula  $x \& -x$ . \xc2\xa0\xc2\xa0

5. Last question similar to the concept of this question sort numbers stored in different machines.

<https://www.geeksforgeeks.org/sort-numbers-stored-on-different-machines/>. \xc2\xa0

### Round 4:\xc2\xa0

This round was based on designing problems. \xc2\xa0

Min Cash flow among friends. <https://www.geeksforgeeks.org/minimize-cash-flow-among-given-set-friends-borrowed-money/>. I solved by  $n^2$  and  $n\log n$  complexity. In  $n\log n$  I used the concept of heap. \xc2\xa0

\xc2\xa0

In each round interviewers were giving test cases to run on the programs and expecting very neat and clean code.\xc2\xa0

So I would recommend to have experience of competitive coding for depth knowledge of code and then follow geeksforgeeks. It has all the problems.\xc2\xa0

Before 2-3 of campus recruitment I would recommend to solve all problems of interviewbit with the help of geeksforgeeks.\xc2\xa0

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[All Practice Problems for Amazon !](#)

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# Amazon interview experience | Set 397 (On-Campus)

- Difficulty Level : \n [Hard](#)
- Last Updated : \n 11 Jul, 2019

## Online Round:

It consisted of 20 mcqs and 2 coding questions. The test was hosted on HackerEarth.

1. [Given a string. Find all the palindromic partitions of the string.](#) (Number of way the string can be partitioned so that all the partitions are palindrome)

Input: NITIN      Output: 3

2. [You are given with a large paragraph and N words. You have to find a min length subparagraph of the paragraph which contain all those N words in any order.](#)

## Round 1 (35-mins):

The interviewer started with the most common questions \xe2\x80\x9ctell me about yourself\x80\x9d , in which I explained my projects , my achievements and my strengths. I was asked 2 questions from ds and algo in this round.

1. [Find all the hero and super hero in an array. Hero \xe2\x80\x93 Elements which are greater than all the elements on its right side. Super Hero \xe2\x80\x93 Elements which are greater than all the elements on its left and right side \(Largest Element of the array which should only occur once\). Expected Complexity \xe2\x80\x93 O\(1\) space and O\(n\) time in single traversal.](#)

Input: {1,6,5,4,7,8,4,3,2,1} \r\n Output: Heroes : 8 4 3 2 1 \r\n Super Heroes : 8 \r\n \n

2. [Smallest window in a string containing all the characters of another string](#)

## Round 2 (60-mins):

I was asked to introduce myself asked about my strengths and my weakness. Like last round I was asked 2 questions on data structures and algorithms.

Discussions on projects for 15-20 minutes.

1. [Find Maximum number possible by doing at-most K adjacent swaps.](#) Expected Time Complexity \xe2\x80\x93 n\*K and space complexity \xe2\x80\x93 O(1)
2. Find the closest pair to a given sum in an unsorted array. Approaches \xe2\x80\x93 Brute force, Sorting , Ceil and floor using BST.
3. Memory Allocation in C++. How to allocate double memory in c++. Couldn\x80\x99t Explain this.

Was called for 3rd round after 5 mins.

## Round 3 (90-mins):

This round was purely on algorithm design and data structures.

1. [Special stack](#)

Couldn\x80\x99t derive this for O(1) space.

2. [Check for Balanced Tree](#)

3. [Minimum number of jumps to reach end](#)

Explained O(n^2) dp approach. Gave a segment tree approach of time complexity O(nlogn) , space O(nlogn).

#### 4. First non-repeating character in a stream

Implemented using Double Linked List and Hashmap.

Was called for the final round after 5 mins.

#### Round 4 (30-mins):

The round started with discussions on Operating Systems and Compiler Design.

Operating System Questions-

1. What is caching ?
2. Where does cache lie in operating system ?
3. Difference between associative mapping and direct mapping in cache.
4. What is spooling ?
5. Applications of spooling.

Compiler Design Questions \xe2\x80\x93

1. What is lexical analysis ?
2. What is semantic analysis ?
3. What is a Deterministic Finite Automata (DFA) ?
4. Difference between DFA and NFA ?

Exhaustive discussion on my current projects.

Finally 3 questions were asked on data structures and algorithms.

1. [Minimum time required to rot all oranges](#)
2. <https://www.geeksforgeeks.org/fix-two-swapped-nodes-of-bst/>
3. [Bottom View of Binary Tree](#)

Verdict : Selected \xf0\x9f\x99\x82

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## Amazon interview experience | Set 396 (For SDE-2)

- Difficulty Level :\n[Expert](#)
- Last Updated :\n11 Jul, 2019

Round 1:-

Design JProfiler. How will you design datastructure and why, function stacktrace. HLD+LLD  
Design Cricket Score Board HLD+LLD

Round 2:-

Design DataStructure Insert, Delete, Search, findMin, findMax, DeleteMin, DeleteMax with minimal complexity. How will you tradeoff multiple operation to support mutiple operation. Classes should be extensible , if you are using some data structure to support these operation.

Design Multiplayer Chess Board Game LLD only, without drawing HLD.

Round 3

Algo+Problem Solving

- 1) [WildCard Matching](#), slight change \* is replaced by +. Cover all corner cases. Write Code.They checked line by line.
- 2) [Copy linked list with random pointer with using O\(1\) space](#). Approach only
- 3) [Calculate Top K frequent number from the running stream of data](#).

Round 4

Lots of behavioral question.

1) Design a Fresh Grocery System. Means Daily usable Items, you cannot store them in inventory like bread, milk etc.

HLD+ DB Schema + Concurrency issues + Scalable architecture. How will you scale to multiple countries

2) Design an Online tracking system, similar to how you can track your order on swiggy after you place it on maps.

Round 5

Behavioral Questions

Full Project Discussion

Design Recommendation system. How will you generate generate recommendations for millions of users. DB Schema, How will you improve latency? if the user is searching a item, when will you show next recommendations. How will you update, latency basically and consistency.

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## Amazon Interview Experience | Set 395 (On-campus for Internship)

- Difficulty Level :[Medium](#)
- Last Updated :[11 Jul, 2019](#)

**Round 1:** Total of 300 students participated in the notion of getting selected to do intern at Amazon.  
Round 1 had 20 MCQs and 2 questions.

- Given a range [L,R] find the count of numbers having prime number of set bits in their binary representation. [This hint was included in O/P section. Only even numbers should be checked within the L,R range]

[GeeksforGeeks Link](#)

### Examples:

```
\r\nInput : 6 10 \r\nOutput :2\r\n6 -> 110 (2 set bits, 2 is prime)\r\n10->1010 (2 set bits , 2 is prime)\r\nSo 6,10
```

- Given n lines a land can be split into many areas of different measure(say b). You are provided with a constant K . You have to find whether it is possible to use K areas from the B areas

```
\r\nInput : 2 4\r\nOutput : True\r\nThink of a circle whenever a circle is split by \r\na n line the total number of
```

Total of 30 students moved to the next round.

### Round 2:

It was a group fly round . Me and my friend sat in the same room and were asked to code the following:

- [Rearrange characters in a string such that no two adjacent are same](#)

But I dint use a stack I used hashmap to find the occurrences of the characters. Created a character array traversed the map with an iterator. Filled the character array with elements in odd positions then after all odd positions are filled I filled in the even positions. Used a validate function to check whether the newly generated string has no adjacent characters repeating. If false print no string can be formed else return the string.

- Given a tree and a element K . Find the root-leaf path with a sum equalling K and delete the path.[GeeksforGeeks Link](#)

Total of 10 were shortlisted.

Next was the final round. It was F2F round .

### Round 3:

The interviewer asked me give a brief introduction about me.  
Then he moved on to shoot coding questions at me.

- Find the intersection elements in 2 unsorted arrays. [GeeksforGeeks Link](#)

```
\r\nInput: 5 4 1 3 2\r\n      12 3 15 1 7\r\nOutput: 3 1\r\n
```

Brute force :  $O(n^2)$

so he asked me to code in optimized way.

Gave me three constraints

size of arr1,arr2 is m,n

what to do when  $m < n$ (negligible), $n < m$ , $m$  approx eq to  $n$ ?

I said when  $m$  or  $n$  value is negligible we can sort the array of lesser size and make a binary search

sort takes  $O(n\log n)$  and binary search takes  $O(\log n)$  but as the array size is negligible sorting won't cost much.

when they are equal(or approx) then push all elements to a set then search( $O(\log n)$ ) . Here we dont use sorting since the array size is going to more or less same, we use more space thereby decreasing the time complexity , anyway the searching time is be the same.

- This was an interesting question . Given Air tickets to different cities in the form of a pair of cities where one denotes the source and another tells the destination.Our job is to return a linkedlist indicating the way the travelling should travel in order to cover all the cities.(Linkedlist wasnt mentioned by the interviewer).

```
\r\nInput: (Chennai,Bombay) (Bangalore,Goa) (Agra,Chennai) (Bombay,Bangalore)\r\nOutput Agra->Chennai->Bombay->Ba
```

**Solution :** Put them in a hashmap. Now find the occurrences of all cities. In this we can notice that the source and destination occurs only once in the tickets.Cross check with the original pair list to find which one is the source and which one is the destination. Then with the help of a separate comparator function push the pairs into a new hashmap in such a way that the source of one pair must have been the destination of the previous pair).Then traverse the new hashmap to create a linked list then return it.

The interviewer will also help you if you ask for any approach (but don't ask them for more help.) But if the interviewer intentionally gives a clue then code as he wishes as it is one of their way to test you whether you can adapt to anything approach and code.

Results were out and 8 people got internship.

Luckily I was one among them.

My personal advice: Be confident, Keep your communication skill high , use geeksforgeeks website to learn linked list ,Trees, STL and DP then solve all Company specific questions.

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# Amazon Interview Experience | Set 394 (On-Campus Full Time)

- Difficulty Level : \n[Medium](#)
- Last Updated : \n11 Jul, 2019

Amazon visited my campus in August 2017. Apart from online screening round, there were 4 technical rounds \xe2\x80\x93 3 F2F and 1 telephonic.

The online round was hosted in HackerEarth platform. It had 20 MCQ\x80\x99s of 1 mark each and 0.25 negative mark and 2 coding questions of 10 marks each. The MCQ\x80\x99s was mostly from Data Structures and Operating Systems, and few questions from networking, DBMS and 1 Java question.

## Round 1:

In this round, the interviewer didn\x80\x99t look at my Resume and moved on to technical problems.

1. [Given an array with integers first increasing then decreasing order, you have to search an element in O\(log n\).](#)
2. [Given BST with 2 nodes being swapped with each other, find these 2 nodes.](#)
3. [Reverse singly linked list using both ways](#)\xe2\x80\x93 iterative and recursive.

## Round 2:

Interviewer asked me to introduce myself then to explain one specific project(pointed by him) in detail. Then he asked me 4 questions.

1. Given integer matrix, have to find total connected components, connected in such a way that adjacent numbers should have the absolute difference of 1.
2. [Find next greater element of each element in array](#)
3. Given a graph with edge weights of 1 or 2, have to find minimum distance between a source and destination vertex.
4. Given array having integers showing the burst times of processes, I am given 3 threads to complete all processes and a thread takes exact time to complete a process equal to its burst time, I have to assign some contiguous processes to threads such that maximum among the total time of all threads is minimum.

Example: 9 10 9 8 7 9 then 3 threads can be assigned as (9 10), (9 8), (7 9).

As I had to code the first 3, the interviewer probably noticed me being tired, he only asked me the algorithm for 4th one.

## Round 3:

Here, the interviewer first introduces herself and then asked about me, then told me to explain any one of my projects. After that she asked me few basic computer science questions followed by 2 DS/Algo problems.

1. How are recursion and iteration handled by the compiler.
2. How differently are a linked list and array stored in memory.
3. Difference between multiprocessing and multithreading.
4. All normal forms in DBMS.

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# Amazon Interview Experience | Set 393 (On Campus For Internship)

- Difficulty Level :\n[Easy](#)
- Last Updated :\n07 May, 2021

## Online Coding Round:-\xc2\xa0

There were 2 coding questions and 20 MCQ\xe2\x80\x99s.\xc2\xa0

1. Given an array find all the triplets having their sum of elements less than a given number k.\xc2\xa0  
[GeeksforGeeks Link](#)
2. [Find The N-th Magic Number.](#)

## 1st Interview Round(Face To Face):-

The interviewer was very friendly. He went through my CV and asked me if I had any project. To which I replied no and told him that I am currently on a project, and later I gave him a brief explanation of it. For those who didn\xe2\x80\x99t do any project don\xe2\x80\x99t worry much.\xc2\xa0

He asked me 2 questions\xc2\xa0

1. Generating All the Possible Subsets(Subset Iteration).\xc2\xa0  
[GeeksforGeeks Link](#)
2. Slight Modification of BFS on a grid. I told him my approach, and he was satisfied with that.

After I told my approach for the 2nd question he told me to write a Pseudo Code for BFS in a graph. He was the best interviewer I faced till now.\xc2\xa0

The interview lasted for around 45 mins.

Other people were given questions like\xc2\xa0

1. The middle element in a linked list.\xc2\xa0  
[GeeksforGeeks Link](#)
2. Merge Sort in a Double Linked List.\xc2\xa0  
[GeeksforGeeks Link](#)
3. Merge Two Sorted Arrays.\xc2\xa0  
[GeeksforGeeks Link](#)
4. Given A Binary Tree, For every Leaf Node print sum of the values from the root node to the leaf node.\xc2\xa0  
[GeeksforGeeks Link](#)
5. Quick Sort\xc2\xa0  
[GeeksforGeeks Link](#)
6. LCA in Binary Tree and Binary Search Tree.\xc2\xa0
  - [LCA in Binary Search Tree](#)
  - [LCA in binary tree](#)

## 2nd Interview Round(Face To Face):-\xc2\xa0

This interviewer was also very friendly. He also had a good knowledge of Coding. He asked me how was my previous round, I replied that it went well. And later he asked me what questions I was asked in the previous round. I told him the questions which I was asked in the previous round, and also I explained their solutions.\xc2\xa0

He asked me 2 questions.\xc2\xa0

- Print the Binary Tree in A Spiral Order.  
[GeeksforGeeks Link](#)
- lli stands for long long int in this question.  
He gave me a question in the form of a function. And here goes the question.

## CPP

```
// a1(size1) and a2(size2) are arrays and you
// have to append them.
lli* Append(lli* a1, lli* a2, lli size1, lli size2)
{
    lli i;
    for(i=0; i<size1; i++)
        a1[i] = a1[i];
    for(i=0; i<size2; i++)
        a2[i] = a2[i];
}
```

### Simple But Wrong Solution

## CPP

```
lli* Append(lli* a1, lli* a2, lli size1, lli size2)
{
    lli i;
    for(i=0; i<size1; i++)
        a1[i] = a1[i];
    for(i=0; i<size2; i++)
        a2[i] = a2[i];
}
```

I told him that the above code actually fails. He asked me why it fails. I answered him this way. The array a is actually in the function Append and once you leave the function the scope of this array ends. He asked me how to do it then. I had no idea. Later he told me that we have to allocate memory for the array using malloc. Later on, he explained to me how it works using heap memory.

For my friends, he asked the question in a different way(Merge Two Sorted Arrays).

**Thanks to GeeksForGeeks For my interview preparation.**

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[All Practice Problems for Amazon](#) !

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## Amazon Interview Experience | Set 392 (For SDE 2)

- Difficulty Level :\n[Expert](#)
- Last Updated :\n11 Jul, 2019

Telephonic Round:

1. Question was a little tricky one but finally it was converted to Next greater Element [Next larger element](#)
2. Given a Singly Linked list, Update the second half of the list such that n-th element becomes sum(1st + nth) element, (n-1)st element becomes sum(2nd + n-1st) element and so on.

Eg: 2->3->4->5->6 => 2->3->(4+4)->(5+3)->(6+2)

[GeeksforGeeks Link](#)

Face to Face Interview:

Round 1:

1. Design the payment module of the Uber App.

Round 2:

1. Design Memory Management System and tell about all the data structures you will use and why. How will you allocate and deallocate the memory using those data structure and Time & Space complexity of the operations.
2. Given an array of words, print all anagrams together in the output array.

[GeeksforGeeks Link](#)

Round 3:

1. Discussion about the projects worked in previous company and how did you handle certain situation occurred while working on the project.

Round 4:

1. You are provided with different Excel files and the data format those files contain. You are also provided with low level parser. You have to design a system which takes the excel file and its data type as the input and returns the list of Data objects in the file.

Round 5:

1. Discussion about project in previous company.
2. Design multiplayer generic board game (like chess or ludo)
3. You are provided with 2D char array. You have to provide the 2D char array as response which contains the multiplication od the input array. For eg: input=> {{a,b},{c,d}}, output => {{a,c}, {a,d},{b,c},{b,d}}

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[All Practice Problems for Amazon !](#)

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## Amazon Interview Experience | Set 392 (On Campus for Internship)

- Difficulty Level :[Expert](#)
- Last Updated :[22 Jun, 2020](#)

### Online Coding Round:

The first round was an online round. There were **2 coding questions** (no penalty for wrong submission) and **20 Multiple Choice Questions**(with negative marking). We were given 90 minutes to solve them.

MCQs were based on Data Structures, OS, CN, C outputs, OOP, etc.

The two coding questions were:

- Given a string you have to partition it in such a way that each part of the partitioned string is a palindrome in itself and you have to count the number of such partitions.

```
\r\nInput: NITIN\r\nOutput: 3\r\nExplanation: The 3 possible partitions are N | ITI | N, N | I | T | I | N, NITIN\r\n
```

[GeeksforGeeks Link](#)

- You are given a large paragraph and N words. You have to find a minimum length subparagraph of the paragraph which contains all those N words in any order. Here, the length of a paragraph is the count of words in the paragraph.

### Round 1 (Face to Face):

The interviewer asked me to introduce myself and a brief introduction of the projects that I have done. She first asked me questions related to my project. After that she moved on to the data structures part. The questions were:

- [Merge Sort](#).
- [Given a BST containing distinct integers, and a number \xe2\x80\x98X\xe2\x80\x99, find all pairs of integers in the BST whose sum is equal to \xe2\x80\x98X\xe2\x80\x99.](#)
- [Merge overlapping Intervals](#).

The interviewer asked me to code all the problems on paper and dry run each of them for some test cases.

Some questions asked to other candidates in this round were:

- [Find next greater number with same set of digits](#)
- Given a binary tree, if parent is 0, then left child is 0 and right child is 1. if parent is 1, then left child is 1 and right child is 0. Root of the tree is 0. [Find the kth node value which is present at Nth level](#).

### Round 2 (Face to Face):

The interviewer asked me about how my previous round went. After that, he asked me to introduce myself and a brief introduction of the projects that I have done. He first asked me a few questions related to my project. Then he moved on to the data structures part.

The questions were:

- He asked me about different types of hashing. He then asked me an [alternative](#) and a better way for Linear Chaining.
- [Implement AVL Tree](#).
- [Minimum number of squares whose sum equals to given number n](#).
- [Insertion sort for a singly linked list](#).

For the second question, I told him that I don't remember rotations in an AVL Tree so I won't be able to code it. Also, in this round the interviewer gave me strict time limit for coding the solution on paper for each problem and as soon as I was done coding he gave me 2-3 minutes every time to find errors and debug my code.

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# Amazon Interview Experience | Set 390 (On-Campus)

- Difficulty Level : \n[Easy](#)
- Last Updated : \n11 Jul, 2019

Amazon visited our campus in August 2017. There were 5 rounds \xe2\x80\x93 Aptitude test and 4 Technical rounds.

The aptitude test was an online test hosted in HackerEarth platform. It consisted of 20 MCQ\xe2\x80\x99s of 1 mark each and two coding questions of 100 marks each. Total time was 90 minutes. The MCQ\xe2\x80\x99s were from subjects such as Data Structures, Networks, Operating systems and a few shell command questions. The HR said that there was a separate cutoff for the MCQ\xe2\x80\x99s. The two coding questions were

1. Given a string, find the longest sub-string such that the sub-string has unique letters.  
[GeeksforGeeks Link](#)
2. Given a matrix, find the sum of the sub-matrix between two given points.  
[GeeksforGeeks Link](#)

The results were announced the next day. There were 4 technical rounds:

All rounds had similar questions such as \xe2\x80\x9cTell me about yourself\xe2\x80\x9d, \xe2\x80\x9cWhat do you know about Amazon\xe2\x80\x9d, \xe2\x80\x9cWhy amazon\xe2\x80\x9d, \xe2\x80\x9cDo you have something you want to ask me\xe2\x80\x9d , \xe2\x80\x9cStrengths and weaknesses\xe2\x80\x9d and few other HR questions. The main focus of each round were the problems. First we have to solve the problem and explain our idea to the interviewer, and he may suggest modifications and improvements. After that we have to write the code for the same (on paper). While writing the code take care to not to make too many corrections, start writing the code only after getting a clear idea of what to write.

## Round 1:

1. Given a binary search tree, find the k th smallest element.  
[GeeksforGeeks Link](#)
2. Given a matrix which is sorted both row wise and column wise, search for an element.  
[GeeksforGeeks Link](#)

## Round 2:

1. Given a linked list, find and remove all the loops.  
[GeeksforGeeks Link](#)
2. Construct a minimum spanning tree from a given weighted graph. While solving this I made use of certain \xe2\x80\x9cset\xe2\x80\x9d functions. As I didn\xe2\x80\x99t know syntax of these operations in C++, wherever I had to make use of set functions I wrote a \xe2\x80\x9csudo\xe2\x80\x9d function call. So after writing the code for the question, she asked me to implement the set functions that I had used.  
[GeeksforGeeks Link](#)

## Round 3:

He didn\xe2\x80\x99t give me any problems. The questions were mostly based on an SQL based project that I had done, and on my internship.

## Round 4:

- Given a number, find the next higher number which is a palindrome.

**Example:** if given number is 99 next highest palindromic number is 101, if given number is 72 next highest palindromic number is 77.

[GeeksforGeeks Link](#)

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# Amazon Interview Experience | Set 389 (On -Campus for Full Time)

- Difficulty Level :\n[Hard](#)
- Last Updated :\n11 Jul, 2019

Online Coding Round:

Time: 1.5 hr

Questions Format: 20 MCQs + 2 Coding Questions

MCQs were based on Data Structures, Operating systems etc.

## Coding Questions:

1. [Minimum time required to rot all oranges](#)
2. [Unbounded Knapsack \(Repetition of items allowed\)](#)

Around 25 students were selected from the coding round and were called for further interview rounds.

## Round 1(Face-to-face):

Time: 45 minutes

The interviewer was very cool. He asked me to introduce myself and a brief introduction of the projects that I have done. Then she moved on to the data structures part.

1. [Find height of a special binary tree whose leaf nodes are connected](#)
2. [Maximum sum such that no two elements are adjacent](#)

I was supposed to write the functions in the language of my choosing which take all the input as parameters and return the answer. After the round was done, he insisted on me taking a cookie \xf0\x9f\x98\x9b

## Round 2(Face-to-face):

Time: 1.5 hours

The interviewer was very cool and asked me about how my previous round went. After that, we immediately moved onto data structures part.

1. [Minimum number of bracket reversals needed to make an expression balanced](#)
2. He asked me a question in which I have a 2D array and at every index, either there is a soldier or a mine, I was supposed to find the minimum distance of every soldier from any of the mines, I told him that this type of qs was already asked in the online round, after that he asked me another qs, it was \xe2\x80\x93 [Dynamic Programming | \(Matrix Chain Multiplication\)](#)
3. [Given a binary tree, how do you remove all the half nodes?](#)
4. He asked me to implement all the standard properties of the heap that are \xe2\x80\x9cinsert\xe2\x80\x9d, \xe2\x80\x9cremoval\xe2\x80\x9d, \xe2\x80\x9cdeletion\xe2\x80\x9d and \xe2\x80\x9cupdate\xe2\x80\x9d in an array.  
[GeeksforGeeks Link](#)

## Round 3(Face-to-Face):

Time: 60 minutes

The interviewer asked me to introduce myself, after that he asked me questions regarding OS, DBMS, and CN. we moved onto questions after that. After that, I was asked to explain one of my projects to explain in complete details and also about the problems I faced during the project. Then we moved onto qs.

1. [Convert a given tree to its Sum Tree.](#)
2. [Convert an arbitrary Binary Tree to a tree that holds Children Sum Property](#)
3. [Reverse a Linked List in groups of given size](#)
4. What is the time complexity of binary search, prove it mathematically.

All the students who qualified the round were taken for a semester long internship. Some of us were given a chance to convert our semester long intern to a full-time job through another round.

#### Round 4(Online round/telephonic):

Time: 60 minutes

This round mainly focused on my projects and my team work skills, we discussed my projects for around 45 minutes, after that, we moved to some simple algorithmic question which looked like a formality. I was supposed to code it on collab-edit (online interview platform).

question was \xe2\x80\x93 [Length of the longest substring without repeating characters.](#)

verdict \xe2\x80\x93 selected \xf0\x9f\x99\x82

**A Tip** \xe2\x80\x93 Don\x9t take CS fundamentals for granted, although coding is important, you should also be thorough about OS, DBMS, OOP, and CN.

PS: I have attached the link of all the question in the article. If you don\x9t get anything, you can always ping me. Happy coding and Godspeed.

This article is contributed by [abhinandan mittal](#). If you like GeeksforGeeks and would like to contribute, you can also write an article using [contribute.geeksforgeeks.org](#) or mail your article to contribute@geeksforgeeks.org. See your article appearing on the GeeksforGeeks main page and help other Geeks.

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[All Practice Problems for Amazon !](#)

#### Related Practice Problems

[Rotten Oranges](#)  
[Knapsack with Duplicate Items](#)  
[Stickler Thief](#)  
[Length of the longest substring](#)

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## Amazon Interview Experience | Set 388 (On -Campus for Full Time)

- Difficulty Level :[Easy](#)
- Last Updated :[11 Jul, 2019](#)

### Round 1: Online coding test (90 minutes (HackerEarth))

It had 2 coding questions and 20 MCQs.

1. Knapsack variation(you can choose an item any number of times) [GeeksforGeeks Link](#)
2. Given a 2D array consisting of 0's, 1's and 2's. 1 denotes a fresh apple, 2 denotes a rotten apple and 0 denotes absence of an apple at that position.  
Each rotten apple takes 1 day to make its neighbors (8, given a fresh apple, is already there) rotten as well. Calculate the number of days when all the apples will be rotten. If not, then print the number of apples which will never get rotten.

MCQs included some output based questions in C (5), time complexity (2), data structures (10), OS(2), Java-based output question(1), etc.

### Round 2 (F2F1)

The interviewer was very chilled and asked me to introduce myself, then he asked me to explain any of my projects. He then asked me two questions:

1. Given a special binary tree, find the height of the tree.  
Specialty: each leaf is connected to the next leaf(left to right) in a circular doubly linkedlist fashion.  
fashion. Let's say the 2 consecutive leaves are A and B, so, A->right = B and B->left = A. The leftmost leaf's left points to the rightmost leaf and the rightmost leaf's right points to the leftmost leaf.  
Expected time complexity = O(n), space complexity = O(1).  
[GeeksforGeeks Link](#)
2. [Flip maximum k bits to find the maximize the number of consecutive 1's in a binary array.](#)  
Expected time complexity = O(n), space complexity = O(1).

### Round 2 (F2F2)

He started with a description of my projects and then he asked me several questions, majorly:

1. Next permutation of a given string(can contain duplicates). (Write complete code including swap, reverse etc).  
[GeeksforGeeks Link](#)
2. Find the mirror of a tree in which each node can have any number of children. (Write complete code)  
[GeeksforGeeks Link](#)
3. Boundary order traversal.  
[GeeksforGeeks Link](#)
4. Check if the given 2 nodes are cousins or not.  
[GeeksforGeeks Link](#)
5. Check whether a given tree is a summation tree or not. (Any node's value = sum of all its children's value).  
[GeeksforGeeks Link](#)

### Round 3 (F2F3)

She started with a description of my projects and then he asked me several questions, majorly:

1. Difference between recursion and iteration(slightly long discussion).
2. Difference between array, linkedlist and trees.  
[GeeksforGeeks Link](#)
3. Discussion on all O(n log n) sorting algorithms.
4. Sort an array consisting of 0, 1, and 2's only in one pass.  
[GeeksforGeeks Link](#)
5. Given 2 arrays which denote the elements to be inserted in two separate binary search trees. Find whether the two binary search trees will be same or not, without actually constructing the tree.  
[GeeksforGeeks Link](#)

\r\n            Eg: 2 3 1\r\n            2 1 3\r\n \r\n            Ans = Yes.\r\n            Eg. 1 2 3\r\n \r\n            3 2 1\r\n \r\n

6. Normal forms in DBMS.
7. Difference between threads and processes. Also, between multi threading and multi processing.
8. Return a random node from a given binary search tree and also find the k-th smallest value in the tree(can change the structure)  
[GeeksforGeeks Link](#)
9. Spiral order traversal in a square matrix.  
[GeeksforGeeks Link](#)
10. Find an element in a sorted, rotated array. Expected time complexity = O(log n).  
[GeeksforGeeks Link](#)

### Round 4 (Telephonic + screen share)

He also started with a description of my projects. Then he just asked one question.

1. Given an array, find the number of inversions in the array.[GeeksforGeeks Link](#)

The call quality and the internet connection was poor. I wasn't able to explain my solution(recursive) on the phone call. Then I wrote the code on the shared screen. He asked me to dry run it on a case. Just when I was about to dry run I encountered a 502 Bad Gateway error. Nevertheless, he could still see my code and asked me questions on some of the things in my code like the use of `c` instead of `c` & `d` and declaration of array like `int temp[n]` and not using `malloc` (Specifically: why `malloc`, if you can declare an array like this?). Later, I could not hear him properly so he decided to end the interview here itself.

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#### Related Practice Problems

[Maximize Number of 1's](#)

[All Practice Problems for Amazon !](#)

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# Amazon Interview Experience | Set 387 (On -Campus for Full Time)

- Difficulty Level :\n[Hard](#)
- Last Updated :\n11 Jul, 2019

## Round \xe2\x80\x93 1:

The first round had 20 Aptitude MCQs (20 min) and 15 Technical MCQs (15 min) with +1 and -0.25 marking schemes. The MCQs covered topics included \xe2\x80\x93 DSA, Operating Systems, C, C++, Java basics. After this, there were 2 coding questions (45 min). Minimum cut off was set for each section. One question was of the Game Theory and other was of Dynamic Programming.

Questions in The Coding Round: \xe2\x80\x93

Q1) Given two players A and B and some positive numbers in an array, each player will play a game by choosing a positive difference of two numbers such that the number doesn\x9t exist in the array and place that number in the array. If he is unable to find such a difference then he loses. Each player will play optimally so as the other player is not able to find two numbers such that their difference doesn\x9t exist in the array.

Q2) Given a string containing only lowercase alphabets, you have to convert it into a string such that it contains all vowels by doing the minimum number of operations. In one operation, you could select a substring always starting from index 0, and move that substring up or down (any number of times). Following examples are treated as 1 operation.

For Ex:- input-axzf

Let index chosen to be 0 to 3 and move it up by 2

Output-czbf

For Ex:- input-axze

Let index chosen to be 0 to 2 and move it down by 2

Output-yvxe

12 students were selected from this round out of about 125.

## Round \xe2\x80\x93 2:

My interview lasted for about 20 minutes. I was tested on basic concepts of DSA and OS in this round. My interviewer was very good, he made me feel very comfortable before we got to the actual process of the interview. Firstly, he asked for my introduction and then asked me to write a basic C program on a given series pattern (very easy) followed by questions on Paging, Page Faults, and Stacks.

Q1) Write a code to print the nth element of the given series

1 1 2 4 8 16 32

Q2) What is paging? Why is it done? What are page faults? What are the techniques to resolve page faults?

Q3) Implementation of stacks using arrays.

7 students were selected from this round out.

## Round \xe2\x80\x93 3:

This interview lasted for about half an hour. The interviewer asked me to get comfortable. He asked me about the languages I was comfortable with and then, he asked me questions on the bitwise operator and then asked some puzzles (these were really very tricky). Then he had asked me questions on the linked list and asked me to make my solution more and more efficient (reducing complexity) followed by questions use of maps (STL in C++). Then he asked me how a different site gets loaded into my web browser whenever I search for any of these sites.

Q1) Given a number you have to make it last 4 bits 0 in just a single line code.

Q2) [Given an array of integers you have to find 3 no\xe2\x80\x99s such that sum of two makes the other in minimum time complexity.](#)

Q3) What is the difference between JAVA and C++?

Q4) What is PASS BY VALUE and PASS BY REFERENCE in JAVA and code for the same on the paper.

You can practice some important questions on bitwise operators on

<https://www.geeksforgeeks.org/bitwise-algorithms/>

Also, while preparing for interviews you must also practice some puzzles on

<https://www.geeksforgeeks.org/puzzles/>

3 students were selected from this round out.

#### **Round \xe2\x80\x93 4:**

This interview lasted for about half an hour. As I had mentioned Java in one of my strong subjects so he started from the basics of JAVA like what was the purpose and need for inventing this language. Then he asked me to write a simple program just checking my practice on implementing JAVA and some question of C too. Then he gave me some interesting puzzles like

<https://sbjoshi.wordpress.com/2008/06/04/puzzle-burning-ropes/> was one of them.

Q1) What is the difference between malloc and calloc function in C?

Q2) What are static blocks in java?

Q3) Can the main method be overloaded in JAVA? Why or Why Not?

Q4) How Is JAVA platform independent?

Q5) Is the JVM platform dependent or independent? Why or Why Not?

Only 1 student was selected from this round for an internship at the Hyderabad Office.

The interview experience was quite good and they focused on all the core computer science subjects. Geeks for geeks was a lot of help to me as it helped me in my placement preparation and provided almost all content that was necessary for placement preparation.

This article is contributed by **Varun Goel**. If you like GeeksforGeeks and would like to contribute, you can also write an article using [contribute.geeksforgeeks.org](https://contribute.geeksforgeeks.org) or mail your article to [contribute@geeksforgeeks.org](mailto:contribute@geeksforgeeks.org). See your article appearing on the GeeksforGeeks main page and help other Geeks.

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# Amazon Interview Experience | Set 386 (On Campus for Internship)

- Difficulty Level :\n[Easy](#)
- Last Updated :\n11 Jul, 2019

The first round was an **online round**. There were 2 coding questions and 20 MCQs. The MCQs consisted of both aptitude questions as well as technical questions. The students who did both the coding questions and half of the MCQs were chosen for the interview round. 25 students out of 200 students who gave the online round were selected.

The **first round** of interview was the elimination round. It was a technical round in which the interviewer asked me 3 questions, I had to tell him my approach and code the solution on paper. After all the students were done with the first round, 17 students were selected for the second round of interview. This round was also a technical round, I was asked 3 questions and was told to code them on paper. The interviewer also went through my CV and asked about my projects. He also asked me a few technical concepts based on OS and C++ (after I told him I code in C++). Finally, 11 students were selected for internship, including me \xf0\x9f\x99\x82

The questions asked were of the following topics :

1. [Bit manipulation](#) (2 questions in interview and 1-2 mcqs in online test as well)
2. [BST and Trees](#)
3. OS, networking and output of C programs in online MCQs
4. The coding questions in the online test included a string question and a mathematical question which used concepts of [permutations and combinations](#)

A tip for interviews: If the interviewer asks a question which you don't know, be frank with him and tell him you don't have knowledge about it. This is much better than blurting out irrelevant answers.

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# Amazon Interview Experience | Set 385 (On Campus for Internship)

- Difficulty Level : \n [Hard](#)
- Last Updated : \n 21 Nov, 2019

## Round-1:

**Platform:** Hackerearth

**Time:** 1.5 hrs

The first round was an online coding round and 20 MCQs. MCQs were from general computer science topics like: data structures, algorithms, dbms, puzzles and some questions based on languages C, C++.

Two coding questions were of 100 marks each and mostly based on implementation skills like forming cumulative arrays from both ends of the array, etc.

Suggestion: Have a good command over c++ STL or Collection in Java.

MCQs \xe2\x80\x93 +1 correct answer and -0.5 negative marking.

13 people were shortlisted for the interview rounds.

## Round-2

There were 2 questions.

**First** was a puzzle i.e. You are having n weights in a line eg: 12 13 2 1 6, a man is coming with a basket from behind the first weight. He can't read which weight he is picking as he is illiterate and he can only keep 1 weight in the basket. But he can compare the current weight with the weight in the basket, if it is less or greater or equal and by making some decision he can swap the positions of the two. Initially the basket is empty. Moving from one weight to another adjacent weight takes 1 unit time. The man needs to arrange the weights in descending order in minimum time. And derive the formula for this minimum time taken.

HINT: try first placing the smallest weight to the rightmost while moving right and then placing the largest weight to the leftmost while moving left. Idea: see every time we are decreasing the path length by 2 (1 from both sides ) by placing the smallest and largest at the start and end respectively.

**Second** was an algorithmic question : Trapping Rain Water can be found on geeksforgeeks.

Link: [Trapping Rain Water](#)

## Round-3

3 questions were asked in this interview round.

Suggestion: Try to write clean code with all corner cases handled.

**Question-1:** Interviewer asked me which data structure i liked the most. I said Segment trees. So, I was instructed to write the build function for range sum query in an array of integers.

**Question-2:** [Find the maximum length of the subarray with sum zero in an array of integers.](#)

Subarray with sum zero : is formed when elements repeat in cumulative sum array and maximum length

subarray can be obtained by maintaining first occurrence of the element.

**Question-3:** Find LCA (lowest common ancestor) of two nodes in a binary tree.

[Lowest Common Ancestor in a Binary Tree](#)

I thanks GeeksforGeeks for helping me in my preparations.

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# Amazon interview experience | Set 384 (On-Campus for FTE)

- Difficulty Level :\n[Medium](#)
- Last Updated :\n11 Jul, 2019

## Online Coding Round:

Platform: Hackerearth

Time: 1.5 hr

Questions Format: 20 MCQs + 2 Coding Questions

MCQs were based on Data Structures, OS, Networking, etc.

Coding Questions:

[1\)find maximum j-i such that arr\[j\]>arr\[i\]](#)

Expected time complexity: O(n)

[2\)find maximum of minimum of every window size in the array](#)

Only optimised solution(O(n)) using stack was able to pass all test cases.

Around 37 students were selected from the coding round and were called for further interview rounds.

## Round1(Face-to-face):

Time: 45 minutes

The interviewer was very cool. She asked me to introduce myself and a brief introduction of the projects that I have done. Then she moved on to the data structures part.

One question was that given an array containing the equal number of positive and negative elements, arrange the array such that every positive element is followed by a negative element. I told her the O(n) approach by firstly segregating positive and negative elements with 0 as the pivot and then arranging alternatively. She asked me to write code for that covering all corner cases.

Second question was simple [to reverse linked list in groups of given k size.](#)

She asked me to write code for that.

## Round2(Face-to-face):

Time: 45 minutes

The interviewer was very cool and cooperative. He asked me how my previous round went. Then he moved on to the questions.

One question was simple [to find boundary traversal of binary tree.](#) He asked me to write code for that.

Second question was [find min cost path in matrix.](#) I told him the approach using BFS then finally solved it using recursion with memoization. Then he asked to write my approach on paper. He was very impressed with my performance in this round.

## Round3(Bar-raiser):

Time: 60 minutes

The interviewer was the manager and head of the panelist. He asked me to introduce myself, what

is my favorite subject. He asked me which question I had solved that I found to be hard and what were the problems that came while approaching that question. Then he moved on to the questions.

One question was given an n-ary tree, for every kth level of the tree, print the kth node present at that level on counting from left and if the kth node is not available, then print the last node at that level. I told him the obvious approach using level order traversal. He asked me to write code for that covering all corner cases.

Another question was to buy and sell stock only once. Then he changed the question to [buying and selling multiple times to maximize final profit.](#) He kept on confusing me by modifying the problem constraints. Then he finally accepted my solution and asked me to dry run on that code.

## Round4(Face-to-face):

Time: 1.5 hr

This round was mainly based on problem-solving and various CS subjects like OS, DBMS, OOP, etc. He started the round by asking me to introduce about my project which was an android app. He asked me about the core idea of the app, its layout, etc. He asked me about what I had used for storing various information in the database and I told him that I used MySQL with MySQL statements called from a PHP script using URL encoding mechanism in java. He asked me about the difficulties that I faced during my project and how I had tackled those problems. Then he moved on to the questions.

The statement of one question was similar to [the mobile-keypad problem](#). But there was a slight variation that a dictionary of words was also given along with a number and I had to find all words which are present in a dictionary that can be obtained by pressing this number. I told him the usual approach using backtracking. He asked me to optimize my approach. He gave me a hint that it could be done by using some spaces. Finally I came to the optimized solution by mapping individual letters with digits from which they can be generated by pressing the digit like pressing 2 can generate letters a,b or c so map a,b, and c with 2. Then iterate over every word present in dictionary to find if it is the possible solution or not.

Second question was to [find next higher element in an array for every element](#). I told him the brute-force one of  $O(n^2)$  time complexity. He asked me to optimize that. I tried it using BST but it was not passing all test cases. Then after some hints, I finally came to the solution using the stack.

He asked me to design a class for the tic-tac-toe game where the size of the board given is variable n. I was asked to implement the member function `findWin()` by checking all rows, columns, and diagonals for all 1s or all 0s for any matrix size n.

He asked me questions based on OOP like an abstract class, interface, their differences, etc. and in OS, he asked me about mutex, semaphore, their differences, etc and describe the software life-cycle in detail. Finally, the round ended.

9 students went in the 4th round of which 5 were selected. I was one of them. \xf0\x9f\x99\x82 I thanks GeeksforGeeks for helping me in my preparations.

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[All Practice Problems for Amazon !](#)

### Related Practice Problems

[Maximum of minimum for every window size](#)  
[Positive and negative elements](#)

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# Amazon interview experience | Set 383 (On-Campus for Internship)

- Difficulty Level : \n[Medium](#)
- Last Updated : \n05 Dec, 2018

Amazon visited our campus for internship and placement. The Selection Process starts with an online test comprises of 20 technical questions involving data structures, operating system basic concepts, algorithms and aptitude questions and two coding questions.

## First Round Questions

1. Given an array find all sets of size 3 having sum of elements less than a given number k.  
[GeeksforGeeks Link](#)
2. Find n-th magic number.  
[GeeksforGeeks Link](#)

27 out of 150 were selected for the second round.

## Second round questions.

1. given a BST with additional information at each node howmany nodes in its left subtree and right subtree. find the kth largest element in that tree.  
[GeeksforGeeks Link](#)
2. merge two sorted linked list.  
[GeeksforGeeks Link](#)

15 out of 27 got selected.

## 3rd round questions.

1. Given two rectangles diagonally opposite coordinates. find whether a rectangle is completely overlapping the other or not.  
[GeeksforGeeks Link](#)
2. Given a binary tree create a new tree which is mirror image of that tree.  
[GeeksforGeeks Link](#)
3. Given three consecutive even numbers. prove mathematically that atleast one of them is divisible by 6.  
[GeeksforGeeks Link](#)

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## Related Practice Problems

[Count triplets with sum smaller than X](#)

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## Amazon Interview Experience | Set 382 (On-Campus for Full Time)

- Difficulty Level :[nHard](#)
- Last Updated :[n11 Jul, 2019](#)

The Selection process started with an Online Coding round.

20 MCQ and 2 Coding Questions:

MCQs were from OOPs, OS, DBMS, Networking etc.

Coding Questions:

1. Rotate the given Matrix by a factor k. Input is given as two integers n,m (row and column of the matrix). Followed by n lines with m space separated integers as all the elements of the matrix. Last line has an integer k.

[GeeksforGeeks Link](#)

```
\r\n\r\nInput: \r\nn3 3\r\nn1 2 3\r\nn4 5 6\r\nn7 8 9\r\nn2\r\nn\r\nOutput: \r\nn7 4 1\r\nn8 5 2\r\nn9 6 3\r\nn
```

2. Given a string. Find all the palindromic partitions of the string. (Number of way the string can be partitioned so that all the partitions are palindrome)

[GeeksforGeeks Link](#)

```
\r\n\r\nInput: str = "NITIN"\r\nn\r\nOutput: \r\nn3\r\nnN I T I N\r\nnN ITI N\r\nnNITIN\r\nn
```

### Face2Face (Interview)

Round 1:

He asked coding questions straight away \xe2\x80\x93

1. Add two numbers without using +,- operator, recursion or loop.

Try to think in terms of half adder.

[GeeksforGeeks Link](#)

2. Postfix to prefix without using recursion.

[GeeksforGeeks Link](#)

3. Given an array of numbers. What is the largest no possible by concatenating all the numbers together.

[GeeksforGeeks Link](#)

```
\r\n\r\nInput: \r\nn5\r\nn21 30 1 9 98\r\nn\r\nOutput: \r\nn99830211\r\nn
```

4. Write the heapify code.

Round 2:

1. Level order traversal of a tree. Further he asked to optimise the code.

[GeeksforGeeks Link](#)

2. Given a matrix. \xe2\x80\x93 empty room, \xe2\x80\x93 door, \xe2\x80\x93 wall. For every cell as an empty room find the distance to the nearest door (One cannot go through a wall).

[GeeksforGeeks Link](#)

```
\r\n\r\nInput: \r\nn5 5\r\nn0 0 1 -1 1\r\nn0 -1 0 0 -1\r\nn0 0 -1 0 -1\r\nn1 -1 1 0 0\r\nn0 0 0 0 0\r\nn\r\nOutput
```

The door would be replaced with 0 as the distance to the nearest door would be 0.

I started by a backtracking solution. But the guy didn't know what it was. I gave many more solutions and concluded with an O(N) bfs solution.

Guys answer straight. Do not answer very complex algorithms, even though they are correct. Try to provide as brute-force solution as possible.

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# Amazon Interview Experience | Set 381 (For SDE2)

- Difficulty Level :\n[Hard](#)
- Last Updated :\n11 Jul, 2019

## Telephonic Round :

1. Given a set of packages or jars, with dependencies over each other. Write code to provide ordering, in which these packages should be compiled.
2. Given a number n, write code to count number of palindromes till n. For eg : If n is 10, number of possible palindromes are 11.  
[GeeksforGeeks Link](#)
3. Design a data structure to support insert, delete, search in o(1) time complexity.  
[GeeksforGeeks Link](#)

## Round 1 :

1. Design doctor appointment System.
2. Given a piece of code in java, provide code review comments.

## Round 2 :

1. Explain architecture of project in depth.
2. Given a fully connected graph with n nodes and corresponding values. One node can interact with other node at a time, to replace/ignore/add its value to other node\xe2\x80\x99s value. Assuming this operation takes 1 unit of time, how much time would it take for all the nodes to have value equal to sum of all the nodes.  
Examples : Given a graph with values {1,2,3,4}, find total time it takes, such that all nodes have value as 10.

## Round 3 :

1. Given a sorted string, find number of occurrences of given character in string.  
[GeeksforGeeks Link](#)
2. Given a chessboard, find minimum number of moves for a knight to reach from source to destination.  
[GeeksforGeeks Link](#)

## Round 4 :

1. In depth discussion on all the projects mentioned in resume.

I would like to thanks GeeksForGeeks, for helping me in interviews. If you like GeeksforGeeks and would like to contribute, you can also write an article using [contribute.geeksforgeeks.org](#) or mail your article to [contribute@geeksforgeeks.org](mailto:contribute@geeksforgeeks.org). See your article appearing on the GeeksforGeeks main page and help other Geeks.

Please write comments if you find anything incorrect, or you want to share more information about the topic discussed above.

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## Amazon Interview Experience | 380 (On-Campus)

- Difficulty Level :[Hard](#)
- Last Updated :07 Jan, 2020

### Amazon Interview experience

#### Online Round

Platform: HackerEarth

Format: 20 MCQs, 2 coding questions

Time: 90 minutes

MCQs: Data Structures, Networks, OS, etc.

Q1) [Maximum j such that a\[j\] > a\[i\]](#)

Expected Solution in O(n)

Q2) [Maximum of minimums of every window size](#)

#### PERSONAL INTERVIEW

40 candidates were selected for the PI. 20+ candidates were rejected after first PI. Only 8-9 went till final round. 5 were finally selected.

#### ROUND 1:(45 mins)

Ques 1) [All permutations of a string](#)

Ques 2) [Permutations with duplicates](#)

Ques 3) [Connect nodes at each level in Zig-Zag pattern.](#)

#### ROUND 2:(60 mins)

Ques 1) Given an array of size N, there exist a pattern such that,  $a[i]-M \leq a[i+1] \leq a[i]+M$ . Suggest an algorithm to search for a number in the given array. The solution should be better than O(n).

He gave hints like consider M to be much much less than N, etc. I gave him many approaches but couldn't give him a concrete algorithm. He said we will discuss this later and gave another problem

Ques 2) Imagine a land in a form of grid. There are enemies to the North of the land. And soldiers to the West of the land. Soldiers in the West want to know if there are enemies to the North. So they decide to place mirrors at a 45-degree angle in the grid land. If they place a mirror at (i,j) then they can see the enemies in the jth column. Similarly, they will put mirrors in other places in the grid to view the enemies in other columns. Now it is given that some of the cells of the grid are rocky area and a mirror cannot be placed in those cells.

Example:

\r\n | \r\n Walls | Enemies\r\n \_\_\_\_\_ | \r\n \_ \_ R \_ \r\n \_ \_ \_ \_ \r\n R

In the above solution, / represents a mirror.

Using the above configuration, the soldiers are able to look at the enemies in column 0, 1 and 3.

Note there is no way to see enemies in column 2 as the rocky area will block the vision.

There can be at most one mirror in one row and at most one mirror in each column.

You have to give any one solution that puts the maximum number of useful mirrors possible.

I solved this by first marking out the useless cells. and then placed mirrors in a greedy manner.

Time complexity: O(n\*m)

Ques 3) You have been given a regex and a string. Return true if the string matches the regex and false if not.

The regex has only \* ? and English alphabets.

\* means any character occurring zero or more number of times.

? means any character occurring exactly once.

Example:

\r\nregex: \*aab?c\r\nstring: dbvaabcc\r\noutput: True\r\n\r\nregex: \*c\*\r\nstring: ca\r\noutput: True\r\n\r\nregex: ?c?

I solved this using recursion. Explore all possible paths.

#### ROUND 3:(Bar Raiser) 90 mins

This round was taken by a senior guy. He was very experienced and extremely smart.

He started with my CV. Asked about my internship experience and the project that I did during my internship. My project was on a NoSQL database so questions on them. He asked me to explain why my project was important to the organisation. What all I learnt, etc. He gave me very tricky scenarios and asked me how I would handle those cases in my NoSQL database. How will I protect my database against hackers, etc? Few Distributed System question on Consistency, Availability, etc. The project discussion went on for about 15-20 min.

Ques) He then told me to imagine a large chunk of files with lots of sentences in them. I have to find out programmatically which are the important words in them. Which words convey more meaning?

I gave him few approaches. I kept on saying something or the other. He was fairly satisfied and move on to next question.

Ques) [Stock span problem](#)

He asked me all the possible variations of the above problem.

I kept on giving solutions and he kept on modifying it, putting constraints, etc. He grilled my concepts with this problem.

Ques) You have a large string of 0xe2\x80\x99s and 1\xe2\x80\x99s. Re-arrange the given string according to a formula:  
 $f(i) = f(i-1)*f(i-1) \xe2\x80\x99s f(i-2)*f(i-2)$

$f(1) = 1$  and  $f(2) = 2$  is given.

Therefore,

$f(3) = 2^2 \xe2\x80\x99s$

```
f(4) = 5  
f(5) = 16  
\xe2\x80\x96
```

Arrange in a sequence such that you have f(1) 0\xe2\x80\x99s and f(2) 1\xe2\x80\x99s and again f(3) 0\xe2\x80\x99s and so on. Append the remaining 1\xe2\x80\x99s or 0\xe2\x80\x99s in the end.

```
\r\nExample:\r\nstring: 1011001010011 // 7 1\'s and 6 0\'s\r\noutput: 0110001111100\r\n
```

Do this in-place and in O(n).

He was very satisfied with my elegant code and told me I did well. I was immediately informed that I will have my 4th round shortly.

#### ROUND 4: (50-60 mins)

This round focused mostly on Computer Fundamentals and CS concepts. He did not ask me any DS or Algo question in this round.

He asked me to introduce myself and then asked about my favourite subjects.

He asked me a lot of questions on Exceptions.

1. What are exceptions? How do you use them?
2. What is a Runtime Exception? Give examples.
3. Should we catch a RuntimeException? When? Why? How?
4. The advantage of using exceptions, etc.

He then moved on Threads.

1. What are threads?
2. Threads Vs Process?
3. The advantages of threads?
4. How to synchronize threads?
5. Producer-Consumer design using threads.
6. Thread life cycle
7. How threads communicate?

Asked me to write an Object Oriented code for a Banking application using Threads. Only Deposit, Withdraw and Check Amount feature should be implemented. I told him I don't have these concepts fresh in my mind but he still insisted me to do it.

I was struggling with the code so he told me to leave that and moved on to Computer Networks.

Networks:

1. What is FTP? How is different from Secure FTP?
2. How TCP works? What is 3-way handshaking?
3. What happens when I make a URL request from my web browser?
4. What is a peer to peer network? How does it work?
5. What is scp command in Linux? What does it do?

Few other questions.

I did not perform good in Round 4 and was rejected.

GeeksForGeeks was a great help during my preparation. Thanks to other students for sharing their interview experience. \xf0\x9f\x99\x82

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[All Practice Problems for Amazon !](#)

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# Amazon Interview Experience | 379 (On-Campus for Internship)

- Difficulty Level :  
[Hard](#)
- Last Updated :  
11 Jul, 2019

## Round 1:

The first round had 20 MCQs with +1 and -0.25 marking scheme. The MCQs covered topics like DSA, Operating Systems, Networking, OOAD, Computer Architecture, C, C++, Java basics. There were 2 coding questions each for 10 marks.

- Given a set of 2 alphabets (A, B), find the number of strings of given length that can be formed such that the string contains at least one set of three consecutive B's.

Examples:

```
\r\nInput: 3\r\nOutput: 1\r\n\r\nInput: 4\r\nOutput: 2\r\n
```

- There are n friends who bring gifts to a Halloween party and they exchange their gifts and the array of the number of gifts each person receives is given to you. Check if such an arrangement (array) is possible and if it's possible then, given an arrangement of the same.

Examples:

```
\r\nInput: \r\nn3\r\nn1 1 1\r\nOutput: 2 3 1\r\n
```

26 people were shortlisted for the face to face interview rounds.

## Round 2:

My interview lasted for about 1 hour, 45 minutes; more than expected, generally, it was 30 minutes. We were tested on our DSA in this round. My interviewer was very good, he made me feel very comfortable before we got to the actual process of the interview. He introduced himself, asked for my introduction, gave me a brief introduction on what Amazon actually does, their AWS services, Prime services, Security and Alexa.

The candidates were asked the following questions:

(I was the second last person, so collected questions from friends :P)

- [Find the vertical sum of all nodes in a given binary tree.](#)
- [Find the maximum area under a given histogram.](#)
- [Find the zig-zag traversal of a given binary tree.](#)
- [Find the node value from the end in a given binary tree.](#)
- [Add a node to a given number \(in the form of a singly linked list\) without reversing the linked list.](#)
- [Find a triplet among the given numbers that satisfies a + b = c.](#)
- [Find the largest repeated sub-sequence in a given string.](#)
- [Given an infinitely large array, find the given element.](#)
- [Maximum rain water that can be trapped in the given set of buildings.](#)
- Given an infinitely large array and every element has tags associated with them, and there are about 10,000 tags (say) then sort the given array to get all tag-0's first, tag-

$O(n)$  next and so on in  $O(n)$ .

I got the 10th question, I was asked to approach the problem in as many ways as possible, starting from  $O(n^2)$  solution to  $O(n \log n)$  and finally to  $O(n)$ . I was asked to code the algorithm on paper for any approach the interviewer liked. Finally, after discussing with my interviewer, we came to the conclusion that my algorithm would work. I was asked to pseudo-code the  $O(n)$  algorithm. Then, I was asked to pick a comfortable language (C, C++ or Java). I picked Java, I was asked to code the whole solution on the paper with the proper implementation of all functions. My code's modularity and loop control along with the asymptotic complexity were tested.

I got only one question but the others were tested on 2  $O(n)$  questions, one being hard and the rest being simple.

After this round, 11 people were shortlisted for the next round.

### Round 3:

My interview lasted for about an 1 hour; more than expected, generally, it was 30 minutes. This was the final round. My interviewer asked me to get comfortable. He asked me about my projects, the languages I was comfortable with and about my club activities in the college. Then, we discussed one of my projects for some time. We discussed on Loosely coupled systems and Strongly coupled systems with respect my project. Then he had asked me if I was comfortable with Dynamic Programming, I said that I wasn't very comfortable, so, he asked me if I was comfortable with trees. I said yes; he asked me 2 questions on trees.

1. [Given a binary search tree, find and print all leaf nodes.](#)
2. [Convert a given binary search tree into a doubly linked list without using any additional space.](#)

The same method as in the 2nd round was employed here. I was asked to Pseudo-code the solution and code it in a language of my choice (C, C++, Java). Then, he asked me if I was comfortable with Operating Systems; I said yes. He started with Paging, Fragmentation, Security, Job Processing, Types of OS. He covered almost all concepts of OS. The questions were application based rather than direct topic related.

Finally, 4 people were shortlisted and were given the opportunity to work with Amazon.

This article is contributed by **Tushaar Gangarapu**. If you like GeeksforGeeks and would like to contribute, you can also write an article using [contribute.geeksforgeeks.org](#) or mail your article to contribute@geeksforgeeks.org. See your article appearing on the GeeksforGeeks main page and help other Geeks.

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## Amazon Interview Experience | Set 378 (On-Campus)

- Difficulty Level :[Medium](#)
- Last Updated :[11 Jul, 2019](#)

### Round 1 : Screening

There were 20 questions on OS, DS, CN, Algorithm and 2 coding question

Aptitude question each of 1 mark (0 mark for each wrong answer)

2 Coding question one contained 100 marks and other contained 116.

1. you have give n people position in a row, 1 represents standing and 0 represents sitting, after every hour, the persons whose neighbor was sitting in previous hour will sit in current hour, and rest sitting people will stand., the same process will continue for given hour, For eg, 6 people are there 1 0 1 1 0 0, and after 3 hours it will be 1 0 0 0 0 0.
2. <http://ideone.com/K5FZ9x>

Out off 120 students 14 were selected for interviews.

### Round 2: F2F

2 questions were given,

1. You are given an array of non-negative numbers and target sum, you to find minimum length of subarray whose sum is larger than target.  
**Solution:** [GeeksforGeeks Link](#)
2. [You have given an array with repeating numbers, and a window k less than n, you were suppose to find if there is any repeating element for and ith index,](#) like { 1, 2, 3, 4, 5, 2, 5} and k=2, for i=4, it is true.

### Round 3: F2F

4 questions were given,

1. Find K random elements from N distinct elements such that probability of all remain the same.
2. [HeapSort](#)
3. [Check whether two trees are mirror images of each other or not.](#)
4. [Word Ladder \(Length of shortest chain to reach a target word\)](#)

### Round 4: F2F

1. [What is pointer](#)
2. [How recursion works and how its memory allocation happens.](#)
3. [Given a sorted dictionary of an alien language, find order of characters](#)
4. [Word Ladder \(Length of shortest chain to reach a target word\)](#)
5. [Maximum sum of nodes in Binary tree such that no two are adjacent](#)

### Round 5: F2F

1. [Print a given matrix in spiral form](#)
2. Given an infinite binary stream, you are suppose to on every ith position that whether the number formed till is divisible by 3 or not,

\r\nfor eg. \r\nInput : 0 1 1 0 1 1... \r\nOutput : yes, no, yes, yes, no, yes.. \r\n

**Solution:** [GeeksforGeeks Link](#)

### Tips:-

1. remain Honest with them.
2. tell your approach how you are solving the question.
3. tell them frankly if you do not know some subject, in my case i know only DS and Algorithm and they did not mind

it at all.

#### 4. go through past interview experience on geeksforgeeks

Getting placed in amazon is like a dream come true!!

Thank you geeksforgeeks, for all this, it helped me alot, whatever i have done, i have done it from geeksforgeeks only!!

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## Amazon Interview Experience | Set 377 (On-campus for Full time)

- Difficulty Level :[Hard](#)
- Last Updated :[11 Jul, 2019](#)

Amazon visited my Campus few days back .Here is my interview experience.

There was 1 online round and 3 FTF and a bar raiser.

### Online Round (conducted on Hacker Earth)

20 MCQ questions and 2 Coding Questions

MCQ question-each 1 mark(-0.25 mark for wrong answer)

Coding Questions- each 10 mark

- Given a string you have to partition the string in such a manner that each part of the partitioned string is a palindrome in itself and you have to count the number of such partition.

```
\r\nFor eg: given string NITIN\r\n        N   I T I N\r\n        N I T I N\r\nOutput-3\r\n
```

**Solution:** [GeeksforGeeks Link](#)

- You are given with a large paragraph and N words. You have to find a min length subparagraph of the paragraph which contain all those N words in any order. Here length of a paragraph is the count of words in the paragraph.

### First Technical

- [Smallest window in a string that contains all the characters of another string](#)
- [Implement k queues single array](#)

### Second Technical

We have n machines in which n tasks can run, and we have common cooling time t(in cycles) for all the machines.Certain conditions need to be followed \xe2\x80\x93

- Task can run only on its assigned machine.Each task is assigned its own separate machine.

Eg.Task1 runs on Machine1. Task2 can run on machine2.Task3 on machine3.

Initially all machines are cool and tasks can run on them.

At a time,only 1 task can run on its assigned machine.No 2 tasks can run simultaneously even on their assigned machines.

Machine needs to be cooled for the cooling time period t after its task\xe2\x80\x99s run is over.

Each task takes 1 cycle to run and machine takes t cycles to cool.

We are given an array which contains the order in which tasks are going to run on the machines. So we need to find out how much cycles in total it would take to run those tasks.

```
\r\nEg.\r\nn = 3\r\nnarr[] = {3, 1, 2, 1, 2}\r\nnt = 2(cooling time)\r\nOutput=6\r\n
```

Explanation-

In the start task 3 can run on third machine(T0)

Task 1 runs on first machine(T1)

Task2 on second machine(T2)

Now task 1 waits since cooling time is 2 (T3 gone in waiting)

Task 1 runs now(T4)

Task 2 runs on second machine as cooling time of second machine has passed (T5)

Total cycles consumed to run all tasks =6 cycles

- We are given two unsorted arrays, size can be different we need to swap two elements one from first array and second from second array such that the sum of each individual array becomes equal after swapping.

```
\r\nEg.\r\nn = {4, 3, 5}\r\nn = {9, 1, 6}\r\nOutput-{4, 6}\r\n
```

4 from array a and 6 from array b are swapped to get equal sum of each array as 14.

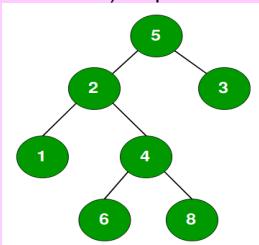
**Solution:** [GeeksforGeeks Link](#)

### Third Technical

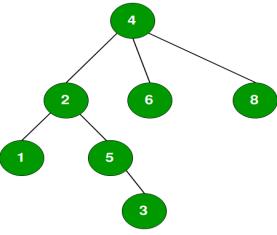
Few questions from my project.Then he asked me about structure of C program.

Page fault and swap space.

- [What is Caching?](#)
- [Implement LRU\(Only logic was asked like which data structures you would use and how\) and then 2 coding questions](#)
- Say you are given a tree and a target node, so we need to restructure the tree when target node becomes the root.(node can have more than 2 child)Keep in mind all the cases.



Eg- target node = 4



4. Count Inversions in running stream of integers.(I gave answer using bst)

Reference: [GeeksforGeeks Link](#)

#### Bar Raiser-

- Given initial capital W and n projects and the capital being used in each and the profit earned from each. You need to select k projects out of these n projects such that at the end your capital is maximised.

```
\r\nEg-\r\nW=3\r\nint capital[] = {9,2,3,1}\r\nint profit[] = {13,5,2,7}\r\nint k = 2\r\noutput- 13\r\nn
```

Explanation- We choose project with capital 1 and new capital becomes(3+7-1=9)

now we choose project with capital 9 and gets profit of 13 so final capital becomes(9+13-9=13)

I gave answer by initially sorting the array according to capital and then selecting those projects which have capital required less than or equal to initial capital and insert them in max heap, after extracting the top node decrease k and my capital would change and now i can insert new projects from remaining in my max heap which have capital required less than or equal to new capital and repeat this step till k becomes 0.

Verdict-SELECTED \xf0\x9f\x98\x80

GEEKSFORGEEEKS, indeed was a great help :D.

Tips-Don't panic ..keep trying different approaches ..they will help you when you are stuck..Try to do as many experiences from geeks.Do all the questions under Amazon tag from geeksforgeeks.

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Please write comments if you find anything incorrect, or you want to share more information about the topic discussed above.

[All Practice Problems for Amazon !](#)

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## Amazon Interview Experience | Set 376 (On Campus for Internship)

- Difficulty Level :[Medium](#)
- Last Updated :11 Jul, 2019

Amazon visited our campus(Jadavpur University) to recruit interns and FTEs. I'm sharing my internship interview experience. There were 3 rounds in all (1 Online Round followed by 2 F2F Interviews).

### Online Round(90 min on Hackerearth):

There were 20 questions mostly based on C, C++, DS, Reasoning and a few from OS, OOPS, DBMS etc and 2 coding questions. The 2 coding questions were:

1. Find the maximum sum of lengths of non-overlapping contiguous subarrays with k as the maximum element.

```
\r\nEx: Array: {2,1,4,9,2,3,8,3,4} and k = 4\r\nAns: 5\r\n{2,1,4} => Length = 3\r\n{3,4} => Length = 2\r\nSo, 3 + 2
```

**Solution:** [GeeksforGeeks Link](#)

2. You are given an array A where A[i] (1-based indexing) denotes the number of chocolates corresponding to each station. When we move from station i to station i+1 we get A[i] chocolates for free. Note that if this number is negative, we lose that many chocolates. We can only move from station i to station i+1 and that too if and only if we have non-negative number of chocolates with us. Given that cost of one chocolate is Rs. P, our task is to find the minimum cost incurred in reaching station n from the first station (station 1).

```
\r\nEx: A: {1,2,3} and P = 10 Ans: 30\r\nTo reach station 1 from the starting station, we need to buy 1 chocolate. To reach station 2, we need to buy 2 chocolates. To reach station 3, we need to buy 3 chocolates.
```

**Solution:** [GeeksforGeeks Link](#)

**Out of around 150 students, 26 were shortlisted for Round 2.**

-> In the 1st question those who used cin/cout instead of printf/scanf got TLE in 20% of test cases.

-> In the 2nd question not a single test case was passed on using int instead of long long int. I wasted about 40 mins on this.

-> Doing MCQ was important. Few students who solved both the coding question but didn't attempt the MCQs were not selected while some who could solve 80% of 1 question(8/10 test cases) and few MCQs were selected.

### Round 2: FTF Interview (Around 30 mins):

1. The interviewer told me to introduce myself.
2. Count all nodes at distance k from a given node in a binary tree. It's very similar to [Print nodes at k distance from a given node](#). Suddenly he went out of the room and came after about 20 mins. By that time I came up with the O(n) solution, I explained it to him with a pseudo code.

Then, he asked me if I had any questions for him.

### Round 3: FTF Interview (Around 45 minutes):

First, the interviewer told me to introduce myself and then asked me the question asked in the 1st round. Then, she asked me about threading. I told her that I haven't studied JAVA well. Thereafter she didn't ask anything related to JAVA.

1. [Search in row and column wise matrix](#) I started with an O(RlogC) solution, she told me to optimize it, after some time I finally gave the O(R+C) solution. She asked me to write the code.
2. A stream of integers are coming you need to keep the track of minimum at any time, which DS would you use? I told her that I simply store the numbers in a vector and keep a variable min and update min whenever required. Then she told me what if you need to find Kth minimum. I told her to explain the question again, then she asked [Kth largest or smallest element in an array](#). We discussed various approach. She asked me to code the Max-heap approach(use of STL was allowed). Then she asked me various questions about heap.
3. How to represent heap efficiently? I told her the array representation, then she asked me to explain the one using pointers. After that, she asked me which one is better and why? I listed various reasons one of which was that array is cache friendly, she asked me to elaborate this. She also asked me few questions on cache.
4. She asked me to explain heap sort in detail.

[GeeksforGeeks Link](#)

We discussed it for about 5 min covering everything in detail. Code was not required.

5. [Connect N ropes with minimum cost](#) Initially my approach was wrong, she showed a case where it failed. After some time I told her O(N\*N) approach which was correct, she asked me to optimize it and told me to think of some DS which I can use. Finally, I came up with the solution using heap, she asked me to code it.

Finally, she asked if I had any questions for her. My experience of this round was very good, the interviewer was very helpful and friendly.

Out of the 26 selected for the interviews, 13 were finally selected for internship.

During my preparation geeksforgeeks, indeed, was a great help. Almost all questions asked in the interview were from geeks. A big thank you to other geeks as well for sharing their interview experiences as going through past experiences was the perfect way to end my preparations.

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## Amazon Interview Experience | Set 375 (On Campus for Internship)

- Difficulty Level :[Hard](#)
- Last Updated :[11 Jul, 2019](#)

Recently, Amazon visited our campus to recruit interns and FTEs. There were 3 rounds in all : 1 Online Round followed by 2 F2F Interviews

### Round 1: Online Round (90 minutes)

There were 2 coding questions and 20 MCQs mostly on Time Complexities (Master Theorem), Logical Reasoning, Data Structures and Algorithms, around 2 from OS, DBMS and Networking each.

The 2 coding questions were:

1. Find the sum of lengths of non-overlapping contiguous subarrays with k as the maximum element.

`\r\nEx: Array: {2,1,4,9,2,3,8,3,4} and k = 4\r\nAns: 5 \r\n{2,1,4} => Length = 3\r\n`

**Solution:** [GeeksforGeeks Link](#)

2. You are given an array A where A[i] (*1-based indexing*) denotes the number of chocolates corresponding to each station. When we move from station i to station i+1 we get A[i] chocolates for free. Note that if this number is negative, we lose that many chocolates. We can only move from station i to station i+1 and that too if and only if we have non-negative number of chocolates with us. Given that cost of one chocolate is Rs. P, our task is to find the minimum cost incurred in reaching station n from the first station (station 1).

**Solution:** [GeeksforGeeks Link](#)

`\r\nEx: A: {1,2,3} and P = 10\r\nAns: 30\r\nTo reach station 1 from the starting station, we need to buy 1 chocolate.`

Out of around 150 students, 26 were shortlisted for Round 2.

### Round 2: FTF Interview (Around 30-40 minutes)

First, the interviewer told me to introduce myself and then asked 3 coding questions:

1. Search for an element in a row-wise and column-wise sorted 2D Matrix  
I started with a O(R\*C) solution, followed it up with an O(RlogC) solution and finally gave the O(R+C) solution.  
**Solution:** [GeeksforGeeks Link](#)
2. Given an array of n elements and a number, find a pair in the array with sum equal to that number.  
This question was followed up with finding a triplet with sum equal to Zero.  
**Solution:** [GeeksforGeeks Link](#)
3. I was provided with a function `int getval(int x)` which basically takes the value of x and returns f(x). Given that f(x) is a monotonically increasing function, my task was to find the smallest value of x such that f(x) > 0.

### Round 3: FTF Interview (Around 30 minutes)

The interviewer once again asked me to introduce myself and asked 3 questions:

1. What is Data Abstraction. Explain it with a real-life example.
2. What are infix and postfix expressions. He then asked me to write a pseudo-code for converting infix expression to postfix expression.  
**Solution:** [GeeksforGeeks Link](#)
3. Multiply 2 numbers without using Multiplication or Division operator, Bitwise operators or any loop.  
**Solution:** [GeeksforGeeks Link](#)

I gave him a recursive approach and he was pretty happy with it

Finally, he asked me if I had any questions for him.

Out of the 26 selected for the interviews, 13 were finally selected for internship.

During my preparation **GEEKSFORGEEKS**, indeed, was a great help. Preparing from articles under DS and Algo section would give anybody a definite chance to clear all rounds. A big thank you to other geeks as well for sharing their interview experiences as going through past experiences was the perfect way to end my preparations.

This article is contributed by **Harsh Modi**. If you like GeeksforGeeks and would like to contribute, you can also write an article using [contribute.geeksforgeeks.org](#) or mail your article to [contribute@geeksforgeeks.org](mailto:contribute@geeksforgeeks.org). See your article appearing on the GeeksforGeeks main page and help other Geeks.

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#### Related Practice Problems

[Chocolate Station](#)

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## Amazon Interview Experience | Set 374 (On-Campus)

- Difficulty Level :[nHard](#)
- Last Updated :[n07 Dec, 2018](#)

### CODING AND APTITUDE ROUND

There were 20 aptitude questions and 2 coding questions.

Aptitude question  $\times 2 \times 80 \times 93$  each of 1 mark (-0.25 mark for wrong answer)

Aptitude question are based on OS, DBMS, Output question on c/c++, and some questions were on time complexity of the given code

Coding question  $\times 2 \times 80 \times 93$  each of 10 mark

- Given a string you have to partition the string in such a manner that each part of the partitioned string is a palindrome in itself and you have to count the number of such partition

\r\nFor eg: given string NITIN\r\n N ITI N\r\n N I T I N\r\n NITIN \r\nSo output will be 3.

**Solution:** [GeeksforGeeks Link](#)

- You are given with a large paragraph and N words.

You have to find a min length subparagraph of the paragraph which contain all those N words in any order. Here length of a paragraph is the count of words in the paragraph.

### FIRST F TO F ROUND

Tell me about yourself (tell them about your projects and all).

Then he asked 2 coding questions:

- Given an array in such a way that first the element stored in array is in increasing order and then reach to a peak element after which elements stored in decreasing order.

Then he asked me to search a given element in this array gave some approach he was satisfied and asked to code I did the same.

**Solution:** [GeeksforGeeks Link](#)

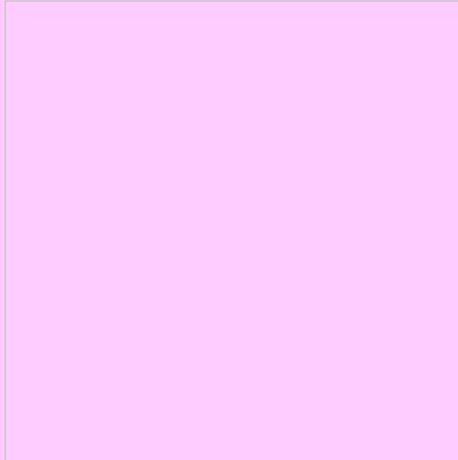
- He asked me to design a snake and ladder game for 2 player and code it.

**Solution:** [GeeksforGeeks Link](#)

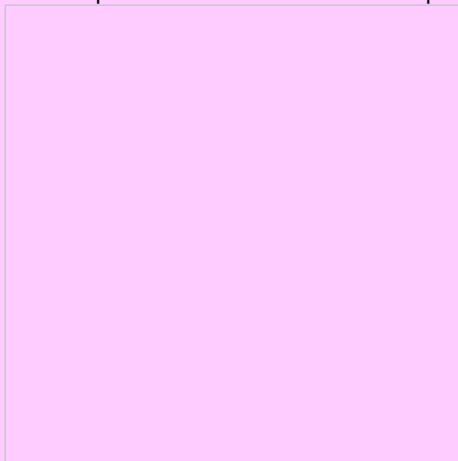
### SECOND F TO F ROUND

First he asked me about my projects in detail. Then he asked 2 coding question

- Print a month of a calendar such that starting day of the month, number of days in a week and number of days in a month is given you can consider it as an alien calendar which can have more than 31 days in a month and more than 7 days in a week like this



- Second question was same as above but print like this



He was satisfied with my approach and code.

### THIRD F TO F ROUND

- Given a string print all the permutations of the string

**Solution:** [GeeksforGeeks Link](#)

- Stream of integer is given, each time when you get an integer you have to print the kth largest integer.

**Solution:** [GeeksforGeeks Link](#)

I gave 2 approach first using insertion sort and a k length array and second using binary min heap of k element he gave some hints also at last he asked me to code I did the same.

### FOURTH F TO F ROUND

- He asked about projects and some question related to OS

- Then he asked given an array of strings in sorted order in some alien language where we don't know the ordering of the alien alphabets form these given strings we have to deduce and print the ordering of all the alphabets.

**Solution:** [GeeksforGeeks Link](#)

I used graph and topological sort he was satisfied and asked me to code I did the same.

- Then he asked given an array of string count the number of anagrams .

**Solution:** [GeeksforGeeks Link](#)

I gave solution for 2 strings then he asked solution for the main problem I was struggling then he helped me and we reached to solution.

### SOME TIPS

- Be confident amazon have amazing interviewers they won't let you feel nervous
- Try to communicate in English don't worry about the fluency.
- Try to improve your problem solving and coding skills
- Don't just mug up or read the solution try to get the concept behind any problem and practice approach building.
- During interview don't jump to the solution direct try to start with brute force and keep talking to interviewer while you are building an approach he will let you know what he wants.
- Listen carefully your interviewer and follow his instruction only and catch his hints also.
- The only thing amazon wants in a candidate is analytical and problem solving skills
- You can use any programming language I used java
- For preparation I used hackerrank, geeks for geeks, and book karumanchi of ds and algo.

NOTE: Please excuse my English

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### Related Practice Problems

[Find the Highest number](#)

[All Practice Problems for Amazon !](#)

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# Amazon Interview Experience | Set 373 (For SDE 2)

- Difficulty Level :\n[Hard](#)
- Last Updated :\n07 Dec, 2018

## Round 1

1. [Trapping rain water](#)
2. [Total number of possible binary search trees with n keys](#) , Just the formula and its derivation was discussed

## Round 2

1. [Majority Element](#)
2. [Boundary traversal of a binary tree](#)

## Round 3

1. Discussion on my project, its design, challenges faced, what important decisions I took that worked and other such behavioural questions.
2. After this discussion, I was given a problem to design Truecaller kind of system

Only these rounds happened on 1<sup>st</sup> day. Later I was called to complete the other 2 rounds

## Round 4

1. Again discussion on my project and behavioural questions around the work
2. Then, a problem was given to design a performance management system (appraisal workflow system) that can be used across companies

## Round 5

1. Discussion on project and behavioural questions
2. Design a backend store system for managing inventory and orders with different pricing structure of items across stores. Focus was on schema and API design along with which parts of the system will be centralised and which will be at store level

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# Amazon Interview Experience | Set 372 (For SDE II)

- Difficulty Level : \n[Medium](#)
- Last Updated : \n11 Jul, 2019

## Round 1 (45 Mins)

Brief description of the current project: Architecture, Technologies, Workflow etc.

1. A 2D array problem(cant remember exactly) but I have to sum up the values on given constraints: He asked to start with basic approach so I gave  $O(n^4)$  time complexity solution then he asked for improvisation, after some workout I came up  $O(n^2)$  time and  $O(n^2)$  space complexity solution. He asked for more optimisation (avoid extra space) but in given time I could not find solution without extra space.
2. Find the difference between sum of values in odd level and sum of values in even level in given binary tree: I explained the approach then he asked me to write code with both recursive and non-recursive approach.

**Solution:** [GeeksforGeeks Link](#)

## Round 2 (50 Mins)

1. Tapping Rain Water problem: I didnt know the classic solution but I came up with my own approach which worked fine.
2. A 2d array with all 1s and 0s where 1s are land and 0s are water, Matrix itself is surrounded with water i.e 0. I gave him  $O(n^2)$  time and  $O(n^2)$  space complexity solution and he accepted.

He asked questions like most challenging task you did in your past experience, I explained him about middlewares I implemented earlier for tracking the exceptions in code.

## Round 3 (written)

I was called in Amazon office after few days (very nice office)

1. Tree traversal with several ways.
2. Few linear array problem

I believe this round was just for warmup.

## Round 4 (45 Mins)

Brief description of current project: this time he was more focused on technologies and tools. He asked every technology I mentioned in deep.

1. Top view of given binary tree.
2. An html format string was given where I have to find output of given queries.  
Ex.

Pratik

Queries would be like: GET name, so output would be Pratik. (something like that)

## Round 5 (Manager)

1. After some formal discussion he came up with his question \xe2\x80\x9cDesign pattern for chess game\xe2\x80\x9d for which I wrote few classes and explained approaches for the game like peer to peer and client-server but he was not satisfied. This round didn\x9t go well.

I could not make it but it was very good experience, All interviewers were so friendly and helpful.

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# Amazon Interview Experience | Set 371 (For SDE-2)

- Difficulty Level :\n[Hard](#)
- Last Updated :\n11 Jul, 2019

Recently I had an interview at amazon for SDE 2 role and here is my experience:

## Round 1:

1. Given a binary tree, print the nodes in zig-zag form.  
**Solution:** [GeeksforGeeks Link](#)
2. Given a binary tree, return the farthermost nodes.  
**Solution:** [GeeksforGeeks Link](#)

## Round 2:

1. Implement meeting booking system like outlook.

## Round 3:

This was bar-raiser round.

1. Millions of words are coming in stream and there is a typo in some words. Assign each words in some cluster which is most closer to the word. Example: iphone, ipone, abiphone, iphoe should be in one cluster.
2. Design Data warehouse placement system.
3. Lots of behavioral questions: why amazon, what is most critical feedback you got from manager, when did you get above and beyond feedback and why.

## Round 4:

1. Detail discussion on project which I have worked on. At each point interviewer was asking why you did this way, why not some other way.
2. Design producer/consumer live and offline video streaming system.
3. Design comment system.

Lots of behavioral questions

## Round 5:

1. Return all the possible decoding of the given digit sequence where 1 denotes a, 2 -> b, 3->c so on. Example: input 121 output \xe2\x80\x98aba\xe2\x80\x99, \xe2\x80\x98la\xe2\x80\x99, \xe2\x80\x98au\xe2\x80\x99.
2. [Maximum of all subarrays of size k](#)

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# Amazon Interview Experience | Set 370 (On Campus for Internship)

- Difficulty Level :\n[Hard](#)
- Last Updated :\n11 Jul, 2019

## Round 1: Online Round(90 minutes)

There were 20 MCQs and two coding questions. MCQs were mostly logical reasoning, running time and DS/Algo. There were also 2-3 OS, 2-3 DBMS and 1 networking MCQ.

2 coding questions-

1. Magic numbers are defined as either powers of 5, or sum of unique powers of 5. Find nth magic number. Eg: 5,25,30,125,130 etc.

**Solution:** [GeeksforGeeks Link](#)

2. Print matrix in diagonal form.

**Solution:** [GeeksforGeeks Link](#)

## Round 2: FTF Interview(Around 1 hr)

First the interviewer told me to introduce myself. After that he asked 2 coding questions.

1. Given a binary tree and a node of that tree, find all nodes at a distance d from the given node. Pointer to root node is given.

I took a lot of time to solve this question. The interviewer found mistakes and told me, and I corrected them or changed my approach slightly. After almost 45 minutes I was able to write the correct code.

**Solution:** [GeeksforGeeks Link](#)

2. Given an array of integers, find the first non-repeating number in the array.

I gave him the hashmap based approach and he told me to write code. I did so. After that, he told me to find the answer in a single linear traversal of the array. I discussed a lot of approaches but none of them were satisfactory. I couldn't come up with the correct approach. (Later on when someone asked him the solution, he said that he himself doesn't know, but maybe a very complex solution exists. I'm still not sure on that. Maybe he just wanted to check how much we can think. :p)

**Solution:** [GeeksforGeeks Link](#)

## <Round 3: FTF Interview(Around 30 minutes)

The interviewer asked me what subjects I like. I told him ds algo but he didn't want to hear that. So he asked what else and I said DBMS. Then he asked me what is a transaction, how is it different from an sql query, what are its properties.

After that he moved on to coding questions. He asked me what data structures or algos I like. I said arrays and graphs. Then he asked these questions.

1. Given a sorted dictionary(array of words) of an alien language, find order of characters in that language. I told him I had seen this question before and told him the approach. He didn't ask me to write the code.

2. How will you find if a cycle exists in a directed graph?

I gave him my approach and wrote the code.

**Solution:** [GeeksforGeeks Link](#)

3. Find the longest palindromic subsequence in a given string.

I tried to solve and told him some approach, even though I knew it was wrong but was hoping

for some hint. After just one or two minutes he said let me change the question.

**Solution:** [GeeksforGeeks Link](#)

4. Given 3 characters a, b, c, find the number of strings of length n that can be formed from these 3 characters given that; we can use \xe2\x80\x98a\xe2\x80\x99 as many times as we want, \xe2\x80\x98b\xe2\x80\x99 maximum once, and \xe2\x80\x98c\xe2\x80\x99 maximum twice.

**Solution:** [GeeksforGeeks Link](#)

I told him the dynamic programming approach and he asked me to code it, so I wrote the code.

After that he said that\x80\x99s all, do you want to ask any questions. \xf0\x9f\x99\x82

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## Related Practice Problems

[Total number of Strings](#)

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# Amazon Interview Experience | Set 369 (On-Campus)

- Difficulty Level : [Medium](#)
- Last Updated : [11 Jul, 2019](#)

Around 600 students gave the test.

## 1. Round 1 : 2 full coding questions+ 20 technical mcqs

This round was an hour long. The first 20 questions were related to data structures, sorting algorithms, computer networks etc. There were no separate sections or times for the mcqs and coding question.

1. Count and print all the duplicate elements in an array.

**Solution:** [GeeksforGeeks Link](#)

2. Merge 2 arrays in non-ascending orders. The original arrays had same size and were in non-ascending orders. (Non-ascending order simply means descending order) I used simple brute force method for the first one and all test cases passed.

**Solution:** [GeeksforGeeks Link](#)

## 2. Round 2 : Written Coding Test (3 questions)

140 students were selected for 2nd round. Students were divided into batches of 10 and were given 1 question of full coding, 1 question to determine all possible test cases and 1 question to identify the given algorithm and debug the same. All batches were given different questions. The following questions were given to me-

1. WAF to swap kth element from front and back in linked list. I used the most basic method in which, I traversed through list and identified nodes to be swapped, then simply swapped the nodes. The panel present during the test was very helpful and was providing assistance in case any student had any doubts. I discussed my approach with them, they said I can reduce the complexity further but the solution I gave was also acceptable. I decided to come back to this question once I was done with the other questions.

**Solution:** [GeeksforGeeks Link](#)

2. Given are 2 linked list which store digits of two numbers, add the two numbers. Determine test cases for this question. (cases having carry, no carry, negative number etc)

**Solution:** [GeeksforGeeks Link](#)

3. Identify the algorithm and rectify the error.

The code given was to check whether given binary tree is a binary search tree or not. The conditions in if statements were incorrect, we had to identify and correct them.

I didn't get time to optimize my first code. They took all our fair as well as rough sheets

## 3. Round 3: Technical Interview(2 coding questions)

Around 50 students were shortlisted for technical interview. The interviewer asked for my resume and asked me about one of my project works. Then he moved on to asking programs.

1. Determine the row index with minimum number of ones. The given 2D matrix has only zeroes and ones and also the matrix is sorted row wise. I could come up with solution with time complexity N square. He gave me hints to traverse in different manner(diagonally) and asked

me to keep a broad perspective while thinking for the solution. I tried for some more time but failed, then he moved on to the next question.

**Solution:** [GeeksforGeeks Link](#)

- Given a binary tree and 2 nodes. To find whether the 2 nodes are cousins or not. I came up with a solution using recursion. He was satisfied with my approach.

**Solution:** [GeeksforGeeks Link](#)

My friends got questions like bottom view of tree, best technique to sort first 5 elements of array with 1 million elements(brute force), mostly questions related to trees were asked. After the 2 questions he asked if I had any questions for him. I asked him how I had performed in this round. He gave a smirk and replied, "The HR will tell you." Then I asked him if it was allowed to change domain in Amazon to which he replied, "Yes, but only once you are permanently hired, not as an intern." This round was 1.5 hours long.

#### 4. Round 4: Last round Troubleshooting and Debugging Round

- In this round the interviewer gave me a scenario where a user is using an application and the application suddenly crashes, what would you do if you were a tester. She wanted to hear terms like "test cases", "testing" etc in my answer. This was a tech cum HR round, where I got to talk most of the time. This round was 45 minutes long.

After this we were asked to go home and wait for a text message from Amazon, in case we get selected.

GEEKSFORGEEKS, indeed was a great help. Prepare all questions under Amazon tag from geeksforgeeks, you stand a cent percent chance of getting hired.

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#### Related Practice Problems

[Row with minimum number of 1's](#)

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# Amazon Interview Experience | Set 368 (Phone and Onsite)

- Difficulty Level :\n[Hard](#)
- Last Updated :\n10 Dec, 2018

## Phone interview

1. Deep copy of linked list

## Onsite interview

1. Question on map reduce, find if all words in a file are palindrome
2. Design Elevator with OOPS concept
3. [Design Twitter](#)
4. Problem related to amazon
5. Compare two expressions and check if they are similar. for example -(a+b+b) = -a-c-b

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## Related Practice Problems

[Similar expressions](#)

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# Amazon Interview Experience | Set 367 (On-Campus for Internship)

- Difficulty Level :\n[Easy](#)
- Last Updated :\n11 Jul, 2019

## 1st ROUND(Online Round :90 min)

There were 20 aptitude questions based on C, DS, OS, OOPS, and 2 coding questions.  
Coding Questions:

1. [Find nth Magic Number](#)
2. [Count triplets with sum smaller than a given value](#)

Since coding questions were easy those who completed both coding questions and some aptitude questions were selected.

Total 19 students were selected from this round.

## 2nd ROUND (TECHNICAL INTERVIEW :Around 1 hour)

First he asked me a genuine question : \xe2\x80\x9ctell me about yourself\xe2\x80\x9d.

1. Find the intersection of two arrays .Initially i told him to use c++ map to hash, immediately he asked me to implement your own defined map,I was a little confused then he asked me to use hashmap and finally i solved this one.Interviewer was very co-operative.

**Solution:** [GeeksforGeeks Link](#)

2. Given a binary tree,print the nodes in spiral form.I solved this one immediately using two stacks, he was much impressed and told me to wait for next round.

**Solution:** [Level order traversal in a spiral form](#)

Total 6 students were selected for next round.

## 3rd ROUND (TECHNICAL INTERVIEW : Around 30 min)

The interviewer was very cool. He immediately asked me questions:

1. Find the rotation point in a rotated sorted array.It was a stright forward question on binary search.  
**Solution:** [Find the Rotation Count in Rotated Sorted array](#)
2. Given a linked list separate even and odd numbered nodes such that even numbered nodes are at the front of the list and in order followed by odd numbered nodes. Since it was also a straight forward question. I explained two approaches and he was satisfied and asked me to code it.

**Solution:** [Segregate even and odd elements in Linked list](#)

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### Related Practice Problems

[Count triplets with sum smaller than X](#)

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# Amazon Interview Experience | Set 266 (SDE 2)

- Difficulty Level :\n[Hard](#)
- Last Updated :\n11 Jul, 2019

I recently had an interview at amazon for SDE2 role. I am here to share my experience :

## Telephonic :

1. You are given a string and hashmap. replace all characters that are present in hashmap with hash value and generate all possible combinations.
2. [Given a tree, print all cousins of node that is given as input.](#)

## Round 1

Interviewer was really nice guy, he was helpful and gave hints while solving

1. [Implement LRU](#) \xe2\x80\x93 time 45 min as 15 min were left, so he asked one more ques and said we wont code for it.
2. Given an unsorted array, get the median of array. \xe2\x80\x93 this has to be done in O(n). We had discussion on this i tried all DS to look for solution, he gave me hint that i can sort, so i came up with solution in which i used optimized quick sort and i was also asked to code in last 3 min.

**Solution:** [GeeksforGeeks Link](#)

## Round 2

1. He asked me to [design Parking Lot](#).
2. He asked me to code [zig-zag printing of binary tree](#).

we also had discussion on challenges of my past experiences.

## Round 3

This was bar-raiser, i got to know after the round.

1. He asked me about my experience and background and asked some tricky questions on leadership.
2. Asked me to design the flight system with src, destination and no of hops. (i coded 3.5 pages of solution :))
3. Why you want to join amazon ?
4. How will optimise the performance and check for leaks ?

## Round 4

This guy was very smart, he pin points anything that i say and marks it.  
discussion about my background.

1. Why did you shutdown your company ?
2. why amazon ?
3. Tell me about your failures ?
4. Tell me about your project with max technical difficulty ?
5. How will optimise any system ?
6. Design a Railway system \xe2\x80\x93 it was very lengthy stuff, i coded around 5 pages.

## Round 5

1. You have a tree, find the minimum length from input node to leaf.

**Solution:** [GeeksforGeeks Link](#)

Happy to receive the offer and join here! :)

[All Practice Problems for Amazon !](#)

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# Amazon Interview Experience | Set 265 (For Internship)

- Difficulty Level :\n[Hard](#)
- Last Updated :\n11 Jul, 2019

Let me discuss each round in detail.

## APTITUDE ROUND

There were 20 aptitude questions and 2 coding question

**Aptitude question \xe2\x80\x93 each of 1 mark (-0.25 mark for each wrong answer)**

**Coding question \xe2\x80\x93 each of 10 mark**

Since, Coding questions had more weight-age, so I started with coding questions. I attempted only one coding question and there I could pass only 2 test cases (received 4 marks). And then I moved to aptitude part. There, I attempted 13 questions.

With God grace, I got my name in the extended list.

## INTERVIEW ROUND

There were 4 interview round. Each round took by different people and 2 questions were asked in each. I am going to tell you about each round in detail.

### ROUND 1

First question was \xe2\x80\x98Tell me about yourself?\xe2\x80\x99. I told her about projects like what I learnt from it, what difficulties I faced, my hobbies and what I am looking for in future.

After that, two more Questions that were asked:

- Given an array consisted of both positive and negative integers. The task was to put positive and negative elements alternatively and efficiently.

*I told her 2 approach. The best approach was asked to code (in any language). I coded it.*

**Solution:** [GeeksforGeeks Link](#)

- Given arrival and departure times of Train. The task was to find out minimum number of platform needed.

*I did this question even earlier. I told her my approach and coded the same.*

**Solution:** [GeeksforGeeks Link](#)

### ROUND 2

Two Questions that were asked:

- Given a complex weighted directed graph. Each weight represents the cost of transaction and each edge represents the transaction. The task was to minimize the graph and find out the minimum cash flow.

*I gave him one approach using hash map and coded the same.*

**Solution:** [GeeksforGeeks Link](#)

- Given an integer and decoding mechanism (like 1- A, 2-B\xe2\x80\x98xa6\xe2\x80\x99-Z). The task was to find out all the possible decoding of integer.

*I applied dynamic programming approach and coded the same.*

**Solution:** [GeeksforGeeks Link](#)

### ROUND 3

He asked me to tell about my projects. I wrote three projects in my Resume. I discussed them. Then he gave me some situation and asked how your project would solve this scenario.

After that, two more Questions that were asked:

- Given an Amazon Store House where every products were stored like pens, balls etc. Also the condition was that items can be sold in bundles like 2, 3, 5, 7 etc. The task was that how I can sell those products if some order like 10 pens has come. It was asked to solve it in an efficient manner.

*I tried it using dynamic programming and solved it correctly. But interviewer replied \xe2\x80\x9cNo, you cannot apply dynamic programming here as you need to find the solution for all the products and serve all the customer. Think of some other approach like using data structure\xe2\x80\x9d.*

*Then I thought of another approach and that worked for me.*

- Given a BST and number K (which is one of those BST). The task was to find out the closest value to K.

*The solution was very easy. I did this with inorder traversal and picked the adjacent values to K which has minimum difference with K. I coded the same..*

**Solution:** [GeeksforGeeks Link](#)

## ROUND 4

Here again, I was asked to tell about my projects. Some questions related to them were also asked.

After that, only one question was asked:

- Given a room, where N number of person are present and some comparison among them (like A>B, B>C, B<D etc). The task was to find out the greatest among them.

*I solved it first using dynamic programming approach but its\xe2\x80\x99 time complexity was O(n<sup>2</sup>). So I was asked to find out another approach. I tried it with two other approaches. The last one was asked to code. I used hash map for the input.*

Interviewer seems to me that he was satisfied with the approaches and code I gave. May be, he didn\xe2\x80\x99t ask the second question because of this.

## MY SUGGESTION

I would suggest the following things to follow:

- Be confident and keep on trying to solve the question however it is tough. Because they\xe2\x80\x99re looking for your analytical and problem solving ability rather than solved problem.
- Keep on telling about the approaches that are coming in your mind at the instant. Interviewer may help you to let you know where you\xe2\x80\x99re wrong (as happened in my case).
- Keep on explaining while you\xe2\x80\x99re finding the time complexity of the problem.
- Be sure that your communication medium is English in interview.
- Practice the coding (coding not pseudo code) on paper and dry run. Otherwise, you may not be able to write it there.

\xe2\x80\x99ve been selected in Amazon with God grace.

**Rohit Kesarwani**

[All Practice Problems for Amazon !](#)

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# Amazon Interview Experience | Set 364 (On-Campus)

- Difficulty Level : \n[Hard](#)
- Last Updated : \n27 Apr, 2021

In my college, we 250 students have attended Amazon interview, and from that 16 among us are selected for the internship.\xc2\xao

## 1st round: Online test: 2 \xe2\x80\x93 coding questions\xc2\xao

We were given 1.30 hrs to complete it\xc2\xao  
\xc2\xao

1. Merge two sorted arrays\xc2\xao  
[GeeksforGeeks Link](#)
2. Find the element which is repeated more than twice in given array\xc2\xao  
[GeeksforGeeks Link](#)

20 MCQ questions based on data structures\xc2\xao

## 2nd round : written test \xe2\x80\x93 2 programs\xc2\xao

we were given 1.15 hr to solve it. and it was correct and marks were given separately by all judges. Among them nearly 30 are selected for next round.for the second problem they have expected for dynamic programming solution.\xc2\xao  
\xc2\xao

1. Given an array, arrange it in such a way that odd elements occupy the odd positions and even elements occupy the even positions.\xc2\xao  
[GeeksforGeeks Link](#)
2. Convert the given string into palindrome by removing minimum number of characters.\xc2\xao  
[GeeksforGeeks Link](#)

## 3rd round: written test: 2 programs\xc2\xao

Here we were given 1 hr and a HR will be present to whom we must explain our answer and satisfy his expectations.\xc2\xao  
\xc2\xao

1. find the next largest number by using the same digits in the given number.\xc2\xao  
[GeeksforGeeks Link](#)
2. given a matrix , sorted row wise , find the common element among all the rows.\xc2\xao  
[GeeksforGeeks Link](#)

## 4th round: Technical hr:\xc2\xao

I was selected for next round for QAE and they asked me several questions. We must answer all the questions by considering the practical scenarios and presence of mind is important.Even if u doesnt know the correct answer, try to compromise them with ur smartness.\xc2\xao  
\xc2\xao

1. Write testcases for frequently bought items in amazon.com
2. write usecases for temperature sensing application
3. write a linux command for deleting all the files contains
4. Troubleshoot: in amazon.com a person X has ordered for 10 items.oly 2 among them were delivered to X.but it is showing in amazon\xe2\x80\x93 mobile app, as all 10 items are delivered.at the same ti,e it shows the correct status in amazon\xe2\x80\x93 mobile app, as all 10 items are delivered.at the same ti,e it shows the correct status in amazon\xe2\x80\x93 mobile app

website\xe2\x80\xa6.find why??

### 5th round: Technical Hr with Hiring manager:\xc2\xa0

In this round he ll question u technically, but he ll check ur way of answering and attitude.He ll just check whether u ll be suitable for that position.Ur knowledge doesnt matter here..Ur attitude speaks.\xc2\xa0

\xc2\xa0

1. Validate the cancel order option in amazon.com
2. Draw the flow diagram of your project and explain it briefly.
3. How will you provide security for your project.and many questions related to my project.
4. troubleshoot : you are unable to see the latest details in ur mobile app.it still shows the old details.What are all the reasons?
5. troubleshoot: what all the things u ll do , if u couldn\xe2\x80\x99t open ur mobile app?

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\xc2\xa0

### [All Practice Problems for Amazon !\xc2\xa0](#)

\xc2\xa0

Related Practice Problems[Even and odd elements at even and odd positions](#)

\xc2\xa0

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# Amazon Interview Experience | Set 363 (On-Campus for Internship)

- Difficulty Level : \n[Medium](#)
- Last Updated : \n11 Jul, 2019

## Round 1:online Test(90 min)

20 MCQs

-15 Technical(DS,OS,NETWORK,PCD)

-5 Aptitude

2 Coding Questions

1. Finding duplicates in the given array, change that to 1, move all the 1\xe2\x80\x99s to the right side and the other elements are moved to right
2. Pair sum count(to find the number of pairs present in the given array whose sum is also present in the array)

**Solution:** [GeeksforGeeks Link](#)

## Round 2:coding in paper 2 coding questions(60 min)

1. [To find the diameter of a binary tree](#)
2. [Given a linked list, write a function to reverse every k nodes \(where k is an input to the function\).](#)

## Round 3:Technical HR 1

1. Project Explanation(Basic Details is enough)
2. Data Structure questions

Solving 2 Coding questions

- [To construct a binary tree from inorder and post order traversals](#)
- [To find the Least Common Ancestor of a binary tree](#)

## Round 4:Technical HR 2

1. Project Explanation(hardcore details)
2. JVM,JRE
3. Operating Systems
4. Compiler Design
5. To draw automata for given questions
6. OOPS
7. Basics in Network
8. Testing Questions
9. Design Patterns
10. drawing design pattern for the project done
11. Why Amazon?
12. Any Questions from me(HR)?

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## Amazon Interview Experience | Set 362

- Difficulty Level :\nEasy
- Last Updated :\n11 Jul, 2019

### 1st round( written)

They asked to write 3 code in 1 hour.

1. Write code to find the diameter of tree.
2. Search an element in rotated sorted array in optimized way.
3. Given an array of size n and an integer k, return the count of distinct numbers in all windows of size k.

I have written all 3 code in 1 hour and i asked to wait for 2nd round. they provide food coupon for lunch and resume interview at 2 p.m.

### 2nd round only 2 questions he asked.

1. Count minimum days to rotten orange.

I have given this approach and write the code for it.. but there was some mistake in my code so he rectify it.

They need proper code no pseudo is worked for them.

He had given me 15 minutes to write the code.

2. Merge K sorted arrays in optimized way.

I know the solution , but could not implement at that time. Min heap is the solution.

I have given the simple approach to put them in one large array and apply merge sort.

one more solution I have given i will make binary search tree of all the elements and print the inorder of the tree ( i had written this proper working code )

This round went for about 1 hour. The concerned person told me HR will get back to you.

Geeksforgeeks very helpful for this experience. Do always share your interview experience it will help other geeks.

Geeksforgeeks has given me confidence to crack the interview.

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# Amazon Interview Experience | Set 361

- Difficulty Level :\n[Hard](#)
- Last Updated :\n11 Jul, 2019

## Round 1 :

1. Given 2 array of size m , n , find the pair from diff array with minimum difference  
**Solution:** [GeeksforGeeks Link](#)
2. Given the dialer of a feature phone and a dictionary of words , find the string suggestions after dialing n numbers.
3. Verify if the Tree validates the definition parent\_node.data = left\_node.data + right\_node.data.  
**Solution:** [GeeksforGeeks Link](#)

## Round 2 :

1. How to handle server scaling up to sudden increased of request?
2. How to handle scaling the data?
3. [Design BookMyShow tables](#) .

## Round 3 :

1. Given an array of Strings , not necessarily in any order , find out if the string create a chain , such that first last char of a string is the first character of another and thus making a chain including at least all string.  
**Solution:** [GeeksforGeeks Link](#)
2. Given a party with n people , a given function Knows() , such that **A knows B : true** if a knows B. A Celebrity would be a person who knows no one but is known by all.

Find out the celebrity if he exists in the party. I would like the mail id to be kept confidential.

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# Amazon Interview Experience | Set 360 (On-Campus)

- Difficulty Level : \n[Expert](#)
- Last Updated : \n10 Jul, 2019

## Round 1: (Online Test)

Time: 1hr 30 mins on HackerEarth Platform  
 20 MCQ (Gen Apti, OS, TOC, Networks and DS)  
 Coding:

1. Maximum non adjacent subsequence  
[GeeksforGeeks Link](#)
2. Profit sort (Find no. of elements in the given range)

## Round 2: (Problem Solving Round)

1. [Vertical Sum of Binary Tree.](#)  
 Discussion about various data structures that can be used. Finally came up with hash map.
2. [Width of Binary Tree](#)
3. [How map is internally stored in C++?](#)
4. If N students in a class play a game against each other where each student plays against all other students in the class, find the total number of matches to be conducted.  
 Also, if the class leader has to arrange the students in a line where each student would have lost the match with the student in front of him (Remember: student may or may not have won the match with the student front of front of him). Design a suitable data structure for maintaining such an order.

## Round 3: (Data Structures and Algorithms Round)

1. Project Discussion
2. There are various libraries that a Kindle app may use. All these libraries must be linked appropriately to be included in Kindle. There will be dependencies between the libraries. Apply a suitable data structure such that a library cannot be added before its dependencies. I discussed a topological sort approach. Finally wrote code and tested the same.
3. Discussion about second coding question asked in the online test. I was asked to bring up a better solution, given, that I can use extra space. I proposed an approach based on hashing and counting sort.
4. Threads vs Process. They were impressed because I explained with a real-time example
5. How the Program is stored in memory? Stack frame for Program?
6. When two threads access a code at the same time, what happens. How is it prevented?
7. [Difference between mutex and semaphore.](#)
8. Priority Inheritance and Priority Inversion.

## Round 4: (CS Fundamentals)

1. Tell me about yourself
2. Design a music player application  
 I was asked to first list out all possible features to be added within 2mins time. I came up with around 30 features. The interviewer selected a few of those features and asked to draw a class diagram for the same.
3. I have a DB of some size as of now. In future new DB with additional space will be added. How

- will the DB be modified? What to modify? How to scale it?
4. Distributed computing concepts
  5. [Multiple partitions in OS](#)
  6. [MVC design pattern](#)
  7. My costliest mistake in life
  8. Asked something interesting about myself that others don't have.
  9. Whether I like back-end or front end. Reason out.

### Round 5: (Bar Raiser Round)

1. Project Discussion
2. There are k stars in the space and an origin star, find the nearest 100 stars from the origin star.  
I came up with brute force approach first.  
Later devised a max heap solution and coded the same
3. Virtual Machine
4. About AWS, S3
5. Design Patterns. Asked to implement Singleton Design Pattern in Java
6. Scheduling Algorithms. Which scheduling algorithm does modern operating systems use?
7. Strength and weakness
8. Latest technical knowledge that I gained. Recent technical article that I read.
9. Maximum amount of code that I had ever written in college.
10. Any Questions from my side?

I was one among the three to be selected from my college for Full Time SDE at Amazon

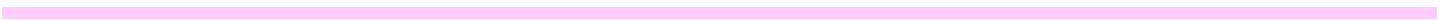
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# Amazon Interview Experience | Set 359 (On-Campus)

- Difficulty Level : \n [Expert](#)
- Last Updated : \n 10 Jul, 2019

20 MCQs mixed with simple Quants, logical, other Technical CS concepts (TOC, DS, DBMS, NETWORKS)

2 Programming questions (I solved both)

## 1. [Maximum Non-Adjacent Subsequence](#)

Use max (previous element\(\times 2\)\(\times 80\)\(\times 99s\) exclusive + arr[i]) idea. See Geeks For Geeks or Tushar Roy video if needed.

## 2. Profit sort (Find no. of elements in the given range)

(Did it in

**O(n)** for each query, by normal for loop traversal

**O(log(n))** for each query, by sorting and using Binary Search we can pass TLE (Time Limit Error) then finally, I solved it using Hashing and then do like **counting sort** algorithm so

**O(1)** for each query (Because question had maximum space complexity as **256MB** so it won't be a problem) MOST OPTIMAL ONE.

## FACE TO FACE INTERVIEWS:

**4 Totally = 3 technical, 1 technical + Bar raiser rounds**

### First Round: (1 hr.)

- Tell me about yourself?
- How was your placement preparation?
- How were your previous company interviews?
- Which DS you are comfortable? (Tricky for some panels asked other DS rather)
- [Merge 2 sorted linked list into sorted one](#) (Optimize code further)
- Write code for the same by covering All Edge cases (Avoid wild pointers)
- A modified DFS with recursion question
- You want to ask any questions?

### Second Round: (40 min)

- What's your passion in technologies?
- Write code to connect Binary Tree leaves nodes like a Doubly linked list (Use Post Order or any Traversal and keep track of previous nodes and check if it's a leaf node. Note: Avoid Dangling or wild pointers while writing code, initialize variables to NULL)
- You want to ask any questions?

### Third Round: (1:20 hrs.)

#### (PROBLEM SOLVING + kind of like STRESS INTERVIEW)

- U have  $2^n$  players, they compete with each other, each player has a rank, what can you tell about

the winner?

(Question was same as this, I asked many clarifications (received stress then answers) and tried Graphs, Sorting players based on Ranking he said it's not required, demanded efficient one then I solved using **Tournament Trees** ( $2^n$  is the clue to use tournament tree) He was very satisfied.

- Write a code to convert a palindrome number to next immediate higher number and it's a palindrome too e.g. 1221=> 1331 (Think about edge cases like 99, 191 before coding, that will reduce no. of strikes on paper, in case of 9, u have to propagate carry to next elements)

COMMENT about your codes nearby too for better understanding.

- What is Scheduling algorithm? What is used in ur PC? (Multiple feedback queue) he didn't accept Round robin.

### Rapid Fire Round:

(these were challenging as he expected to answer faster!)

- Why should I hire you?
- What's the book you read recently?
- What is your biggest mistake?
- What is your strength?
- What is your weakness? How you overcame it?
- What do you want to **change in Amazon**?
- Why your ICICI project was rejected for next level?

### Final Round (1hr) test BASIC CS concepts more

- First received a compliment from interviewer for my fast coding skill on paper (previous panels review).
- Do you like android or iOS? Me: Android! Then take your phone write a code to **simulate Android pattern locking**, took my phone and understood what patterns are possible then

(I solved and coded it using recursion and backtracking)

Matrix can be N x N Pattern Box.

#### 2 sub-problems:

1. Check if given pattern is possible or not (Use ANGLE 90 or 180)
2. Print all possible patterns you can make with given length and starting point

Edges cases should be covered properly!

- Tell about projects?
- Is your forum (project) hosted in your college?
- Why you have used NoSQL in your project?
- Why you can't use MySQL? Where it is used?

(Explained ACID properties using BookMyShow app exactly)

- What and all will happen when you boot up your PC? (Tell from BIOS stage)
- What is kernel?

I explained everything I knew, finally I explained Android Phone Kernel too. He was very impressed and was like stopping further simple questions.

- How PC is executing things? Program counter. Explained more.
- How variables are stored? Depends, Register or Main Memory. Explained more.
- Why main memory or register when you have secondary memory?
- How program is made to run (steps). Explained like C program to Assembly language to binary codes.
- Program vs Process (I tried to explain threads, he stopped me then below one)
- **Design a DS question**

U have a dictionary of words (**Not necessarily** in order given in our English dictionary)

How will u search for word (Used topological sort and explained **why** and **how** it works he was convinced)

- Difference between Abstraction and Encapsulation?
- Why we should use ER diagram? (I gave a lead to Normalization thus next questions)
- Then again why Normalization?
- Give examples of **anomalies** if we don't normalize, I explained with an example database.
- How threads can communicate? Files, Pipes etc.
- Have you attended any coding contests?
- U want to ask Any questions?

It was all done in one day. I thank Geeks for Geeks so much for helping me for my placement preparations. It was and is very helpful!!

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# Amazon Interview Experience | Set 358 (Off-Campus)

- Difficulty Level :\n[Medium](#)
- Last Updated :\n10 Jul, 2019

Amazon conducted interview in their Bangalore office. There were many candidates lined up for interview.

## Round 1

1. Create a class which is collection of integers. Create methods to add an element, retrieve an element and addToAll method in O(1) time.  
**Solution:** [GeeksforGeeks Link](#)
2. Given 52 cards of deck, write a method to shuffle them and produce a permutation of cards such that every call to this method will produce a distinct permutation. Ex- on call 52! times it should print all distinct 52! permutations.
3. [Find median of BST without using extra memory.](#)

The interviewer was always going in some other direction from the solution/things suggested to him. He was not ready to understand the things and it got difficult for me to make him understand the things. Got rejected after this round. Felt very bad, a girl candidate was asked very easy questions one of them was reversing a list.

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# Amazon Interview Experience | Set 357 (For 2.5 Years Experienced)

- Difficulty Level :[Hard](#)
- Last Updated :[10 Jul, 2019](#)

Some time back I went through an interview for Amazon.com for SDE-1 role, and here is my experience to help other aspirants :

## Written Pen & Paper Rounds

Had to write production level code in any programming language of my choice, covering all the edge cases, and clearly mentioning the complexity of my code.

1. [Lowest common ancestor in Binary search tree](#)
2. [Remove minimum number of characters so that two strings become anagram](#)
3. Given an array, print the Next Just Greater Element for every element. The Next just greater Element for an element x is the just greater element on the right side of x in array. Return the same element if there is no greater element present on right side, or if same element is present again on right side (in case of duplicates)

\r\nFor e.g. given input array : 3,5,8,4,2,6,3\r\noutput should be : 3,6,8,6,3,6,6\r\n

**Solution:** [GeeksforGeeks Link](#)

Solved it using Binary search tree

## Face to Face Rounds?

Interviewers were very very helpful, and were focused on approach, they will ask basic brute force solution first, then an optimum solution, after that they may increase the complexity of problem a little bit, and if you are able to explain your approach satisfactorily, then will ask you to write production level code in any programming language of your choice, covering all edge cases using pen and paper :

1. Find an element in an unsorted array such that all left elements are smaller and all right elements are greater.  
**Solution:** [GeeksforGeeks Link](#)  
 $O(n)$  time complexity solution is required.
2. Find kth smallest element in row wise column wise sorted matrix. Discussed both min heap and max heap approach with complexity of both.  
**Solution:** [GeeksforGeeks Link](#)
3. What if there are duplicate elements in matrix, and we have to consider all duplicate element as one position, i.e. if matrix contains elements like 3,6,4,3,5,4,7 then  
1st smallest element is 3  
2nd smallest element is 4  
3rd smallest element is 5  
4th smallest element is 6, irrespective of there occurrence  
I asked if I can use hashing, but he was looking something with less space complexity, was not able to answer this particular thing further.
4. [Level order traversal in spiral form](#)
5. Find the maximum difference between any combination of child and parent node in a given binary tree. Here child node can be any level below parent node, but should be in the same sub tree starting from parent node. solved using recursion, bottom up approach, returning the maximum difference and minimum node value till current node, to upper node at every level.  
**Solution:** [GeeksforGeeks Link](#)
6. Detailed discussion about project, something new which I have designed, why this, why not this etc, how my team work, complete process, my individual role, responsibility and contribution. Do you have bugs in code, how you correct. Have any bug from your code reached production. What you do outside of work, do you have any open source contribution, etc.
7. Given any two nodes in a binary tree, find the path from 1st node to another, and tell if the path is a straight line, or there are turns on the line, find number of turns.  
**Solution:** [GeeksforGeeks Link](#)
8. Detailed discussion about java hashmap, hashset, its internal working and its complexity.
9. Lots of behavioural questions like, most complex thing done, how you did it, what challenges you faced, negative feedback you received, how you improved, and many more cross questions.

Advice to fellow members preparing for something like Amazon :

1. first get good understanding of basic data structure concepts, can refer geeksforgeeks.org section wise or any book like Narasimha Karamunchi (I referred this book), don't just read, but implement things.

2. Read book like Cracking The Coding Interview to learn how to answer behavioural questions. These questions are very limited, but are must for amazon.
3. Practice and solve last 40 amazon interview experience from [practice.geeksforgeeks.org](http://practice.geeksforgeeks.org)

I hope this information will be helpful to all of you, wish you all the very very best.

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# Amazon Interview Experience | Set 356 (For 6 Year Experienced)

- Difficulty Level :\n[Medium](#)
- Last Updated :\n10 Jul, 2019

I went through some interview rounds for SDE-2 in amazon. Below is the format.

**Round1:** It was a test on HackerEarth with two programming questions

- [HackerEarth test link](#)

## Round 2:

1. Boundary Traversal of binary tree  
[GeeksforGeeks Link](#)
2. Find four elements a, b, c and d in an array such that  $a+b = c+d$   
[GeeksforGeeks Link](#)

Write production ready code. Consider scenario for duplicates too.

## Round 3:

1. Trapping Rain Water  
[GeeksforGeeks Link](#)
2. Next smallest palindrome  
[GeeksforGeeks Link](#)

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## Related Practice Problems

[Next Smallest Palindrome](#)  
[Sum equals to Sum](#)

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## Amazon Interview Experience | Set 355 (For 1 Year Experienced)

- Difficulty Level :[Easy](#)
- Last Updated :[10 Jul, 2019](#)

I recently got an interview call from Amazon (Chennai) for the Kindle team. Here is my experience:-

**Round 1** It was written round (Pen & Paper) consisting of three questions

1. [Run length encoding of a string.](#) Ex Input aaaabcccd , Output a4b2c1d1
2. [Given a linked list consisting of characters. Determine if it is a palindrome or not?](#) O (1) space complexity.
3. Connect nodes at same level. [Check if Linked List is Palindrome](#)

Out of 30 people, they shortlisted 6 of them for further rounds. I was one of them.

**Round 2 (F2F)** It was purely based on programming standards:

1. [Given a binary tree with two nodes, find the lowest common ancestor of them.](#)
2. [Adding to first ques, he further asked: find the minimum distance between any two nodes.](#)
3. There is a conference room. N people are joining the conference. You have the start time and end time of each of them visiting it. You are asked to determine the maximum number of people that can be inside the room.

```
\r\nExample \xe2\x80\x93 Four people are visiting the conference\r\nPerson A B C D \r\nStart (hour)
```

Answer will be \xe2\x80\x93 3

It went well. I was able to answer all of them. They asked me write production level code for each of them. Take care of all the end cases. Three out of six were able to make it.

**Round 3 (F2F)** This round was grilling and was again on programming standards:

1. [Print the top view of binary tree.](#)
  2. [Find the maximum sum of any rectangle in a square matrix of n x n.](#)
- <https://www.geeksforgeeks.org/dynamic-programming-set-27-max-sum-rectangle-in-a-2d-matrix/>.

They provide you necessary hints whenever needed or if they feel you are not able to find a solution or thinking in a very wrong direction.

After this, they call me to Chennai for further two rounds of process.

**Round 4 (Hiring Manager)** In this round, they focused on my experience and previous company's work.

All behavioral type of questions like:

1. How do you measure your success in the whole year?
2. Mention some of the negative and positive feedbacks from your manager.
3. Why you want to leave the firm so early? Why Amazon.
4. Questions on my projects and achievements in current company.

Hints: Just do not blame your current company as answer to any question. A clever way to deal this round is make them realize you are quite good for Amazon. P.S. Some research on Amazon before the interview would be great.

**Round 5 (Bar Raiser)** This was my final round. It was mixture of behavioral and coding.

Behavioral question were almost same what I mentioned above.

Discussions on my Final year project and what new I can add to it if I am given a chance to improvise it.

Some coding questions:

1. Given two strings, find the uncommon characters in them using single hash map.
2. Given data of millions of people, (name, age, M/F etc.) Develop an API that will have age range as input and yield the count of people under this range as output.

Thanks GeeksforGeeks for all the references. You people are doing great!

Key points:

1. Just write clean and crisp code, whenever asked to code considering the end cases.
2. Maintain continuous discussions with interviewer. He/She will help you whenever needed.

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**Related Practice Problems**

[Maximum sum Rectangle](#)

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## Amazon Interview Experience | Set 354 (For SDE-2)

- Difficulty Level :[Medium](#)
- Last Updated :[10 Jul, 2019](#)

I went for face to face interview and faced following questions.

1. [Check if parenthesis are balanced or Not.](#)
2. [Given two unsorted arrays A, B. They can contain duplicates. For each element in A count elements less than or equal to it in array B](#)  
Examples:

```
\r\nInput : A = [1, 2, 3, 4, 7, 9]\r\n          B = [0, 1, 2, 1, 1, 4]\r\nOutput : [4, 5, 5, 6, 6, 6] \r\n
```

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### Related Practice Problems

[Count the elements](#)

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## Amazon Interview Experience | Set 353 (For SDE-2)

- Difficulty Level :\n[Hard](#)
- Last Updated :\n10 Jul, 2019

I went through some interview rounds for SDE-2 in amazon. Below is the format.

### Round1:

1. [LCA of Binary tree](#)
2. [Finding minimum cost to combine n pipes of different size.](#)

### Round2:

1. Behavioural question.
2. Design Dating application. HLD, then specific discussion of profile search and ranking based on the users\xe2\x80\x99 interest. Discussion on making it scalable.

### Round3:

1. Design cricket score board.

### Round4:

1. Architecture of current project.
2. Design an aggregator service that would be serving various services to a lot of clients.  
Discussion on how this service can handle billions of data in a request. Code for the service.

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# Amazon Interview Experience | Set 352 (For SDE I)

- Difficulty Level : \n[Hard](#)
- Last Updated : \n10 Jul, 2019

**1) Online coding round** of 45 minutes. We had a question where we had to read an unknown number of lines from a data file. Each line had a formatted date time stamp and a person\xe2\x80\x99s name.

We were supposed to tell if some person had appeared twice on the same date or not. For C++, i used getline to take the input and then STL Map did the trick.

## 2) Onsite Face to Face Round 1

The interviewer asked me two questions and then I coded them after discussions:

He wanted to understand the logic behind the approach rather than just intuition. He asked for proof of the algorithm in the sense that why this works.

1. [Trapping rain water](#)
2. [Print nodes at k distance from nodes](#)

## 3) Onsite Face to Face Round 2

1. He asked me about my internships and projects.
2. Then he asked me how to design a calculator. This involved discussions on exception handling etc.
3. He asked me about postfix and prefix expressions and how to use expression trees etc.
4. [Edit distance](#)

## 4) Onsite Face to Face Round 3

1. The first question was this:

[Rearrange characters in a string such that no two adjacent are same](#)

He gave me input constraints of length of string as  $10^5$ .

2. Then we discussed about detecting cycles in a graph. Can we use a BFS to detect a cycle in a directed graph? He asked me to code cycle detection for a directed graph.

[GeeksforGeeks Link](#)

3. The last question was this:

You are given a binary 2 dimensional array, find the area of the largest rectangular submatrix which has 1s only.

[GeeksforGeeks Link](#)

He was not convinced with the my approach and asked me to give him test cases where this will fail. We made ten \xe2\x80\x93 fifteen cases and tested and it seemed to work.

## 5) Bar Raiser (Skype):

He wanted me to code a data structure for an auto-completing a search query. I mentioned Trie is a way and then we had discussions on Trie and search, insert etc in a Trie.

Then he asked me to code it using a Trie:

- [GeeksforGeeks Link](#)
- Then we discussed about databases. What are normal forms?
- How will you design a database with books and authors (many to many relationship).
- How do we query for the author with the maximum number of books?
- What is a deadlock and what are ways to avoid it?

- Give me a real life example of a deadlock.
- Explain to me any single project in which you had to meet a deadline and what was your course of action?

There was one more round after this and that was the Bar Raiser actually. The 5th point mentioned in the initial post was just a technical interview.

1. He asked me why amazon?
2. Have i ever been in a situation where i went against my mentor in a project and what was the result?
3. How do i keep myself motivated during tough projects?
4. How to meet deadlines?
5. How to make sure the work done by you in a project is easily understandable by a person after you leave the project?

These were the coding questions: Convert infix to postfix and evaluate postfix.

[GeeksforGeeks Link](#) He wanted me to assume nothing (the input string may not be valid and the code was to report so).

GeeksforGeeks helped me the most during my preparation time.

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# Amazon Interview Experience | Set 351 (Off-Campus for SDE I)

- Difficulty Level :\n[Hard](#)
- Last Updated :\n10 Jul, 2019

## 1) Online test with MCQs on OS, DBMS, basic algo ds.

- Coding problem: [Find a tour that visits all stations](#)

## 2) Telephonic Round 1

1. [Find height of a binary tree.](#)
2. [Find height of a binary tree when the leaf nodes are connected to each other via a circular doubly linked list.](#)
3. Balanced parenthesis no stack solution and with stack solution. And minimum number of flips to make bracket sequence as balanced
  - o [Without stack](#)
  - o [Using stack](#)
  - o [Minimum number of bracket reversals needed to make an expression balanced](#)

## 3) Telephonic Round 2

1. [Sum of values in any submatrix for a given matrix.](#)
2. [Maximum sum path in a given binary tree. There may be negative values in the tree. Path can start and end anywhere.](#)
3. Given transactions between group of friends. How to minimize the number of transactions by eliminating redundant cash flow paths? Suggest data structure and solve.

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# Amazon Interview Experience | Set 351 (Off Campus)

## For SDE I)

- Difficulty Level : \n[Medium](#)
- Last Updated : \n10 Jul, 2019

I attended the referral drive in Delhi, so we had to report to 10:00 AM at Amazon's office.

### ROUND 1: Written Pen & Paper (11:00 AM 12:00 PM)

You have to write a short description first of your approach, put comments if necessary to explain that line's logic. Full Optimized Code should be written covering all the edge cases. Also mention the complexities.

1. [Sorted Array to Balanced BST.](#)
2. [Detect and Remove loop in linked list.](#)

### ROUND 2: Face to Face (02:00 PM 03:30 PM)

This was the Technical Round, start with your basic approach and then move further to optimized ones. Interviewer will expect you to write fully fledged code (the optimized approach one) covering all the edge cases and also derive its space time complexities. If he's not satisfied with any of the space and time complexities he will urge you to provide him that solution, and this happens a lot in Amazon's interviews.

1. Given a number N, you can do three operations like (N-1, N/2, N/3) find the minimum number of steps in which N can be reduced to 1 using these three operations.

#### [Minimum Steps to reach 1.](#)

First gave him recursive approach, gave him space time complexities. Then told him dp one and its space time. Then he told me to code the dp approach.

2. [Max Sum Path across two sorted arrays.](#)

Gave him the solution using space O(m+n) and time O(m+n), wrote the code for it. Then he demands to solve it in O(1) space and O(m+n) time, spend some time and coded it too.

### ROUND 3: Face to Face (05:00 PM 06:30 PM)

Again Technical Round, this round was more DS specific, we have to write fully optimized code which will cover all test cases.

1. [Width of a Binary Tree](#)

Gave him many approaches, had discussions on Level Order traversals as well. At the end wrote the code for it.

2. [Print Vertical Order Traversal](#)

Told him the approach using Maps of STL but for that i had to sort it for displaying in the correct order, which would take extra time complexity, so came up with the solution of adding the results direct to array without using Hashmaps. (as the HDs are consecutive -2, -1, 0, 1, 2 so you can also take array and manipulate some insertions there).

### Round 4: Hiring Manager Round (07:30 PM 09:00 PM)

1. Started with a technical question : [Kth largest element in a stream of integers.](#)  
Have to write the code using Heap along with all the util functions of Heaps as well.
2. Tell me something about yourself, about your company, what kind of projects did you do, what extraordinary did you do, Was there any kind of appreciation received in your current company.

3. Told me about the work his team is doing, asks me some behavioral questions like, Was there any kind of conflict between you and your manager at some point of time, how did you resolve that ? What would you do if the deadline marked by you to complete a task has been passed ?

After 1 week\xe2\x80\x9a

### **ROUND 5: Hiring Manager Round (Telephonic : 1 hr)**

Started asking about myself and getting to know me by asking deeper about my background. This round was \xe2\x80\x9cdive deep\xe2\x80\x9d anything you utter from your mouth he will drill into it.

1. Technical Question : Have you studied Data Compression. What are it\xe2\x80\x99s various techniques. I listed Huffman and Run Length.
  - [Running Length Encoding](#)
  - [Huffman Coding](#)
1. He told me to code Run Length.
2. Then told me to do an in-place Run Length encoding given a string of chars.  
It fails some cases where the original string has many unique characters so that the string length would increase and thus cannot be converted in-place. I told him so and suggested i would take a vector in case of any additions is to be made. He then asks for these strings where compressed length is increase how can we identify that.
3. Identify the strings which cannot be compressed using this method and compress those which can be. Wrote code and explain it to him.
4. What can be the practical applications of this algorithm, i told him that warehouses like AWS Redshift already does Data compression, listed him some other useful one\xe2\x80\x99s like they already use for Dates Column.
2. Projects discussions, and have to explain one project to him in detail. he posed several design flaws in my project and asked me for their solutions. This part was very critical as he drilled me to some cases and i had to come up with some technical solution or to correct him if it was a invalid business use case.  
In this way he also checked how much knowledge i have of business apart from technical.

After 5 days : Congratulations from Amazon.com we will be going to offer employment offer for you \xf0\x9f\x99\x82

Status : Selected

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## Amazon Interview Experience | Set 350 (For SDE I)

- Difficulty Level :[Hard](#)
- Last Updated :[09 Jul, 2019](#)

### Round 1 ( Coding Round + MCQs ):

Platform : Hackerearth

1. [Maximum 0 flipping subarray](#)
2. [Find a tour that visits all stations](#)

The test cases were very weak and any brute force solution got accepted.

20 MCQs based on OS, DBMS. The questions were very similar to those present on Geeksquiz.

### Round 2 ( Telephonic Interview 1, duration 1 hour ) :

1. [Find smallest range containing elements from k lists/](#)
2. [Delete operation on a BST.](#)

### Round 3 ( Telephonic Interview 2, duration 35 mins ) :

1. [Adding two polynomials using linked list](#)
2. [Inorder successor in Binary search tree](#)

After this round I was invited for onsite interviews at Amazon Bangalore Office.

### Round 4 : ( F2F , duration 45 mins )

1. [Relative Sorting](#)

This question can be easily solved using a custom compare function combined with merge sort, I figured this out later on . I had proposed a different solution based on 2 hashmaps. Time complexity was  $O(n \log n)$ . My approach was a little complex and lengthy, so the interviewer did not ask me to code this.

2. [Reverse a linked list.](#)

He asked me to dry run my code and checked all corner cases.

### Round 5 : ( F2F, duration 1 hour, 2 interviewers )

1. [Design LRU Cache.](#)

I designed it using unordered\_map and doubly linked list. I coded my own DLL class. After that they framed different test cases and asked me to explain how my code was handling those cases.

They asked some questions about how hashmap is implemented.

2. [You are given a string and 2 operators \( & , | \). Return the total number of ways in which you can evaluate to true using the given string and operator set.](#)

\r\nExample : Input : TF\r\nOutput : 1\r\nInput : TFF\r\nOutput : 3

I solved it using parenthesization and memoization. Time Complexity  $O(n^3)$ .

I used a 3-D array to memoize.

$dp[i][j][0]$  : Number of ways to form 0 using substring( i, j )  
 $dp[i][j][1]$  : Number of ways to form 1 using substring( i, j )

Interviewer stressed to use only a single 2-D array so I had to include the following precomputation to calculate the total number of ways to parenthesize a string of length n, lets say  $F(n)$ .

$F(n) = 1 + \sum F(i) * F(n-i)$  i varies from 1 to n-1 .

### Round 6 ( F2F, duration 45 mins )

Interviewer warned me to inform him in case I had already encountered any of these questions.

1. [Minimum steps to reach a destination.](#) I told him that I had already solved this question using BFS. He asked me to explain the approach, but did not ask to code.
2. [Minimum number of jumps to reach the end of an array](#)

He was expecting an  $O(n)$  solution. I solved it using 2 pointer approach. He asked me to dry run my code and handle cases when array values are negative or zero.

3. [Construct a Maximum Sum Linked List out of two Sorted Linked Lists having some Common nodes](#)

I told him that this is a classical problem and I have solved it earlier. Told him the approach and handled all corner cases.

### Round 7 ( F2F, 2 interviewers, duration 30 mins ):

Detailed discussion about my project. Some random questions about the technologies I had used.

1. [Remove all nodes which don't lie in any path with sum>= k](#)

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# Amazon Interview Experience | Set 349 (For SDE I)

- Difficulty Level :\n[Medium](#)
- Last Updated :\n09 Jul, 2019

## Telephonic Round:

1. [Given a 2D matrix with elements 1 and 0, where 1 is land and 0 is water. Find the number of islands.](#)
2. [Design a data structure which supports operations: insert, delete, find and findAny in constant time.](#)

## FACE TO FACE

### Round 1:

1. Given an array which can be either of the following:  
Non-decreasing  
Non-increasing  
Increasing then decreasing  
Decreasing then increasing
2. [Find the pivot element.](#)
3. [Find the first non-repeating character in a stream of integers.](#)
4. Explain the situation where you had tight deadlines. What did you do to meet the deadline?  
Explain the situation where excess of work and you knew you could not meet the deadline. How did you manage then?

### Round 2:

1. [Print tree in a vertical order.](#)
2. [Minimum no of jumps to reach the end of array.](#)
3. [Given rods with different costs, combine the rods in a way such that you get the minimum cost.](#)
4. When do we use which sort? Example of cases when merge sort is not used.
5. Explain heapify function of heap sort. Then explain with code what happens when you remove one element(max/min) from the heap.
6. Have you ever faced the situation when you did not meet the deadlines, but you thought you were good enough and were on the right track?
7. Have you ever faced the situation when you had to struggle to meet the deadlines? How did you divide/make progress with the work?

### Round 3 (Hiring Manager):

1. [Zigzag print of a binary tree.](#)
2. [Rearrange a string such that no two same characters are adjacent to each other.](#)
3. Client calls server but gets delayed response. What could be multiple reasons? How could you improve upon them?

### Round 4 (Hiring Manager):

1. Can you explain the situation where you have pushed/written your code and your manager didn't approve of it, but you thought you had written the right code? What did you do then?
2. Have you been in a situation where you convinced your manager for something?
3. There is a call/request which takes some extra time in replying. Why could it possibly be? How

- do you remove that?
4. [Explain caching. What happens when cache is full? Implement LRU cache. Write the code.](#)
  5. How do you manage work with strict deadlines? If ever you faced such situations.
  6. What aspects do you have in your mind when you want to join amazon? What are your expectations out of it?
  7. If you are given some work, how do define and manage it.
  8. What will be your course of action if you are assigned some task which you don't know at all?

### Bar Raiser Round:

1. [Given an array of integers, replace every number with the next higher number to its right.](#) If a number can't be replaced, we leave it as-it is.  
For example, the list: 5, 2, 1, 4, 6, 7 needs to be changed to 6, 4, 4, 6, 7, 7.  
4 different approaches were discussed and codes were to be written.
2. Why do you want to switch?
3. Why amazon?
4. Questions about current company, current project, team size, your roles and responsibilities, etc. were asked in almost all the rounds.

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# Amazon Interview Experience | Set 348 (For SDE II)

- Difficulty Level :\n[Hard](#)
- Last Updated :\n09 Jul, 2019

Recently, I was interviewed by Value Added Services team for SDE II position at Amazon Hyderabad campus.

## Telephonic Round: 1:15 Hours

1. [Given a set of words, print anagrams.](#)
2. Questions about sorting algorithms.  
 i) What sorting algorithm should be used for sorting strings?  
 ii) When merge sort is preferred over quick sort?
3. This question is based on [Topological sorting](#). Question was framed over working of Maven/Gradle. Given the dependencies of the packages to be installed.  
 For example,  
 A -> B, C, D (Which means A depends upon B, C & D. Hence, B,C & D should be installed before installing A)  
 B -> F  
 D -> E  
 Print the order in which packages should be installed.  
 Later this question is modified and asked:  
 Given an order of packages, tell whether with the given dependencies, is it possible to install packages in the given order or not.

## Round 2: (Face to Face) 1:20 Hours

Each of the f2f interviews were taken by the two interviewers. One was asking questions and other was observing the behavior of the candidate \xf0\x9f\x99\x82

This round almost covered everything from Current Project to Data Structures and Problem solving to Behavioral questions to High level designing.

Asked the architecture of the product that I am currently working on. Asked me to draw the block diagram and the interactions among the different components for 20mins.

Later moved to Data Structures and Problem solving questions.

- [Given an array find the maximum contiguous sum. Array can have +ve and -ve elements.](#)
- [Sum of two linked lists and store the result in the third one.](#)

Behavioral Questions:

- How did you help your colleague?
- Tell an instance when you proposed some approach but your team lead did not like and how did you convince him.

Design question: [Design BookMyShow](#) website. Asked me, how will I design UI pages?

What things I did not like about BookMyShow? And then designing of DB, tables, constraints, etc. I nailed this round completely.

## Round 3: (Face to Face) 1:30 Hours

Asked about my current project.

This round of mine did not go well. It was a purely about Data Structures.

- Given a binary tree, find the maximum BST subtree with the root of the max BST.

[GeeksforGeeks Link](#)

I gave initial approach where I wanted to traverse the tree in Inorder and store it in an array. After that find the subarray where elements present in increasing order. Interviewer showed some issues with that approach.

Later modified the approach to bottom-up approach. Approach was fine but I could not write clear and running code.

- Interviewer was confused whether to send me to the next round or not. He asked me one more question:

Given an sorted array of alphabets find the count of each element. Told him the approach with Binary search and he was satisfied.

[GeeksforGeeks Link](#)

#### Round 4: (Face to Face) 1:30 Hours

Asked about my current project.

This round was totally on designing.

- Given a piece of paper with some Java code. I need to review the code and provide the comments as a reviewer.
- Design survey monkey like website.

More emphasis was on Admin related activities of creating/editing a survey, showing all the surveys created by the admin user.

Generate a unique link to each of the survey created by the admin.

Started from UI pages designing to what information should be sent through Ajax calls to server for each of CRUD operations on survey.

Structure of each table to store the survey information. How will I as a developer create a layered architecture at server side.

Layered architecture: Ajax -> Servlet -> Class for CRUD operations on surveys <sup>\xe2\x80\x93</sup>  
Transaction Handler <sup>\xe2\x80\x93</sup> Persistence layer

This round was very satisfying round and everything happened properly.

#### Round 5: (Face to Face) 1:00 Hour

This round was taken by the manager of Value Added service team.

He was very friendly and gave his own introduction.

Asked about my current project.

- Given an array of alphabets and a dictionary of english words.  
I need to find the maximum possible valid dictionary word can be formed from these alphabets.  
I went through Trie approach of storing the dictionary words.  
[GeeksforGeeks Link](#)
- Design Outlook meeting request handler, a low level design question.  
I gave some solution and he seemed to be satisfied.
- Behavioral Question: Tell some instance, when you proposed some idea and it was rejected by your Product Manager.

Reason for the rejection of the idea.

For SDEII, more than Data Structure and Problem solving, Amazon looks for designing and approach.

All the interviewers were very friendly and they help during the interview process.

Always try to understand what interviewer is looking for from the given question. If it is not clear, ask them clearly with no hesitation.

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# Amazon Interview Experience | Set 347 (1.8 Years Experienced for SDE1)

- Difficulty Level : \n[Hard](#)
- Last Updated : \n09 Jul, 2019

Below is the summary of interview round conducted by amazon. Although i am not able to remember correctly since its almost 2 months.

## Written Test

1. Check if Linked list contains loop.  
[GeeksforGeeks Link](#)
2. Create Balanced binary search tree from sorted array  
[GeeksforGeeks Link](#)

## F2F (Technical)

1. Stream of coordinates are given. you need to identify k nearest points for given coordinate at any point of time

## F2F (Hiring manager)

1. Discussion about project
2. Project which has business impact
3. Conflict with manager/seniors

## F2F (Technical)

1. Given dictionary of alien language. You need to find order of alphabets based on dictionary  
\xe2\x80\x93 Topological sorting
2. DS for identifying min from given array for index range x to y.

## Telephonic (SDM)

1. Detail discussion about projects
2. Project which made you rockstar
3. What you prefer to use for communication between android and backend server \xe2\x80\x93 XML/JSON ? why ?

## Telephonic (Bar raiser)

1. Discussion about projects
2. Conflicts with manager/team
3. Your role in projects
4. Given array of characters. Identify string with minimum length which covers all characters present in the string  
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## Amazon Interview Experience | Set 346 (For SDE-1)

- Difficulty Level :[Medium](#)
- Last Updated :[25 May, 2021](#)

### 1st Round :\xc2\x00

\xc2\x00

1. [Check if tree is a binary tree or binary search tree or not.](#)
2. [Write a program to output power\(m,n\).](#)
3. Given an infinitely long sorted array having -1\xe2\x80\x99s at the end search a value in that array
4. Provide the complexities for the above questions.

After 20 minutes 2 guys entered my cabin and straight forwardly they started technical stuff. They started with my projects, I told that I am working in support project\xc2\x00

### 2nd Round :\xc2\x00

\xc2\x00

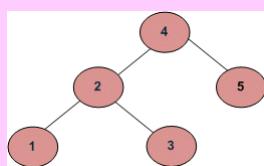
1. Design a musical juke box with functions\xc2\x00  
1\xc2\x00 \xc2\x00 \xc2\x00 \xc2\x00 \xc2\x00 1) add song\xc2\x00  
1\xc2\x00 \xc2\x00 \xc2\x00 \xc2\x00 \xc2\x00 2) delete song\xc2\x00  
1\xc2\x00 \xc2\x00 \xc2\x00 \xc2\x00 \xc2\x00 3) top 10 played song at any point of time\xc2\x00  
We had a lot of discussion about this around 40 minutes using different data structures like hashmap, heap.
2. [Longest consecutive path in a binary tree.](#)\xc2\x00  
I told my approach but they didn\xe2\x80\x99t got that then I wrote recursive code and explained.
3. [Find the sum of all left leaves in a binary tree.](#)\xc2\x00  
Initially I told level order traversal approach. They asked me to code. They seems satisfied but again come up with a question to optimize the space. Told the approach using post order traversal

### 3rd Round :\xc2\x00

This guy is very friendly.\xc2\x00

\xc2\x00

1. [Merge two sorted linked list into one without any extra space.](#)
2. Given a binary tree along with a value. The question is to find the mirror of that node, the value always exist in the binary tree\xc2\x00  
\xc2\x00



1. for this tree mirror of 2 is 4 and for 1 mirror is NULL.
2. Given a array with n songs, we have to play all the songs only once. Given only 2 functions\xc2\x00  
1)playsong(songid)\xc2\x00  
2)getRandom(n) \xe2\x80\x93 return the random values in between 1 to n\xc2\x00  
Told hashmap approach he told if the getRandom() give the same values million of time then its sucks. So I modified my approach and he was impressed.

### 4th Round :\xc2\x00

This round was with SDM of another team\xc2\x00

\xc2\x00

1. [Segregate even and odd number in the list with out using extra space.](#)
2. A kind of design question. Given amazon log files of two days. He asked me to find the users who logged in both the days. Had discussion using Hashmap, he want to optimise further I gave solution using trie with little modification in its structure\xc2\x00  
\xc2\x00

```
struct Trie {\n    int count[2],\n    bool isleaf;\n    Trie *child[26];\n    Trie() {\n        count[0]=count[1]=0;\n    }
```

1. He appreciated me and left.

### 5th Round (Bar Raiser) :\xc2\x00

\xc2\x00

1. Had discussion about my projects and its extensions. He gave some advise

2. [Serialize and deserialize a binary tree.](#)\xc2\x00

I told the approach using two traversals inorder and preorders. He asked me to code directly then I explained him but he didn\xe2\x80\x99t got my approach and he continuously used to ask many questions . Finally I told using one preorder traversal with markers he told that he know that solution.

I would like to thank my friends and geeksforgeeks who are always with me helping all the time,\xc2\x00

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# Amazon Interview Experience | Set 345 (For SDE-1)

- Difficulty Level : \n[Medium](#)
- Last Updated : \n09 Jul, 2019

## Round 1: Onsite, Design

1. Design an online file repository system
2. What are the use cases
3. Features
4. Security
5. HLD
6. LLD

## Round 2: Onsite, Algo

1. Detailed discussion on projects. My contributions to project.
2. [nth Fibonacci number in O\(n\).](#)
3. Data Structure with O(1) time for:  
 get(key) :value  
 set(key, value)  
 delete(key)  
 getRandom() :key

## Round 3: Onsite, Algo

1. [Merge two balanced binary search trees into one balanced binary search tree.](#)
2. [Given an array of 0 and 1, in how many iterations the whole array be filled with 1s if in a single iteration immediate neighbor of 1 can be filled.](#)
3. [Given a binary matrix, fill the row and column of any cell containing 1 with 1\xe2\x80\x99s in O\(n^2\) time without extra space.](#)

## Round 4: Telephonic, Hiring Manager

1. Detailed discussion on projects.
2. Interviewer was trying to find a fit with amazon leadership principles(<https://www.amazon.jobs/principles>) with several behavioral questions.
3. What was the most challenging project.
4. What did you do in case of immediate deadline.
5. What did you do in case of disagreement with your manager.

## Round 5: Telephonic, Bar raiser

1. Very detailed discussion on my projects
2. Give an example in your work where you exceeded expectations
3. Design an analytics system

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# Amazon Interview Experience | Set 344 (For SDE-1)

- Difficulty Level : \n[Hard](#)
- Last Updated : \n09 Jul, 2019

## Round 1: online Test (Hackerearth) 30mins

1. Given a log file calculate the no of people who came on multiple days. A person can come on for multiple times in a day.

On Wednesday I got the call for the onsite round to be happening on Saturday.

## Round 2 : Onsite round(1 hour)

The interview started with my introduction, asked questions about my profile what was I doing(5 min discussion).

After that she gave a programming question,

1. There is voting happening in a college to select an amendment, total 16 professor and there are 4 groups each group consists of 4 prof and for an amendment to be selected it should be, first selected atleast by a single professor in each group and finally select the one which appears maximum times.

I gave a solution and then we discussed my solution and asked me to optimise it further with o(1) memory and o(n) complexity.

2. Then there were some behavioural questions about working in a team and problems I had faced with a new team.
3. [Diameter of a binary tree](#)

## Round 3: onsite(1 hour)

Started with my profile and me to explain my projects I had been doing in my current company

1. [Clone a linked list with next and random pointer](#)
2. [Stock Buy and sell Problem](#)

## Round 4 : HM round onsite(1.5 hour)

He started with my profile and one by one we discussed all my projects in details asked me various questions about them followed by many behavioural questions.

1. [Print common nodes in two binary search trees](#)

Asked me to write a full fledged code like u write in a project with comments and everything.

## Round 5: another HM round (skype)(45 mins)

Started with my profile and detailed discussions about my current project, my role in that project, technologies I have used followed by various behavioural question.

1. [Implement a phone directory](#)

Asked me write the three functions insert, search and suggestions.

Thanks to GeeksforGeeks for helping me out.

\xc2\xab0

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# Amazon Interview Experience | Set 343 (For SDE-1)

- Difficulty Level :\n[Easy](#)
- Last Updated :\n09 Jul, 2019

## Round 1 : Written Round

1. [Given an array of number in sorted order count the pair of number whose sum is less than X.](#)
2. [Given a range of number count the numbers which has same first and last digits.](#)

For e.g. start =7 and End =95 so the numbers are 7,8,9,11,22,33,44,55,66,77,88

3. [Suppose there are millions of number and you have to print max 20 elements.](#)

## Round 2 : Face to Face

1. Suppose there are n bags containing different amount of chocolates and there is wizard and a kid. At every second a kid eat all the chocolates from bag containing maximum number of chocolates and wizard refills it with the half the chocolates it was containing. Find how many chocolates does the kid has eaten at t seconds.
2. [Reverse the word in the string](#)

for e.g. \xe2\x80\x9cMy name is khan\xe2\x80\x9d to \xe2\x80\x9cKhan is name My\xe2\x80\x9d.

3. [Add two singly linked list.](#)

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# Amazon Interview Experience | Set 342 (Off-Campus for SDE-1)

- Difficulty Level :\n[Hard](#)
- Last Updated :\n09 Jul, 2019

## Round 1: (Written \xe2\x80\x93 Pen & Paper)

1. [Lowest common ancestor in binary search tree](#)
2. [Remove minimum characters from two strings to become anagram](#)

## Round 2: Face to Face

Interviewer was expecting full production level code with optimum time/space complexity.

1. Find an element in an unsorted array such that all left elements are smaller and all right elements are greater. O(n) time complexity solution is required.  
[GeeksforGeeks Link](#)
2. Find kth smallest element in row wise column wise sorted matrix.  
[GeeksforGeeks Link](#)

## Round 3: Face to Face

Interviewer was first expecting to explain clear algorithm and then production level code.

1. [Find the number of islands](#)
2. [K\xe2\x80\x93 Smallest/Largest Element in Unsorted Array](#)

## Round 4: Hiring Manager Round

1. Discussed thoroughly about my company project. My contribution in project.
2. [Boundary traversal of a binary tree](#)
3. Why Amazon. Why Chennai.

Hoping for call for Bar Raiser round.

\xc2\xab0

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### Related Practice Problems

[Element with left side smaller and right side greater](#)

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# Amazon Interview Experience | Set 341 (Off-Campus for SDE-1)

- Difficulty Level :\n[Medium](#)
- Last Updated :\n06 Oct, 2021

I had applied to Amazon Hyderabad off campus for SDE-1 role. The first round a telephonic round. It was a technical round. The questions asked were.

## First Round \xe2\x80\x93

1. [Reverse words in a given string. I was also asked to handle whitespaces correctly.](#)
2. [Add two numbers represented by linked list. I was asked to solve it without changing the linked list order.](#)

## Second round \xe2\x80\x93

1. It was an array question which I don't remember exactly \xf0\x9f\x98\x9b
2. [Print all the nodes that are common for 2 given nodes in a binary tree.](#)  
For this I first found the LCA and then printed all the ancestors of LCA.

In this round I was also asked about heap, applications of BST etc.

Then I had a call where I got to know that I was selected. I was called to Hyderabad for Face to face rounds.

## Third round \xe2\x80\x93

The interviewer was very friendly and made me comfortable.

1. Then he reads my resume very carefully and says its good. He then asked me to discuss any of my projects in detail.

He also asked one coding question as follows

2. [Add 1 to number represented by linked list without using extra space \(no recursion\), without modifying the linked list and in O\(n\) time complexity.](#)

Interviewer was very friendly and discussed the problem deeply and helped me in reaching to the solution.

He then asked me to write full production level code covering all corner cases.

## Fourth round \xe2\x80\x93

The interviewer was a manager. He asked me details about my work in current company.

Then he asked me coding question as follows

1. [Find smallest range containing elements from k lists](#)
2. [How to find if words in a file are anagram.](#)

I suggest a Trie approach and he seemed to be satisfied and asked to me just to write how to implement trie data structure and its applications.

He also asked me some questions like

3. Why do I want to leave my company so early?
4. Why amazon?

## Fifth round \xe2\x80\x93

It was purely coding round where 2 persons asked me 2 coding questions.

1. First question was truly mathematics question which had equations and that need to be solved and finally it was reduced to finding max and 2nd max in an array.
2. Union find problem. In above question I was asked details about disjoint datastructure and other questions to find the number of nodes etc.

## Sixth round \xe2\x80\x93

Interviewer was very friendly and asked me details about me and my work

He then asked me a coding question

1. [Minimum number of swaps required for arranging pairs adjacent to each other.](#)
2. It was a data structure question where I had to find the best data structure. There was a bank account which had information like TTL, amount and time of insertion. TTL is the time when the account gets expired.

I suggest a hashmap solution and then he had a deep discussion on the question.

He also asked me some theory questions like \xe2\x80\x9cwhat happens when I hit amazon.com in the browser\xe2\x80\x9d, \xe2\x80\x9cHow does garbage collection works in java\xe2\x80\x9d and some more questions on OS and unix.

For every coding question I was asked time and space complexity.

Thank you geeksforgeeks.

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# Amazon Interview Experience | Set 340 (3.5 years experienced for SDE 1)

- Difficulty Level : \n[Medium](#)
- Last Updated : \n09 Jul, 2019

Recently I have gone through interview with Amazon Chennai for Amazon FIRE TV team. Here is my positive experience.

## Round 1(written):

1. [Run Length Encoding](#)
2. [Find k-th smallest element in BST \(Order Statistics in BST\)](#)
3. [Substrings with similar first and last characters](#)

## Round 2:

1. [Level order traversal in spiral form](#)
2. It\xe2\x80\x99s a two player game. Both the players are equally intelligent to win the game. Give n no. of stones. A player can choose either 1 stone or k stones or l stone ( $1 < k < l$ ). Suppose player 'A' starts game then challenge was to identify the player who will win the game. Player who picks the last 1 stone or last k stone or last l stones win the game.

## Round 3:

1. [Inversion of array](#)
2. [Print matrix in diagonal pattern](#)
3. [Minimum Cost Path](#)

## Round 4 (Bar Raiser)

1. Detailed discussion on current company project.
2. [Maximum Path Sum in a Binary Tree](#)

## Round 5 (Hiring Manager)

1. Design ATM machine.
2. Design a queue using only one stack.
3. Discussion on process & threads, Inter process communication, Lots of discussion on scheduling algorithm, their implementations, data structures used to implement scheduling algorithms, scheduling algorithms in real time distributed systems & implementation.
4. Lots of behavioral questions like why amazon, why you are leaving current company.

Finally got positive response from amazon with decent package.

Thanks GFG for this wonderful site.

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# Amazon Interview Experience | Set 339 (For SDE 2)

- Difficulty Level :\n[Hard](#)
- Last Updated :\n09 Jul, 2019

## Round -1 (Written Round) Pen and Paper

1. [Level order Traversal in spiral form.](#)
2. Design deck of cards with joker (53 cards).
3. 1 array question need to do in O(n).

## Round -2 F2F

1. About previous projects and role.
2. [In-place rotation of 2D Array by 90 degree clockwise.](#)
3. About Amazon- what are the different projects in amazon

## Round-3 F2F

1. [Find sum of all elements in a matrix except the elements in row and/or column of given cell?](#)
2. [Print top view of tree without hashing.](#)

## Round-4 F2F Design round

1. If N-files are given containing sorted number list and files are adding at run time. design a program if 1 st time run then gives min number , 2nd time run give 2nd min number , 3rd time gives 3rd min number and so on

write a program

## Round-5 Design and Coding

1. [Design Book My show.](#)
2. 1 problem of their project which will be solved by using map and list.
3. Your Role in previous company, design of your project, flaw in your design and improvements , your strength and improvement area

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# Amazon Interview Experience | Set 338 (1st Round for SDE-1 in Delhi)

- Difficulty Level :\n[Medium](#)
- Last Updated :\n09 Jul, 2019

## 1st Round \xe2\x80\x93 Pen and Paper

1. [Boundary Traversal of binary tree](#)
2. [Permutation with Spaces](#)
3. [Add two numbers represented by linked lists](#)

\xc2\xa0

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# Amazon Interview Experience | Set 337 (For SDE-1)

- Difficulty Level : \n [Hard](#)
- Last Updated : \n 09 Jul, 2019

Amazon Bangalore/Chennai Interview for SDE 1 role

## Round 1 \xe2\x80\x93 Pen Paper Test

- 1) [Root to leaf path sum equal to a given number, number can be positive or negative](#)
- 2) [Reverse a Linked List in groups of given size](#)

## Round 2

- 1) [Two nodes of a BST are swapped, correct the BST](#)
- 2) [Given two \(binary\) trees, return the first pair of non-matching leaves](#)

## Round 3

- 1) [Print distinct elements in every window of size k](#)
- 2) [Diagonal Traversal of Binary Tree](#)

## Round 4

- 1) Design Pizza Class, mostly OOPs concepts.
- 2) [Print top 500 words in a dictionary on the basis of frequency](#)

## Round 5 \xe2\x80\x93 Hiring Manager Round

- 1) Behavioural questions: Why to leave present company, Anything you want to change in yourself
- 2) How files are stored in memory? Is it compulsory to save each character in 8-bit? Can we have a variable length of bit representation? Why ASCII has 8 bit only?  
For variable length I have said the Huffman Coding.

## Round 6 \xe2\x80\x93 Bar Raiser Round

- 1) Behavioural questions : Anything that you have suggested apart from work, an instance where you have an argument with your manager, biggest accomplishment, biggest failure, anything that you have implemented apart from your day-to-day work.
- 2) What is semaphore?
- 3) What is design pattern? Explain Factory Design Pattern.
- 4) [Length of the longest substring without repeating characters](#)

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# Amazon Interview experience | Set 336

- Difficulty Level :\n[Hard](#)
- Last Updated :\n09 Jul, 2019

## Round 1 \xe2\x80\x93 HackerEarth 2 questions (Online)

1. [Find the distance between 2 nodes in a BST\(Binary Search Tree\)](#)
2. [Given a graph, find the Topological Sort.](#)

## Round 2 \xe2\x80\x93 Team Lead (F2F)

1. system design to show the list of suggestion when a user is buying and item. Example: the user will buy a pencil and will see a list of other pencils, pens and erases.
2. Behavioural questions,.

## Round 3 \xe2\x80\x93 Senior or principal engineer(F2F)

Almost same behavioural questions :

- Most challenging project
- tell me one time where you did something without everyone knowing because you thought you could make it better
- time you disagreed with your manager
- hardest bug.
- Given a log file containing {timestamp,begin/end,requestId} (the begin/end is a flag to identify when a request started and finished) define the peak of transaction running concurrently.

## Round 4 \xe2\x80\x93 Manager (F2F)

1. Lots of behavioural and prior project questions(almost the same again)
2. [Given an array, shuffle it\(Sort it random\).](#)

## Round 5 \xe2\x80\x93 Bar Raiser(F2F)

1. Questions about decisions I made in prior project(lots of whys)
2. Given a set o coordinates( double X and y) and an angle. Calculate the max of points that could fit inside the angle.  
Approach: calculate the angle for each point this way we can have a simple list of angles and then iterate through them to see if the difference is equal or lower to the given angle and then count the max points group

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## Amazon Interview experience | Set 335

- Difficulty Level : [Hard](#)
- Last Updated : 09 Jul, 2019

### First Round :

1. 10 Mins Introduction of the team , myself , Behavioral questions .
2. Next 45 mins write a findMatch method for online game where two players are set to play game. If player X comes online then he needs to be matched with player whose existing rank is closest possible to that of Player X. This had to be efficient algorithm and scale to millions of users

### Second Round :

1. [Given different time periods during which tasks were running find the time at which maximum tasks are running.](#)

### Third Round :

1. [Given a String find out if it contains ONLY all strings from another string.](#)

Input : str - FeeO & another String - { "Fe", "e", "O"} \r\n Hint : Use DFS to solve this

### Fourth Round:

1. Design Amazon address manager app

### Fifth round:

1. Behavioral questions only.

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# Amazon Interview experience | Set 334 (For 4.5 Years Experienced)

- Difficulty Level :\nExpert
- Last Updated :\n09 Jul, 2019

Round 1:

1. [Given binary tree. Find level with maximum sum](#)
2. [List of modules with Dependencies given. Order the execution of modules \(Topological sort\)](#)

Round 2:

1. Questions on Projects, Managerial questions
2. Design Chess game. After basic design, complicated things by adding various functionalities

Round 3:

1. Deep design level discussion on one project that I have worked on
2. Design cricinfo live score page

Round 4:

1. [Clone a binary tree which has random pointer as well](#)
2. Design Cache library

Round 5:

1. Minimize cash flow among set of friends.
2. Questions on Projects, Managerial questions

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## Amazon Interview experience | Set 333 (For Internship)

- Difficulty Level : \n [Hard](#)
- Last Updated : \n 28 Jun, 2021

### Round 1: Aptitude test

1. An aptitude test was conducted, comprising of 20 MCQs and 2 coding questions. MCQs were very easy. MCQs were based on data structures/asymptotic notations/data structure and quantitative and verbal aptitude.

In coding section there was an easy question which was based on strings and brute force based.

[The question was to check if the substring of one given string is an anagram of the other.](#)

Input: zamo amazon\r\nOutput: Yes

2. Second question was of moderate level in which input is an expression string and you have to evaluate that given string is valid. If yes return the value of the expression, else return -1.

\r\nInput : 5+7\*2\r\nOutput : 19\r\n\r\nInput : 5++4\r\nOutput : -1

I solved one complete and one partial.

### Round 2: Technical Interview 1 (around one hour)

1. After Aptitude they selected 18 candidates and announced that interviews would begin within next 15 minutes.

Firstly he introduced himself and then asked for my introduction, it was just for creation of amicable environment. After that I was asked technical questions.

[Question 1: You have been given an alphanumeric string extract maximum numeric value from that](#)

\r\nInput: 100klh564abc365bg\r\nOutput: 564

Answer: I gave him a O(n) approach, he gave me a few test cases and tried to prove my logic wrong, for one case I was wrong because I had used int data type so as to rectify the mistake, I told him that I would be using long int instead. Then I asked him if I can use string.h library? He said yes sure, then I gave him atoi() approach. Then he told me to write the code.

2. [Question 2: You have been given a generator string ab from which any number of strings can be generated recursively by inserting \xe2\x80\x98ab\xe2\x80\x99 at any location. You have been given an input string to check if that given string is valid or not.\(i.e. generated by given with given string.\)](#)

\r\nInput: aabbab\r\nOutput: valid\r\nInput: abbaab\r\nOutput: Invalid

Answer:

First I gave him O(n^2) approach then he told that he wanted O(n) approach. After about 5 minutes I gave him O(n) approach involving two pointers. Then again he told me that I would be traversing the input twice. What if I wanted to achieve it in one pass? Afterwards I gave him solution using count variable. (It was PDA problem there is also a stack based solution but I didn't give that solution because that solution didn't strike at that time)

Then he asked me, Do you have any question for me?

I asked him about job profile, his projects and his experience in Amazon

### Round 3: Technical Interview 2(1 Hour)

After one hour of round 1 they told me that I was selected for round 2. Just like round 1 he asked me to introduce myself. Then he started asking technical questions.

- [Question 1: Delete a node from doubly circular linked list.](#)

Answer: It was easy question, so I asked him about constraints, like if there was any condition that node can exist or not and data constraint. After listening to constraints I wrote a code covering all possibilities and hence

we checked few test cases manually for that code.

- **Question 2:** He observed that I was little tensed he asked me the reason of my nervousness. I answered saying, as it is my first interview and I was feeling anxious. He asked me why was that so, though few companies had visited campus before Amazon, guessing that I must have had at least one interview experience.

Answer: I told him that I was not eligible because of low pointer then I told him that why my CPI was low and how I'm good at coding.

Then He encouraged me which was very good and positive thing for me(usually interviewer will do it if you show your positive side). Then he asked few question related to my hobbies to make my mood fresh.

Coming back to technical stuff

- **Question 3:** [You have been given stock prices for n days and find optimal buy and sell day i.e. maximize the profit.](#)

Answer : I told him that I have solved similar question in Morgan Stanley Hackathon, Then I gave him  $O(n^2)$  approach and told that when I implemented this approach in the contest I got TLE(time limit exceeded) message hence I had modified it and found a  $O(n \log n)$  solution which got AC(all correct) in contest. Then I explained  $O(n \log n)$  solution using STL. He told me not to use STL and asked me if I can solve this question in  $O(n)$ ? I replied I shall try. Then after 10 minutes, with dp approach I successfully solved that question. We then checked some test cases.

After this question he asked me if I had any questions. Taking reference from first interview we discussed for around 10 minutes about projects currently going on in amazon and his experience in amazon.

(I think this question matters a lot because this question reflects your confidence about selection as well as your interest.)

Couple of days after the interview I received a mail stating I was selected for the internship hope you will also get a similar mail.

## How to prepare for internship?

1. Quant and Verbal Aptitude:
2. indiabix.com is more than enough.
3. You can also use RS Agrawal books.
4. Technical Aptitude:  
Any book of DSA and DBMS you can use.
5. Data structures made easy is awesome and enough for DSA

You must solve MCQs on [quiz.geeksforgeeks.org](http://quiz.geeksforgeeks.org)

## Coding Round:

1. This is totally different from MCQs. You have to write and debug code, so practice is very important for this round.
2. To study algorithm and data structures implementations refer geeksforgeeks, also try to solve questions on [practice.geeksforgeeks.org](http://practice.geeksforgeeks.org)
3. For standard algorithms follow codemonk series by hackerearth.
4. Logic development usually takes more time so try to practice on codechef and hackerank. Also try to participate in live contest of codechef (every months codechef long challenge).

## Technical Interview:

1. In technical interview you should be aware of commonly known data structures and algorithms. Learn that from geeksforgeeks and implement on codechef. If you are prepared for coding round then preparing for interview is a cake walk and all you have to be is confident. To answer the coding questions impressively I would suggest you to go through the career-cup questions once.
2. Cracking the coding Interview is best book for tips of technical interviews. Also if you have studious friends circle, try to conduct mock interviews with friends. (And to be honest, everyone gets serious once internship procedure starts so you can easily manage that.)  
Lastly I would also suggest coding on [interviewbit.com](http://interviewbit.com) if time allows.

## Few Tips(Specially for SY students reading this) :

1. try to Keep your CPI above 8 else you will miss some opportunities. And another thing CPI matters only for qualification after that CPI is just a number nothing else . So TY students reading this if you

don't have decent CPI then tie your shoes for coding (MY CPI was just 7.8).

2. Try to code on codechef and hackerank and try to participate in live contest

Wish you all the best! ☺

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# Amazon Interview experience | Set 332 (Off-Campus)

- Difficulty Level :\nHard
- Last Updated :\n09 Jul, 2019

Amazon Interview Experience (Off Campus)

## Round 1: Online Test

1. Circular tour that visit all petrol pumps.
2. Find a sub-array in an array of 0 and 1 such that flipping bits maximizes no. of 1s.

## Round 2: Telephonic Interview 1

1. Mirror Image of binary tree (Recursive Solution Required)
2. Mirror image of binary tree (Iterative Solution Required)
3. Mirror of n-ary tree.
4. Generate all k length combination from n length string, characters can appear multiple times, print unique combinations only.

## Round 3: Telephonic Interview 2

1. Sqrt of an integer till given decimal places. (Expected complexity  $\log n$  and only a single function can be made which has to deal with all the cases)
2. Merge two balanced binary search tree.

## Round 4: F2F

1. Isomorphic binary tree check.
2. Count all possible decodings of a string of digit.
3. Given log files consisting of product bought and customer id, print top k purchased items at any time. If billions of items are there and it is not possible for a single machine to handle them then how will you handle this condition. Discussed several approaches.

## Round 5: F2F

1. Top view of binary tree.
2. Given an expression number of different ways to evaluate the expression.  
Exp.  $1+2*3$ , can be evaluated as  $(1+2)*3$  or  $1+(2*3)$   
Later he asked me to find out all the possible answers as well.

## Round 6: F2F (Technical + hr)

Discussion about project I completed during internship.

Technical Questions asked were :\n

- K-th largest element in bst.
- Array vs Linked list.

Several behavioral questions.

## Round 7: F2F

1. Hotel booking problem.
2. [All Practice Problems for Amazon !](#)

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## Amazon Interview experience | Set 331 (1 Year Experienced for SE-1)

- Difficulty Level :[Hard](#)
- Last Updated :[09 Jul, 2019](#)

A big big thanks to geeks for geeks for constructing this platform where candidates find suitable question sets.

### 1. 1st Round (Coding round on hacker rank) :

Two questions. Each of 100 marks. Total time given was 2 hours.

Question 1: [Unit Area of largest region of 1xe2x80x99s](#)

Question 2: [Largest Sum Contiguous Subarray](#)

### 2. 2nd Round (Tech) :

Two questions. Here the basic knowledge of data structures and algorithm is tested to determine whether candidate is eligible for onsite interview rounds or not.

Question 1: [Find zeroes to be flipped so that number of consecutive 1xe2x80x99s is maximized](#)

Question 2: [A program to check if a binary tree is BST or not](#)

### 3. 3rd Round (Tech):

Two questions. Knowledge of algorithms and data structure was tested. Along with it, production level code had to be written on paper and it was to be made sure that no edge cases remain uncovered.

Question 1: [Print nodes at k distance from root](#)

Question 2: [Print all nodes at distance k from a given node](#)

### 4. 4th Round (Tech):

Same checks as present in 3rd round. Since i did not perform well in the 2nd question of 3rd round, more stress on my coding part was given in this round. They were thoroughly checking my code and pointing all the edge cases if any.

Question 1: [Clone a linked list with next and random pointer](#)

Question 2: <http://stackoverflow.com/questions/6179635/what-is-a-good-data-structure-for-storing-and-searching-2d-spatial-coordinates-i>

### 5. 5th Round (Hiring Manager \xe2\x80\x93 Tech & Non Tech):

Checks were same as above rounds. Along with those, whether the candidate was a good fit at amazon was checked.

Question 1: Given a stream of integers, at any point of time, fetch the count of integers which are smaller than a given number.

```
\r\n      Example : \r\n                  at time t1:\r\n                  stream : 1, 4, 3, 2, 6, 7\r\n                  input : 5\r\n
```

Question 2: HR Questions

\xe2\x80\x93 give an instance where your manager and you disagreed.

\xe2\x80\x93 give an instance where you outperformed yourself.

\xe2\x80\x93 explain your project and your role in it.

\xe2\x80\x93 explain the most difficult project you\xe2\x80\x99ve faced.

### 6. 6th Round (Bar raiser Tech and Non Tech) :

This guy will thoroughly check everything starting from code, algorithm, data structure, behavior etc. It is necessary of every candidate to crack this round.

Question 1:

Given the below pattern, write a recursive code for all values of n.

```
\r\n\r\n    N = 3\r\n    - - -\r\n    - -\r\n    - - -\r\n    N = 4\r\n    - - - -\r\n    - -
```

Question 2:

Explain internals of hash map\xe2\x80\x99s put method and write code for it.

Question 3: HR Questions

\xe2\x80\x93 give an instance where your manager and you disagreed.

\xe2\x80\x93 give an instance where you outperformed yourself.

\xe2\x80\x93 explain your project and your role in it.

\xe2\x80\x93 explain the most difficult project you\xe2\x80\x99ve faced.

**Practices :**

1. Practice code with pen and paper.
2. Cover all edge cases.
3. Take time to code but make sure once done, the code is impeccable.
4. Do practice HR questions seriously.
5. Try to cover as many geeks for geeks amazon interview sets as possible. As you can see my interview questions were mostly covered by articles already present.

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## Amazon Interview experience | Set 330

- Difficulty Level :[Easy](#)
- Last Updated :[09 Jul, 2019](#)

I recently gave interview for Amazon SDE-I role in Bangalore for AppStore team.

### Online Test (Hacker Earth):

1. [Given a number N, you have to print if its a prime number or Not Prime](#)
2. [Given a string S, print the number of digits and number of english alphabets in it.](#)

eg Input = "a5\$&45NdG"\r\nOutput = 3, 4

3. [Given a list of words, print them in lexicographical order](#), given the following priorities.

- a) If two words have same spelling, lowercase characters take higher priority.
- b) The words can have spaces in them. A space takes higher priority over any alphabet.

eg : Input = ["funny" , "fun", "fuNny"]\r\nOutput = ["fun", "funny", \xe2\x80\x9cfuNny\xe2\x80\x9d]

I could not solve the third question fully. Got partial marks.

### Round 1 :

1. Given a large number (can contain upto  $10^5$  digits), find the number of substrings that are divisible by 8. A substring cannot start with a 0 except if it is just 0.  
ex : Input = 10888 , output = 9 {0, 8, 8, 8, 88, 88, 888, 1088, 10888}  
Initially, I gave a brute force  $O(n^2)$  solution iterating over all substrings and then came up with  $O(n)$  solution.
2. The question was a bit vague. It ultimately boils down to [finding the number of distinct elements in an array](#).  
I gave the solution using HashMap and he was satisfied.

### Round 2:

1. [Find the number of islands](#)

I gave the solution using dfs and he asked me to implement it. I wrote the solution but did not keep track of visited cells and my solution was running into an infinite loop. He pointed it out to me and I corrected it.

2. [Rearrange characters in a string such that no two adjacent are same](#)

I gave him a solution where I start with empty string and in each step I pick the most frequent character and add it. I also check if the character I am adding is same as the previous character. He was satisfied with my approach and didn't ask me to write code. He said this question is for testing problem solving skill.

3. [Top View of Binary Tree](#)

He asked whether I came across this question and I said no. I gave the solution using bfs but I used HashMap which was not necessary. He asked me to think on using a simpler data structure. I struggled a bit but finally came up with set to store elements.

### Round 3 (Managerial):

1. Tell me about yourself.
2. Tell me a situation where you had conflict with your manager.  
And many more behavioral questions.
3. A DBMS question about Amazon's product catalogue. I had no clue how to approach this. She asked if I know any DBMS concepts and I said No and told her that I am from a Non-CS background.

Overall I didn't feel good about this round and my confidence went low. Luckily, my first two rounds went well and they decided to give me another chance by taking another coding interview.

### Round 4:

1. <http://stackoverflow.com/questions/2473114/how-to-find-sum-of-elements-from-given-index-interval-i-j-in-constant-time>

At first I gave a solution using segment tree (overkill) . He asked me to think of a simple solution. And then I remembered the solution where we keep an auxiliary array to store the cumulative sums. Then the queries can be answered in constant time.

2. [Longest K unique characters substring](#)

I already solved this problem previously and I immediately told him the solution using two-pointers.

### Round 5 (Managerial):

1. Tell me about yourself.
2. What was the hardest bug that you have encountered. How did you fix it.

And many more behavioral questions.

3. <https://www.careercup.com/question?id=64946>

This is an object oriented design question. I practiced these type of questions before going to the interview from Cracking the Coding Interview book and felt comfortable during the interview.

Compared to the first managerial round, this went pretty smooth.

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# Amazon Interview experience | Set 329 (Off-Campus for SDE-1)

- Difficulty Level :\nHard
- Last Updated :\n09 Jul, 2019

I applied off campus for Amazon Bangalore SDE-1. It started with two face to face rounds.

## Face-2-Face (Round 1) :

1. [A binary tree is given print the binary tree in vertical order.](#)  
I gave him a hashmap based approach then he said can you improve it and finally I came up with space optimized solution using DLL.
2. He asked do you like DP. I said yes so He asked me a puzzle. There is a stream of integers and two players are playing. Each player can take one integer from either of the corners. I need to tell if player A is playing first then what will be his maximum score. I gave him recursive approach he said its perfectly fine. He asked me to optimize my solution cause it was exponential finally I gave him a dp approach he was satisfied and then told me to write full bug free code for the same.
3. [N number of identical nodes are given. You need to calculate how many no of binary trees are possible?](#)

## Face-2-Face (Round 2):

He started introducing himself and then asked me some behavioural questions.

1. Tell me about yourself.
2. Your industry experience.
3. Why do you want quit so early?
4. What courses you did?

And then he asked me one dynamic programming question.

A matrix is given and each cell has some value. You can enter from any cell of first row and make three different moves down, south-east and south-west i.e. from  $(i,j)$  to  $(i+1,j+1), (i+1,j-1), (i+1,j)$ . You need to calculate maximum value when you reach last row.

I gave recursive solution of complexity  $O(3^n)$  and then finally gave him dynamic programming solution in  $O(n^2)$ . He was not done yet then he asked me to print the path as well. I did.

Both interviews were good so I was waiting for results. After 2 days I got the call you have cleared both the rounds and they want to conduct two more rounds. Next step was two more face-2-face rounds.

## \xc2\x0Face-2-Face (Round 3):

It was a bar raiser round very crucial for the whole process. Interviewer introduced himself and asked me behavioural questions like:

1. Tell me about yourself.
2. Interests, strengths and weakness.

3. Then he asked me about my final year project which was based on Machine Learning. He discussed everything in details. After that he asked me about office life and working culture etc.

I was currently working on Blockchain so he asked me about this technology cause its totally new and amazing tech so he was pretty impressed. He asked if I have any question for him. I asked several question related to his work and Amazon visions.

### Face-2-Face (Round 4): Hiring manager round

This round was behavioural round and cultural fit. He asked so many questions related to projects and current work.

1. Why do you want to join Amazon?
2. Why are you quitting?
3. What are your future expectations?

Then he asked me explain current company project and project architecture, my role in team etc. Guys prepare well for behavioural questions, they look for culture fit.

Coding question:

[Print the vertical sum of a binary tree.](#)

Result : I got the call after 3 days and hr said congratulations, you are placed and It was like dream came true.

Thanks to my parents, Upendra Bhaiya and Prajakta for all the support. I want to thank geeksforgeeks team, it\xe2\x80\x99s an ideal platform for preparing coding interviews.

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## Amazon Interview experience | Set 328 (For SDE-1)

- Difficulty Level :[Medium](#)
- Last Updated :[08 Jun, 2021](#)

Started with online test at Hackerearth. It had 2 questions.

\xc2\x0

1. [Find subarray with max sum. Array have both -ve and +ve integers.](#)

2. Consider a matrix with rows and columns, where each cell contains either a 0 or a 1 and any cell containing a 1 is called a filled cell. Two cells are said to be connected if they are adjacent to each other horizontally, vertically, or diagonally;

If one or more filled cells are also connected, they form a region.

Output the length of the largest region.

Ex: in the following example, there are 2 regions one with length 1 and the other as 6.

```
0 0 1 1 0\xc2\x0  
1 0 1 1 0\xc2\x0  
0 1 0 0 0\xc2\x0  
0 0 0 0 1\xc2\x0
```

Solution: [Unit Area of largest region of 1](#)

### 1st Round (telephonic)

\xc2\x0

1. Given a string and integer k, in-place rearrange the string such that last n-k characters comes before the first k characters.

Ex: abcdef and k=3, so result is: defabc

2. [Given a binary tree, sum all the root to leaf nodes and return the sum.](#)

```
Ex: \n      1\n      /\n      2      3\n      /\n      4      6\n      /\n      7\n\nhere ans: 124 + 126 + 13
```

### 2nd Round

\xc2\x0

1. [Given a large file having strings\(for understanding, given an array of strings\). Find the string which repeats the most.](#) Ignore the case.

2. [Given the link-list and integer value \xe2\x80\x98k\xe2\x80\x99, reverse every k nodes of the list.](#)

Ex. k = 3, list: 1-2-3-4-5-6-7-8

ans: 3-2-1-6-5-4-8-7

### 3rd Round

\xc2\x0

1. Questions on my projects.

2. [Given a binary tree with each node having parent pointers. Find the LCA of two nodes.](#)

### 4th Round

\xc2\x0

1. Given a 2-D grid, number of steps to take, say k and initial position of a Robot. print the paths possible from initial position after k steps. Robot can move in top, right, left, bottom. In one path, robot can't move to the location it has previously visited.

2. [Check if a binary tree is balanced. Balance criteria was difference of height between left and right subtree should be <= 1.](#)

3. [Given a binary tree, a node of that tree, and integer k. Print all the nodes which are at distance k from that node.](#) NOTE: there is no parent pointer in the node.

### 5th Round

\xc2\x0

1. Behavioral Questions. Read front pages(before technical stuff) of Cracking the coding interview book. Prepare them well.

2. [Given a string, count all the palindromes in that string.](#) Only consider substring palindromes

Thanks to geeksforgeeks for helping me prepare for interviews.

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\xc2\x0

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# Amazon Interview experience | Set 327 (Off-Campus for SDE-1)

- Difficulty Level :\n[Hard](#)
- Last Updated :\n08 Jul, 2019

I was Invited to attend Interview at amazon Hyderabad for the position of SDE 1 and I had the following rounds.

## Round 0 coding \xe2\x80\x94

1. [Given an array find the maximum consecutive and non consecutive sum and print them.](#)
2. [Given a matrix find the number of 1\xe2\x80\x99s in the maximum island MAT\[i\]\[j\] = {0,1}.](#)

## Round 1 Data Structure \xe2\x80\x94

1. [Given a tree return the number of elements for the level with the maximum elements.](#)  
PS : all null nodes between two non null nodes need to be counted and null nodes can have null children which also can be counted.  
eg\xe2\x80\x93 [null,2,1,null,null,3,null] in this level all nodes between 2 and 3 will be counted i.e. 5
2. Asked about what data structures I knew and what data structure will I use to make a cache.the answer was Hashing.
3. Asked what data structure would i use for maintaining cricket scores.  
the answer was priority queue.

## Round 2 Algorithms \xe2\x80\x94

1. [Given a binary tree find out if it is a BST](#)
2. [Given a binary tree root and a node ,print all nodes at K distance from the node.](#)
3. Given an array it can be of 4 types
  - Ascending
  - Descending
  - Ascending Rotated
  - Descending Rotated

[find out which kind of array it is and return the maximum array.](#)

## Round 3 Design \xe2\x80\x94

- Asked me the word breaking problem which I couldn\xe2\x80\x99t solve and this round didn\xe2\x80\x99t go well.

## Round 4 Managerial \xe2\x80\x94

1. Asked about my current company and work done over there.
2. Asked me a problem to [convert Integer to Roman while handling all the corner cases.](#)
3. Asked about [process and Threads](#)
4. I asked about the team and kind of work to be done

\xc2\xab0

I would like to thank **GeeksforGeeks** to provide such a huge variety of problems and a progressive

way to approach any problem.

\xc2\xd0

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# Amazon Interview experience | Set 326 (For Application Engineer)

- Difficulty Level : \n[Medium](#)
- Last Updated : \n08 Jul, 2019

Requirement was that the candidates should have strong troubleshooting skills, strong knowledge of scripting in any language + Strong coding skills and problem solving skills.

## Round 1: Written test (Elimination Round)

There were total 6 questions. 2 coding and 4 scripting questions.

1. Write a function to [print the run length encoding of a given string](#).

Example : \r\nI/P String - wwwwxxxxddaaaww\r\nO/P String - w5x4d2a3w2

[5 marks]

2. Write a [function to print the spiral of a matrix](#). [5 marks]

- The file is given as follows containing records of length 10 having mix of numbers, alphabets and alphanumeric characters.

1234567890  
0987654321  
ABCDEFGH  
123456789X  
1234567890  
123456789X

Write a script command to print the distinct records containing only alphanumeric characters.

Expected Output : 123456789X

[2 Marks]

- Write a script command to rename all .JPG files to .JPEG files in the current directory.[2 Marks]
- Write a command to kill a process using process name. [2 Marks]
- Script command to calculate the total size of all the PDF files in the directory. [2 Marks]

## Round 2 : Technical/Problem Solving F2F Interview

The customary \xe2\x80\x93 Tell me about yourself\xe2\x80\x9d. \xf0\x9f\x99\x82

Then the interviewer asked me whether my code for the run length encoding asked in the written round will run for all the inputs. I was pretty sure that it would run. He gave me a case where my code was failing. He told me to modify my code. Also, I had used Hashing technique for this problem so he asked few questions on HashMap how it works.

1. [How will you find whether any permutation of a word would be a Palindrome.](#)

I explained him the logic using Brute force approach with  $O(mx2^m)$  time complexity, where m is the size of the word. He told me to optimize it. I told him the following approach:

We will keep track of the counts of each character in the word. If the length of the word is even and if all characters appears even number of times, a palindrome can be formed.

Similarly, if the length of the string is odd and all characters but one appear even number of

times then Palindrome can be formed.

Else, in all other cases Palindrome won't exist in the word. He seemed to be satisfied with my approach and told me to write the full code.

2. [Find all the pairs with a given sum.](#)
3. He gave me a problem to solve. Given two identical ropes of equal length, ,if it takes 60 minutes to burn out the whole rope, how will you measure 45 minutes using these two ropes. You are provided with only these two ropes and a lighter to ignite.

## Round 2: Debugging and Troubleshooting/Scripting

Tell me about yourself.

- Given the contents of the file as follow:

Company1 400

Company2 500

Company3 600

Company2 150

Company1 350

Write a script command to find the total cost incurred by Company1.

- Script command to [print the sentence in reverse order.](#)

I/P - "You are in Amazon"\r\nO/P - "Amazon in are You"

- Troubleshooting scenario \xe2\x80\x93 If a customer complains that he is not able to sign in to his Amazon account, how will you troubleshoot?

She told me to write as many points in the paper as possible. Whatever point I was mentioning, she was like \xe2\x80\x93 \xe2\x80\x9cAnything else? Anything else? :P\xe2\x80\x9d

She modified the question and asked me if 3-4 customers complains the same that they are not able to login to their Amazon account, how will you troubleshoot the issue.

Debugging \xe2\x80\x93 How will you debug the issue whatever you have troubleshooted.

- If there is sudden increase in the requests count in the system and you need to answer to the higher authorities, how will you handle the situation?

## Round 4: Troubleshooting/Debugging/Problem Solving/ Managerial

1. Tell me about yourself.
2. Given a file containing some sample text, write a script command to count the number of occurrences of the word \xe2\x80\x9cAmazon\xe2\x80\x9d.
3. Given a file containing some sample text, write a script command to change all occurrences of the word \xe2\x80\x9cAmazon\xe2\x80\x9d with \xe2\x80\x9cIt\xe2\x80\x9d in the file.
4. [Given an array of positive and negative numbers, find the maximum product of the pair of numbers in the array.](#)
5. He asked me what project am currently working on. I told I was mainly a backend developer in DB2 as core database. He gave me a query to fetch the 2nd highest value from the column.
6. Tell me a situation where you were working with your team and the team was stuck with some issue for which you were digging out the main problem where the issue is arising and finally you figured out the same.
7. Troubleshooting \xe2\x80\x93 A customer is having 2 devices \xe2\x80\x93 tablet and android. He is using Kindle app in the tablet and he has made notes and read till 500th page of a book in the kindle app. Next day he wishes to read the same book from 501st page, but he observes that all his notes are lost from 401st-500th page. How will you troubleshoot this issue.

At last, HR called me and told that I am rejected. \xf0\x9f\x99\x81

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# Amazon Interview experience | Set 326 (For SDE II)

- Difficulty Level :\n[Medium](#)
- Last Updated :\n08 Jul, 2019

## 1st

1. [Reverse the linklist in pair manner](#)

Q: 1->2->3->4->5 \r\nA: 2->1->4->3->5

2. [Third highest value in tree](#)

Full code required.

## 2nd

1. [Put the given random pointers in linklist to point to next greater node such that if u transverse list in using random pointer, list become sorted. duplicates are allowed.](#)

Full code required

## 3rd

1. Design a solution to search the given value in system. You are given a value which need to be searched. The system will respond basis of type.

If its app based it will return app names. if it is web based it will return web pages hitsetc. A detailed discussion design and development.

No actual coding

## 4th

- Get the local maxima or minima in array.

## Bar raiser:

- [Distance between two nodes in binary tree.](#)

## Hiring manager 1

- Design chess game

## Hiring manager 2

- Design inventory system. (eg: library)

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# Amazon Interview experience | Set 325

- Difficulty Level :\n[Easy](#)
- Last Updated :\n08 Jul, 2019

## 1st Round(Hackerrank)

- Given an array, find largest sum of

1) [Contiguous subarray](#)

2) [Non Contiguous Subarray](#)

- [Largest region of cells problem](#)

## 2nd Round(Written test)

- [Add two numbers represented by linked list](#)
- [Get a number, find next greater element with same digits](#)
- Given a sorted array find if  $a[i]+a[j]=0$  ( $i \neq j$ )

## 3rd Round(ftf)

- [Max Sum level in a binary tree](#)
- <https://www.geeksforgeeks.org/print-nodes-binary-tree-k-leaves/>

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## Amazon Interview experience | Set 324 (For SDE2)

- Difficulty Level : \nExpert
- Last Updated : \n08 Jul, 2019

I got a call from an consultant for recruitment drive in Delhi.

**First round (1 hour 30 minutes): online written** It was online written round on a platform called Stockroom.io.

1. Two string a haystack and needle is given find at what all indexes needle occurs in haystack as an anagram(0 based indexing)

```
\r\nINPUT: str1 = "ABACDABCABA" , str2 = "BA"\r\nOUTPUT: 0,15,8,9\r\n
```

Expected time complexity is O(n). The only thing to pay attention was that ASCII characters starts from A.

2. Given A company\xe2\x80\x99s hierarchy where each employee reports to exactly one manager. and one manager can be reported by multiple employees, implement necessary setter getter functions in object oriented way. also write a helper instance methods to return lowest common manager for two given employees  
answer to this question was simple but had to write object oriented code and zip it then upload it.

**Second round(1 hour): Design round** This was most critical and important round.

- Design a geographically partitioned multi-player card game, that supports multiple players, multiple games at a time. Each game will have one contractor like ones we have in a bar, He can play a game or just watch it. integrate payment systems.

First HLD was required, use cases, flow diagram. then a low level design was required all necessary classes where will u use polymorphism, where inheritance, multithreading, synchronised approach if needed, socket connections. Other things that surfaced and he asked as interview goes : round robin load balancer, hash-map based load balancer, two layer caching, nosql db, design patterns, solid principles, ACID property, CAP theorem etc.

Interviewer was a senior person and knew a lot. I was nervous in this round but answered well.

- Many behavioral questions

**Third round (1 hour): technical**

1. Many behavioral and \xe2\x80\x9cwhat if you were in a situation\xe2\x80\x9d questions
2. Given an array of words which comes in a dictionary of some language in the same order. tell if its possible?

ans. represent characters of words as a graph and find out if graph is cyclic (cycle in directed graph)

the interviewer was very supportive. He gave me few important hints in terms of question understanding.

**Fourth round (1 hour): technical** He asked me what you like , I said array questions \xf0\x9f\x99\x82 He started laughing.

- given an array of integers and two types of queries point update and range sum?

ans: I said binary indexed tree then he asked for other ways I said segment tree, He asked more , I said prefix array or sqrt decomposition.

he asked me to write code for the same. made some variations like lazy propagation.

- [topological sorting](#). given a words of dictionary tell alphabet ordering.
- many behavioural questions

Hr came and told me that we are done for the day one more interview is there which was on next day.

Hr was very supportive she gave me some constructive feedback and told me to get prepared well and come next day as next day was with a Bar Raiser.

### Fifth round (1 hour): technical+ design + behavioural, Bar Raiser

1. asked tree related questions , how to represent and model a tree.
2. Design a Netflix type system. start from HLD to LLD. detailed discussed happened on this discussion on search, video serving, authentication, encryption, dns lookup, which caching strategy would you chose? serving multi quality video etc.
3. few behavioural questions.

### Few things to remember:

1. for technical go through geeksforgeeks practice test and interview experiences
2. for design have a look at carreercup
3. review OS concepts.
4. recruiters and hr is very supportive
5. prepare for behavioural questions well.
6. prepare \xe2\x80\x9cd you want to ask any questions?\xe2\x80\x9d

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# Amazon Interview Experience | Set 323 (Software Development Engineer Off-Campus)

- Difficulty Level : [Hard](#)
- Last Updated : [08 Jul, 2019](#)

I applied off campus for the role of Software Development Engineer at Amazon, Hyderabad.

## Round 1 (Telephonic) : 1 hour

Interview began with my intro and briefing of my work at current company. Then he asked me two coding questions :

- **Ques 1** : You are given an array of size n. Now [print the number of distinct elements in the array for every frame of size k.](#)
- **Ques 2** : A binary tree and a number, say k are given.  
[Print every path in the tree with sum of the nodes in the path as k.](#)  
(A path can start from any node and end at any node, i.e. they need not be root node and leaf node; and negative numbers can also be there in the tree)

After two weeks, I got a mail to come for the face to face rounds of interviews.

## Round 2 (F2F) : 1 hour

Interviewer was very friendly. I was tensed before entering into the room but after talking to him for a minute, I started feeling comfortable. He started with his introduction and then asked me about myself and the work I am doing in my current company.

Then, he moved on to the coding questions.

- **Ques 1** : [A binary tree is given. You need to print every path in the tree starting from root with sum of the nodes of an path equal to a given number, k.](#) (Numbers can be negative too)
- **Ques 2** : A linked list is given in which every node has two pointers, one to its next node and the other one, random pointer, pointing to some other node in the linked list. You have to clone the given linked list.  
Sol : [Clone a linked list with next and random pointer](#)

Some questions that arose as a result of discussion on OS were :

Q1 . What is [critical section problem and how is it solved?](#)

Q2 . What is [Semaphore?](#)

Q3 . What is [race condition?](#)

Q4 . What is write lock and what are the conditions of it?

Q5 . What are [threads and processes?](#)

Then he asked me if I had any questions and then I was asked to wait for the result of this round.

I was called after sometime for the next round.

## Round 3 (F2F) : 1.25 hour

In this round, two people were there, both were looking like some senior persons at Amazon. They discussed only about my project in the current company in detail. They didn't ask anything else in this round.

## Round 4 (F2F) : 1 hour

Interviewer started with his introduction and asked me for mine. Then he asked me to brief my company project.

Then he asked two coding questions :

- **Ques 1** : A browser is being designed and you have to implement the history feature in that, which will have two functions, one is to fetch recent 100 urls ( `getHistory()` ), and other one to update that recent 100 urls list whenever a url is hit ( `updateHistory()` ).
- **Ques 2** : An array is given and it can be of four types :
  - (a). increasing
  - (b). decreasing
  - (c). first increasing then decreasing
  - (d). first decreasing then increasing

Without traversing the array we need to tell its type. There was a long discussion on this question.

## Round 5 (F2F) : 1.5 hour

Interview started with the introductions of me and the interviewer.

Then, he scanned my resume and started asking me about the projects I mentioned. Then he told me to select any of the projects and explain everything from scratch including my role, number of persons involved in the project and the role of each person. He also asked me the title of research paper I used to implement the project but I didn't remember the title so he asked me name of any one author who was part of the research paper. I told him a name and he searched for the paper on his laptop there only. Discussion on the project was approx 45 minutes long.

1. After discussing the project in detail, he gave me a coding question and we discussed that question also for approx 45 minutes.

Question : There is a number given in the form of a string. Number can be any long. Now I have to tell just greater number of the given number which is a palindrome also.  
Sol : [Given a number, find the next smallest palindrome](#)

I would like to thank **GeeksforGeeks** to provide such a huge variety of problems and a progressive way to approach any problem.

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## Amazon Interview Experience | Set 322 (Off-Campus)

- Difficulty Level :[Hard](#)
- Last Updated :[08 Jul, 2019](#)

Recently I attended interview at Amazon for SDE 1 profile.

### Round 1 (Written):

3 questions were given and I was asked to write the executable code in any language.

1. [Check whether the tree is BST.](#) <
2. [Check whether the Linked List is Palindrome.](#) ( $O(1)$  space).
3. [One array \(Array 1\) of size m with m sorted elements and another array \(Array 2\) of size \(m + n\) with n sorted elements, you have to put all the elements from both the arrays in Array 2 in sorted order.](#) ( $O(1)$  auxiliary space and  $O(m + n)$  time).

### Round 2 (F2F):

1. Given a stack of integers of size n, you have to sort it using only push and pop operations (you are not allowed to copy the numbers in auxiliary array and sort it and then push back in array). (I gave  $O(n^2)$  approach and  $O(1)$  auxiliary space).
2. [Stepping on stairs: A valid move is defined as either a single step or 2 steps.](#) Starting from 1st stair you have to reach nth stair in minimum valid moves. I gave dp approach then rolled down it to Fibonacci formula which can be solved in  $O(\log(n))$  time using Matrix Exponentiation.
3. [Stepping numbers:](#) A stepping number is defined as a number in which the absolute difference between the consecutive digits is not greater than 1, A stepping number cannot be a single digit number. You have to find the number of stepping numbers between n1 and n2 where n2 > n1 and n2, n1 > 0. First I gave brute force approach i.e. traverse from n1 to n2 and print i if i is a stepping number. They asked me to optimize it, after a little while I came up with BFS solution, where a node in graph (directed) represents a number and nodes directly connected to it have one more digit appended at the end. Stop when number dequeued from the queue is greater than n2.
4. [Iterative version of Tower of Hanoi.](#) I gave stack version of TOH. Since recursion uses recursion stack. I removed recursion and used stack to imitate recursion instead. They were satisfied with the solution.

### Round 3 (F2F):

1. [In any point of time print the first non-repeating number in a stream of numbers.](#) It took me quite a while and after little brainstorming I came up with solution using DLL and map.
2. [Delete a node from BST.](#) I had forgotten how it was done so again I had to think hard, realized that deleted node must be replaced with its inorder successor to maintain the BST property and coded the solution.
3. This was the most exciting round. They seemed happy with my approach.

### Round 4 (Design Round):

1. Design a Parking Lot.
2. Create queue using stack.
3. Discussion on all the OS scheduling Algorithms.
4. How to implement SRTFS (preemptive SJF).
5. Discussion on Inter Process Communication : Shared Memory and Sockets.
6. Why sockets are preferred over Shared Memory.
7. Where shared memory is stored (in user space or kernel space) ? and why ?

### Round 5(Hiring Manager Round):

1. General Discussion.
2. [Infix to Postfix conversion.](#)
3. [Return a maximum length sequence containing consecutive numbers from a binary tree.](#) i.e.

\r\n 90\r\n / \\\r\n 1 66\r\n / \\\r\n \r\n 2 67\r\n

Consecutive sequence of maximum length: [66, 67, 68] of length 3.

I had the hunch but was not able to code it at first, so he asked me to do it later then after some discussion, i was given 15 min to complete it and finally in those 15 min it clicked and I managed to do it.

### Some advice:

1. Practice coding on paper, try to do write clean code without overwriting.
2. Brush up important concepts of OS.
3. They concentrated more upon the thought process to reach the final solution. So think loudly and you will receive hints ;).
4. Keep calm and remain confident.

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## Amazon Interview Experience | Set 321 (Online Assessment)

- Difficulty Level : \n[Basic](#)
- Last Updated : \n13 Jan, 2017

Just completed Amazon\xe2\x80\x99s online assessment that was given a week in advance to prepare for.

It consisted of two tests on:

1. Code debugging (20 min)
2. Reasoning (35 min multiple choice)

The first part were 6 questions. Each with a provided code where it asks you fix and make changes so it can compile/run correctly. Most of these problems were errors with syntax, parameters, operators, and others along the same lines. The second part were 24 questions on patterns, logic, and some others like concluding a given passage. Everything during the test is monitored and questions can be returned to if moved on. Before starting it gives the option of selecting a programming language from C, C++, or Java. For me I chose C. If you ever coded at a university in a beginner/intermediate computer science class, then you should have no problem getting through this. I just graduated last month so everything was fresh to me still. I reviewed several old homework assignments that helped out a lot with the basic understanding of algorithms and memory allocation. A lot of people told me to study from the \xe2\x80\x9ccracking the Code Interview\xe2\x80\x9d by Gayle, which I vaguely looked over and found it did not help as much for this assessment, though it might for the next interview processes. The most difficult aspect for me was the limited amount of time, especially the first portion that requires you to read code line by line. I highly suggest you take your time to read the question once and carefully, then answer if you can and if you cannot then skip it and return if time permits. Other than that, I found it far simpler than what I had expected and overly prepared for. They said I will be contacted for the next interview step within a week.

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**Amazon Interview Experience | Set 320 (Off-Campus)**

- Difficulty Level :\nEasy
  - Last Updated :\n21 Nov, 2019

Recently i attended\xc2\xa0interview at amazon hyderabad for SDE-1.

## **Written round Two questions**

1. Find the unique character from two strings
  2. [Parenthesis match problem](#)

## **Face to Face**

1. Two colors are given(yellow, blue), we have to color such that no consecutive blue color is painted

Given the arrival and departure time of various trains in a station. Calculate the minimum number of platforms required such that no train has to wait for another train to vacate the platform.

The question basically means calculate the maximum number of trains that would be present in the platform at any given time.

## **Answer**

sort the arrival time and sort the departure time, keep a count initialized to 0. compare the first element of the arrival time with the first of departure, increase the value of count if the value at current Index at arrival is less than the value index at departure and increment the arrival index, and vice versa. Keep the maximum count that you see.

## Second face to face

1. Implement stack using queue
  2. Reverse linked list form n occurrence

\xe2\x80\x94\xe2\x80\x94\x94\xe2\x80\x94\x94\xe2\x80\x94\x94\xe2\x80\x94\x93not so good

1->2->3->4->5->6->7->8

if k=3;

3->2->1->6->5->4

## Third face to face

1. Design elevator in OO perspective.
  2. How class is loading in JVM:- Discussed about eden, perm space. using graph and BSF & DFS.
  3. [Clone the binary tree](#).

I didn't get call after that.

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# Amazon Interview Experience | Set 319 (On-Campus)

- Difficulty Level : \n[Medium](#)
- Last Updated : \n08 Jul, 2019

## Online Round:

There were 20 MCQs based on basic programming, C output questions, OS. There were 2 programming questions.

1. [Given an array with only 1s and 0s, You have to maximize numbers of 1s in this array.](#) You are allowed to do max one flip operation which can be applied to a range of continuous indexes. I used something like max sum contiguous subarray dynamic programming approach. This problem is similar to

2. [You are given a linked list. for i=1 to n/2, subtract \(n-i\)th number from ith number. Print modified linked list in the end.](#)

## Technical round 1:

1. [Given three numbers A, B and M. Calculate \(A\\*B\)%M.](#) All numbers are in a range of 1 to  $10^{15}$  so prevent overflow. First I gave brute force approach for running a loop A times, each time adding B to the answer and taking the mod. Then, I improved from  $O(n)$  to  $O(\log n)$  by calculating  $A*B/2$  recursively and multiplying it by 2. The interviewer asked me to write complete code for it.

2. [He asked me whether I know about trie data structure and I said yes so he asked me to write node structure of trie. I wrote the basic node structure. Then he asked me if I want to add and match exact strings then how would I modify node structure. I told him to add a boolean in the node signifying an end of the string. Then he asked me to write complete code for adding a string in trie root.](#)

## Technical round 2:

He asked me introduction and questions asked in previous interviews.

1. [Given a binary tree, print the edge nodes of this binary tree.](#)

2. You are given an array of contacts. Each contact consists 3 strings: name, email and phone number. If any of these parameters match with any other contact\xe2\x80\x99s parameter then these 2 contacts are same. Find groups of same contacts. I suggested having a hashmap with parameter string as key and index as value. Then when we encounter matching strings in the hashmap, connect this 2 contact indexes as we do in Disjoint set Quick Union approach. In the end, find matching contacts using find operation.

## Technical round 3:

This interview was mostly based on resume discussion. He asked me about my internships and projects and also asked me some OS questions. Then he gave me a chess problem. I am given initial positions of 8 pawns and a knight. I have to answer whether I can remove all 8 pawns using my knight. Then he simplified question and now only 1 pawn is there. I wrote full code for recursion to solve the problem but time complexity was exponential. Then he asked me how do I find the minimum number of steps in which I can remove this pawn. I modified my existing code to return a number of steps now.

## Technical round 4:

This was kind of like HR round. Initially, he asked me about my latest internship work and started with specific questions. What was the toughest challenge I solved during any of my projects? What kind of problems you encounter when working in a team and how can those be resolved? Did you ever write non-maintainable code and why did you write it? Did it ever happen to you that you suggested some good approaches but they were thrown to trash by higher authority and how did

you tackle with that?

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# Amazon Interview Experience | Set 318 (For SDE Intern)

- Difficulty Level : \n [Hard](#)
- Last Updated : \n 24 Apr, 2020

The First Round of test was taken online by Amazon on Hackerearth.

## First Round:

- 20 MCQs
- 2 Coding Questions:
  - [Find zeroes to be flipped so that number of consecutive 1\x80\x99s is maximized](#)
  - [Find the first circular tour that visits all petrol pump](#)

## 2 Technical Rounds:

They take time in declaring results as they ensure that all eligible candidates make it to the Technical Interviews. Technical Rounds also consists of coding. Here, you need to discuss your approach with the interviewer and then code it on paper.

### 1st Technical Round:

General question of Tell My About Yourself. Following this were technical questions mainly coding.

Q1. [Find the position of the rightmost set bit.](#)

I gave various approaches, firstly dividing by 2. Then they asked for a solution using bit operations. Gave them solution using OR.

Q2. Time complexity of Binary Tree: Searching, Inserting

### 2nd Technical Round:

Again asked Tell My About Yourself. There were 2 coding questions asked.

Q1. [Large number sum using Linked List.](#)

2 Approaches: Reversing the linked list and then adding or Recursion. Gave both the solutions. Then the question was: In case of a billion digits, which would you prefer? Recursion has a lesser time complexity but, a normal system won't be able to operate so much on recursion, as there will be a stack overflow. Hence for a billion digits we have to go with reversing the linked list and then adding each digits.

Q2. [Find an element in a strictly row sorted and column sorted 2 dimensional array without brute force.](#)

Q3. Questions on Sorting and Searching algorithms complexity.

Q4. Questions on Networking

What is BGP(Border Gateway Protocol)?

What is Link State Routing? How does it work?

What is OSPF?

TCP/IP model and OSI model.

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# Amazon Interview Experience | Set 317 (SDE-1 Off Campus)

- Difficulty Level : \n[Medium](#)
- Last Updated : \n08 Jul, 2019

## Round 1:

1. \xc2\xa0Tell me about yourself.
2. \xc2\xa0[Trapping Rain Water](#): Given n non-negative integers representing an elevation map where the width of each bar is 1, compute how much water it is able to trap after raining.
3. [Print left view of a binary tree](#).

Discussion : I gave two approaches one with DFS and other with level order traversal.

He asked to compare two approaches and implement the efficient one. DFS is the efficient one because in level order, you need to store all the nodes at each level, some of them may not be a part of the left view of BT.

## Round 2:

1. \xc2\xa0Tell me about yourself.
2. \xc2\xa0Find sum of n elements after kth smallest element in BST. Tree is very large, you are not allowed to traverse the tree.

Discussion : Since the array traversal is not allowed so we need to do some preprocessing over the tree, something like storing sum of all its predecessor nodes. For finding kth smallest element, use order statistics approach:

3. \xc2\xa0[Given a sorted array which has been rotated n number of times. Find the value of n. It is similar to below post where you need to find only the pivot element. If you have the Index of pivot element, you can get the number of times the array is rotated.](#)

## Round 3:

1. [Count ways to reach nth stair.](#)

It is similar to fibonacci series. Interviewer asked various ways to implement the same - Recursion, 1-D array, with 3 variables and complexity of each.

2. Design recommendation engine.

It\xe2\x80\x99s like auto suggestion. I gave the trie approach. The interviewer seemed fine with this approach and asked me to write full code with time and space complexities. Implementation of Tries:

[Trie | \(Insert and Search\)](#)

## Round 4(Managerial Round \xe2\x80\x93 Over video call)

1. Tell me about yourself.
2. Current work
3. Which project you liked working the most.
4. \xc2\xa0Any case where you had conflict with your manager.
5. \xc2\xa0Any idea/technology suggested by you to your team which then got implemented and worked out.
6. \xc2\xa0Any case when you had to work out of your comfort zone.
7. \xc2\xa0The most critical feedback received from your manager/team members.

8. What do you do to enhance your technical knowledge apart from your project work.  
And many more.

## Round 5(Final Round) Telephonic

- Initially I was asked questions about the work I had done, the projects I did and some managerial questions.
- Then I was given a coding problem to solve. They use Collabedit tool in phone screen interviews where the same screen is shared by both interviewer and interviewee.  
**Ques :** Print all the non-repeating words out of two given sentences.  
**Eg. Statement 1:** I have a blue pen.  
**Statement 2:** I got a red pen.  
**Output :** have blue got red  
**Discussion :** I suggested the hashing approach. The interviewer asked to implement the same.

### Points to take care:

- You must know how to calculate time and space complexities
- In each round they ask you about the project you recently did/ the project you liked working most/ most challenging work etc- so you should be prepared well for at least one project with in-depth details.
- Start with the naive approach for each question asked and then proceed with solutions with better space and time complexities.
- No need to waste time reading about Operating Systems, Networking, DBMS etc. They only care about the projects you did and your coding skills whether you cover all the edge cases while writing code, know time and space complexities, have better approaches for solving same problem and so on.

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# Amazon Interview Experience | Set 316 (On-Campus)

- Difficulty Level : \n[Medium](#)
- Last Updated : \n13 Dec, 2016

## Round 1- 90-100 min

- First Ques- So what you know about Amazon- I wasn't prepared to start my interview with this ques. But I had read months earlier how Amazon was established and was able to satisfy him with answer.
- 2 ques- Tell me about Summer Intern at wipro- It took around 20 min. Deep discussion on project, all in and out.
- 3 Ques- How does the program gets compiled internally, I told him I have not studies this part as my branch is ECE. He then asked me what have you studied- I told him DS algo ,OS, Networks and convinced him that ECE is strongly related with CS in terms of Algorithm.
- 4 ques- As i told him that I like competitive coding, He asked tell me 1 quess you have solved- I told him- Find the K-most frequent occurring word till now in a running stream of words by using Trie(modified) and Heap concept. He asked why I am using min heap and not Max heap and I gave the reason.
- Everything about Min Heap-> Insertion deletion modification.
- Given data How will you sort them. I told him quick sort , merge sort are possible ways. He asked which you will prefer I told him QuickSort . Why not Merge sort? I told him because of external memory use but then he asked that can we do it in-place , later on I was able to do inplace merge sort and he again asked which algo you will prefer I told still quicksort because it is more Cache Friendly and he was satisfied.
- Given 100 gb data, you need to sort them how will you proceed. I told him external sorting and he straight away told me I don't want merge sort. Then I tried to twist the situation by asking what type of data is available. He was in doubt why am I asking that, So I told him if all the data is in limited range then I can simply apply counting sort and he was impressed as well he forgot about the actual question.
- He was done with the interview and said do you have any ques. ME- What role will be playing in the team if selected.

In 2 min They told me that i was cleared for 2 round.

## Round 2

I went for 2 round without wasting time as Spot On offers were to be given. Interviewer was slightly weirded and he straight on went for the ques.

There is data available for different vehicles and all vehicles have n parameters which distinguish it with other vehicle so given huge data you need to separate them in different lists based on some parameters matching. How will you proceed->Then he said 3 parameters are there and if all 3 parameters match then they belong to same list.

I told him lets sort the data according to first parameter then for then sort acc to 2 para and so on.. (something like Radix sort).

He told me to use Hash-Map and model the whole idea. building the structure for each vehicle and then use key to do hash-mapping.

I implemented it but due to too much overwriting, He was not looking impressed but he told its correct.

DO u have any questions.

After this Round I was rejected.

## TIPS-

1. Please be prepared for Hash\_MAP it is very important to have deep knowledge as this part is rarely covered in.
2. Try to write clean codes and by clean code I mean you should use good variable name, don't scribble much and try to write comments along with it.(I made a mistake here.)
3. You should know all ins and outs of the project and remember interview can ask any project.
4. Puzzles don't matter much

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## Amazon Interview Experience | Set 316 (Off-Campus)

- Difficulty Level : [Medium](#)
- Last Updated : 14 May, 2017

Amazon Off Campus Interview Experience(SDE-1, Experienced)

### Round 1:

1) Tell me about yourself.

2) Trapping Rain Water : Given n non-negative integers representing an elevation map where the width of each bar is 1, compute how much water it is able to trap after raining.

<https://www.geeksforgeeks.org/trapping-rain-water/>

3) Print left view of a binary tree.

<https://www.geeksforgeeks.org/print-left-view-binary-tree/>

Discussion : I gave two approaches one with DFS and other with level order traversal.

He asked to compare two approaches and implement the efficient one. DFS is the efficient one because in level order, you need to store all the nodes at each level, some of them may not be a part of the left view of BT.

### Round 2:

1) Tell me about yourself.

2) Find sum of n elements after kth smallest element in BST. Tree is very large, you are not allowed to traverse the tree.

Discussion : Since the array traversal is not allowed so we need to do some preprocessing over the tree, something like storing sum of all its predecessor nodes. For finding kth smallest element, use order statistics approach:

<https://www.geeksforgeeks.org/find-k-th-smallest-element-in-bst-order-statistics-in-bst/>

3) Given a sorted array which has been rotated n number of times. Find the value of n.

It is similar to below post where you need to find only the pivot element. If you have the index of pivot element, you can get the number of times the array is rotated.

<https://www.geeksforgeeks.org/search-an-element-in-a-sorted-and-pivoted-array/>

### Round 3:

1) Count ways to reach nth stair.

<https://www.geeksforgeeks.org/count-ways-reach-nth-stair/>

It is similar to fibonacci series. Interviewer asked various ways to implement the same recursion, 1-D array, with 3 variables and complexity of each.

2) Design recommendation engine.

It's like auto suggestion. I gave the trie approach. The interviewer seemed fine with this approach and asked me to write full code with time and space complexities. Implementation of Tries:

<https://www.geeksforgeeks.org/trie-insert-and-search/>

### Round 4 (Managerial Round Over video call)

Tell me about yourself.

Current work

Which project you liked working the most.

Any case where you had conflict with your manager.

Any idea/technology suggested by you to your team which then got implemented and worked out.

Any case when you had to work out of your comfort zone.

The most critical feedback received from your manager/team members.

What do you do to enhance your technical knowledge apart from your project work.

And many more.

### Round 5(Final Round) Telephonic

Initially I was asked questions about the work I had done, the projects I did and some managerial questions. Then I was given a coding problem to solve. They use Collabedit tool in phone screen interviews where the same screen is shared by both interviewer and interviewee.

Ques : Print all the non-repeating words out of two given sentences.

Eg. Statement 1: have a blue pen.

Statement 2: got a red pen.

Output : have blue got red

Discussion : I suggested the hashing approach. The interviewer asked to implement the same.

### Points to take care:

You must know how to calculate time and space complexities.

In each round they ask you about the project you recently did/ the project you liked working most/ most challenging work etc so you should be prepared well for at least one project with in-depth details.

Start with the naive approach for each question asked and then proceed with solutions with better space and time complexities.

No need to waste time reading about Operating Systems, Networking, DBMS etc. They only care about the projects you did and your coding skills whether you cover all the edge cases while writing code, know time and space complexities, have better approaches for solving same problem and so on.

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Amazon Interview Experience | Set 315

- Difficulty Level : [Medium](#)
  - Last Updated : 08 Jul, 2019

Interviewed for Mumbai location.

## Round 1 (Written round 45 min)

1. [Count the number of occurrences in a sorted array](#)
  2. [In given range, print all numbers having unique digits](#). e.g. In range 1 to 20 should print all numbers except 11.
  3. [Given a node, you can even find the next highest node](#) in  $O(\log(n))$  time.

## **Round 2 :**

1. Tell me about yourself
  2. A  $\times 80 \times 98 + \times 2 \times 80 \times 99$  pattern of size 1 is defined as following :

Find size of largest plus pattern in given 2D mattrix which has only 0s &1s.

### **Round 3:**

1. check if a binary tree is BST or not [Check for BST](#)
  2. Min Cost path : [Min Cost Path](#)
  3. Check if two linked lists merge : [Intersection of Two Linked Lists](#)
  4. Count ways to reach nth stair : [Count ways to reach the n<sup>th</sup> stair](#)

The guy opened geeksforgeeks link in front of me and was asking from there directly!

## **Round 4 (Skype Round):**

1. Tell me about yourself.
  2. Tell me most challenging project you did. 30 min detailed discussion about project. (So, choose answer to this wisely)
  3. [Find the smallest window in a string containing all characters of another string](#)
  4. How HashMap is implemented?

\*This is most favourite question of Amazon\*

## **Round 5 (Skype round):**

1. Tell me about a situation when you had conflict with manager.
  2. Tell me about situation you screwed up something.
  3. What is the most technical challenging work you did?
  4. Implement LRU cache

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## Related Practice Problems

## Unique Numbers

Smallest window in a string containing all the characters of another string

## All Practice Problems for Amazon !

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# Amazon Interview Experience | Set 314 (For FTE)

- Difficulty Level : \n [Hard](#)
- Last Updated : \n 28 Jun, 2021

Recently Amazon came to our college for both FTE and interns. Here I am sharing my interview experience. There was 1 online round and 3 F2F interviews and 1 Bar Raiser round.

Online round had 2 coding questions and 20 ([MCQs](#) based on sorting complexity, Recursion, quantitative aptitude , geometry etc).

## F2F 1

He introduced himself and asked me about my project.

Then He asked me these questions

1. [Find the maximum of all subarrays of size k.](#)

I gave him a  $O(n^2)$  approach, then  $O(n \log n)$  approach using segment tree, then  $O(n \log k)$  using max heap and then  $O(n)$  approach using deque. He asked me to write the full production level code.

2. [Find the first non-zero digit starting from right in n!](#) Simply keep the last digit of every multiplication, gave an  $O(n)$  approach. He seemed to be satisfied.

## F2F 2

He asked the following questions

1. He asked me to make a dictionary in which i had to search a string and if it is not present , i had to insert in dictionary.\xc2\x0Gave a  $O(n \log n)$  approach using map. He asked to optimize it , then gave a trie approach. He asked me to write full code for it.

2. He asked me, [what is LRU cache and how it is implemented.](#) Then he asked me to write the full production level code for it.

## F2F 3

This interview was a design round as well as theoretical round.

1. Firstly, he asked me about my favorite subjects. I told him operating system. Then he asked me about process scheduling algorithms and then he asked me how will you allocate memory to a newly formed file. I told him about first fit, best fit and worst fit. He asked me what are the advantages and disadvantages of these.

2. Then he asked me a design question. Let's say you have a 13 floor building and it has 6 lifts in it, you have to design an algorithm such that if a user click the lift button, any of the available lift should reach to him in minimal time.

3. Then he asked to give the design for top k trends of twitter of facebook. I told him that I'll keep a trie for storing the count of the number of users associated with a particular trend and will keep this count in max heap and will extract top k trends.

Solution for design varies from candidate to candidate. so you should design your own solution rather than searching solution on google.

## F2F 4

This was a Bar raiser round and it was telephonic. He asked about my project and we had discussion on it in detail . After 40 minutes he asked me to write the full production level code on implementing LRU using circular linked list. It was easy and i had done that in second round also, so i wrote the whole code and he was satisfied.

verdict: selected \xf0\x9f\x98\x9b

### Thanks GeeksforGeeks !!

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# Amazon Interview Experience | Set 313 (For SDE II)

- Difficulty Level : \n [Hard](#)
- Last Updated : \n 17 Oct, 2019

## 1st Round(Written) \xe2\x80\x93 60 mins

It was a test on HackerEarth with two programming questions

1. [The Maximum Subarray problem](#): Given an array A of N elements, find maximum possible sum of
  - a. Contiguous Subarray
  - b. Non Contiguous Subarray
2. [Connected Cell in grid problem](#). Find the number of cells in largest region.

## 2nd Round (DS and Algo) \xe2\x80\x93 45 min

1. [Palindrome Partitioning](#) Spilt a string into minimum number of substring such that each substring is a pallindrome.
2. [Find the diameter of a binary tree](#)

General discussion on current role.

## 3rd Round (DS and Algo) \xe2\x80\x93 45 min

1. find difference in height of two nodes in a binary tree.

## 4th Round

Detailed Discussion on current role and responsibilities.

Discussed complete architecture of my current project- in terms of classes and methods, databases and cache used and then discussed improvements that i could suggest in architecture of my project.

## 5th Round

Discussion on current role and responsibilities. Discussed on architecture of my previous projects and technologies i have worked on.

Design question- Design a enhanced search that can help customer executives to search for the query asked by user through all the possible sections like- payment, order etc.

## 6th Round

Design a job scheduler.

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## Amazon Interview Experience | Set 312 (For SDE II)

- Difficulty Level :\nEasy
- Last Updated :\n08 Jul, 2019

I was not able to recall phone interview question from Amazon for SDE \xe2\x80\x93 II . After few days from phone interview, I got an email invitation to fly for face to face interview. Below are the questions that I was asked during the in-person interview.

Round 1:

[Write a program to check whether it is a valid binary tree or not.](#)

Check all test cases (e.g. No left Node case).

Behaviour Questions

Round 2:

Behaviour Questions

Tell me your current job roles, responsibilities , Challenges and improvements that you can make on your current project

Round 3:

A lot of Behaviour Questions again

Introduction, your current roles and responsibilities

Round 4:

Various Types of Behaviour Questions

Design a kind of kindle fire application where we can subscribe news channel and read the news from all publishers as a digital format.

Round 5:

Behaviour Questions

Design an OOP concept for an application where employee can dispatch their incoming phone call according to their seniority level if they are not able to solve.

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# Amazon Interview Experience | Set 312 (Off Campus)

- Difficulty Level : \n [Hard](#)
- Last Updated : \n 08 Jul, 2019

I got a call from amazon for F2F discussion for SDE1 at hyderabad. There were totally four rounds and asked to leave for the day.

## First round:

1. Find the [kth smallest element in row wise and column wise sorted matrix](#). (No Heap solution)
2. There is a given data with time and number of orders at that time and it will random. Then there will be a query of how many orders placed between a given interval of time.

## Second Round:

1. <https://www.geeksforgeeks.org/minimum-number-of-swaps-required-for-arranging-pairs-adjacent-to-each-other/>
2. [There given a list of strings out which we have to print the unique strings. Unique string is a string which is not repeated.](#)

## Third Round:

It was a discussion on my current project and the challenges I faced and how I managed when I am unable to meet the deadlines.

1. There given a 2 Lists with int values. We need to find the longest chain. Eg: L1 = {2,7,4,8,9,10}, L2 = {1,2,8,9,4}. Here the solution is 2 (chain is 2,4 or 8,9). Because 7 is present in L1 which is not L2.
2. Given a equi-weighted uni directed graph and need to find the max distance possible from a given node.

## Fourth Round:

It was again discussion on my current project.

Final question of my interview: [Add 1 to the integer represented by a linked list with O\(n\) time and O\(1\) space.](#)

First I start with the recursion and he suggested me without stack space too. Then I suggested for the reversing of linked list and then adding the number. He was again asked me without reversing of linked list. Then I came up with the solution with linear search.

Thanks **GeeksforGeeks** for your work in helping so many programmers!!

\xc2\xa0

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# Amazon\xe2\x80\x99s most frequently asked interview questions | Set 2

- Difficulty Level :\n[Medium](#)
- Last Updated :\n22 Mar, 2022

[Amazon\xe2\x80\x99s Most Frequently Asked Questions | Set 1](#)\xc2\xa0

## Level \xe2\x80\x93 Easy\xc2\xa0

\xc2\xa0

1. [Get minimum element from the stack](#) \xe2\x80\x93 Practice [here](#)
2. [Serialize and deserialize a binary tree](#) \xe2\x80\x93 Practice [here](#)
3. [Print a binary tree in a vertical order](#) \xe2\x80\x93 Practice [here](#)
4. [Celebrity problem](#) \xe2\x80\x93 Practice [here](#)
5. [Level order traversal](#)
6. [Swap the kth element from starting and from the end position](#) \xe2\x80\x93 Practice [here](#)
7. [Binary tree to bst](#) \xe2\x80\x93 Practice [here](#)
8. [Max sum in the configuration](#) \xe2\x80\x93 Practice [here](#)
9. [Find the nth element of spiral matrix](#) \xe2\x80\x93 Practice [here](#)
10. [Count the number of occurrences in a sorted array](#)
11. [Find the smallest window in a string containing all characters of another string](#)
12. [Find the maximum of all subarrays of size k](#)
13. [Find the kth smallest element in row-wise and column-wise sorted matrix](#)
14. [Minimum swaps required to arrange pairs](#)
15. [There is an array of N numbers ranging from 1 to N. Only 1 number is missing, return the index of that number](#)
16. [Find the second largest and second smallest in a given array in a single traversal.](#)
17. [Find power\(x,y\) without using pow function.](#)(divide and conquer approach required)
18. [Count possible decoding sequence](#)

## Level \xe2\x80\x93 Medium\xc2\xa0

\xc2\xa0

1. [Given two string print them inter leaving strings characters](#)
2. [Minimum cost required to travel from top left to the bottom right in a matrix](#)
3. [Maximum difference between node and its ancestors](#) \xe2\x80\x93 Practice [here](#)
4. [Min distance between two given nodes of a binary tree](#) \xe2\x80\x93 Practice [here](#)
5. [Find the number of island](#) \xe2\x80\x93 Practice [here](#)
6. [Topological Sort](#) \xe2\x80\x93 Practice [here](#)
7. [Detect cycle in a directed graph](#) \xe2\x80\x93 Practice [here](#)
8. [Flattening a link list](#) \xe2\x80\x93 Practice [here](#)
9. [Detect a loop in a linked list](#) \xe2\x80\x93 Practice here
10. [Check if a binary tree is BST or not](#)
11. [Min Cost path](#)
12. [Count ways to reach nth stair](#)
13. [Maximum Subarray Problem](#)
14. [Palindrome Partitioning](#)
15. Given a binary tree [find the minimum root to leaf height.](#)
16. [Implement LRU cache](#)

## Level \xe2\x80\x93 Hard\xc2\xa0

\xc2\x0

1. [Boolean parenthesis Practice here](#)
2. [Maximum Index Practice here](#)
3. [Largest Number formed in the array Practice here](#)
4. Find the length of maximum numbers of consecutive numbers jumped up in an array
5. Delete the elements in a linkedlist whose sum is equal to zero
6. [Given a list of numbers of odd length design an algorithm to remove a number and divide the rest numbers equally so as it makes their sum same](#)
7. [Find diameter of a binary tree](#)

Also see\xc2\x0

\xc2\x0

- [Amazon Interview Experiences](#)
- [Amazon Practice Questions](#)
- [Top topics for Interview Preparation](#)

You may also like to see the following Amazon Interview [Video](#). \xc2\x0

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# Amazon Interview Experience | Set 311 ( On Campus for Internship and FTE)

- Difficulty Level : \n[Medium](#)
- Last Updated : \n28 Jun, 2021

Recently Amazon came to our college for both FTE and interns. Here I am sharing my interview experience.\xc2\x9cThere was 1 online round and 4 F2F interviews.\xc2\x9cOnline round had 2 coding questions and 20 MCQs (based on [OS](#), [sorting complexity](#), Recursion, \xc2\x9cDBMS , geometry etc).

## F2F 1

He introduced himself and asked me about my project which I had done in Samsung Research Institute this year.

Then He asked me these questions

1. [Suppose there is only one platform and n number of trains. So at any point of time only 1 train will stay in platform. N time intervals are given which represent the timing duration of n trains. You have to find what is minimum number of trains that have to be postponed such that no collision take place. \(full code was required covering all corner cases\)](#)
2. Suppose a string \xe2\x80\x9cabca\xe2\x80\x9d is given. Print all of its permutation such that no 2 same combination will be printed twice. (Considering string can have duplicate characters). (full working code required)
3. Asked me what DS I will use to evaluate a given expression? Then Asked to write the code of [Infix to Postfix conversion](#).
4. [There is an array of N numbers ranging from 1 to N. Only 1 number is missing, return the index of that number.](#)

## F2F 2

Asked me many question regarding my project for first 10 minutes. Then asked the following questions

1. [A matrix is given containing only 1 and 0. So whenever you access a 0 make the entire row and column as 0.](#)  
I was using  $O(n^2)$  space first, he said to use  $O(n)$  space only.
2. Given a binary tree [find the minimum root to leaf height.](#)

I told him a level order solution where I was enqueueing the level also with each node. He said not to push the levels with each node, so I kept on delimiter which I was pushing only after one entire level traversing was over and returned as soon as I got a leaf node.

## F2F 3

This interview was taken by the senior most person among the interview panelists. I was nervous while entering the room and as a result I messed up the interview.

He directly started asking question without any introduction which made me more nervous \xf0\x9f\x98\x9b

1. He wrote one nested recursive program(around 12-15 lines) on a page and asked me to draw the recursion stack of that program and show him in what order one function is called and stored in the

stack and in what order it is returned back to its callee function. And to prove what is the space complexity through that recursion stack.

I was nervous and was loosing confidence so could not solve it properly.

2. [Find the second largest and second smallest in a given array](#) in single traversal.
3. [Find power\(x,y\) without using pow function](#).(divide and conquer approach was required)

After this round I did not get a call for the last round. Some of my friends were asked questions on basic BFS application, [topological sorting](#), [LRU cache implementation](#), [Boxing stack problem](#) in the last round.

## Tips

1. Questions asked will be very easy at most of the times. Be confident. Whatever be the question you were asked try to solve it as long as you can, share your approaches with your interviewers. They will certainly help you out.
2. Have a clear idea of your project, they will ask you several questions regarding that.
3. Work very hard. \xf0\x9f\x99\x82

All the best \xf0\x9f\x99\x82

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[All Practice Problems for Amazon !](#)

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## Amazon Interview Experience | Set 310 (For Internship)

- Difficulty Level :\nEasy
- Last Updated :\n08 Jul, 2019

Technical round 1:

1 [I was asked to implement L.R.U.](#)(least recently used cache) using any DS i want

2 [Build a Binary Tree using inorder and preorder](#)

Technical round 2:

1-[Quick sort](#)

2-Questions about DBMS and DS to make it more efficient

3-Find minimum and maximum number in an array with minimum number of if statements.

4-Discussion about c++

They didn't conducted more technical rounds.

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# Amazon Interview Experience | Set 309

- Difficulty Level :\nHard
- Last Updated :\n08 Jul, 2019

**0th Round: (Online):** 20 MCQs + 2 Coding Questions In hackerrank platform:

MCQs Topics:

Quantitative aptitude(speed,mixture,ratio etc)

C apps (find o/p time complexity)

Os,DBMS

MCQs based on quants was little bit challenging.

Coding Questions:

1) [Size of Largest subarray with given sum.](#)

2) [Reverse Individual words in a string.](#)

i/p : This is a game

O/p: game a is This

After this round 39 were short listed.

There were 4 rounds of interviews(all technical)

## Round 1:(1 hr written round)

1)[zigzag traversal of a binary tree.](#)

2) [Find the size of largest island from a group of islands.](#)

There were 13 people 39 were divided to thirteen groups and one was eliminated in each group.

## Round 2:(1 hr Face to face)

First question was tell me about yourself.

Thoroughly went through my resume.

Asked me about my projects and internship experience.

Then a question came in Arrays.

Q) [Replace every element by its Immediate greater element](#)

\r\ni/p: 5 6 3 10 9 12\r\no/p: 6 10 10 12 12 12.

Then os questions came.

1) what is virtual memory?y is it so called?

2) paging and segmentation concepts.(in and out)

3) size of virtual memory.

Then he asked me \xe2\x80\x9cd u hav e any questions?\xe2\x80\x9d . I asked few questions in Amazon cloud drive.

## Round 3:(1hr 15 min Face to face)

First question was \xe2\x80\x9ctell me about yourself\x9d.

Then the Questions came:

1.[Find Minimum in each k sized window.](#)

\r\ni/p:12 3 4 10 6 5\r\nn                           k = 4\r\no/p:   3   3   4

I told him the Queue approach he is not satisfied. Then I started with dequeue ,he stopped me and asked me to use data structure other than queue. I told him min heap approach. He seemed to be satisfied .He asked me to write a production level code for that.

2. A new tree data structure is given in which each node has two values top and bottom, when all the nodes are arranged in tree, the top values of all nodes must follow BST while the bottom values must follow min heap. elements can be inserted in any order(not the order of arrival).

I gave my solution. He was satisfied and asked me to write a production level code for that.

Finally, \xe2\x80\x9cdoo u have any questions?\xe2\x80\x9d

#### Round 4:(1hr 30 min Face to face)

##### 1. [The Celebrity Problem](#)

2. Count possible decoding sequence: [Count Possible Decodings of a given Digit Sequence](#)

3. We are receiving a stream of data from a social network, how will you display k max persons based on number of friends?

He was satisfied with my approach of max heap.

Finally, \xe2\x80\x9cdoo u have any questions?\xe2\x80\x9d

After each interview some were eliminated.

Thanks to geeks for geeks.

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# Amazon Interview Experience | Set 308 (On-Campus for Internship)

- Difficulty Level : \n [Hard](#)
- Last Updated : \n 28 Jun, 2021

**Online Round (1 hr 30 min):** There were 20 MCQs and 2 coding questions

**MCQs :** There were 20 MCQs based on [DS](#), [OS](#), IQ and [output questions](#).

**Coding questions:**

1. Given an expression containing alphanumeric characters and parenthesis, check if  $\backslash x{e2}\backslash x{80}\backslash x{9c}(\backslash xe2\backslash x80\backslash x9d and \xe2\x80\x9c)\backslash xe2\x80\x9d$  are balanced. [Parenthesis Checker](#)
2. The preorder and the inorder traversals of a binary tree are given. Convert this to a tree where each node contains the sum of the left and right sub trees in the original tree. The values of leaf nodes are changed to 0. Print the preorder and the inorder traversals of the modified tree.  
[Transform to Sum Tree](#)

## Technical Round 1 (around 1 hr)

1. The interviewer asked me about my project, mainly the database part.
2. Given a rectangular matrix and n moves. If you are at a position (x,y) , you can move to (x+1,y) , (x-1,y), (x,y+1), (x,y-1). What is the probability that after n moves ,you will remain inside the rectangle?
3. [Sum equals to Sum](#)

## Technical Round 2 (around 1 hr)

1. The interviewer asked me what data structures I know. Then he asked me the applications of [graph](#).
2. Suppose there is a social networking site like Facebook. Every user gets some friend recommendations (i.e. People you may know!). Now, if there is a user A and he has 100 friends and each of his friends has got 5 other friends,A can get these 500 recommendations. But the condition is that he should only get the top 10 recommendations with whom he has the maximum number of mutual friends(If A and B are friends and B and C are friends, then A and C have a mutual friend, B). Suggest an efficient data structure for this and how to implement it. The implementation should be flexible as at any moment, any user can make new friends and he may also unfriend someone!
3. Applications of heap. Insertion in a [heap](#) ( insertion of strings in a heap, priority is decided lexicographically). Time complexity of insertion.

Thanks GeeksforGeeks \xf0\x9f\x99\x82

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# Amazon Interview Experience | Set 308 (For SDE)

- Last Updated : \n08 Jul, 2019

I was recently interviewed for the position of SDE-1 at Amazon. It was a 3 round process:

## Round 1:

On paper coding:

1. Given a binary tree print it in vertical order. The problem is stated here: [Print a Binary Tree in Vertical Order](#)
2. [Given a linked list convert it into given format:](#)

1->2->3->4->5->6\r\nnto\r\nn1->6->2->5->3->4\r\nn

## Round 2:

It was an in-person interview. I was asked only one question. He asked me about various approaches. With least space complexity, least time complexity, different data structure usage for the following problem:

[Trapping Rain Water](#)

## Round 3:

1. I was asked to [implement a queue](#) with any data structure, discuss its time complexity, why the particular DS was chosen etc.
2. Second question was to [find the number of islands given a graph](#), i.e. find number of disconnected graphs given a graph.

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# Amazon Interview Experience | Set 307 (Off-Campus)

- Difficulty Level : \n[Medium](#)
- Last Updated : \n08 Jul, 2019

I got call from consultancy for Amazon. After profile shortlisting, i received online test and then had telecom interview. After I went to Pune for f2f interview. HR shares all the topics need to study for interview. Below are the details of all rounds.

## Round 1: Online test

Hackerearth

2 programs with 75 mins duration.

## Round 2: Telecom interview

2 coding programs here too. Initially approach need to discuss, and once it\xe2\x80\x99s concrete and finalized they will ask to write code.

1. [Find level with maximum nodes on binary tree](#)
2. [Addition of infinite size of integer](#)

## Round 3: F2F design round

- \xc2\xa0Design parking system

## Round 4: F2F design round

- Design notification system

## Round 5: Coding round

1. \xc2\xa0[Remove half nodes from binary tree](#)
2. \xc2\xa0[Swap elements in linked list](#)

## Round 6: coding round

1. \xc2\xa0[LRU cache implementation](#)
2. [Copy binary tree and create new](#). Binary tree has left, right and random pointer

In any round they will discuss your project in dept. And asks for alternatives for technologies used in your application.

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# Amazon Interview Experience | Set 306 (On-Campus)

- Difficulty Level : \n [Hard](#)
- Last Updated : \n 20 Jun, 2021

Amazon came for FTE as well as internship.\xc2\xa0

MCQ consisted of 20 questions. 18 were related to mathematics and ds/algo. Everyone found ds/algo questions simple while maths questions were from topics like pipes/cisterns, distances, log, etc were quite complicated. I managed to get about 10 + correct and both coding questions correct to crack the online round.\xc2\xa0

The two coding questions were:\xc2\xa0

1) [Largest subarray sum \(O\(n^2\) was even getting accepted!\)](#)\xc2\xa0

2) [Reverse individual words of sentence](#)\xc2\xa0

eg-\xc2\xa0

i/p This is a game\xc2\xa0

o/p-game a is This\xc2\xa0

## Round 1:\xc2\xa0

First round consisted of following questions:\xc2\xa0

1) Given an array of string and array of characters find the string with atleast one and the most occurrence of all characters in array of characters.If there is tie print first occurring string.\xc2\xa0  
eg:`vector<string> = {\xe2\x80\x9ccabcd\xe2\x80\x9d, \xe2\x80\x9caaaaaaaaa\xe2\x80\x9d, \xe2\x80\x9cabcc\xe2\x80\x9d}\xc2\xa0`

`vector<char> = {\xe2\x80\x98a\xe2\x80\x99, \xe2\x80\x98b\xe2\x80\x99, \xe2\x80\x98c\xe2\x80\x99};\xc2\xa0`

answer should be abcd\xc2\xa0

2) [Check whether tree is balanced or not i.e check balance factor](#) O(n) solution was expected\xc2\xa0

3) [Given a string find longest substring with no repeating characters:](#) O(n) solution was expected\xc2\xa0

I solved all of the q\xe2\x80\x99s in first round with best complexity and interviewer was quite impressed.\xc2\xa0

## Round 2:\xc2\xa0

In round 2 following q\xe2\x80\x99s were asked\xc2\xa0

1) Given n points in 2 d space and two functions JOIN(A,B) and istransitvelyconnected(A,B).\xc2\xa0  
Join assigns A,B to same set while istransitvelyconnected(A,B) checks whether belong to same set.Solved using disjoint set using path compression\xc2\xa0

2) [Clone a doubly linked list with random pointer.](#)\xc2\xa0

Got confused and stuck in this question..but somehow managed to solve with O(n) space using hashing..\xc2\xa0

Interviewer was not very impressed coz of 2nd q but still I managed to reach 3rd round.\xc2\xa0

## Round 3:\xc2\xa0

Two questions were asked\xc2\xa0

1) [Find path with root to leaf sum as equal to target.](#)\xc2\xa0

2) Given an infinite string defined by function  $f(x)=x+\xe2\x80\x980\xe2\x80\x99d0\xe2\x80\x980\xe2\x80\x99b3+f(\text{complement } x)$  find k\xe2\x80\x99th bit\xc2\xa0

Solved first one easily,got stuck in second one so solved using brute force\xe2\x80\x99a\xe2\x80\x99\xc2\xa0  
However,managed to reach 4 th round\xc2\xa0

## Round 4:\xc2\xa0

Interviewer was little arrogant to my surprise..he kept staring and grinning while I solved the problem..he also said since it is 12:30 I wont waste time asking to introduce you.although ALL other people had theoretical round involving OS,CN,DBMA concepts I was asked to solve coding problems again..\xc2\xa0

I was asked my favorite Data structure..I said tree..\xc2\xa0

1) [Find shortest distance between two nodes of binary tree.](#)..after 2 mins. I said just find LCA in one traversal and then the path of the nodes in other traversal..\xc2\xa0  
soln is O(n)..he asked me to write LCA code ..i wrote in O(1) space using recursion\xe2\x80\x99 maybe he wanted solution in 1 traversal..although he did not tell me that..\xc2\xa0

2) The RAM of pc is 4 gb and file is 40gb in size .File contain numbers..sort the numbers..I came up with dividing files and using heap to sort all the file..\xc2\xa0

Asked me to writ the data structure\xe2\x80\x99 gave something like this..

```
struct heap{\n    int element;\n    FILE *f;\n} nheap arr[];
```

Got confused with complexity a bit\xe2\x80\x99 maybe he wanted something like this..

Result came out after 1 hour.. I was not selected :(..We asked about internship they told they did not come for internship although they said this during their presentation the same morning!!But can\xe2\x80\x99t help..life is unfair\xe2\x80\x99 maybe he wanted something like this..

Some of the students got rejected despite having excellent coding skills and\xc2\xa0  
amazing profile at codeforces,topcoder,codechef,etc..\xc2\xa0

Questions asked from other people:\xc2\xa0

1. Flattening of tree\xc2\xa0
2. [Word break problem](#)\xc2\xa0

Thanx @geeksforgeeks!!\xc2\xa0

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# Amazon Interview Experience | Set 305 (On-Campus for Internship)

- Difficulty Level : \n [Hard](#)
- Last Updated : \n 28 Jun, 2021

**Eligibility Criteria:** CGPA >=7.5 (with no history of arrears)

## Round 1: Technical Test (1 hour 30 min)

An online test held on HackerRank which consists of 20 [MCQ\xe2\x80\x99s](#) and 2 coding questions.

- **Coding Question 1:** [Find next greater number with same set of digits](#)
- **Coding Question 2:** [Merge two sorted arrays with O\(1\) extra space](#)

### [MCQ\xe2\x80\x99s](#)

They were pretty simple and straight forward. 5 questions were from general aptitude like probability, permutation and combinatorics. Rest of the questions were from Data Structure, Algorithm and C and C++ output questions. Reading [GeekQuiz](#) helped me a lot.

Around 300 students took the test out of which 21 were shortlisted. I was also one of them. We were interviewed the following day.

## Face-to-Face Interview 1(~1 hour)

The interviewer asked me to introduce myself. After I gave my introduction, he went straight to the questions.

### **Question 1:** [A program to check if a binary tree is BST or not](#)

Given a binary tree, we need to check if it\xe2\x80\x99s a binary search tree. He wrote the following function

```
bool isBST(Node *root)
```

I asked him if I could modify the function template to include min and max values. He said that I can modify the function template. So I gave my approach as described. After reviewing the solution, he asked me to explain it with an example. I drew a small tree and explained it to him. He was satisfied and we moved on to the next question.

### **Question 2:** [Maximum sum such that no two elements are adjacent](#)

Given an array of positive and negative numbers find the maximum sum in the array such that no two elements are adjacent.

As soon as he gave the question I said it is a Dynamic Programming problem. He asked me to write code. I wrote the code by using a dp array of size n (size of array) and I gave a top-down approach. He thoroughly checked if my code could handle all the corner test cases. He asked me to run the code for array of size 1 and 2. I explained it to him. He was satisfied and we moved on to the next question.

### **Question 3:** [Find a given word in a matrix of characters.](#)

Given a NxM matrix and string s, check if the string is part of the matrix. We can move to top, left right and bottom from a given cell.

Initially after giving the question I said we should use Depth First Search. But he gave me a case where it won't work and asked me to modify the approach. I said BFS and he asked me to write code. I wrote the code by handling all edge conditions. But I missed the visited array part. He read my code and gave me a case where it would run into an infinite loop. Now, I found out what was missing and said I have to include the visited array. He was satisfied and asked me to add that part to the code.

After this, the interview was over. He asked me if I had any questions for him. I asked him a few questions and we were done.

Out of 21 students, 12 students were selected for the second interview. Fortunately, I was also selected.

## Face-to-Face Interview 2(~1 hour)

The interviewer read my resume and asked me to introduce myself. After I gave my introduction, he went to the question.

### Question 1: [Count Possible Decoding of a given Digit Sequence](#)

Let 1 represent 1\x80\x98A\x80\x99, 2 represents 1\x80\x98B\x80\x99, etc. Given a digit sequence, count the number of possible decoding of the given digit sequence. The question can be found [here](#).

I gave my approach using Dynamic Programming. He asked me to reduce the space complexity. I gave an approach like finding nth Fibonacci number. He was satisfied. Then, he asked me to generate all the possible decoding instead of counting them. I gave my approach using backtracking and he was satisfied.

### Question 2: Identify the classes required to play chess game.

This was like a general question. I said four classes like pieces, board, clock, player and game. He asked me to identify the attributes and functions of each of the class and how they interact with each other. I told them. He was satisfied.

Finally, he asked me if I had any questions for him. I asked him a few questions and we were done.

That was all for the interviews.

## General Tips:

Don't be nervous when speaking to the interviewer. And don't think for a long time. Speak out your thoughts so that they can help if you go wrong. Preparing from GeeksforGeeks helps a lot.

## Best of Luck!

\xc2\x80

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# Amazon Interview Experience | Set 304 (On-Campus for Internship)

- Difficulty Level : \n [Hard](#)
- Last Updated : \n 28 Jun, 2021

Eligibility Criteria: CGPA >= 5.0

## Round 1: Technical Test

An online test held on HackerRank which consists of 20 [MCQ\xe2\x80\x99s](#) and 2 coding questions.

- Coding Question 1: [Find a tour that visits all the stations](#)
- Coding Question 2: An array consists of 0\xe2\x80\x99s and 1\xe2\x80\x99s. A flip operation is one in which you turn 1 ? 0 and a 0 ? 1. You have to do a \xe2\x80\x9cFlip\xe2\x80\x9d operation at most once on a sub array. Then finally display the maximum number of 1 you can have in the array after one flip operation.

In both the questions brute force solutions were accepted, i.e O(n^2).

## MCQ\xe2\x80\x99s

They were pretty simple you just need to have basic knowledge about Scheduling Algorithms, Threads and Time Complexity.\xc2\xa0In this section major portion was from the [Operating Systems](#).

I would suggest you go through [last minute notes on OS](#), they were life savior for me in Online round as well as in further round.

We were told that there will be only 2 Technical Rounds and No HR round.

## Face to Face Round 1: (~1 hour)

- **Questions 1:** Fold a LinkedList : 1 ->2->3->4->5->6 is converted to 1->6->2->5->3->4  
My approach :

- Step 1: [Find the middle of the link list.](#)
  - Step 2: Reverse the second half of the link list and keep the head as head2 for the second half of the linklist.

First Half

1->2->3

Second Half after reversal

6->5->4

Now traverse both the halves simultaneously and then take a node from first list and then from second list, do this until you reach the end of first and second list and make new links and maintaining the links to the next Node. Asked me to cover all corner cases.

Finally asked me to give a proper working code on paper.

- **Question 2:**

If one of the nodes in BST is not in correct position place that in correct position in the bst.\xc2\xa0First by some observation I figured out that there will be 2 nodes which will be in wrong order.

So this question became similar to Two nodes of a bst are swapped ,correct the bst. I gave an in order traversal approach but missed some corner cases, after giving a few he told me I am missing some more test cases, then he moved to next question.

- **Question 3:**

A music player has N songs , you have a random number generator rand(n) which generates a number from [0,n-1] .Your task is to play a random song from given N songs such that each

song is played once and your program should terminate once you have played all the songs.

- **Approach 1:**

We will use a HashMap to store the index of the song played and then whenever a random song is played check its occurrence in the HashMap if it is already there generate a random number again and do this till the size of the HashMap is N.

He told me that is a buggy code, and asked me to find out the bug.

The problem with the code is that it might end in an infinite loop in the worst case, assume that the first time rand(n) generates a number k ( $k < n$ ) and we put that in the hashmap , now assume every time the rand(n) generates k so we will end into an infinite loop and our program might never terminate.After a lot of thinking, I couldn't come up with a good approach.

Hint given by interviewer: What if you can swap some of the songs?

- **Approach 2:**

Step 1: Take a variable last initialize it to N.

Step 2: Generate a random number using rand(last),let it be k.

Step 3: Swap(a[last-1],a[k])

Step 4: last=;

Step 5: Goto Step 2 till all the songs are played(last!=0)By the last variable I simply keep track of all the songs that are played(after last).

He was satisfied with the approach.

Round 1 was over.

## Face to Face Round 2 (~1.5 hour)

- **Question 1:**

He started with [graphs](#) asked to find the followers of a person told him to do a [bfs](#) and some basic questions related to bfs.

- **Question 2:[Clone a LinkList with random pointers.](#)**

Gave him a solution using Hash Map, he was not satisfied asked me to do in  $O(1)$  extra space. I thought for 20 minutes but couldn't come with the  $O(1)$  approach.

Hint given by interviewer: What if you change some links in the original list?

Again thought for about 10 minutes still couldn't come with an  $O(1)$  approach.

Then he asked me to code the HashMap approach, while coding I figured out the approach with  $O(1)$  extra space. Once I was done with the code I told him the other approach, he was satisfied, code wasn't required for the second approach.

- **Question 3:[If you have 2 very big numbers how will you add them?](#)**[Told him BigInteger is there in Java use that.](#)

I : No without using that.

Take two strings and simply convert every character to digit and then add them up.

I: No you don't have to convert a character to a digit.

Take 2 arrays.

I: Tell the constraints with the array.

Then I finally told him to use a LinkList.

And then finally told me the approach to add them without reversing the list.(Did by recursion)

- Then there were many small questions related to quick sort, heaps, hashing, time complexity for various algorithms.

What are different phases in Compiler?

I never expected that!

I thought for about 2 minutes and tried to collect as much as possible whatever I have read in Compiler design. Then I gave him 4 phases of Compiler: Lexical Analyzer, Syntax Analyzer, Semantic Analyzer, Intermediate Code generation and then told him that I didn't remember anything more than this since I haven't prepared CD and studied a long

time ago.

- Then he asked me questions from OS.  
What is Threading?  
Why thread better then process?  
What is thrashing?  
What is LRU?  
And some more basic questions on OS.

That was all for the interview.

Result: Selected \xf0\x9f\x98\x80

### **Best of Luck to all of geeks for their placement season!!**

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# Amazon Interview Experience | Set 303 (On-Campus)

- Difficulty Level :\n[Easy](#)
- Last Updated :\n28 Jun, 2021

## Round 0: (Written): 20 MCQs + 2 Coding Questions

MCQs \xe2\x80\x93 Topics:\xc2\xa0[OS](#) ,[DS](#) ,[DBMS](#) \xe2\x80\x93 (Serialization etc.), [Aptitude](#) (simple [puzzle](#) kind.)

Coding Questions:

- [Given a string output reverse string](#) (string could have multiple spaces between the words).

Example:

i/p: I am a proud Indian.

o/p:

Indian proud a am I.

- [Given a no in string format output another string which is the biggest no formed from using same digits , otherwise print -1:](#)

**i/p:** \r\n0000\r\n132\r\n4312\r\n11\r\nno**/p:** \r\n0\r\n321\r\n432\r\n-1\r\n

So the solution is : <http://stackoverflow.com/questions/12493591/given-an-array-of-integers-find-the-largest-number-using-the-digits-of-the-array>

## DAY 2: (Interview Rounds)

### Round 1 (Technical Interview \xe2\x80\x93 45 min approx.)

The Interview started with his introduction , what his department is , what do they do and so on.

- [Given a link list of 0\xe2\x80\x99s and 1\xe2\x80\x99s sort it so that all the 0\xe2\x80\x99s are at beginning and 1\xe2\x80\x99s at the end.](#) \xc2\xxa0It had to be in-place.  
You cannot swap values only pointers.Order of 0\xe2\x80\x99s and 1\xe2\x80\x99s was to be maintained . I\xc2\xxa0had to write production level code for this with all boundary conditions checked!
- Given an array of 0\xe2\x80\x99s and 1\xe2\x80\x99s again and a variable k , print the size of the smallest window which contains exact k 0\xe2\x80\x99s .
  - discussion about the best optimised approach .
  - I solved it by storing indexes of all 0\xe2\x80\x99s and calculating min diff b/w every k elements.

### Round 2 (Technical Interview \xe2\x80\x93 1 hr approx.)

The interviewer asked me to introduce myself and then my projects.

- [A person has to cross a road and with each step he either gains some energy or loses some \(this info is provided as an array\) . Find out the min amount of energy he should start with so that at any level his energy is not less than 1 \).](#)

Simple question done in O(n).

- How to solve (a\*b)%m , where all a,b,m are of the order 10^15. Modulo\xe2\x80\x99s distributive property is one thing .

1st approach suggested was breaking the no\xe2\x80\x99s to binary as solving for eg:- [ ( 2^5 + 2^3 + 2^0 ) \* (2^5) ] % [(2^3 + 2^2 + 2^0)] is feasible,\xc2\xxa0but he wanted faster approach.

I suggested O(lg b) approach using divide n conquer (recursive solution) .

- He asked me if I know about the data structure [Trie](#) , I had heard about it and its use but never

implemented it. He explained a briefly what it is , then told me to code its structure , its functioning (finding / adding a new word) .

Then asked a few questions on it , some cases where it will falter , some more discussion on it.

## Thanks Geeks ! Result `\xe2\x80\x93 Selected \xf0\x9f\x99\x82`

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# Amazon Interview Experience | Set 302 (On-Campus)

- Difficulty Level : \n[Medium](#)
- Last Updated : \n08 Jul, 2019

0th Round: (Online): 20 MCQs + 2 Coding Questions:

MCQs Topics: OS Page fault, Waiting time (RR Scheduling), Paging, Semaphores, etc.

DS : Hashing (simple chaining based numerical)

Aptitude : 1 Probability question, Puzzle: 1 question, C: 2 questions, etc.

There were 4 rounds of interviews(all technical). Each round was for 45-50 minutes.

## 1st Round:

In this round the interviewer asked me the below two questions.

1.a) Given a number find the next greater number with the same set of digits.( [Find next greater number with same set of digits](#) )

I had to write the complete code covering all the edge cases.

Since I had practiced this question, it didn't take much time to code for it.

1.b) Given a Binary Tree, convert this to a tree where each node contains the sum of the left and right sub trees in the original tree.( [Convert a given tree to its Sum Tree](#))

For this question, first I discussed the approach, confirmed the edge cases and then wrote the code using recursion.

## 2nd Round:

This round started with questions from Operating Systems.

The interviewer asked me questions on Process and Threads, Process Scheduling, Mutex and Semaphores and Memory Management.

Some of the questions that were asked:

- Difference between process and thread.
- Advantages and disadvantages of using threads.
- Difference b/w Scheduler and Dispatcher.
- Name all the process scheduling algos and explain the Round Robin Process Scheduling.
- At max how many threads can be active at a time in a machine?
- What is race condition and how do we avoid it?
- Difference between Semaphores and Mutex?
- What is secondary memory and why do we use it?
- What is thrashing?

Then he asked me questions on Computer Networks.

- Explain OSI reference model and write all the layers present in this model along with the protocols used at each layer.
- Difference between TCP and UDP.

Finally he gave me a problem and told me to first discuss the approach with him and then code the same covering all the edge cases.

The problem was as follows:

[You are given an infinite stream of numbers, at any instant of time you have to print the earliest non-repeating number.](#)

eg: 2 3 4 2 5 6 output 3

2 3 4 2 3 7 8 output 4

I discussed my approach with him, he told me to further increase the efficiency and gave me hints. With his hints, I came up with the final solution (using Doubly Linked List and HashMap) and wrote the code.

He evaluated it and spotted 3 errors.

### 3rd Round:

In this round the interviewer asked me questions on the Internship project.

He told me to briefly explain the complete project and asked various questions on the same.

Then he gave me a coding question and asked me to first explain the approach and then code.

The question was,

You are given an infinite stream of numbers and an integer k, at any instant of time you have to print the top k elements scanned till that point.

I explained the naive approach of using an array of size k and then inserting the elements at proper position thus making sure

that the array always remained sorted. Complexity  $O(k)$

He was not satisfied with this solution and told me to further improve it ie aim for  $O(\log(k))$ .

I did some brainstorm for a while and then gave the final solution to him using a min heap of size k.

He also asked me to write down complete code for min heap.

The next question was on Caches.

He asked me to tell different page replacement policies.

Then he asked me, How would you implement LRU Cache?

I told him that it can be implemented using Priority Queue.

Then he cross-questioned me on Priority Queues, its internal implementation and complexities.

He didn't ask to code for it.

### 4th Round:

The interviewer gave me 45 minutes to solve the below coding problem.

You are given an infinite stream of numbers, at any instant of time you have to print the median of the elements scanned till that time.

Median of an array here refers to the middle element of the array after sorting.

First I told him that I would maintain a sorted array, thus order of insertion would be  $O(N)$  and order of query would be  $O(1)$ .

He told me to further optimize it.

I thought of using heaps and somehow try to achieve  $O(\log(N))$  for both insertion and query, but then he told me that it can be further optimized.

He told me to aim for  $O(\log(N))$  and  $O(1)$  for insertion and query respectively.

Suddenly I got the idea that I could make use of a minheap and a maxheap to solve the problem.

I discussed my approach with him. He was impressed.

Finally I coded the problem.

At last he asked me, Given an inorder traversal of a BST, can u build the tree? I told him yes. Then he asked me, How many such trees are possible?

I knew answer to this question, as it was taught in the class.

I told him about Catalan Number.

Verdict: 3 selected out of 33 interviewed.

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# Amazon Interview Experience | Set 301(On-Campus for Internship+ FTE)

- Difficulty Level :\nHard
- Last Updated :\n28 Jun, 2021

## Round 0: (Written): 20 MCQs + 2 Coding Questions:

### MCQs \xe2\x80\x93 Topics:

- OS \xe2\x80\x93 Page fault, Waiting time (RR Scheduling), Paging, Semaphores, etc.
- DS \xe2\x80\x93 Hashing (simple chaining based numerical)
- Aptitude \xe2\x80\x93 1 Probability question, Puzzle \xe2\x80\x93 1 question, C\xe2\x80\x93 2 questions, etc.

### Coding Questions:

1. Given a list of n strings group all anagrams together

Example:

**i/p:** cat act pat mad dog god

**o/p:**

cat act

pat

mad

dog god

2. Given a binary square matrix of size n, find the size of largest region i.e. find a region of connected ones (horizontally, diagonally, vertically). Example:

**i/p:**

0 1 0 0

1 1 1 0

0 0 1 0

1 0 0 0\xc2\xa0

**o/p:** 5

## DAY 2:\xc2\xa0(Interview Rounds)

### Round 1 (Technical Interview\xc2\xa0\xe2\x80\x93\xc2\xa01 hr. approx.)

The Interview started with the interviewer telling me that we don\xe2\x80\x9t have much time so he will ask few questions on data structures and algorithms and I will need to tell him the approach.

1. Reverse a linked list.

- I gave two approaches, one using stack and one using pointers (in-place).

2. Print top view of a binary tree.

- Well simple question but don\xe2\x80\x9t know why I started using DFS approach (Pre-Order Traversal)
- Tried using pre-order but he gave me test cases where it failed.
- Tried different approaches within pre-order found issues with one or the other test cases and I was also using HashMap to keep track of nodes to print.
- So he asked me to do it without auxiliary storage.
- I tried level order approach (w/o auxiliary HashMap)and it worked fine for all test cases.
- He was satisfied with the approach, so asked me to write production level code.

## Round 2 (Technical Interview \xe2\x80\x93 45mins. approx.)

The interviewer introduced himself briefly and asked me to introduce myself. No follow up questions from the introduction (although I was hoping something on projects or company :P).

1. Find Kth Max occurring element in the Array.
  - Used HashMap and Heap to solve the question.
  - Time O(n\*logn)
2. DP question: [Special Keyboard](#)

## Round 3 (Technical Interview \xe2\x80\x93 45 mins. approx.)

The interviewer introduced himself briefly and asked me to introduce myself. No follow up questions from the introduction again.

He gave me a string based question and asked me if I knew it already (which I didn't), so he asked me to come up with an approach.

- [Given a string find a repeating substring of maximum length.](#)

Example:

i/p 1: banana

o/p 1: ana

i/p 2: indiaindianttindiaindia

o/p 2: india india

I thought of using [KMP](#) but complexity was high with this approach. I tried using [Longest Common Substring](#) to see if there is any pattern or way to solve it using LCS, I found an approach told it to the interviewer he was very happy with the approach.

## Round 4 (Technical Interview \xe2\x80\x93 25mins. approx.)

Short round as it was my last round.

Only one question:

- Given an infinite integer number line, find minimum steps required to reach a particular point. 0 is the starting point and at ith step we can move +i or -i steps from current position.

Tried using tree and realised it is DP problem told him the approach and complexity and why DP and why BFS (to get minimum steps). He was satisfied with the approach.

ALL THE BEST!:)

Thanks **GeeksforGeeks** for all the material, it helped me a lot during preparations. Keep it up!!

\n

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# Amazon Interview Experience | Set 300 (On-Campus for Internship)

- Difficulty Level : \n[Medium](#)
- Last Updated : \n05 Jul, 2019

## 1. Written Round

20 MCQ from simple data structures, Networking, DBMS and some maths.

2 coding questions.

A) [Interval merging problem](#).

B) [Finding the diameter and printing the path of a binary tree from one end to other](#). If there are more than one diameter then print the one which is lexicographical small.

## 2. Technical Interview 1

A) Discussed the second problem of the written round.

Asked me to code it.

B) Implement a circular queue using 1-D array.

Handle all the case like condition for full, empty. Write push, pop, isEmpty function.

C) Given three arrays. Find all the pair from the two array such that the sum of those element is in the third array.

## 3. Technical Interview 2

A) [Given the preorder and the inorder traversal of a binary tree. Construct the tree](#).

B) Now he said if the tree is binary search tree how you\xe2\x80\x99ll solve. Asked me to optimize as much as possible

## 4. Technical Interview 3

A) Asked me about my projects. Asked me about problem in that. Asked me to solve those problems.

B) There is a file in secondary storage consisting name, address, phone and many other details. Now sort that file on the basis of phone no. Constraints: I have very low memory. I can\xe2\x80\x99t bring all the content of file to main memory. Using indexing I have to solve that problem. I gave k-way merging approach. Now asked me to do in a different way. He gave me hint for bst. Told me to write the code.

## 5. Technical Interview 4

A) You have an infinite number coming to you. Device an algorithm to get the minimum at that time. Solved using two stack. Asked me write proper code, handle all corner cases.

B) Given the marks of a class in BST.

Subtract 5 marks from even ranked student. Asked me to code.

C) Questions from OS, threading.

And many more questions, some I don\xe2\x80\x99t remember.

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# Amazon Interview Experience | Set 299 (On-Campus for Internship)

- Difficulty Level : \n [Hard](#)
- Last Updated : \n 05 Jul, 2019

AMAZON came to our college for both FTE\ xe2\x80\x99s and two month summer interns.

**The First Round** was an Online Coding Round along with MCQ\ xe2\x80\x99s. Remember to attempt some MCQ\ xe2\x80\x99s correctly in order to improve your chances in getting through this round as the Coding questions may not be very difficult.

Q1. [Find the next greatest number using digits for a given number.](#) STL usage is allowed!

Q2. [In a given array A find the maximum value of |Ai \xe2\x80\x93 i| \xe2\x80\x93 |Aj \xe2\x80\x93 j| where i not equal to j.](#) This is pretty simple!

MCQ\ xe2\x80\x99s were standard and were from permutation and combination and probability mostly. Also outputs for code snippet.

There is a 5:1 selection ratio here.

## The Second Round : Face 2 Face Interview 1

Asked for the favorite data structure and questions on them. I answered trees and linked list. So, the questions were from the basics of trees.

Q1. [Check if a given binary tree is a Binary Search Tree.](#)

Then questions stemmed out from the in-order successor part and the in-order successor had to be coded with and without using the parent pointer.

Q2. [Implement Stack using Arrays Linked Lists and Queues.](#) And comment on their advantages and disadvantages.

Q3. [Implement Queues using Stacks](#) and comment on the complexity.

Questions were simple enough but code was required.

20 people out of 31 were selected.

## The Third Round : F2F Interview 2

A different interviewer in the same setting.

Found the questions to be of higher standard compared to the previous round and more time consuming.

Q1. [Maintain the First Non-Repeating character in a stream of incoming and out going characters or digits](#) simply in O(1).

Gave some solutions for O(n) at a particular instant of time.

But used a Hash and Queue but that did not allow maintaining the first non-repeating character as the elements could not be accessed randomly.

There were a lot of hints and finally i understood that the interviewer was hinting at a deque where the hash value is the node pointer in deque.

I just had to sum up the small things and give a final solution with all the bits and pieces arranged. Not Very Satisfactory.

## Q2. Cloning of a Binary tree with random pointer:

Did the cloning of the normal binary tree but could not do it for the random pointers because I need the links and paths.

Gave a O(nlogn) solution storing all the paths from the node to its random pointer node.

Finally, I came up with a Hash Map Solution which seemed fine.

The interviewer told me to practice more questions and increase the depth of knowledge in Data Structures.

This was all for the interview!

Though the questions were not common for me, these are standard questions and can be found in gfg.

But somehow I kept thinking and collected the hints for the answer and summed it up.

I thank the huge amount of online resource that is available for learning and practice, especially [geeksforgeeks.org](http://geeksforgeeks.org).

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# Amazon Interview Experience | Set 299

- Difficulty Level : \n[Basic](#)
- Last Updated : \n05 Jul, 2019

## Online round (1 hour 30 min)

20 MCQs + 2 coding questions-

1) [You have given two strings. You have to write function to check whether any anagram of second string is substring of first string or not.](#)

2) You have given one mathematical expression containing +,-,\*,/ in form of string which is space separated (\xe2\x80\x9d \xe2\x80\x9c). You have to write a function to solve this expression and return value of expression.

MCQ questions mostly based on data structures(trees, linklist ,arrays),2 questions from database and some questions from basic concepts (like give output of given program). 2 or 3 questions on aptitude.

## Technical round 1 ( almost 50 mins ) F2F

1) [Given two very large integers and calculate the sum of given integers without using BigInt library in java.](#)

I did it by taking input number in form of string and traverse both string from right to left and added integer one by one from right to left.

2) Given two arrays and one product. You have to write function to print all pairs(p,q) such that p\*q=product and p belong to first array and q belongs to another.

He ask me to do it in linear time.I did it using hashing.

Then He asked me some questions about my projects.

## Technical round 2 (almost 60 to 70 mins) F2F

1) [Given an array and one sum. You have to write method for checking whether any pair exist in array that sums equal to given sum or not.](#)

He ask me to solve in linear time.I did it with hashing.

2) [He gave me an stack and ask me to find minimum element in stack at any point of time in O\(1\) time.](#)

I did it using another stack containing current minimum at top of stack. Then he asks me to reduce memory of program.

3) What are the advantages of quick sort over merge sort and advantages of array over link list.

4) He ask me to explain binary search and proof of its complexity(O(log n)).

According to me the key for selecting is don\x80\x99t stop interacting with recruiter at any cost and be loyal with him/her.

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# Amazon Interview Experience | Set 298 (On-Campus for SDE-1)

- Difficulty Level :\nHard
- Last Updated :\n05 Jul, 2019

Recently Amazon came to our campus for placement (SDE-1).

I want to share my experience.

## Round-1

20 MCQs many from GeeksQuiz and 2 coding questions.

1. Find a range in array of bits(0 and 1) such that by flipping it, the count of  $1 \times 2^{15} \times 80 \times 99s$  in complete array becomes maximum.
2. Find the first circular tour that visits all petrol pumps

## Interview-1

Brief introduction.

Two coding ques. were asked:

1. Clone a link list with random pointers.
2. In an array of +ve integers, all numbers are occurring even no. of times expect one. find it.

## Interview-2

Two coding ques. were asked:

1. find the largest palindromic substring.
2. Merge 2 binary trees to make a binary tree.(Solved using conversion of binary tree to Doubly linklist and then merge two DLLs and then convert DLL to Binary tree.)

## Interview-3

Brief introduction.

Discussion on projects. They focused on team projects.

Then gave a situation: n no. of vendors and m no. of warehouses(n , m very large). We have to shift the products from vendors to warehouse and then from warehouse to customers. Aim is to fasten the product delivery and reduce the cost to company.

In this we had to make assumptions and make cases.

## Interview-4

Brief introduction(Only technical one).

Two coding ques. were asked:

1. 2 sorted arrays of size m and n (m > n) are given. There are n empty spaces at the end of the array1. Make the array1 consisting/merging the elements from both the arrays and store it in array1.
2. Connect siblings at same level in binary tree.

What do you mean by time complexity(in depth)?

Concepts of OS like virtual memory, paging, page fault were asked.

Other ques. asked to other people:

1. BST two nodes swapped. correct them.
2. Square root of no. (correct to 2 decimal places).
3. Diameter of the binary tree.
4. Add 1 to a number represented by link list.
5. largest substring having unique elements.
6. Diff. b/w process and thread (in detail).

## 7. Coin change problem.

I want to thank geeksforgeeks.org for its content.  
I got selected because of it.

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## Amazon Interview Experience | Set 297 (On-Campus for SDE)

- Difficulty Level : \n[Medium](#)
- Last Updated : \n05 Jul, 2019

Amazon visited our campus on 12th August. There were 5 rounds namely \xe2\x80\x93

- 1) Written round
- 2) \xe2\x80\x93 5) All technical rounds with increasing difficulty levels

The written round consisted of 20 mcqs ( OS, DBMS, CPP , C , JAVA and Aptitude basic level ) and two Hacker Rank coding questions \xe2\x80\x93

- 1) [Overlapping subsets problem](#) and
- 2) [The longest path in a given binary tree](#)

The technical rounds took 1 hour each.

In the first technical round I was asked to [check whether a given tree is a complete binary tree or not](#) and then to code both recursive and non-recursive version of it. It also included another question like to find whether a number is a power of 2 or not.

The 2nd technical round had questions like what is a symmetric number, how will you check if its a symmetric number. And then he asked me to find all the symmetric numbers of given n-digits. I wasn\xt able to do the last part.

The 3rd technical round consisted of a string compression problem. Given a string like AAABBBCDEFIGHJKLLLLLLLLLLLLLL \xe2\x80\x93 you have to compress it to a string like A3B3C1D1E1F1G1H1K1L15. The question was to be done in O(n) and inplace.

The 4th technical round consisted of the popular dynamic programming problem of [cutting sticks of various length and merging them to form a bigger stick](#) keeping in mind that you have to decrease the overall cost of merging.

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# Amazon Interview Experience | Set 296 (On Campus for Internship)

- Difficulty Level : \n [Hard](#)
- Last Updated : \n 05 Jul, 2019

## Online round (1 hour 30 min)

20 MCQs + 2 coding questions-

1) [Given an expression string exp, write a program to examine whether the pairs and the orders of \xe2\x80\x9c\(\xe2\x80\x9d and \xe2\x80\x9c\)\xe2\x80\x9d are correct in syntax](#)

2) Given preorder and inorder traversal of a binary tree, print preorder and inorder of the tree after modifying it such that each node stores the sum of its left and right subtree.  
(building the tree was not required)

## Technical round 1 ( 1hr 30 min) F2F

1) [Given a string of characters find the first non repeating character.](#)

did it with hashing.

He asked me to do it using one loop. I did it by taking two pointers.

2) Given a list of vehicles group vehicles by their property.

All vehicles with same production year and other parameters are to be grouped together.

He asked me to write object oriented code.

I did it with list of lists.

Then He asked me to modify the code considering the production year and other parameters as objects and not just integer or string variables.

He was looking for some better method for comparison of two vehicles . I did it operator overloading inside the vehicle class.

## Technical round 2 (1 hour 30 min) F2F

1. Given two numbers return the sum of the two numbers considering all the cases(like integer overflow, underflow etc).

2. Given array of elements denoting price of some objects, print the maximum sum that can be obtained following some constraints-

i)only one of the two ends from the array can be selected at a time

ii)the seller can sell only one item per day

iii)the value of each of the elements gets multiplies by the number of days passed.

I did it with dynamic programming.

3. [Print next greater palindrome of a given array with each element denoting a single digit of an integer.](#)

4. [Connect nodes at same level with O\(1\) extra space.](#)

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## Amazon Interview Experience | Set 295 (On Campus)

- Difficulty Level :[Hard](#)
- Last Updated :[28 Jun, 2021](#)

Amazon visited our campus for FTE's (Full Time Employees). Interview process started with an online coding round followed by 4 face to face interviews. The level of difficulty increased as we move to the further rounds. All interview rounds started with brief introduction about me.

### Online Round:

A hackerank contest with 22 questions inclusive of 2 coding problems and 20 MCQ's (Multiple Choice Questions) on [C](#), [OS](#), [DBMS](#), [Networking](#).

The 20 MCQ's are mainly based on Algorithm analysis for example time complexity space complexity for a particular snippet of code, basic C, java output based questions, OS's, semaphores, IPC, synchronisation etc..

Here are some of the questions i remember

1. Which of the following sorting algorithms have worst case  $n \log n$  complexity?  
Ans: merge sort, heap sort.
2. Time to insert an node after a given node in a linked list?  
Ans:  $O(1)$ .
3. Number of child process created when fork() system call is called n times?  
Ans:  $2^n - 1$  (i guess).
4. Int arr[5]={1,2}, cout<<a[2]<<a[3]<<a[4]; . . . what is the output of the following snippet? Ans: 0,0,0.
5. The average time taken for searching an element in an array using linear search assuming that the searched element is always present in the array? Ans:  $(n+1)/2$ .
6. You will be given array ,you have to find out which of them represents a max/min heap?
7. You are two traversals of a binary tree, you have to find out the asked traversal? For ex: Inorder=4, 8, 10, 12, 14, 20, 22. Level order=20, 8, 22, 4, 12, 10, 14 Find preoder? Ans: 20, 8, 4, 12, 10, 14, 22
8. You are given a binary search tree and a key time taken for the Searching given key? Ans:  $O(\log(n))$  worst case for balanced BST  $O(n)$  worst case for Normal BST (this case occurs for left/right skewed trees).

### Coding Questions :

1. You are given a array of positive integers which represents heights of buildings. Width of each building is assumed to be 1. You have to find max rectangle area of buildings.
2. You are given a string let say s, where s-1,a-1,i-1,e-2,d-1,p-1 is the frequency of each character. VALUE of the string is defined as sum of squares of count of each distinct character. value of above string is  $1^2 + 1^2 + 1^2 + 4^2 = 8$ ; Your task is to minimize the string's VALUE of the string after removal of k characters.

**Ans:** Its a straight forward question where you take a 256 array to store frequency of each character ,for k times you find a maximum frequency character and decrements its frequency by 1. After k iterations print the VALUE function you get by remaining characters.

### F2F 1 ( 1 hr 30 min, TECHNICAL ) :

Interviewer is a lady, probably 3-4 years senior to me. She asked me two coding Questions:

1. You are given a binary tree ,you have to print extreme nodes of it.? Give me an algorithm that is robust, works fine for all cases, explain the space complexity and time complexity of your algorithm?  
For Example:

```
1\r\n      /\r\n      2\r\n      \\\r\n      3\r\n      /\r\n      /\r\n      4\r\n      /\r\n      /\r\n      5\r\n      /\r\n      /\r\n      6\r\n      /\r\n      /\r\n      7\r\n      /\r\n      /\r\n      8\r\n      /\r\n      /\r\n      9\r\n      /\r\n      /\r\n      10\r\n      /\r\n      /\r\n      11\r\n      /\r\n      /\r\n      12\r\n      /\r\n      /\r\n      13\r\n      /\r\n      /\r\n      14\r\n      /\r\n      /\r\n      15\r\n      /\r\n      /\r\n      16\r\n      /\r\n      /\r\n      17\r\n      /\r\n      /\r\n      18\r\n      /\r\n      /\r\n      19\r\n      /\r\n      /\r\n      20\r\n      /\r\n      /\r\n      21\r\n      /\r\n      /\r\n      22\r\n      /\r\n      /\r\n      23\r\n      /\r\n      /\r\n      24\r\n      /\r\n      /\r\n      25\r\n      /\r\n      /\r\n      26\r\n      /\r\n      /\r\n      27\r\n      /\r\n      /\r\n      28\r\n      /\r\n      /\r\n      29\r\n      /\r\n      /\r\n      30\r\n      /\r\n      /\r\n      31\r\n      /\r\n      /\r\n      32\r\n      /\r\n      /\r\n      33\r\n      /\r\n      /\r\n      34\r\n      /\r\n      /\r\n      35\r\n      /\r\n      /\r\n      36\r\n      /\r\n      /\r\n      37\r\n      /\r\n      /\r\n      38\r\n      /\r\n      /\r\n      39\r\n      /\r\n      /\r\n      40\r\n      /\r\n      /\r\n      41\r\n      /\r\n      /\r\n      42\r\n      /\r\n      /\r\n      43\r\n      /\r\n      /\r\n      44\r\n      /\r\n      /\r\n      45\r\n      /\r\n      /\r\n      46\r\n      /\r\n      /\r\n      47\r\n      /\r\n      /\r\n      48\r\n      /\r\n      /\r\n      49\r\n      /\r\n      /\r\n      50\r\n      /\r\n      /\r\n      51\r\n      /\r\n      /\r\n      52\r\n      /\r\n      /\r\n      53\r\n      /\r\n      /\r\n      54\r\n      /\r\n      /\r\n      55\r\n      /\r\n      /\r\n      56\r\n      /\r\n      /\r\n      57\r\n      /\r\n      /\r\n      58\r\n      /\r\n      /\r\n      59\r\n      /\r\n      /\r\n      60\r\n      /\r\n      /\r\n      61\r\n      /\r\n      /\r\n      62\r\n      /\r\n      /\r\n      63\r\n      /\r\n      /\r\n      64\r\n      /\r\n      /\r\n      65\r\n      /\r\n      /\r\n      66\r\n      /\r\n      /\r\n      67\r\n      /\r\n      /\r\n      68\r\n      /\r\n      /\r\n      69\r\n      /\r\n      /\r\n      70\r\n      /\r\n      /\r\n      71\r\n      /\r\n      /\r\n      72\r\n      /\r\n      /\r\n      73\r\n      /\r\n      /\r\n      74\r\n      /\r\n      /\r\n      75\r\n      /\r\n      /\r\n      76\r\n      /\r\n      /\r\n      77\r\n      /\r\n      /\r\n      78\r\n      /\r\n      /\r\n      79\r\n      /\r\n      /\r\n      80\r\n      /\r\n      /\r\n      81\r\n      /\r\n      /\r\n      82\r\n      /\r\n      /\r\n      83\r\n      /\r\n      /\r\n      84\r\n      /\r\n      /\r\n      85\r\n      /\r\n      /\r\n      86\r\n      /\r\n      /\r\n      87\r\n      /\r\n      /\r\n      88\r\n      /\r\n      /\r\n      89\r\n      /\r\n      /\r\n      90\r\n      /\r\n      /\r\n      91\r\n      /\r\n      /\r\n      92\r\n      /\r\n      /\r\n      93\r\n      /\r\n      /\r\n      94\r\n      /\r\n      /\r\n      95\r\n      /\r\n      /\r\n      96\r\n      /\r\n      /\r\n      97\r\n      /\r\n      /\r\n      98\r\n      /\r\n      /\r\n      99\r\n      /\r\n      /\r\n      100\r\n      /\r\n      /\r\n      101\r\n      /\r\n      /\r\n      102\r\n      /\r\n      /\r\n      103\r\n      /\r\n      /\r\n      104\r\n      /\r\n      /\r\n      105\r\n      /\r\n      /\r\n      106\r\n      /\r\n      /\r\n      107\r\n      /\r\n      /\r\n      108\r\n      /\r\n      /\r\n      109\r\n      /\r\n      /\r\n      110\r\n      /\r\n      /\r\n      111\r\n      /\r\n      /\r\n      112\r\n      /\r\n      /\r\n      113\r\n      /\r\n      /\r\n      114\r\n      /\r\n      /\r\n      115\r\n      /\r\n      /\r\n      116\r\n      /\r\n      /\r\n      117\r\n      /\r\n      /\r\n      118\r\n      /\r\n      /\r\n      119\r\n      /\r\n      /\r\n      120\r\n      /\r\n      /\r\n      121\r\n      /\r\n      /\r\n      122\r\n      /\r\n      /\r\n      123\r\n      /\r\n      /\r\n      124\r\n      /\r\n      /\r\n      125\r\n      /\r\n      /\r\n      126\r\n      /\r\n      /\r\n      127\r\n      /\r\n      /\r\n      128\r\n      /\r\n      /\r\n      129\r\n      /\r\n      /\r\n      130\r\n      /\r\n      /\r\n      131\r\n      /\r\n      /\r\n      132\r\n      /\r\n      /\r\n      133\r\n      /\r\n      /\r\n      134\r\n      /\r\n      /\r\n      135\r\n      /\r\n      /\r\n      136\r\n      /\r\n      /\r\n      137\r\n      /\r\n      /\r\n      138\r\n      /\r\n      /\r\n      139\r\n      /\r\n      /\r\n      140\r\n      /\r\n      /\r\n      141\r\n      /\r\n      /\r\n      142\r\n      /\r\n      /\r\n      143\r\n      /\r\n      /\r\n      144\r\n      /\r\n      /\r\n      145\r\n      /\r\n      /\r\n      146\r\n      /\r\n      /\r\n      147\r\n      /\r\n      /\r\n      148\r\n      /\r\n      /\r\n      149\r\n      /\r\n      /\r\n      150\r\n      /\r\n      /\r\n      151\r\n      /\r\n      /\r\n      152\r\n      /\r\n      /\r\n      153\r\n      /\r\n      /\r\n      154\r\n      /\r\n      /\r\n      155\r\n      /\r\n      /\r\n      156\r\n      /\r\n      /\r\n      157\r\n      /\r\n      /\r\n      158\r\n      /\r\n      /\r\n      159\r\n      /\r\n      /\r\n      160\r\n      /\r\n      /\r\n      161\r\n      /\r\n      /\r\n      162\r\n      /\r\n      /\r\n      163\r\n      /\r\n      /\r\n      164\r\n      /\r\n      /\r\n      165\r\n      /\r\n      /\r\n      166\r\n      /\r\n      /\r\n      167\r\n      /\r\n      /\r\n      168\r\n      /\r\n      /\r\n      169\r\n      /\r\n      /\r\n      170\r\n      /\r\n      /\r\n      171\r\n      /\r\n      /\r\n      172\r\n      /\r\n      /\r\n      173\r\n      /\r\n      /\r\n      174\r\n      /\r\n      /\r\n      175\r\n      /\r\n      /\r\n      176\r\n      /\r\n      /\r\n      177\r\n      /\r\n      /\r\n      178\r\n      /\r\n      /\r\n      179\r\n      /\r\n      /\r\n      180\r\n      /\r\n      /\r\n      181\r\n      /\r\n      /\r\n      182\r\n      /\r\n      /\r\n      183\r\n      /\r\n      /\r\n      184\r\n      /\r\n      /\r\n      185\r\n      /\r\n      /\r\n      186\r\n      /\r\n      /\r\n      187\r\n      /\r\n      /\r\n      188\r\n      /\r\n      /\r\n      189\r\n      /\r\n      /\r\n      190\r\n      /\r\n      /\r\n      191\r\n      /\r\n      /\r\n      192\r\n      /\r\n      /\r\n      193\r\n      /\r\n      /\r\n      194\r\n      /\r\n      /\r\n      195\r\n      /\r\n      /\r\n      196\r\n      /\r\n      /\r\n      197\r\n      /\r\n      /\r\n      198\r\n      /\r\n      /\r\n      199\r\n      /\r\n      /\r\n      200\r\n      /\r\n      /\r\n      201\r\n      /\r\n      /\r\n      202\r\n      /\r\n      /\r\n      203\r\n      /\r\n      /\r\n      204\r\n      /\r\n      /\r\n      205\r\n      /\r\n      /\r\n      206\r\n      /\r\n      /\r\n      207\r\n      /\r\n      /\r\n      208\r\n      /\r\n      /\r\n      209\r\n      /\r\n      /\r\n      210\r\n      /\r\n      /\r\n      211\r\n      /\r\n      /\r\n      212\r\n      /\r\n      /\r\n      213\r\n      /\r\n      /\r\n      214\r\n      /\r\n      /\r\n      215\r\n      /\r\n      /\r\n      216\r\n      /\r\n      /\r\n      217\r\n      /\r\n      /\r\n      218\r\n      /\r\n      /\r\n      219\r\n      /\r\n      /\r\n      220\r\n      /\r\n      /\r\n      221\r\n      /\r\n      /\r\n      222\r\n      /\r\n      /\r\n      223\r\n      /\r\n      /\r\n      224\r\n      /\r\n      /\r\n      225\r\n      /\r\n      /\r\n      226\r\n      /\r\n      /\r\n      227\r\n      /\r\n      /\r\n      228\r\n      /\r\n      /\r\n      229\r\n      /\r\n      /\r\n      230\r\n      /\r\n      /\r\n      231\r\n      /\r\n      /\r\n      232\r\n      /\r\n      /\r\n      233\r\n      /\r\n      /\r\n      234\r\n      /\r\n      /\r\n      235\r\n      /\r\n      /\r\n      236\r\n      /\r\n      /\r\n      237\r\n      /\r\n      /\r\n      238\r\n      /\r\n      /\r\n      239\r\n      /\r\n      /\r\n      240\r\n      /\r\n      /\r\n      241\r\n      /\r\n      /\r\n      242\r\n      /\r\n      /\r\n      243\r\n      /\r\n      /\r\n      244\r\n      /\r\n      /\r\n      245\r\n      /\r\n      /\r\n      246\r\n      /\r\n      /\r\n      247\r\n      /\r\n      /\r\n      248\r\n      /\r\n      /\r\n      249\r\n      /\r\n      /\r\n      250\r\n      /\r\n      /\r\n      251\r\n      /\r\n      /\r\n      252\r\n      /\r\n      /\r\n      253\r\n      /\r\n      /\r\n      254\r\n      /\r\n      /\r\n      255\r\n      /\r\n      /\r\n      256\r\n      /\r\n      /\r\n      257\r\n      /\r\n      /\r\n      258\r\n      /\r\n      /\r\n      259\r\n      /\r\n      /\r\n      260\r\n      /\r\n      /\r\n      261\r\n      /\r\n      /\r\n      262\r\n      /\r\n      /\r\n      263\r\n      /\r\n      /\r\n      264\r\n      /\r\n      /\r\n      265\r\n      /\r\n      /\r\n      266\r\n      /\r\n      /\r\n      267\r\n      /\r\n      /\r\n      268\r\n      /\r\n      /\r\n      269\r\n      /\r\n      /\r\n      270\r\n      /\r\n      /\r\n      271\r\n      /\r\n      /\r\n      272\r\n      /\r\n      /\r\n      273\r\n      /\r\n      /\r\n      274\r\n      /\r\n      /\r\n      275\r\n      /\r\n      /\r\n      276\r\n      /\r\n      /\r\n      277\r\n      /\r\n      /\r\n      278\r\n      /\r\n      /\r\n      279\r\n      /\r\n      /\r\n      280\r\n      /\r\n      /\r\n      281\r\n      /\r\n      /\r\n      282\r\n      /\r\n      /\r\n      283\r\n      /\r\n      /\r\n      284\r\n      /\r\n      /\r\n      285\r\n      /\r\n      /\r\n      286\r\n      /\r\n      /\r\n      287\r\n      /\r\n      /\r\n      288\r\n      /\r\n      /\r\n      289\r\n      /\r\n      /\r\n      290\r\n      /\r\n      /\r\n      291\r\n      /\r\n      /\r\n      292\r\n      /\r\n      /\r\n      293\r\n      /\r\n      /\r\n      294\r\n      /\r\n      /\r\n      295\r\n      /\r\n      /\r\n      296\r\n      /\r\n      /\r\n      297\r\n      /\r\n      /\r\n      298\r\n      /\r\n      /\r\n      299\r\n      /\r\n      /\r\n      300\r\n      /\r\n      /\r\n      301\r\n      /\r\n      /\r\n      302\r\n      /\r\n      /\r\n      303\r\n      /\r\n      /\r\n      304\r\n      /\r\n      /\r\n      305\r\n      /\r\n      /\r\n      306\r\n      /\r\n      /\r\n      307\r\n      /\r\n      /\r\n      308\r\n      /\r\n      /\r\n      309\r\n      /\r\n      /\r\n      310\r\n      /\r\n      /\r\n      311\r\n      /\r\n      /\r\n      312\r\n      /\r\n      /\r\n      313\r\n      /\r\n      /\r\n      314\r\n      /\r\n      /\r\n      315\r\n      /\r\n      /\r\n      316\r\n      /\r\n      /\r\n      317\r\n      /\r\n      /\r\n      318\r\n      /\r\n      /\r\n      319\r\n      /\r\n      /\r\n      320\r\n      /\r\n      /\r\n      321\r\n      /\r\n      /\r\n      322\r\n      /\r\n      /\r\n      323\r\n      /\r\n      /\r\n      324\r\n      /\r\n      /\r\n      325\r\n      /\r\n      /\r\n      326\r\n      /\r\n      /\r\n      327\r\n      /\r\n      /\r\n      328\r\n      /\r\n      /\r\n      329\r\n      /\r\n      /\r\n      330\r\n      /\r\n      /\r\n      331\r\n      /\r\n      /\r\n      332\r\n      /\r\n      /\r\n      333\r\n      /\r\n      /\r\n      334\r\n      /\r\n      /\r\n      335\r\n      /\r\n      /\r\n      336\r\n      /\r\n      /\r\n      337\r\n      /\r\n      /\r\n      338\r\n      /\r\n      /\r\n      339\r\n      /\r\n      /\r\n      340\r\n      /\r\n      /\r\n      341\r\n      /\r\n      /\r\n      342\r\n      /\r\n      /\r\n      343\r\n      /\r\n      /\r\n      344\r\n      /\r\n      /\r\n      345\r\n      /\r\n      /\r\n      346\r\n      /\r\n      /\r\n      347\r\n      /\r\n      /\r\n      348\r\n      /\r\n      /\r\n      349\r\n      /\r\n      /\r\n      350\r\n      /\r\n      /\r\n      351\r\n      /\r\n      /\r\n      352\r\n      /\r\n      /\r\n      353\r\n      /\r\n      /\r\n      354\r\n      /\r\n      /\r\n      355\r\n      /\r\n      /\r\n      356\r\n      /\r\n      /\r\n      357\r\n      /\r\n      /\r\n      358\r\n      /\r\n      /\r\n      359\r\n      /\r\n      /\r\n      360\r\n      /\r\n      /\r\n      361\r\n      /\r\n      /\r\n      362\r\n      /\r\n      /\r\n      363\r\n      /\r\n      /\r\n      364\r\n      /\r\n      /\r\n      365\r\n      /\r\n      /\r\n      366\r\n      /\r\n      /\r\n      367\r\n      /\r\n      /\r\n      368\r\n      /\r\n      /\r\n      369\r\n      /\r\n      /\r\n      370\r\n      /\r\n      /\r\n      371\r\n      /\r\n      /\r\n      372\r\n      /\r\n      /\r\n      373\r\n      /\r\n      /\r\n      374\r\n      /\r\n      /\r\n      375\r\n      /\r\n      /\r\n      376\r\n      /\r\n      /\r\n      377\r\n      /\r\n      /\r\n      378\r\n      /\r\n      /\r\n      379\r\n      /\r\n      /\r\n      380\r\n      /\r\n      /\r\n      381\r\n      /\r\n      /\r\n      382\r\n      /\r\n      /\r\n      383\r\n      /\r\n      /\r\n      384\r\n      /\r\n      /\r\n      385\r\n      /\r\n      /\r\n      386\r\n      /\r\n      /\r\n      387\r\n      /\r\n      /\r\n      388\r\n      /\r\n      /\r\n      389\r\n      /\r\n      /\r\n      390\r\n      /\r\n      /\r\n      391\r\n      /\r\n      /\r\n      392\r\n      /\r\n      /\r\n      393\r\n      /\r\n      /\r\n      394\r\n      /\r\n      /\r\n      395\r\n      /\r\n      /\r\n      396\r\n      /\r\n      /\r\n      397\r\n      /\r\n      /\r\n      398\r\n      /\r\n      /\r\n      399\r\n      /\r\n      /\r\n      400\r\n      /\r\n      /\r\n      401\r\n      /\r\n      /\r\n      402\r\n      /\r\n      /\r\n      403\r\n      /\r\n      /\r\n      404\r\n      /\r\n      /\r\n      405\r\n      /\r\n      /\r\n      406\r\n      /\r\n      /\r\n      407\r\n      /\r\n      /\r\n      408\r\n      /\r\n      /\r\n      409\r\n      /\r\n      /\r\n      410\r\n      /\r\n      /\r\n      411\r\n      /\r\n      /\r\n      412\r\n      /\r\n      /\r\n      413\r\n      /\r\n      /\r\n      414\r\n      /\r\n      /\r\n      415\r\n      /\r\n      /\r\n      416\r\n      /\r\n      /\r\n      417\r\n      /\r\n      /\r\n      418\r\n      /\r\n      /\r\n      419\r\n      /\r\n      /\r\n      420\r\n      /\r\n      /\r\n      421\r\n      /\r\n      /\r\n      422\r\n      /\r\n      /\r\n      423\r\n      /\r\n      /\r\n      424\r\n      /\r\n      /\r\n      425\r\n      /\r\n      /\r\n      426\r\n      /\r\n      /\r\n      427\r\n      /\r\n      /\r\n      428\r\n      /\r\n      /\r\n      429\r\n      /\r\n      /\r\n      430\r\n      /\r\n      /\r\n      431\r\n      /\r\n      /\r\n      432\r\n      /\r\n      /\r\n      433\r\n      /\r\n      /\r\n      434\r\n      /\r\n      /\r\n      435\r\n      /\r\n      /\r\n      436\r\n      /\r\n      /\r\n      437\r\n      /\r\n      /\r\n      438\r\n      /\r\n      /\r\n      439\r\n      /\r\n      /\r\n      440\r\n      /\r\n      /\r\n      441\r\n      /\r\n      /\r\n      442\r\n      /\r\n      /\r\n      443\r\n      /\r\n      /\r\n      444\r\n      /\r\n      /\r\n      445\r\n      /\r\n      /\r\n      446\r\n      /\r\n      /\r\n      447\r\n      /\r\n      /\r\n      448\r\n      /\r\n      /\r\n      449\r\n      /\r\n      /\r\n      450\r\n      /\r\n      /\r\n      451\r\n      /\r\n      /\r\n      452\r\n      /\r\n      /\r\n      453\r\n      /\r\n      /\r\n      454\r\n      /\r\n      /\r\n      455\r\n      /\r\n      /\r\n      456\r\n      /\r\n      /\r\n      457\r\n      /\r\n      /\r\n      458\r\n      /\r\n      /\r\n      459\r\n      /\r\n      /\r\n      460\r\n      /\r\n      /\r\n      461\r\n      /\r\n      /\r\n      462\r\n      /\r\n      /\r\n      463\r\n      /\r\n      /\r\n      464\r\n      /\r\n      /\r\n      465\r\n      /\r\n      /\r\n      466\r\n      /\r\n      /\r\n      467\r\n      /\r\n      /\r\n      468\r\n      /\r\n      /\r\n      469\r\n      /\r\n      /\r\n      470\r\n      /\r\n      /\r\n      471\r\n      /\r\n      /\r\n      472\r\n      /\r\n      /\r\n      473\r\n      /\r\n      /\r\n      474\r\n      /\r\n      /\r\n      475\r\n      /\r\n      /\r\n      476\r\n      /\r\n      /\r\n      477\r\n      /\r\n      /\r\n      478\r\n      /\r\n      /\r\n      479\r\n      /\r\n      /\r\n      480\r\n      /\r\n      /\r\n      481\r\n      /\r\n      /\r\n      482\r\n      /\r\n      /\r\n      483\r\n      /\r\n      /\r\n      484\r\n      /\r\n      /\r\n      485\r\n      /\r\n      /\r\n      486\r\n      /\r\n      /\r\n      487\r\n      /\r\n      /\r\n      488\r\n      /\r\n      /\r\n      489\r\n      /\r\n   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- You are given a maze which describes the way for a goat to reach its house. Maze is usually a M\*N grid consisting of only 0xe2\x80\x99s and 1\xe2\x80\x99s. Goat initially is at (0,0) point in the maze and it has to reach point(M-1,N-1). The only possible move the goat can make is go RIGHT,DOWN,RIGHT-DOWN(DIAGONAL) i.e from a point (i,j) goat can move to(i+1,j) or(i,j+1) or (i+1,j+1) point. Goat can make only one step at a time. Your task is to find number of such paths for the goat to reach its house.

Point (0,0) and point(M-1,N-1) are obviously 1. A 1 indicates that the point can be used and 0 indicates that the point is blocked in the sense we cannot go to the point at any cost.

**Ans:** I gave him a recursive solution initially and explained him about the drawbacks of that solution, that it takes exponential time to solve that problem. I then explained how I can use Dynamic programming to solve this problem and gave him a DP solution. He was very much impressed with my solution and asked me the time and space complexities of that solution. He then asked me write complete code neatly.

### F2F 3 ( 1hr TECHNICAL ) :

The interviewer went through my resume and my previous interview rounds performance and said introduce yourself. I introduced myself. He asked me if I had done any internships. I said no sir, I got chance in some of the companies but I didn't take it. He then asked me what did you learn in this summer. I said I prepared for the placements and I've done 1-2 mini projects. He then asked me why didn't you take that intern. I told him I didn't like those companies hiring process itself how can I work in the company. I said that they all asked memorizing concepts which I am very weak in and didn't even ask me single logical question. He even didn't ask me single coding question.

He said lets start our process you are here because of your coding skills, but in this round I am gonna ask you theoretical questions.

He asked me

- Difference between trigger and stored procedure?
- Difference between [thread and process](#)?
- Define deadlock and race condition?
- How [deadlock is detected](#)?
- What is resource allocation graph and how its related to deadlock, what are the nodes in that graph?
- He asked me what all the data structures I know and give their real time examples?
- [Indexing](#) in DBMS
- Types of indexes
- How indexing is done in DB(b-tree and b+trees)
- Views, types of views its advantages

He then gave me a coding question: You have to replace every element of an array with its immediate smaller element to the right. If such an element doesn't exist don't replace it.

**Ans:** I gave him a stack solution which he was very much satisfied and asked me to code taking care of corner cases. He then asked me write complete code neatly. He is satisfied with my code and asked me to wait outside for further round.

### F2F 4 ( HR+TECHNICAL ) :

He started by asking me to introduce myself and gave a coding question. It's the tough question [You will be given a floor say\(m\\*n\) dimensions and sub rectangles that can fit inside the big rectangle..you have to print the floor plan for given dimensions of small sub rectangles.](#)

He explained me that it requires construction of SLICING TREE and then printing floor plan. He asked which all the data structures you will use to construct it and asked me think of it.

**Ans:** I gave him an stack/queue based approach. I told him that I'll sort the sub rectangles by lengths/breadths and push them in stack in d=increasing order. He was very much satisfied with my algorithm and asked me to code it. I coded it completely and showed him. I just solved the problem and I didn't print the floor plan which is our actual problem. I then implemented the print function inside it.

He said that he's done with the interview and asked me if any queries.

I asked him about the kinda of project he's currently working and some casual discussion on technologies.

PS:- Everyone knows the algorithm but its implementation with robust, clean code is required which covers all test cases. They will certainly give corner cases that our code fails to execute so make sure you write a universal code. Make sure you ask any doubts if any to clarify the given question/scenario. The interviewers are a lot helpful and they give you hints if you are stuck.

Thanks [GeeksforGeeks](#) . It helped me a lot in my preparation.

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# Amazon Interview Experience | Set 294 (Experienced)

- Difficulty Level : \n[Hard](#)
- Last Updated : \n26 Nov, 2019

## Round\xc2\x01

1. [Pivoted array search, \xc2\x01modified that array can have duplicate values need to return first occurrence of element.](#)
2. [Is pair of given values present in BST or not?](#)

## Round 2

1. In FB when we enter person name to search then their are multiple name FB gives us as a suggestion.\xc2\x01Design a DS for showing these name.(gives him [trie](#) DS solution)
2. Behavioral Questions
  1. Things u learn in 3 years of experience which makes u different from fresher guy?
  2. Project description

## Round 3

1. [LCA](#) in binary tree. Both elements parent must not be equal to given elements.
2. [Check if pair is present in array or not.\xc2\x01modified to return all unique pair in it.](#)
3. [Integer stream is coming find largest K element.](#)(K is fixed)
4. [Design a DS where below operation is performed in O\(1\) time.](#)
  1. [Insert](#)
  2. [Delete](#)
  3. [Search](#)
  4. [GetRandom](#)

## Round 4

1. Lot of discussion on projects. HLD and LLD of project.
2. There is file of million number you have to find out largest k element.
3. [Give all pair present in array. Duplicate can be present in it.](#)

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# Amazon Interview Experience | Set 293 (On-Campus)

- Difficulty Level : \n [Hard](#)
- Last Updated : \n 05 Jul, 2019

**Round 1(Online Test)** It consisted of two coding questions and 20 MCQs. **Round 2(Technical Interview)**

1. [Write a function to find  \$\text{a}^{\text{b}}\$  raised to the power  \$\text{c}\$ .](#) Then he asked me to find the time complexity of the function.
2. [He was about to ask me the question of finding the number of islands.](#) I told him that I already know the solution so he moved to the next question.
3. [There are n boxes given that are 1-D. You have to find the best fit for the given item that can fit into the box.](#) For ex- An array of boxes is given as {7,9,12} and we need to find the best match for the item of size 10 then the box with dimension 12 will be our best match. I suggested him to use BST. We can arrange all the boxes in a BST and find the successor for the given item in the BST. He then asked me to code it.
4. He then asked me about my project.

## Round 3(Technical Interview)

1. He asked me a question of joining strings which is similar to the below question [Minimum Cost of ropes](#) I suggested the same approach and coded it. He was satisfied.
2. There is a audio player given which picks up a random song from the playlist and plays it. The song should not be repeated until all songs are played atleast once. The sequence number of the songs are given in an array. Design such audio player without using any extra space. I suggested him to use a pointer say  $\text{pivot}$  that initially points to the last element of array. The songs to the left of the array are not yet played and the songs to the right are already played and cannot be repeated. Each time a song is picked form left of the pivot and played. That song is then replaced with the pivot element and pivot is moved left by one position. If the pivot points to the first element that means all songs have been played once and the pivot again moves to the rightmost element.

**Round 4(HR+Technical)** He asked me some HR questions for about half an hour. After that he shifted to the technical part.

1. What all data structures you know. Give the real life examples of when can we use them.
2. [Write a code for preorder traversal of a binary tree without recursion.](#)

## Round 5(Technical Interview)

1. A boolean matrix question [Boolean Matrix Problem](#) already knew the question so she just asked me to code it.
2. [An array of strings is given in which some strings are anagrams of one another. You have to find those strings and store indexes of those strings in a vector.](#) I suggested to sort all the strings and then use a hashmap< String, vector> to solve the above question. She asked me to code it.

And yayy!! I got selected :p

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# Amazon Interview Experience | Set 292 (On-Campus for Internship)

- Difficulty Level :\nHard
- Last Updated :\n28 Jun, 2021

Amazon came to our campus for hiring interns. At first there was a coding round then 2 personal interviews

**Coding round:** There was 20 mcq questions based on DS , OS , IQ and output questions

And there were 2 coding questions

1. Given a string print the lexicographically smallest possible rotation of the string.  
(N square sol. Passed)
2. Balanced parenthesis

I did both coding questions and attempted 17 mcq and got selected for next round  
Out of 500 ,47 were shortlisted

**2nd round:**(Personal interview)

First he asked me about myself then he gave me a question

1. suppose there is a matrix filled with zeros and ones then find if there is a path between (0,0) to (n-1,m-1 )  
I explained my approach(trivial dfs) Then he asked me to write a code for printing all possible paths I implemented it using backtracking
2. Game of nim
3. Number of all possible bst for keys 1 to n
4. number of all possible labeled binary trees for given n nodes
5. <https://www.geeksforgeeks.org/dynamic-programming-set-31-optimal-strategy-for-a-game/>
6. <https://www.geeksforgeeks.org/check-whether-a-given-string-is-an-interleaving-of-two-other-given-strings-set-2/>

24 students were shortlisted

**3rd round:**

- Design a data structure for a server which can store atmost 100 records, 2 functions are used to access server get(k) ,put(k,v,x).  
Where k is key and v is corresponding value and x is the expiry time before which this record cant be removed  
Implement a data structure to implement these function optimally. I implemented using self balancing bst and an unordered hash map
- Then he asked me to construct an avl tree for keys from 1 to n.

Cheers i got selected!!

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## Amazon Interview Experience | Set 291 (On-Campus for SDE1)

- Difficulty Level :[Hard](#)
- Last Updated :[05 Jul, 2019](#)

Amazon visited our campus for SDE\_1. The entire interview procedure was divided into a coding round and a set of 4 face to face interview.

### Online coding round:

It was a 90 minutes test with 22 questions(20 MCQs + 2 coding) set hosted on HackerRank.

Coding questions:

1. [Reverse words in a string.](#)

Example: Let the input string be `\xe2\x80\x9ci like this program very much\xe2\x80\x9d`. The function should change the string to `\xe2\x80\x9cmuch very program this like \xe2\x80\x9d`

2. [Largest length of subarray with given sum.](#)

MCQs consisted of OS, Geometry, Basic Maths, C ,Recursion and such topics.

Whoever solved atleast two questions were chosen for the interviews.

### F2F 1(Technical):

He asked me about my Summer Internship Project at Microsoft India Development Centre, Hyderabad and asked me about several technologies involved in it and why I had used certain things.

Then he moved on to two technical questions.

1. [Given a sorted and pivoted array, find an element given to you.](#)

I had given him a  $O(\log n)$  solution with pivot finding and then doing binary search in either halves. But it was a  $O(\log n) + O(\log n)$ , so he asked me to modify it to a one  $O(\log n)$  question. After giving him the solution, he asked me to write production level code considering all corner test cases.

2. Given a BST which consists of marks of students in a class. It is found that all even ranked students have cheated,so we reduce k marks from their score. Modify the BST to make the change of marks without considering that after this operation, the BST might not remain a BST anymore.

I gave him a modified inorder traversal so that elements are sorted and solved it using a counter variable. He asked me to modify it to using neither a static counter variable nor a pointer passed to the recursive calls. For both questions, he also asked me the time and space complexity.

### F2F 2(Technical):

He asked a very brief idea about my Summer Internship again. Then he asked me 2 questions again.

- 1.[Given a k sized window in an array,find max element in each window.](#)

<https://www.geeksforgeeks.org/maximum-of-all-subarrays-of-size-k/>

I discussed a lot with him as to which data structure could be used and finally came up with a Queue solution. I was asked to code it again considering all the corner cases.

- 2.[Implement a queue using stacks with the operations \(Enqueue,Dequeue,IsEmpty,Size\).](#)

While I was telling him the solution,he even asked me whether I would prefer Arrays or Linked List implementation when i make a normal queue.

(Space and time complexity for both)

### F2F 3(Technical):

He also asked me a brief introduction to my Summer Internship Project.

He began with the pros of cons or arrays and linked lists. Then a question on arrays:

1. [Given an array with all even elements present even number of times except one which is present odd number of times. Find that element.](#)

I started with XOR solution, but he told me the OS doesn't support XOR. So, I gave him a HashMap solution. He went on asking me to optimize further. So at the end I had a space complexity of  $O(k)$  where  $k$ = number of unique elements.

Asked me the Space and Time complexity of the most optimized solution.

2. Given four types of array

`\r\n a) Increasing(1,2,3,4) \r\n b) Decreasing(4,3,2,1) \r\n c) Increasing-decreasing(1,2,3,4,7,6,5) \r\n d) Decreasing-increasing(5,4,3,2,1)`

Find the type of array in  $O(1)$  and then find the maximum element in the array.

Except case c, max element is  $O(1)$ . For c, I gave binary search solution. he asked me to write the code considering the corner cases.

### F2F 4(Bar raiser):

He asked me what my favorite subject was. I told DS,so he asked me from DS.

1. Write a class of circular queue using array implementation with Enqueue and Dequeue member functions.

2. [Given a binary matrix\(filled with 0 and 1 only\) where 0 depicts water and 1 depicts land. We can traverse either up or down or left or right.Given a source and destination,find if we can reach the destination.](#)

He then modified it to finding the path followed and then the minimum path possible.

(Code wasn't required)

3. Given a series of operations to build a project along with the time taken by each operation. Some operations are dependent on previous operations. Find the minimum number of days needed to finish the operation.

I wasn't very sure of the solution I was thinking,so he said it was okay and concluded the interview.

### Tips:

1. Keep sharing your idea with the interviewer, he would help you a lot.
2. Don't give up, you might come up with a brilliant idea with a little more thinking.

And do remember:

\xe2\x80\x9clf it doesn\xe2\x80\x99t end well then it probably hasn\xe2\x80\x99t ended yet\xe2\x80\x9d

I would like to thank all my friends for all the support and a special thanks to GeeksForGeeks for their awesome website. Cheers! \xf0\x9f\x99\x82

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[Subarray with given sum](#)

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# Amazon Interview Experience | Set 290 (On-Campus for Internship)

- Difficulty Level :\nEasy
- Last Updated :\n28 Jun, 2021

Recently, Amazon visited our campus and as a matter of fact it was the first to visit. They took 3 rounds to select interns.

1st round \xe2\x80\x93 Online test

There were 20 MCQs, which included questions from C, C++, Java(Multi Threading) and few aptitude questions.

Then, there were 2 coding questions-

1)<https://www.geeksforgeeks.org/lexicographically-minimum-string-rotation/>

2) Given a string, check whether string is Good or Bad(Condition \xe2\x80\x93 String is composed of \xe2\x80\x98a\xe2\x80\x99 and \xe2\x80\x98b\xe2\x80\x99 characters only and you can add only \xe2\x80\x9cab\xe2\x80\x9d anywhere in the string to form a Good string).

## 2nd Round \xe2\x80\x93 F2F interview

Interviewer gave me one question \xe2\x80\x93 Count possible paths from top left

He first asked me to give recursive approach and then optimize it further by creating an extra matrix. Finally, he asked me to give DP solution of the problem.

Interviewer was very helpful and discussed every step of my solution. He wanted to see how I approach the given problem and further optimize it gradually.

## 3rd Round \xe2\x80\x93 F2F Interview

Interviewer started with my projects and slowly came to Operating system. He asked few questions related to it-

- 1) What is a page fault?
- 2) How does it affect the CPU performance?
- 3) How to minimize it? (I talked about LRU)

He asked me to design LRU using appropriate Data Structures.

I did it using doubly linked list and map. Then, he talked about complexity of my solution and wrapped up the interview by asking if I had any questions for him.

**Few advises** \xe2\x80\x93 First, be cool and don\x80\x99t be nervous because interviewer wants you to be interactive and confident. Think out loud and keep discussing with interviewer about any of your queries. Lastly, just memorising algorithms won\x80\x99t do any good. One has to learn the art of developing logic of a problem.

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# Amazon Interview Experience | Set 289 (On-Campus for Internship)

- Difficulty Level :\nEasy
- Last Updated :\n19 May, 2021

Amazon was the first company to visit our university this year. They have taken 3 rounds for selecting students for internship program.\xc2\x9a

**1. Online coding round :** This was as usual. 2 coding questions and 20 MCQs. MCQs were from probability, permutation, output, tree, DBMS and OS.\xc2\x9a  
Coding questions were easy. The first one was [finding-next-greater-element-with-same-set-of-digits](#).  
\xe2\x80\x99ve to implement the function long nextGreater(long n);\xc2\x9a  
There were hidden test cases. That means, if you submit successfully, then also your code might be wrong. You\xe2\x80\x99ve to design and test your code.\xc2\x9a

Second question was easy, [finf max\(|Ai \xe2\x80\x93 i| \xe2\x80\x93 Aj \xe2\x80\x93 j|\) from an array with i!=j.](#)\xc2\x9a

There were students who were not selected just because they answered only 3 or 4 MCQs. Actually, the selection was not done based on the coding questions. Two of my friends answered both the coding questions and didn\xe2\x80\x99t answer any MCQ and were not selected.\xc2\x9a

## 2. 2nd round was a F2F round.\xc2\x9a

The interviewer was very frank, friendly and helpful as well.\xc2\x9a

[At first he gave me the problem of finding triplets in an array that adds up to a given value.](#) I told him that I\xe2\x80\x99ve solved it before and he told me to explain the algorithm. I did.\xc2\x9a

Then he gave me another problem. [Given a BST and a range, return all the elements in that range.](#) I told him one recursive approach and I had to write the code on the paper. He told me that there are two bugs in the code, find it. Later I figured out and modified the code.\xc2\x9a

Then he gave me [infix to postfix conversion](#) and [evaluation of postfix](#). I solved it but then he told me it was wrong. Then I\xe2\x80\x99ve to find out what was wrong with my code. I took an example and debugged my code.\xc2\x9a

Then he gave me a chance to ask him questions if I had. I asked him, \xe2\x80\x9cHow many hours do you code in a day?\xe2\x80\x9d He replied, \xe2\x80\x9cSometimes I don\xe2\x80\x99t write code at all, sometimes it is 12-16 hours.\xe2\x80\x9d He also mentioned that his wife doesn\xe2\x80\x99t like him. I told him, you should have married a CS girl. He was laughing. I asked some other questions and it was really an awesome conversation.\xc2\x9a

**3. 3rd round was HR round.** The interviewer started talking about the life and culture at amazon.\xc2\x9a

Then he asked me the problem of [finding whether two nodes in a Binary tree are cousins or not.](#) I was not able to solve it at first. I was nervous. I wrote the code but again it was wrong, he told me you\xe2\x80\x99ll get 2 more minutes for 5 times. But he gave more than 10 minutes to solve it. Actually he was trying to confuse me.\xc2\x9a

2nd question was a math question, it was easy and then he told me to implement insert method\xc2\x9a

of MaxHeap. I told him that I can't implement MaxHeap but I have never implemented MaxHeap. He said, Then implement it now. I did and said, Have you ever implemented MaxHeap insert method in O(1) time ? He just stared at me and then I said, I don't even understand. And I never needed this algorithm as well. Later I apologized for the arrogance that I showed. He asked me lot of questions like why do you want to work at amazon ? Then he gave me a chance to ask him questions. I asked the same question,

How long do you code ? He said, I don't write codes at all. I said, Why ? He said, Because I'm the HR manager. I said, I thought that there will be one more round and that will be the HR round.

And I heard that the HR manager likes to ask mathematical questions. He laughed and said, I asked you one.

And one advice that I can give you is that You don't need to know thousands of algorithms. Apply your brain to develop them because they'll give you sufficient time to do that. Remembering algorithms is a bad habit. And be confident and proud of what you already know. Thanks geeksforgeeks for giving me such an unexpected happiness.

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# Amazon Interview Experience | Set 288 (On-Campus)

- Difficulty Level : [Medium](#)
- Last Updated : [05 Jul, 2019](#)

Amazon visited our campus for SDE-1 . Interview process started with an online coding round followed by 4 Face to Face Interviews. All Interview rounds started with brief introduction about me.

## Online Round :

A hackerank contest with 22 questions inclusive of 2 coding problems and 20 MCQ's on OS, DBMS, Networking and C/C++.

### Coding Questions :

1. Given a 2d array with only elements # & . # represents cherry and . represents nothing . Can you divide the array into 2 halves with equal cherries . You can only make a single cut either horizontally or vertically .

2. [Sliding Window of size k . Find max of each window.\(no need of optimization, Brute-Force was accepted\).](#)

## F2F 1 ( 1 hr 20 min, TECHNICAL ) :

1. [Find floor of a number in a sorted array](#). Production code was required.

2. [Given a number k , Find no. of ways to make this number using sum of numbers from 1 to k-1](#) . Constraints: You cannot take same number more than once in a combination( for eg: k=6, {1,1,4} can not be considered in solution) and also all permutations of a combination count as one way ( for eg: if k= 6, Then all permutations of (1,2,3) count as one way only). (Solution : Recursion, DP)

## F2F 2 ( 40 min, DIRECTOR + TECHNICAL ) :

1. Given an API :- bool isValidWord(string) and a list of sentences. For each word in a sentence, you have to print all the substrings and reversed substrings in that word which are valid (validity of a string is checked by above API).

2. Discussion on Egg Drop Puzzle.

3. What happens when you type www.amazon.com in your Browser .

## F2F 3 ( 1hr , TECHNICAL ) :

1. Given a linked list, write a function to reverse every alternate k nodes. Need to handle all the Corner cases .

2. Given millions of sorted lists and a God Processor that can work on infinite threads at a time, make a sorted list using all the elements of given lists considering the advantage provided by such a processor.

(My approach 1: use Priority Queue, but he said that only one thread can use the PQ at a time.

My approach 2: use technique similar to Merge Sort) .

## F2F 4 ( 1 hr 20 min, TECHNICAL ) :

1. Given a robot which is on Origin in a number line and a string that contains either

\xe2\x80\x98L\xe2\x80\x99 , \xe2\x80\x98R\xe2\x80\x99 or \xe2\x80\x98?\xe2\x80\x99.  
\xe2\x80\x98L\xe2\x80\x99 means turn left and \xe2\x80\x98R\xe2\x80\x99 means turn right.  
\xe2\x80\x98?\xe2\x80\x99 can be assumed to be \xe2\x80\x98L\xe2\x80\x99 or  
\xe2\x80\x98R\xe2\x80\x99. Find the maximum distance from origin the robot can go at any point of time. ( My approach 1: Backtracking, 2: Backtracking+Memoization, 3: using two variables )

2. Discussion on data structure used for dictionary, Hash table vs Trie, collision handling in hash tables.

Print all the substrings of a given string that are present in the dictionary. Then he asked to optimize the solution. Then I used technique similar to Rabin-Karp algo + Hashing assuming collision is not a problem. Interviewer was satisfied after this solution. Code was not required.

Interview tips : Interviewers don't want most optimized solution. They see how you approach a question , Interact with interviewer if you get stuck , don't jump directly to code, think loud and be confident.

A big thanks to GeeksforGeeks and other online judges.

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# Amazon Interview Experience | Set 287 (On-Campus)

- Difficulty Level :[Hard](#)
- Last Updated :[05 Jul, 2019](#)

Amazon visited our campus for SDE-1. Interview process started with an online coding round followed by 4 face to face interviews. All interview rounds started with brief introduction about me.

## Online Round :

A hackerank contest with 22 questions consisting of 2 coding problems and 20 MCQ's on C, OS, DBMS, Networking.

### Coding Questions :

1. Given a 2d array with only two elements # & . # represents cherry and . represents nothing. Can you divide the array into 2 halves with equal cherries. You can only make a single cut either horizontally or vertically.

2. [Sliding Window of size k . Find max in each window.](#)

No need of optimization, brute force was accepted.

## F2F 1 (30 minutes , Director + Technical)

1. [You have a 2-d matrix , you have to print matrix in Spiral Order Form.](#) Production code was required.

2. What is the most funniest and craziest data structure you have ever used.

I said Segment Trees. He asked me to explain it. Why to use it, explain it through some example, prove its complexity.

## F2F 2 (40 minutes, Technical )

1. [You have a 2-d array \(m\\*n\) , where every row and column is sorted in increasing order. You have to return an array which is sorted](#) (basically have to sort given 2d array)

Approach 1- insert all elements in map/set . (  $O(mn\log(mn))$  ) .

Approach 2- insert first element of each row in a heap (same as sort k sorted list of equal length), then call extract-min and insert next element from the required row.

Complexity-  $O(mn\log(m))$  )

Follow up question- what if  $m>>n$  ?

Solution- Transpose the given matrix and follow the same procedure as above.

2. [Given a binary tree containing positive and negative values, you have to find maximum sum that passes through parent.](#) (  $O(n)$  solution was required ).

Proper code was required for both the questions.

## F2F -3 (1 hour ,Technical )

Several questions on Operating Systems and Computer Networking.

Operating Systems- Difference between multi -tasking, multi-processing and multiprogramming, Virtual Memory, why to use Virtual memory, issues related to virtual memory , paging, segmentation , multithreading, difference between process and thread.

Computer Networking- What happens when you type www.amazon.com in Web Browser, how server handle requests, how routing works, difference between HTTP and HTTPS, how TCP works.

Coding Question- Given an array, find min element in the range (xi,yi) . Queries can be very large.

First i gave brute force approach ( $O(n)$  for each query ) and after that I gave a segment Tree solution to him. He told me to prove time and space complexity.

Follow up question- What if we delete some element from segment tree. How do you augment your data structure.

I said that instead of deleting we can update it to INT\_MAX value.

#### F2F-4 (1 hour, Technical)

Given a string consisting of 3 types of brackets ( \xe2\x80\x98(\xe2\x80\x98, \xe2\x80\x98{ \xe2\x80\x98, \xe2\x80\x98[ \xe2\x80\x98 ), there are priorities assigned to each bracket. You have to check if given string is balanced and valid.

Definition of valid- Higher priority bracket can't be inside lower priority bracket.

I solved it by a single Stack .

Follow up question-

Find the length of longest valid substring which is balanced and valid.

Then he asked if you have any questions.

Interview tips-

Interviewers don't want most optimized solution. They see how you approach a question , Interact with interviewer if you get stuck ,don't jump directly to code, think loud and be confident.

A big thanks to geeksforgeeks and other online judges.

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## Amazon Interview Experience | Set 286 (On-Campus)

- Difficulty Level : [Hard](#)
- Last Updated : 05 Jul, 2019

### Round 1 (Online on HackerRank)

Duration: 90 minutes

20 MCQ questions mostly based on Operating System, Data Structures and Algorithms and a few puzzles.

2 coding questions

1. [Given a string \(which may or may not be a palindrome\) of length  \$n\$ . Also given  \$k\$  \(0 <= k <= n\), such that  \$k\$  represents the maximum number of characters of the string that you can replace to convert it to a palindrome. Your task is to convert the string to maximum palindrome that can be formed by replacing the string with digits 0-9. If it isn't possible to convert the string to palindrome, print -1.](#)

Note: Leading 0s in the string are also considered to be a part of palindromic string. Eg., 00100 is also a palindrome with leading zeros.

Test Cases:

- i.  $n = 4, k = 2$ . Given input string `\text{Am?zon Amazon}`, then the output string would be `\text{Am?zon Amazon}`
- ii.  $n = 4, k = 1$ . Given input string `\text{Am?zon Amazon}`, then the output string would be `\text{Am?zon Amazon}`

2. [Given a text and pattern string. The pattern consists of the following characters:  \$\*\$ : It can be replaced with 0 or more occurrence of the previous character  \$?\$ : It can be replaced with single occurrence of any character. You task is to determine if the string and pattern match after successfully replacing the special characters in the pattern with the above rules. Print true if the text and pattern match else print false](#)

Test Cases: The first string is the pattern and the second string represents the text

```
\r\ni. Input : Am?zon Amazon \r\n      Output : true\r\nn. Input : Am?z*on Amazon \r\n      Output : true
```

The MCQs were pretty easy to solve if the concepts are clear. The code was manually verified by team and then students were shortlisted based on the quality of code and overall score.

### Round 2 (F2F Duration: 60 minutes

The interviewer was in a hurry I felt and he asked me some basic questions like tell me about yourself? and then we discussed about my internship and it went on for 10 minutes before he came up with a question.

1. Design the shuffle button of a music player such that it maintains random property and make sure that it plays all the songs uniquely in a cycle (i.e, no song should repeat itself unless all other songs in a particular cycle are played)

I initially gave him an O(nlogn) approach. He wanted me to optimize it and after some pen and paper work I came up with an O(n) approach and the interviewer seemed to be satisfied.

### Round 3 (F2F Duration: 70-80 minutes

The interviewer was very friendly and made me comfortable by offering some snacks and water. Later he asked me to give my best shot and to not fool him if I had already heard of the problems he was going to ask. He asked me to tell few lines about myself and then discussed about my internship for 5 minutes and then fired few questions.

1. Traffic Car Problem. Given  $n$  people and  $n+1$  parking slots. Each person has a car and a parking slot allocated. One night they all go to a party and get drunk. They end up parking their cars randomly. What's the best way to go back to the initial configuration (one where every car is in the right allocated slot).  $n+1$ th parking slot can be used to swap the cars.

I told the interviewer that this question was asked to one of my friends and that I discussed it with him. He seemed impressed with my honesty. He then moved on to ask the next question.

2. [A variation of stock buy sell to maximize profits problem](#)
3. [Trapping Rain Water Problem](#)

Tips: Keep the interviewer involved in the discussion. Give him the approach and if you are not thinking in the right direction, they are always there to guide you. Don't jump to the code as soon as you are given the problem.

I coded the last two problems after explaining him the logic behind it and the interviewer seemed to be satisfied.

### Round 4 (F2F Duration: Around 90 minutes

Initially there was only one person who was interviewing me but then he was joined by another person and it looked that I needed both of their approval to move into the next round.

1. We started off with discussing my previous internships. He was very curious to know about what were my key deliverables as an Intern and also seemed to learn from my experience at those firms.

#### 2. Count ways to reach nth stair

I first explained him how the result can be derived and then after he was satisfied with the logic, gave him a recursive approach, followed by the memorization approach and then the iterative Dynamic Programming approach.

#### 3. Tree Isomorphism Problem

Logic was given and then I coded it. He still didn't seem to be satisfied and asked me to walk him through my code for an example tree and draw the recursion tree for the same.

#### 4. Dynamic Programming (Longest Arithmetic Progression)

5. He asked me to design a student database efficiently.

Raw thinking was what he wanted I felt.

6. Few DBMS related query questions that were simple to answer.

#### Round 5 (F2F) Duration : 100-120 minutes

The interviewer was very friendly at the beginning. He became little strict as the interview went on and in the end he again turned back to the amicable mood he started with \xf0\x9f\x98\x9b

1. We started off with discussing my internships in detail. This went on for about 30 minutes until he was satisfied with that fact that I had put in lot of effort in making it a successful project.

2. Stock buy sell problem which was asked in the second round. I told him that this was asked to me in the earlier rounds and he seemed to be impressed with my honesty. I guess I got some loyalty marks there.

3. [Connect the nodes of the binary tree in the same vertical level by using the next pointer](#). The tree could have nodes with at most two parent nodes.

Approach was given and he didn\xe2\x80\x99t seem to be fully satisfied with my code at first, but then after some optimizations he said it seems to be fine now.

4. Few question on Paging, Collision Resolving techniques, Page replacement algorithms.

Probably the interviewer wanted to make sure that the new hire is well familiar with other subjects other than DSA. He seemed to be satisfied with the answers.

5. Why Amazon?

The standard question that everyone is asked in the end of the last round.

Thanks GeeksforGeeks.

**Tips:** Try to be calm and give the interview. The interviewers are very well experienced and they not only test your technical skills but also read your expressions (on how well you respond to what they ask). Sometimes luck might not be on your side, so do not get disappointed even if you are rejected. Keep practicing and indeed you will crack some good firm soon \xf0\x9f\x99\x82

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# Amazon Interview Experience | Set 285 (On-Campus for JD-SDE)

- Last Updated : \n05 Jul, 2019

There were 5 rounds in total.

## Round 1:

MCQs based on mainly OS and OOP.

Q.1 Tell whether a matrix containing 0s and 1s can be divided into 2 sub matrices containing equal number of 1s.

Q.2 [Find maximum elements in an array in windows of size 3.](#)

## Technical Interview 1:

Q.1 Discussion on projects

Q.2 Some simple question involving unordered map. Then asked me to first implement the map and then use it.

Q.3 Several questions on OS (semaphores, mutex, scheduling)

## Technical Interview 2:

Q.1 K-heavy problem. Given a binary tree, you need to prune it such that the final tree contains all root-to-leaf sums more than equal to k.

Q.2 Sort m arrays each of size n. He wanted the divide and conquer approach.

## Technical Interview 3:

Q.1 Several questions on CN (Protocols, IP Addressing, High level design of a server system used in companies like Amazon)

Q.2 Sort a string in linear time.

Q.3 At Amazon.com, users log in and access random pages numbered as 1,2,3\x{2013}x80\x{2013}xa6 Given at any time, you need to tell the most popular sequence of 3 pages visited by users.

Eg.

At some time t,

U1: P1, P2, P3, P8, P1, P2

U2: P8, P1, P2

O/P: P8, P1, P2

At time t+1, say

U1: P1, P2, P3, P8, P1, P2, P3

U2: P8, P3, P2

O/P: P1, P2, P3

## Technical Interview 4:

Q.1 Given an array containing 0s and 1s your aim is to convert all 1s to 0s. You can only use an auxiliary function for doing this (No swapping or modification to order of elements can be done otherwise). The auxiliary function void flip(int index) toggles all the elements to right of index and index itself. You need to return the minimum no. of calls required to complete the task. Linear time is expected.

Also consider time complexity of flip function while doing complexity analysis.

Q.2 Tricky question which involved usage of hashing in Rabin Karp algorithm. Dont remember the exact question.

## Note:

50/250 were shortlisted after MCQ round.

19/50 were shortlisted after 2 tech interviews.

16/19 were placed after next 2 interviews.

OS, CN and OOP is a must in addition to DS problems. All the best.

A big thanks to geeksforgeeks for providing such wonderful platform!

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# Amazon Interview Experience | Set 283 (On-Campus)

- Difficulty Level : [Medium](#)
- Last Updated : 05 Jul, 2019

Recently I got interviewed at Amazon on campus. The process was :

Online Round :

A hackerrank contest with 22 questions inclusive of 2 coding problems and 20 MCQ's on OS,Aptitude,DBMS .

Coding Questions :

1. Given a 2d array with only elements '98' & '99'. '98' represents cherry and '99' represents nothing . Can you divide the array into 2 halves with equal cherries . You could only make a single cut either horizontal or vertical .

2. [Sliding Window of size k . Find max of each window.](#)

Round 1 :

Problem 1: Search in rotated and sorted array .

Interviewer wants all corner cases covered code .And also Max optimized time complexity .

I gave a O(2\*logn) solution he got satisfied .

Problem 2: [Given a number k , Find no. of ways to make this number using sum of numbers from 1 to k-1](#) . Also You cannot take same number more than once in a combination and also all permutations of a combination count as one way .

For eg: if k= 6, Then all permutations of (1,2,3) count as one way only.

I got shortlisted after this round .

Round 2

It consists of a single problem only but a detailed discussion on that .

Problem : Range Minimum Query .i.e Given an array and a range query (xi,yi) find min element in the range (xi,yi) . These queries can be very large .

First i gave bruteforce approach and after that I gave a segment Tree solution to that with time and space complexity .

He then asked what if we have to update an element and then followed by updating a range .

After that he asked what if we delete an element . How do you modify your solution to cope-up with that .

I suggested him to update the element with INT\_MAX and maintain a mapping array .

After that he asked what if we add an element in the array ? .

I suggested him to reconstruct segment tree based on that . He suggested to construct it like a binary root instead of array representation and store the range . There can be some re-usable subtrees . How can i found those subtrees and how to use them and what will be the time complexities.

Lastly i was told to code range minmum query with node having following properties  
(min,start,end,node\* left,node\* end ) ;

He got impressed .:)

### Round 3

\xe2\x80\x94\xe2\x80\x94\xe2\x80\x94\xe2\x80\x94\xe2\x80\x94\xe2\x80\x94\xe2\x80\x94\xe2\x80\x94

It also consists of only a single problem .

Problem : Given set of coordinates find top k elements whose distance from origin in maximum .

I gave naive approaches and heap approach . Later he asked me to think more then i come up with Quick-Sort Partition function approach .

He asked me to code it .

## Round 4

\xe2\x80\x94\xe2\x80\x94\xe2\x80\x94\xe2\x80\x94\xe2\x80\x94\xe2\x80\x94\xe2\x80\x94\xe2\x80\x94

It was easiest of all so far .

It consist of problem : Given 2 linked list subtract them and store the result in bigger one and return that .

Basically he wants us to cover all corner cases for this .

After that a discussion on projects took place.

Thanks Geeks For geeks for huge programming problems database . Doing a great Job \xf0\x9f\x99\x82 .

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# Amazon Interview Experience | Set 282 (On-Campus)

- Difficulty Level : \n[Medium](#)
- Last Updated : \n28 Jun, 2021

I have just entered my third year and Amazon was the first company to visit our campus for Software Internship. The process was :

## ONLINE ROUND

2 Coding questions and 20 MCQs . The coding questions were:

1. <https://www.geeksforgeeks.org/lexicographically-minimum-string-rotation/>
2. It was an easy string question similar to [finding that the parenthesis are balanced or not](#) . Instead of the parenthesis , a and b were to be checked for , For eg )  
ababab is balanced ;Its a good string  
abbbaa is a bad string .

I had practised MCQS from\xc2\xa0<https://www.geeksforgeeks.org/quiz-corner-gq/quiz-corner/>\xc2\xa0and many of the MCQs I had seen here before that were asked in the test. [Sorting](#), [hashing](#), [complexity](#),\xc2\xa0[recursion](#) based MCQs were asked.

Also, 2 questions on [OS](#) , 1 on [Networking](#) and 1 on [DBMS](#) was present. I did not attempt these since there was negative marking .\xc2\xa0I solved around 14-15 MCQs and both the coding questions . (However, some students completing 1 were also selected .)

## ROUND 1

1. <https://www.geeksforgeeks.org/serialize-deserialize-binary-tree/>
2. [Spiral level order traversal](#) of a binary tree from bottom level to top level.( I was allowed to use extra space( $O(n)$ ) .)

## ROUND 2

This round was easier than the previous one for me and went smooth .

1. [Set the rows and columns of a matrix equal to zero if an element in that row or column is zero](#) (The elements could be positive or negative too ). I told him the solution using  $O(n)$  space . He then asked me to do it without the auxiliary space and I told him that it was not possible . (A solution without space could be given if all the elements were either non-negative or non-positive )
2. [Merge k sorted linked lists](#) . I discussed the approach using priority queue . Then he proposed another method of merging two lists into one and then merging it with the next . I explained him the complexities of both the approaches and then wrote the code for priority queue approach . He was impressed.

I would like to thank **GeeksforGeeks** for providing a huge set of problems for practicing for interviews. The internship archives were extremely helpful . Also I practiced on\xc2\xa0<https://practice.geeksforgeeks.org/> and interviewbit regularly in the summer break.

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# Amazon Interview Experience | Set 280 (Off-Campus)

- Difficulty Level : \n [Hard](#)
- Last Updated : \n 05 Jul, 2019

Hiring event in Delhi for Amazon Bangalore. First was written programming test and we needed to write full working code without a single bug. Guys please focus more on written, sometimes we don't take this serious and write code with many bugs.

## Written Round:

Write most optimized solution for all problem.

1. [Check a linked list is palindrome or not.](#)
2. [Search an element in a row and column wise sorted matrix.](#)
3. [Number of bits we need to flip from A to get B.](#)

Problems are easy and can be solved if you have practiced for sometime from geeksforgeeks but the major part was writing clean and bug free code with most optimized solutions.

## F2F 1

After clearing the written round I went for first F2F round.

1. There is one class which has private array list and this array list is initialized in constructor of this class.

We have one public method getItem(int i) { \xe2\x80\x9d return ith item of array list\xe2\x80\x9d },

We need to know the size of array list. We can only call getItem method.

<https://ideone.com/VaE0QL>

Please check the above code for more details.

2. [Search an element in a BST.](#)

3. [Given a set of time intervals in any order, Print all the pair of overlapping intervals .](#)

4. My college project was on RTOS (Real Time OS) and interviewer also did the same project when he was in college , so we had lot of discussion on project.

He was very impressed.

## F2F-2

Here is F2F round 2 where I was not able to give optimized approach for the first problem.

1. [Given a string and he asked me to find Longest Repeated Substring in the given string.](#)

2. [Given a mXn matrix with no obstacle and we can move in right or down direction. Count the no of paths to reach from top left cell to bottom right.](#)

I gave recursive solution with  $2^n$  complexity and then optimized the solution using memoization.

3. [Create sorted list of all unique partitions of given number 5 = { {4, 1}, {3, 2}, {3, 1, 1} }](#)

This round didn't go well and I was praying L Finally HR came and said you haven't performed well in this round so you will have another technical round and I was like no problem!

## F2F 3

Finally last round of the day and I knew I have to perform well otherwise I have no chance.

1. You are given a dictionary and a string. You need to check the string is valid (exist in given dictionary) or not, if its not valid then perform one of the three operation (Insert , remove , replace) on string and get a valid string. We need to find another string which has One edit distance with this string.

Interviewer asked me about the data structure used to implement the Dictionary. I suggested Trie for dictionary. After some discussion he asked me to write code for insert in Trie and for the above problem.[Edit Distance](#)

2. How to implement Trie. Space optimized version.

This was part of 1st problem and we had discussion on space of a trie when we have 500-600 characters in some language. I suggested HashMap instead of using static array in Trie. And then he asked me to write structure and Insert method.

3. [Max sum tree . every node has its value plus maximum of left and right sub tree sum.](#)

Expected time complexity O(N).

After this round HR told me to leave for the day and I will have one more technical and one Hiring manager round.

I was happy that I completed all the round.

4. [Find maximum sum rectangle in given matrix.](#)

## F2F \xe2\x80\x93 4 (Technical plus behavioural)

1. [Find the maximum element in an array which is first increasing and then decreasing.](#)

2. Project discussions.

3. Anything that you have done out of your responsibility.( In technical part )

4. Any situation when your manager really appreciated your work.

## Telephonic Round with hiring manager.

This was my last round of the process and it was with hiring manager.

1. Tell me about yourself.

2. Your day to day work at current company.

3. Discuss any project which.

4. Any disagreement movement with your manager.

5. Why Amazon? and why are you leaving current company?

Guys prepare hard for behavioural questions, these questions are asked to know the person.

Then 2 easy programming questions but again the measuring part was code and the way we explain our solution.

1. [Check a string is palindrome or not.](#)

2. [Count no of words in a string.](#)

He asked me to write test case for both the problem.

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# Amazon Interview Experience | Set 279 (On-Campus for Internship)

- Difficulty Level :\n[Medium](#)
- Last Updated :\n05 Jul, 2019

Recently Amazon visited our campus. There were total three rounds.

First round was an online coding round conducted on Hackerrank, It consisted of 20 Mcqs based on Data Structures, Sorting Techniques, Operating systems, Networking and some aptitude questions along with 2 coding questions,

The questions were:

1. [Sort a linked list which consists of only 0s,1s and 2s.](#)
2. Find the maximum product of three elements in an array which consists of both +ve and -ve numbers.

I Was able to solve both the coding questions in 15 minutes.

Out of 142 students that appeared, 33 were selected for the next round.

F2F-1

The Interviewers were very friendly and made me comfortable.

The questions asked were:

1. [From an Inthreaded B.S.T delete all the nodes with a single child and explain its complexity.](#)
2. [A sorted array is rotated K times, find the index of the largest number.\(A modified binary search can be used for this\).](#)
3. [Largest Palindromic Substring from a string.](#)

A total of 15 students out of 33 were selected for the final round.

F2F-2

1. [Find median of infinite stream of integers.](#)
2. Find all subsequences of a string.
3. Divide an integer array in 2 parts such that their sum is equal.

At the end 9 people were selected.

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# Amazon Interview Experience | Set 278 (On-Campus)

- Difficulty Level : \n[Medium](#)
- Last Updated : \n30 Jul, 2016

Recently Amazon visited our campus for recruitment process. They conducted several rounds based on the interviewee\x80\x99s capacity.

## Round 1:

90 minutes

20 MCQs and 2 Programming Questions.

Programs were based on Strings and Arrays.

The modules were already given by the company itself.

The first was conducted in HackerRank.

## Round 2:

75 minutes.

Pen and paper test.

It is also a programming round.

The number of questions will be get increased based on your solving ability within that 75 minutes.

They need O(1) solution for those questions, if it possible. Otherwise, they need the best solution for the given question.

They sat in front of me and assess my code.

Programming language is not a matter. You can use your preferable language. I prefer Python and C programming.

Note: They are very clear in this. Don\x80\x99t use any inbuilt functions. Sometimes, even striking out the code was not allowed.

## Round 3:

45 \x80\x93 60 minutes

They ask me 2 programming questions and 3 testing and troubleshooting questions.

As usual, for coding they need only the best solutions.

For testing and troubleshooting, they need at least 30 \x80\x93 40 test cases and troubleshooting techniques.

For me, He didn\x80\x99t ask me to stop until i write 35 for each.

I wrote 35 as minimum and 68 as maximum.

While you writing the solutions, they thoroughly go through your resumes and ask questions from that.

After the third completed, You can ask questions to the HR before you come out from the panel.

## Round 4:

Hiring Manager round

This round is different from other rounds.

For me, its 1 hour 45 minutes.

But some of my friends have different timings like 15 to 20 minutes and 45 to 60 minutes.

In this round, there are two HRs for me.

They gave their Self intro with awesome communication. Really awesome.

They ask,

Self Intro

Project Explanation

## Testing for my Project

Testing for the project and scenario given by us I wrote 94 test cases (when I get ready for 95th test case , she asked me to stop and said, its enough..) . Troubleshooting for the test cases provided by me to my Project I wrote 60 test cases. Troubleshooting for the test cases provided by me to the project and scenario given by us.

Then they ask Database queries and questions.

Programming question based on the File Management System For this also, I prefer C Data Structures and Python The expect more number of solutions as well as the best solution.

Communication was checked.

Culture fit questions.

Then, question session for me to them.

At last, they said, Thank you Sathish , we done the interview. We will give the results to your Placement officer.

Thank you GeeksForGeeks :

Because, I prefer GeeksforGeeks for my programming preparations. You played a major role in my placement.

[Practice Amazon Interview Questions.](#)

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# Amazon Interview Experience | Set 277 (On-Campus for Internship)

- Difficulty Level :\n[Medium](#)
- Last Updated :\n05 Jul, 2019

Recently Amazon visited our campus for interns and placements. For interns it consisted of 1 online + 2 technical rounds.

## Online:(90 mins)

20 MCQ\xe2\x80\x99S based mainly on sorting, OS, Networks

2 coding questions:

1. [Given a number find the next greatest number formed with same digits](#)
2. [Find the largest increasing sequence in an array](#)

## Round 1:(40 mins)

The round started with discussion on projects, my strengths for first 20 mins

Then he asked me to write full working code covering all edge cases for

- 1) [Finding nth node from end of linked list](#)
- 2) Deleting nth node from end of linked list

## Round 2:(45 mins)

1. Find the last non-repeating integer in a stream of integers in O(1) time complexity
2. <https://tkramesh.wordpress.com/2011/02/15/kite-cutting-more-on-dynamic-programming-4/>

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# Amazon Interview Experience | Set 276 ( On-Campus SDE-I)

- Difficulty Level : \n [Hard](#)
- Last Updated : \n 05 Jul, 2019

- **Round 1(Online test : MCQ+Coding)**

- 18 basic MCQ from OS, C, Shell, DBMS(SQL, NoSQL), puzzle(25 horses, find fastest three) :attempted 12/13
- 2 Coding questions:
  - Given a string and a pattern state whether it follows the pattern. For eg: s = \xe2\x80\x9credblueredgreen\xe2\x80\x9d matches pattern \xe2\x80\x9cabac\xe2\x80\x9d but not \xe2\x80\x9caaab\xe2\x80\x9d as \xe2\x80\x98red\xe2\x80\x99 means \xe2\x80\x98a\xe2\x80\x99, \xe2\x80\x98blue\xe2\x80\x99 means \xe2\x80\x98b\xe2\x80\x99 and \xe2\x80\x98green\xe2\x80\x99 means \xe2\x80\x98c\xe2\x80\x99 here. String s only contains words \xe2\x80\x9cred\xe2\x80\x9d, \xe2\x80\x9cgreen\xe2\x80\x9d & \xe2\x80\x9cblue\xe2\x80\x9d and pattern can have any character.[Done]
  - Given a number n and k(no of swaps allowed), make the biggest number from n by making at most k swaps. If its already the biggest return the number itself.

- **Round 2(F2F)** 1. Given two arrays containing numbers find all possible orderings (a, b) such that  $a^*b=P$ (given product) where a belongs to array 1 and b belongs to array b.

**Approach:** Store all elements from shorter array in hash and traverse the other and find if  $(P/b)$  is present in the hash. If present print the ordering.

1. [Given a circular road having gas stations at varying distances on the road. The cost to move from one station to another is given. You can refuel at each stations with all the present at the station as the tank capacity is infinite. Find if its possible to traverse the complete road and if yes then find the starting position to finish the route.](#)

**Approach:** Start from beginning and start traversing the road. If fuel finishes at any point then move the start index backwards and add its gas to the tank. If its still -ve then keep doing it until you have enough to move forward.

- **Round 3(F2F)**

1. [Given a N\\*M matrix, print all squares/rectangles of all possible sizes\(all 1\\*1, then all 1\\*2\xe2\x80\x9a6. 2\\*1\xe2\x80\x9a6 \)](#)

**Approach:** Brute Force

2. Serialize a Binary Tree

**Approach:**

1. Store any two traversals. But it takes a lot of space.
2. Store all the nodes and store for each node the information if it has left & right sub-tree or not in a Boolean array.

- **Round 4(F2F)** 1. Function to find optimal selection of packages from amazon warehouse.

Packages contain varying units of a product for eg: one can have 5 units of iphones another can have 3 and so on. Each package is present infinitely ie. take one then there are still infinite left. You can break into a package, you have to take it as a whole. Also, smaller size packages should be used first. Lot of modifications.

**Approach:** Suggested [subset sum](#) dp solution. Couldn't handle infinite case properly. Add one to a given number represented using a linked list where MSB was at tail and LSB at head.

\xc2\xa0

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## Amazon Interview Experience | Set 275 ( Off-Campus SDE-I Experienced)

- Difficulty Level : \n[Hard](#)
  - Last Updated : \n28 Jun, 2021

I was interviewed in Delhi for SDE-I position in Kindle Frameworks Team at Amazon. I was working as a Project Lead in Samsung, Noida and had a total experience of 1 year 10 months in the Software Industry.

## **Round 1 : Written**

- [Print Boundary Traversal of a Given Binary Tree](#)
  - [Add Two Numbers Represented by Linked Lists](#)
  - [Print all Possible Permutations of a Given String by Placing Spaces \(zero or one\)](#)

There were about 80 candidates and the time allotted for this round is 1 hour. I was able to write all the 3 codes correctly in just 20 min and was the first candidate to move onto the second round.

## **Round 2 : Problem Solving (F2F)**

- [Median of Two Sorted Arrays](#)
  - [Equal Size](#)
  - [Different Sizes](#)
  - [Maximum Size Square Sub-matrix with all 1s in a Given Boolean Matrix](#)

## Round 3 : Design and Data Structures (F2F)

- Behavioral Questions :
    - Tell me about your Current Projects in Samsung.
    - What are your responsibilities as a Project Lead ?
    - Why do you want to join Amazon when you are doing so good in Samsung ?
    - At last a 15 min discussion about the most difficult problem I ever faced and how I tackled it with my coding skills and knowledge.
  - [Given a Sorted Dictionary of an Alien Language, Find Order of Characters](#)
  - [What do mean by Dynamic Binding and Virtual Functions in C++ ?/](#)
  - [Discussion about Mutexes, Semaphores, ISR \(Interrupt Service Routines\), Deadlocks./](#)

The interviewer was highly impressed with my coding skills and shook hands with a sense of approval.

## **Round 4 : Hiring Manager (F2F)**

The Hiring Manager introduced himself and told me that I've been doing really great till now. Then he grinned at me and said Lets hope you don't mess it up in this round .

(1) Which Sorting Algorithm is the fastest and why would you prefer it over others ?

While telling the answer, I said in between \xe2\x80\x9c If there would have been millions of numbers\xe2\x80\x9a6\xe2\x80\x9a6 \xe2\x80\x9c and he caught that specific word of mine \xe2\x80\x9cmillions\xe2\x80\x9d and hence the next 2 questions found the way on their own.

- In a city with millions of people, I want to sort them on the basis of their age. Which Sorting Algorithm would you use and why ? There's a Galaxy with Billions of Stars and distance of each star from the Sun is given . I want the closest 1 million stars from the Sun. Which Data Structure would you use and what would be the complexity ? (It is a variation of Finding K Smallest Elements in an Array)
- Find distance between two given keys of a Binary Tree <  
He scrutinized the entire code for any possible errors and found it perfect.
  - Discussion about Inner and Outer Joins in SQL. <https://www.geeksforgeeks.org/inner-join-vs-outer-join/>

Then he stood up and shook my hands with a broad smile and said Well Done Man ! and left.

### Round 5 : Bar Raiser (F2F)

- Design an Algorithm to Transform One Word to Another through Valid Words of a Given Dictionary.(It is clearly a variation of the Edit Distance Problem, but in Edit Distance we do not care about if the intermediate word is valid or not)  
Only this question was asked in this round and the discussion went on for about 45 minutes.

All credit goes to <https://www.geeksforgeeks.org/> team for providing such an inspirational and a brilliant platform for coders. Keep it up guys, Way to go !

### Suggestion for other candidates interviewing at Amazon :

- Try to write Neat and Clean codes without any cutting or hassle, taking care of all the boundary cases.
- Be very precise and explicit in your answers. [Keep Coding](#) and All the Best !

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## Amazon Interview Experience | Set 274 ( On-Campus)

- Difficulty Level :[Medium](#)
- Last Updated :[28 Jun, 2021](#)

### Round 1: (Online in Hackerrank)

20 MCQ questions based on outputs, [DS](#), [OS](#), [DBMS](#).

1. [Print all possible words from phone digits](#)
2. Given a matrix where elements are inserted as 1 to n in row 0, n+1 to 2n in row 1 and so on till  $n^2$  and you [traverse the matrix in spiral manner find the kth number you will visit.](#)  
eg. n = 3  
matrix: 1 2 3  
4 5 6  
7 8 9  
k = 4, output: 6  
k = 6, output: 8

### Round 2: (F2F)

1. [Sort an array of 0 to 999, 1 to 999 and 2 to 999.](#)
2. [Given a linked list like 10->8->3->4->5->6 modify it to 4->2->1->4->5->6](#)

The last number is subtracted from first number, 2nd last from 2nd number and so on till middle of link list.

First gave him a brute force approach  $O(N^2)$ , then  $O(N)$  approach in which reverse of 2nd half of list is done. He told to do this without reversing the list.

Then used a stack and gave him final solution.

### Round 3 : (F2F)

1. [Given a number n and a pattern that follows like:\(1 to 26\): a,b,c, \(27 to 52\): aa,ab,ac, \(52 to 78\): ba,bb,bc, \(78 to 104\): xb,xc,xd, \(104 to 130\): xb,xc,xd,za,zb,zc, \(130 to 156\): za,zb,zc, \(156 to 182\): aab,aac, \(182 to 208\): aab,abb,abc, \(208 to 234\): abb,abc, \(234 to 260\): abc, \(260 to 286\): abc, \(286 to 312\): xb,xc,xd,za,zb,zc, \(312 to 338\): xb,xc,xd,za,zb,zc, \(338 to 364\): za,zb,zc, \(364 to 390\): aab,aac, \(390 to 416\): aab,abb,abc, \(416 to 442\): abb,abc, \(442 to 468\): abc, \(468 to 494\): abc, \(494 to 520\): xb,xc,xd,za,zb,zc, \(520 to 546\): xb,xc,xd,za,zb,zc, \(546 to 572\): za,zb,zc, \(572 to 598\): aab,aac, \(598 to 624\): aab,abb,abc, \(624 to 650\): abb,abc, \(650 to 676\): abc, \(676 to 702\): xb,xc,xd,za,zb,zc, \(702 to 728\): xb,xc,xd,za,zb,zc, \(728 to 754\): za,zb,zc, \(754 to 780\): aab,aac, \(780 to 806\): aab,abb,abc, \(806 to 832\): abb,abc, \(832 to 858\): abc, \(858 to 884\): xb,xc,xd,za,zb,zc, \(884 to 910\): xb,xc,xd,za,zb,zc, \(910 to 936\): za,zb,zc, \(936 to 962\): aab,aac, \(962 to 988\): aab,abb,abc, \(988 to 1014\): abb,abc, \(1014 to 1040\): abc, \(1040 to 1066\): xb,xc,xd,za,zb,zc, \(1066 to 1092\): xb,xc,xd,za,zb,zc, \(1092 to 1118\): za,zb,zc, \(1118 to 1144\): aab,aac, \(1144 to 1170\): aab,abb,abc, \(1170 to 1196\): abb,abc, \(1196 to 1222\): abc, \(1222 to 1248\): xb,xc,xd,za,zb,zc, \(1248 to 1274\): xb,xc,xd,za,zb,zc, \(1274 to 1300\): za,zb,zc, \(1300 to 1326\): aab,aac, \(1326 to 1352\): aab,abb,abc, \(1352 to 1378\): abb,abc, \(1378 to 1404\): abc, \(1404 to 1430\): xb,xc,xd,za,zb,zc, \(1430 to 1456\): xb,xc,xd,za,zb,zc, \(1456 to 1482\): za,zb,zc, \(1482 to 1508\): aab,aac, \(1508 to 1534\): aab,abb,abc, \(1534 to 1560\): abb,abc, \(1560 to 1586\): abc, \(1586 to 1612\): xb,xc,xd,za,zb,zc, \(1612 to 1638\): xb,xc,xd,za,zb,zc, \(1638 to 1664\): za,zb,zc, \(1664 to 1690\): aab,aac, \(1690 to 1716\): aab,abb,abc, \(1716 to 1742\): abb,abc, \(1742 to 1768\): abc, \(1768 to 1794\): xb,xc,xd,za,zb,zc, \(1794 to 1820\): xb,xc,xd,za,zb,zc, \(1820 to 1846\): za,zb,zc, \(1846 to 1872\): aab,aac, \(1872 to 1900\): aab,abb,abc, \(1900 to 1926\): abb,abc, \(1926 to 1952\): abc, \(1952 to 1978\): xb,xc,xd,za,zb,zc, \(1978 to 2004\): xb,xc,xd,za,zb,zc, \(2004 to 2030\): za,zb,zc, \(2030 to 2056\): aab,aac, \(2056 to 2084\): aab,abb,abc, \(2084 to 2110\): abb,abc, \(2110 to 2136\): abc, \(2136 to 2162\): xb,xc,xd,za,zb,zc, \(2162 to 2188\): xb,xc,xd,za,zb,zc, \(2188 to 2214\): za,zb,zc, \(2214 to 2240\): aab,aac, \(2240 to 2268\): aab,abb,abc, \(2268 to 2294\): abb,abc, \(2294 to 2320\): abc, \(2320 to 2346\): xb,xc,xd,za,zb,zc, \(2346 to 2372\): xb,xc,xd,za,zb,zc, \(2372 to 2400\): za,zb,zc, \(2400 to 2426\): aab,aac, \(2426 to 2454\): aab,abb,abc, \(2454 to 2480\): abb,abc, \(2480 to 2506\): abc, \(2506 to 2532\): xb,xc,xd,za,zb,zc, \(2532 to 2558\): xb,xc,xd,za,zb,zc, \(2558 to 2584\): za,zb,zc, \(2584 to 2610\): aab,aac, \(2610 to 2638\): aab,abb,abc, \(2638 to 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## 1st Round (Online Coding Round):

It was 90 min test on Hackerrank. It had 20 MCQs and 2 coding questions. The MCQs were from topics like time complexity, different sorting algorithms, dbms, os, 3-4 puzzles and apti, output of the code, etc.

The MCQs had negative marking of 0.50.

Students of CSE, IT, ECE were allowed and there were around 160 candidates.

### Coding Questions:

1. [Find the first non-repeating character of the string.](#)

2. [There is a square matrix of order n which is filled from 1 to  \$n^2\$  in row major. Find the Kth element in spiral traversal of the matrix.](#)

Example: Given n=3 and K=5.

Matrix:

```
1 2 3
4 5 6
7 8 9
```

Output: 9

I solved both the coding questions and attempted 16 MCQs and qualified for the next round. It is very important to solve at least one coding question to qualify for the next round.

## Second Round (Personal Interview-I):

Time: 40-50 minutes. 31 candidates were selected for this round.

It started with tell me about yourself. Then the interviewer asked me my JEE(mains) rank and also what data structures I know. She asked me basic tree questions such as what is tree, what is bst, how many types of traversals are there and to name them. Next, she gave me this problem:

1. [You are given an array of elements, find out if the array represents Pre-order traversal of a BST.](#)

I thought on it for few seconds and gave her  $n^2$  logic. Before she asked me to optimize it, I told her that I can try to optimize it.

Then after thinking about it for few minutes, I told her my  $O(n)$  logic.

After listening to my approach, she asked me to code it. I wrote the code without any error at one go. She asked me the time complexity and space complexity of my code after checking if its error free or not.

After this, the interviewer asked me theoretical questions on OS such as what is critical section, mutex, semaphore, virtual memory, page fault, ways of preventing deadlock, etc. Then she made a simple table and asked me to write SQL query for it which was very easy. She asked me what is indexing in DBMS, difference between its types and if the query I wrote is case sensitive or not.

Next the interviewer asked me if I know [clone a linked list problem or not](#).

I said, yes. So the interviewer changed the question.

## [2. Given an array with both negative and positive numbers, find the maximum sum contiguous subarray.](#)

I told the interviewer my approach (modification of Kadane's algorithm). And she asked me to write the code. I wrote the code without any errors.

## **Third Round (Personal Interview-II):**

Time: 80-90 minutes. 8 candidates were shortlisted for this round.

First the interviewer went through my resume and asked me about my recent project. Then he asked me if I am comfortable with trees. I said yes. He asked me:

### [1. Vertical sum](#)

I told him the approach and he asked me to write the code. I wrote the code without any error.

Then he asked me theoretical questions. Started with virtual memory concepts, next he wrote a code and asked me if there was any error. Then he asked C/C++ questions based on malloc/calloc, new operator, etc. A tricky question on exception handling. There were many other theoretical questions which I don't remember.

### 2. Then he gave me this problem:

There are n number of people required to do some tasks. Among these n persons, some x number of person require a key to start their work. There are infinite keys which are thrown one by one in front of people in every unit time. The time required by a person to pick up the key is one unit time. Furthermore, the interviewer mentioned conditions such as some particular person can only start after some other particular person finishes his task. The time required by a person to finish his task is one unit. He asked me to find the minimum time in which all people finish their task.

After thinking for few minutes, I told the interviewer my approach using topological sorting in graph. Then he asked me to explain topological sorting in detail. Then he moved on to another question.

### 3. You are in a forest and there are many paths. You need to get out of the forest. Which path do you choose?

[It was a problem of finding the minimum distance between source node and destination node in a graph.](#)

I told him my approach and then he asked me to explain dijkstra's algorithm. Then the interviewer asked me the difference between dijkstra's algorithm and floyd-warshall algorithm. Then he asked me about prim's algorithm and kruskal's algorithm.

Then he gave me another interesting problem.

### 4. For each node of a binary tree, you are given the node id and sum of the ids of its children. Find the node id of the root.

After few minutes I came up with a wrong approach. As soon as I told the interviewer about it, I understood I was wrong. Then he told me to focus on the sum of the ids. Then within a minute I told him another approach. He asked me why this works, I explained him and he was satisfied.

After that the interviewer asked me if I had any questions for him. At last, he again asked me about one of my project in which I used Alexa.

Keeping calm will help you come up with a correct solution faster, ask questions to interviewers if

you have any doubt, they are very friendly. [Practice](#) questions from geeksforgeeks. It helped me a lot. Thank you geeks.

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## Amazon Interview Experience | Set 272 (On-Campus)

- Difficulty Level :[Medium](#)
- Last Updated :[04 Jul, 2019](#)

### Round 1: (online in hackerrank)

20 MCQ questions based on outputs, OS, DBMS.

- [Print all possible words from phone digits](#)
- [Given a matrix where elements are inserted as 1 to n in row 0, n+1 to 2n in row 1 and so on till n^2 and you traverse the matrix in spiral manner, find the kth number you will visit](#)

```
\r\n    eg. n = 3\r\n        matrix: 1 2 3\r\n                           4 5 6\r\n                           7 8 9\r\n                           k = 4, output: 6\r\n                           k =
```

### Round 2: (F2F)

- [Given a boolean matrix find the row with maximum number of 1s](#)
- [Given a pointer to a node of a tree, print the inorder successor. Assume that you have a function getParent\(node\) which returns the parent of the node](#)

- [Given a array find the configuration where we will get max sum of i\\*array\[i\]](#)

eg: 8312 = 8\*0 + 3\*1 + 1\*2 + 2\*3 = 11

3128 = 3\*0 + 1\*1 + 2\*2 + 8\*3 = 29

1283 = 1\*0 + 2\*1 + 8\*2 + 3\*3 = 27

2831 = 2\*0 + 8\*1 + 3\*2 + 1\*1 = 15

max value here is 29 when array is rotated by 1

expected time complexity O(n)

hint: see what goes out and what comes in when the array is rotated. You dont need to rotate the array

Some questions that my friends were asked:

- [Root to leaf path sum equal to a given number](#). Also print the path
- [Given a number n and a pattern that follows like: \(1 to 26\): a,b,c,\xe2\x80\x9c \(27 to 52\): aa,ab,ac,\xe2\x80\x9c \(52 to 78\): ba,bb,bc,\xe2\x80\x9c \(78 to 104\): za,zb,zc,\xe2\x80\x9c \(104 to 130\): aaa,aab,aac,\xe2\x80\x9c \(130 to 156\): aba,abb,abc,\xe2\x80\x9c \(156 to 182\): abba,abbb,abcc,\xe2\x80\x9c \(182 to 208\): abbaa,abbbab,abccab,\xe2\x80\x9c ... find the nth pattern](#)
- [Given a linked list like 1->2->3->4->5->6->7->8 modify it to 1->8->2->7->3->6->4->5](#)

### Round 3:(F2F)

- part 1: [Design the snake and ladder game](#). consider cases like there may be another ladder at the end of another ladder, or a snake at the end of another snake.

Mainly focus on the data structure you will use to design the game and all cases.

part 2: now that your game is designed, find the minimum number of dice throws/jumps you will have to make to reach the end i.e. 100 starting from 0 you can control the value that comes up when you throw a dice.

2. Explain heap sort, hipify, percolate\_down, time complexity

### Round 4:(F2F)

1. OS related questions like what is paging, page faults

DBMS: transactions, ACID property, primary indexing, secondary indexing, multilevel indexing

- [Given an array check if the array can be a preorder traversal of a BST](#)

3. Design a data struct such that insert, delete, findMin(), find() can be done in O(1)

4. Diagonal view of a tree

similar to [Diagonal Traversal of Binary Tree](#)

5. [Diameter of a Binary Tree](#)

### Round 5:(Telephonic round):

1. About my summer internship

2. OS, DBMS questions

3. Given an array, just make the B-tree of order 3

4. Design STL map

5. Given a tree, connect all siblings. Asked me to give both iterative as well as recursive approach

Thanks Geeksforgeeks.

Recruiter at amazon are very friendly. Interact with the interviewer if you get stuck. Try to come up to different approach to solve the same problem. Their main focus remains on how you see a problem and try to solve the problem. Don't jump to code it as soon as you are given the problem, first discuss it then go for coding if asked. Be confident and don't give up if you can't get the perfect solution.

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# Amazon Interview Experience | Set 269 (1 year experienced for SDE-1)

- Difficulty Level :\n[Hard](#)
- Last Updated :\n04 Jul, 2019

**Online Round:** 2 Programming questions for 2 Hours

1. [Convert set of strings in number](#) as given on phone keypad. String will contain only lower case characters. Print these strings with numbers in descending order of numbers, if numbers are same then [lexicographical order of strings](#).

**Input:** amazon, rat,pat

**Output:** 262966

728 pat

728 rat

2. In a M\*N maze you can move in any direction(left,right,up,down). There are bomb on some positions. Starting from (0,0) find the number of moves require to exit from the maze. Exit point is (m-1,n-1). If its not possible then return -1. Similar to [Minesweeper Game](#).

## 1st Round(F2F) 1hr:

Ask everything about project working at current company.

1. <https://www.careercup.com/question?id=7449675> in-place. Had to write proper code for it.

## 2nd Round(F2F) 1hr:

Asked everything about project and lots of cross questions on the same. Interviewer gave me lots of scenarios related to my project and ask to solve them.

1. [Sort an array of 0s, 1s and 2s](#) in place. He asked me if I knew the question, I said yes. Then he told me to write code covering all corner cases.

## 3rd Round(F2F) 1hr:

1. [Find a pair with given target in BST](#) . Asked all possible solutions and then asked to write code for it.
2. [Overlapping Intervals](#). Code for it.
3. [Number of occurrence](#) Asked to explain the solution then to write the code.

## 4th Round(F2F) 2hr:

1. [Correct a deformed BST. All kind of approaches and proper reasoning for each](#). Then asked to write the code.
2. Array question. similar to [Non Repeating Character](#).
3. [Level order traversal in spiral form](#).

All the interviewers were very helpful. In all rounds for every question they were looking for what kind of approach you are going to use and proper reasoning for the same. Not just coding , neat and efficient coding was required because for each question at the end you have to code and they

expect you not to miss edge cases.

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Please write comments if you find anything incorrect, or you want to share more information about the topic discussed above.

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# Amazon Interview Experience | Set 268 (Experienced)

- Difficulty Level :\n[Medium](#)
- Last Updated :\n04 Jul, 2019

I had worked at TCS,Chennai for 6 months and then was working at SAPLabs,Bangalore for last one year. I was interviewed at Amazon,World Trade Center for the position of Software Development Engineer.

## **Round 1:Written Round**

- [Find a pair that sums to zero in a sorted array.](#)
- [Buy and sell shares to maximize profit](#)
- [Replace all nodes in BST with its greater sum](#)

## **Round 2:Face to Face**

- Find all anagrams of a given string.

The question is simple but there was a twist,the file size was 1TB.Interviewer asked me to optimize the solution.I gave a HashMap solution where key was the length of strings in the file and value was number of such strings.

Finally,I was able to solve the question with Trie data structure.

- Given a Hotel and checkin/Checkout time of visitors, find the maximum numbers of rooms required. (different version of Trains/Platform question)

## **Round 3:Face to Face**

- [Find a row with maximum number of 1s in a](#)

binary sorted matrix.I knew this questions before so I got another question

- [Rain Water Trapping problem](#)

- Given two strings print all possible permutations of two strings such that the order of characters are maintained.

I gave a topological sort solution and then a recursive solution.

## **Round 4:Hiring Manager Round**

- A lot of behavioural questions like weakness,strengths,why leaving previous organization.

- Detailed description of projects

- Given an array,generate all valid ip address from the array.

A lot of discussion on this question and finally I gave a hashmap solution to this question.Time complexity: $O(n)$

## **Round 5: Bar Raiser**

- A lot of behavioural questions,why amazon etc etc

- [Find the longest palindromic substring in a string.](#)

I told him we can reverse the string and find the LCS for both strings.

Full working code was required at each round and time complexity was discussed in detail for questions. Thanks a lot geeksforgeeks.

\xc2\xab0

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# Amazon Interview Experience | Set 267 (8 Months Experienced)

- Difficulty Level :\nMedium
- Last Updated :\n26 May, 2021

Recently, I got a chance to be interviewed by Amazon at Bangalore campus, through referral.\xa0

I had 8 months of experience in a product based company and 5 months of Internship.\xa0

## 1st Round Telephonic :\xa0

There were two guys, started with a formal introduction.\xa0

Question 1 : Given an array and a number say  $\text{Num1}$ . Find two numbers whose sum is equal to given number  $\text{Num1}$ .\xa0

I told him first Brute Force solution then he asked the time complexity which i told him  $O(n^2)$ .\xa0

Then he asked me to optimize the solution and I gave a  $O(n\log n)$  solution using sorting.\xa0

And at last I told him  $O(n)$  solution using Hashing.\xa0

Question 2 : Given an array of stock prices . Determine the maximum profit one can get by buying and selling the stock(Similar to stack span problem).\xa0

I told him brute force solution of  $O(n^2)$  then he asked me if you could give an optimized solution.\xa0

I told him  $O(n)$  solution using stack but code got stuck on some of the test cases and he asked me to modify the code but i couldn't as they were running out of time.\xa0

They provided me a link to Colabedit(kind of google shared document) where i had to code.Production ready code was required.\xa0

After 2 days I got call from Amazon saying that feedback was positive and they asked me to come for face to face interview at Amazon's office.\xa0

## F2F Round 1 :\xa0

Started with a brief introduction.\xa0

Q1: Given a  $M \times N$  matrix. you have to start from Index(0,0) and reach to Index(M-1,N-1) with maximum sum , given the constraint that you can only move right or down i.e if you are at index (i,j), you can only move to index(i,j+1) or to index(i+1,j)\xa0

I gave recursive solution for this and there were a lot of discussion on various test cases.\xa0 He asked me to optimize the code. I gave him Dynamic programming approach . He asked that have you done it before and i said no then he asked me to code it. I had no idea of the code as i haven't done it before. i struggled to write the correct code 2-3 times and at last i wrote the correct code.\xa0

Then he said to me i am done with the interview, Do you have any question for me and i asked two question.\xa0

Production ready code was required.\xa0

## F2F Round2 :\xa0

Again Started with a brief introduction and some project discussion.\xa0

Q1: A question similar to LCA(Least Common Ancestor) of Tree and I gave the answer immediately as I have understood the question and didn't ask any further clarification.\xa0

Q2: Given some resources in the form of the linked list you have to cancel out all the resources whose sum up to 0(Zero) and return the remaining list.\xa0

I gave the solution immediately but couldn't handle some of the corner test cases then he asked me to modify the code accordingly.

Then he asked me to write all the test cases for it and I did.

For eg; given the resources like this :

case 1 : 6 -6 8 4 -12 9 8 -8 It should return 9 as all others get canceled.

In the above example lists which gets canceled :

6 -6

8 4 -12

8 -8

O/p : 9

case 2 : 4 6 8 -9 10 -9

O/p : 4 6

case 3 : 4 6 -10 8 9 10 -19 10 -18 20 25

O/P : 20 25

### F2F Round3 :

Started with a formal introduction and BTW he was the same guy who took my telephonic interview.

Q1) He asked me [subset sum problem](#) i.e; Given an array find the maximum sum contiguous subarray.

I gave O(n) a solution for finding the maximum sum immediately after he asked the question as I knew the solution.

Then he asked me to trace the code for some test cases and it passed. Then he asked me to find the starting and end index of the subarray and I modified the code and initially got wrong but after some modification, I got the code right.

Q2) [Sum of numbers represented by two linked list.](#)

And I gave the answer immediately after he finished the question. But I gave the soln for adding two linked list numbers starting from the beginning but he told me to add the numbers as we do in normal addition.

And I gave that solution by reversing the linked list and then adding the numbers and finally reversed the resultant list.

After 2-3 days I got a call from Amazon that I have cleared the rounds and they asked me to come for Hiring Manager Round.

One of the interviewers gave me feedback that he mugged the answer as I gave the answer immediately after the interviewer asked the question as I came to know later which was a major setback for me.

So one of the advice would be to all of you that Even though you know the answer pretends that you don't know. Ask some clarification question, As they also observe your problem-solving skills with coding.

### Hiring Manager Round F2F :

Started with some basic questions and then asked why do you want to leave your current company and then he asked code Of the Fibonacci series.

I explained the Fibonacci series and then he asked me to code it.

I wrote the code and traced some inputs.

Then he had a meeting as I reached late there so he asked me to improve the code as he said there is some bug in the code and I did.

After that, he asked me to write recursive code for it.

Then he asked the time complexity of the code and I said Exponential.

Then he asked me to prove it.

I said sir I could do it using Master Theorem or using Mathematical Induction. But right now I remember none of them.

Then he told me that you can do it without Master Theorem or MI. Then in my mind, it struck me as

the Recursion Tree Method but at that time I didn't have any idea of the recursion tree method as well. So I couldn't tell him.

This round wasn't positive as I knew right after my interview. I got eliminated after this round.

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# Amazon Interview Experience | Set 266 (Off-Campus for SDE1)

- Difficulty Level :\nHard
- Last Updated :\n04 Jul, 2019

## Written Test (on Hackerrank)

20 MCQ\xe2\x80\x99s and 2 Coding Questions to be solved in 90 minutes

- 1) NEXT PERMUTATION: Next Largest Number with same set of digits.

For Ex: I/P: 123, O/P: 132

2) DFS + DP Standard Question. I don\xe2\x80\x99t remember the exact problem statement, but it was pretty standard one and required a DFS+DP solution.

## Round One (Telephonic)

- 1) Given an array of zeroes and ones. You are allowed to flip any one 0 so as to maximize the continuous number of one\xe2\x80\x99s.

- 2) Given only a Node of a Binary Tree, Find the next in-order successor in O(1) space. Root of tree is unknown.

As he told to assume anything except the position of root, To solve the problem I assumed that the Treenodes also contain parent pointers to their respective parent.

## Round Two (F2F)

- 1) Given a Binary Tree. Print its elements vertically. Solved it using Horizontal Distance concept and hashmap.

2) Variation of above question, you are not allowed to use Hashmap. Discussed many approaches. He applied a constraint of not using any Hashing, after a lot of discussion and variations came up with the solution as a Doubly Linked List of List of Nodes. Since I was not allowed to use hashing, the variation I did to solve was to maintain a global pointer to the doubly linked list, moved it left in doubly linked list for the left child of current treenode and move right for right child of current tree-node.

## Round Three (F2F)

Introduction and Internship related discussion followed by these technical problems

- 1) Given a Stream of sorted integers. Size of input vector is unknown. Find a given integer. Expected Complexity; Log(n)

Hint: Used Perfect Square\xe2\x80\x99s as the start index and end index in binary search approach.

2) Variation in above problem, as we do not know the end point. Lets assume we have a function which returns NULL if the threshold index (Size of input vector) had crossed. Now improve above solution to handle the case.

Ex: Lets assume that the array size is

- 3) Subject Related Questions: TCP v/s UDP, Virtual memory, Cryptography etc

- 4) Design a Music Player which plays songs in random order without repeat. Came with O(n) Time and O(1) space solution.

## Round Four (F2F)

Introduction, Project related questions followed by:

- 1) Given k sorted Linked Lists. combine those into one sorted list.

Used custom Min heap approach to do the same.

- 2) Implement Custom Min Heap for above problem.

3) [Print Nodes at distance  \$\leq k\$  from a given node in a binary tree.](#)

### Round Five (Telephonic)

- 1) Introduction and Project discussion.
- 2) Convert given integer into Roman Number format but by using minimum number of conditional statements. Came up with lot of approaches,  
he was not satisfied with any approach and asked to remove as much conditional statements as I can.
- 3) [Given an array of zeroes and ones. find the maximum size of subarray with equal number of zeroes and ones.](#) Came up with  $O(n)$  time and  $O(n)$  space solution.

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# Amazon Interview Experience | Set 265 (On-Campus Internship)

- Difficulty Level :\n[Medium](#)
- Last Updated :\n04 Jul, 2019

Amazon recently visited our campus for hiring interns for 6 month internship.

## Round 1: Online Test

The round-1 was an online test of 90 minutes. It was hosted on HackerRank platform. There were 20 MCQ questions and 2 coding questions. MCQ questions were of 1 mark each. There was a negative marking of 0.25 for each wrong MCQ answer. The MCQ questions were from data structures, DBMS, aptitude, etc.

The coding questions were:

Q1. [Reverse words in a given string](#)

Q2. [Possible words from Phone digits](#)

Note: It is very important to do atleast one coding question to clear this round. Even if you get all your 20 MCQs correct but you don't do any coding question then your chances of getting selected are very low. I suggest everyone to do all the MCQs they can in initial 30 minutes and then devote last 60 minutes for coding questions.

I did 15 MCQs and 2 coding questions. I got selected for next round. Overall, 19 students got selected for next round.

## Round 2: Interview

The interviewer first asked me about one of my project that i mentioned in my CV. Then he asked me two questions.

Q1. We are given a mapping: A is mapped to 1, B is mapped to 2, C is mapped to 3 Z is mapped to 26. We are given a number n, we have to tell how many distinct strings can be formed from this number n using the given mapping. For example,

Input: 121

Output: 3

Explanation: We can read the number n as 1, 2, and 1. The string formed will be ABA (1=A, 2=B). We can also read the number n as 12 and 1. The string formed will be LA (12=L, 1=A). We can also read the number n as 1 and 21. The string formed will be AU (1=A, 21=U). So we can form maximum 3 distinct strings out of number 121 using the given mapping.

I gave a recursive solution and the interviewer was satisfied with my solution. So he asked me to code my solution on a paper. I coded the solution and then he checked my code. Once he was satisfied, we moved on to the next problem.

Q2. <https://www.geeksforgeeks.org/remove-bst-keys-outside-the-given-range/>

After a while the shortlist was announced. 10 students got shortlisted for the next round. I too got shortlisted for the next round.

## Round 3: Final Interview

This was the final interview of the process. The interviewer first asked me to introduce myself and then he asked me about one of my project. He then asked me several questions, which are as follows:

Q1. What is a binary tree? What are different types of traversals in a BT? What is the difference between these traversals? Which of the traversal is based on BFS and which is based on DFS?

I answered the questions appropriately. He was satisfied with my answers.

Q2. [Level order traversal in spiral form](#)

Once i gave him the solution, he asked me to code it on a paper. He checked my solution manually with some test cases. Once he was satisfied, we moved on to the next question.

Q3. What is a max heap? What is a min heap? What are some real life applications of heaps?

Q4. How to insert in a heap? What is the time complexity?

Q5. How to delete a min element from a min heap? What is the time complexity?

Q6. Given an array of n numbers, how can i build a min heap from the array. What is the time complexity?

I answered him appropriately. I told him that we can solve the above problem in  $O(n)$  time complexity. He then asked me to prove that the complexity is  $O(n)$ . I proved it with an example array. He was satisfied with my answer.

Q7. There is a constant flow of numbers coming in from some infinite list of numbers out of which you need to maintain a data structure as to return the top 100 numbers at any given point of time. Assume all the numbers are integer numbers only.

Sol: I gave him a solution using min-heap. We can create a min heap of 100 elements. The first 100 elements is easy to handle. Let say we get the 101th element in the list. If this number is less than the root of the binary heap then we need not do anything. If this number is greater then the root of the binary heap then we need to replace the root element with this element and call percolate-down procedure on the root of the binary heap.

My interviewer concluded my interview with this question.

I suggest everyone to go through Amazon interview experiences of atleast 5 people from [geeksforgeeks.com](#) before their Amazon selection process. Finally, i would say focus on data structures, OS, DBMS and networks. In data structures, focus mainly on binary trees, binary heaps and linked lists.

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## Related Practice Problems

[Operations on Binary Min Heap](#)

[Reverse each word in a given string](#)

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# Amazon Interview Experience | Set 264 (Experienced for SDE1)

- Difficulty Level :\n[Hard](#)
- Last Updated :\n04 Jul, 2019

I had around 1 year and 9 months of experience. And applied for SDE1

## First Round (F2F):

1. What are data structures in which you are most uncomfortable.
2. What is your favorite sorting algorithm. Give a dry run.
3. Heap sort, dry run, Complexity of building heap, prove it.
4. [Lowest Common Ancestor in a Binary Tree](#), extended for n-array tree.
5. [Sort an array of 0s, 1s and 2s \( in single scan\)](#)

## Second Round (F2F):

1. Tell me about yourself.
2. What is the most challenging project you have done, your contribution.
3. [Convert a given tree to its Sum Tree](#)
4. [Longest K unique characters substring](#)

## Third Round (F2F):

1. Tell me about yourself.
2. Most challenging project, why it was challenging, your role in it.
3. [Implement a LRU cache](#), extended for LRU with ttl at each block.
4. [k largest\(or smallest\) elements in an array](#)
5. [Full working code of Dijkstra Algorithm and a dry run.](#)

## Fourth Round: Hiring Manager (Telephonic)

1 Tell me about yourself, company role and responsibility and many behavioral questions.

- Your current Group/Team structure.
  - Promotion criteria in your group.
  - Situation when you helped your colleague
  - Situation when you needed help from a colleague.
  - If one of team member is not working or working very slow, how will you handle the situation.
  - When you have trained any colleague.
  - Technology suggested by you in your team.
2. Detailed discussion about previous projects.
  3. If you have indefinite budget and indefinite time, what type of project would do ?
  4. Design a notification system.

## Fifth Round: Bar Raiser

1. Tell me about yourself.
2. [Find smallest positive missing number from an array of positive numbers.](#)
3. Disagreement with your immediate supervisor, how your relation got affected after that disagreement.
4. Your one area which needs to be improved.
5. Your strongest strength.
6. A work in your project which made you proud.

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# Amazon Interview Experience | Set 263 (For SDET)

- Difficulty Level :\n[Easy](#)
- Last Updated :\n04 Jul, 2019

It was an on campus recruitment. The interview process started on October, 2015.

## Round 1:

It had 25 MCQ questions from core subjects of CS including Operating systems, Database, Networks, Data structures and algorithms, Fundamentals of programming. Apart from that there were 2 programming questions too. Those who solved at least 1 programming problem and few MCQ questions were selected for next round. But it's better to solve both the programming questions. I was asked the following questions:

1. [Merge Two Sorted Arrays](#)
2. [Check for balanced parentheses in an expression](#)

## Round 2:

It was a phone interview of duration 1 hour. It was conducted on collabedit.com. This round consisted 2 data structures and algorithms related questions. I was asked the following questions:

1. [Write a program to print all permutations of a given string](#)
2. [Reverse a linked list](#)

## Round 3:

It was similar to that of round 2. I was asked the following questions:

1. [Square root of an integer](#)
2. [Nodes at given distance in binary tree](#)

Overall it was an awesome experience. I enjoyed the interview process.

Thanks for geeksforgeeks!

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# Amazon Interview Experience | Set 262 (For SDE1)

- Difficulty Level : \n [Hard](#)
- Last Updated : \n 04 Jul, 2019

I am 1.5 year experienced guy, currently working in one good Product Based company in Whitefield,Bangalore. I have spent 1.2 years in my present company and previously, I spent 6 months in TCS Pune.

Recently, I got a chance to be interviewed by Amazon at Bangalore, through a referral (made friend from Facebook :p). I was preparing for Amazon from last 6-8 months from GeeksforGeeks.org. I must say, GeeksforGeeks is making life of people. I got an offer from Amazon by preparing from GeeksForGeeks.

Questions :

As I reached to 25th Floor of WTC, Brigade Gateway, we 25 people were asked to write code for these 3 questions on paper (OnSite Written Round) :

1. [Two numbers are represented by 2 linkedlists. Find the resultant linkedlist represented as sum of these given linkedlists.](#)
2. [Given a number say 12345, find the immediate next number using the same digits, in this case 12354.](#)
3. 3 points of a triangle are given. Find if given forth point lies inside or outside of the triangle.

## F2F Round 1 :

1. Given a Hotel and checkin/Checkout time of visitors, find the maximum numbers of rooms required. ([different version of Trains/Platform question](#))
2. Given sequentially placed boxes, each representing a number( which may be positive or negative), we need to select the numbers in order to have the maximum sum, having the constraint that if we select a given box, we cannot select adjacent box to it, but can select any other.

Solution : let the boxes positions be the indexes of array and their values as array values. then if we select value at index 0, we cannot select value at index 1, but can select from index 2,3,, and so on.so we can apply Dynamic programming here.

## F2F round 2 (Hiring Manager Round):

HR called me and gave me some tips before this Interview(I must say Amazon Interview people are really cool and make the candidate feel comfortable). He told me listen the question carefully and answer perfectly as this interview matter a lot.

1. Asked about my experience and work in current company. (Discussion lasted for about 1 hour) as I explained in deep and he asked cross questions.
2. Given 2 numbers, add them without using any arithmetic operator.  
Hint : Use Binary Operators (specifically \xe2\x80\x98<<\xe2\x80\x99, \xe2\x80\x98&\xe2\x80\x99, \xe2\x80\x98^&\xe2\x80\x99)

Gave answers to this question and he was really impressed.  
(he was also very cool in nature)

## F2F Round 3 :

1. Discussion on my projects and work in current company.
2. Given a general stack, design an advanced DS, such that getMin(), getMax() happens in o(1).  
Many cross questions on this. about optimizations and all.

Then HR told me that all my interviews went well and they will call me for last round of Interview.  
\xf0\x9f\x99\x82

## Last F2F round (Bar Raiser):

1. Given a file having many lines of text(words) and given a dictionary having an API function boolean isValid(String word), which will return true if a word passed to this function is valid word in dic., and will return false if given passed argument is not a valid word in dic.

Now read the file and check if each word as well as all possible words from its L to R and R to L combinations, are valid words in dic. or not.

e.g. say first line in file is \xe2\x80\x9cMy name is Gourav\xe2\x80\x9d, then in the word NAME, the possible valid words are NAME, AM(L to R), ME(L to R), MAN(R to L), AN(R to L).

I implemented this simple question in java code and used Hashmap to avoid processing of already processed words.

2. Why Amazon ?

3. Extraordinary work done in company which was out of scope of your designation.

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## Amazon Interview Experience | 262

- Last Updated : \n04 Jul, 2019

1. [Given infinite sequence of number, how you will store it in a system. Find whether the given sequence is palindrome or not.](#)

Ans: He suggested to store all the number in a linked list and then find Palindrome or not

2. A) Find the path with given sum in a Binary tree from the root

B) [Find the path with given sum in a Binary tree from any node in the tree.](#)

3. Print all possible balanced parenthesis.

4. Implementation of publisher and subscriber design pattern.

5. [Find the given sum in unsorted array.](#)

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## Amazon Interview Experience | Set 261 (For SDE1)

- Difficulty Level :[Medium](#)
- Last Updated :[04 Jul, 2019](#)

I had around 1 year and 9 months of experience.

### Telephonic Interview :

It started with a brief introduction of mine and my work. Then he asked me a coding question

- 1) [Given a linked list eg : 1->2->3->4->5->6, make the following changes 1->6->2->5->3->4](#)

Easy but it was lengthy. Had to write production level code.

After 2-3 hours, I got an invitation for in house interview at Amazon campus:

### Round 1 : Face 2 Face

It started with a discussion about my previous work and projects. After the discussion he asked the following technical questions:

- 1) [Given a pre-order traversal, construct a binary search tree.](#)

Simple solution. Asked me to code it.

- 2) [Given an alien dictionary, find the order of the alphabets in the dictionary.](#)

Only the approach was required. I explained him the approach and he was satisfied. Here is the link to the code anyway:

<https://www.geeksforgeeks.org/given-sorted-dictionary-find-precedence-characters/>

- 3) [Connect n ropes with minimum cost](#)

I was asked to write production level code for the above problem.

### Round 2 : Face to Face

Again the interview started with a discussion about my projects and then he asked a technical question.

- 1) [Given m sorted arrays with n elements, merge these arrays into one sorted array of size m\\*n](#)

I did hear about this question before but never really saw the optimized solution so I gave a  $O(m*m*n)$  solution. He asked me to optimize it, but I wasn't able to do so, hence he asked me to code the  $O(m*m*n)$  solution. I took a lot of time to code it as I wanted to handle all the edge cases. Finally I coded it. He didn't find any issues but he asked me to make it better. And then I suggested using heaps to get the minimum of all the m arrays.

Lot of questions on why heap and why not BST. Asked me to prove it mathematically.

But he was satisfied once I gave the solution using heaps.

### Round 3 Bar Raiser : Telephonic

Discussion on my previous projects and asked some behavioral questions like why are you leaving your current company, conflicts with your manager etc

Technical questions:

- 1) [Find the maximum element in an array which is first increasing and then decreasing](#)

- 2) [Find the Pythagoras triplet in an array](#)

Gave an  $O(n^3)$  solution then made it  $O(n^2 \log n)$ . He asked me to optimize it even further.

Finally came up with  $O(n^2)$  solution.

- 3) Given a very large binary number which cannot be stored in a variable, determine the remainder of the decimal equivalent of the binary number when divided by 3

I had no clue about this question. He gave me a hint, with which I was able to solve it. But later, he asked me to find the remainder for any number k. Again he gave a hint and I was able to solve it.

Basically when we append a digit to a binary number, the previous binary number gets doubled, hence the remainder also gets doubled.

\r\nFor example :      101    -> 5\r\n                        1010   -> 2\*5 + 0 = 10\r\n                        1011   -> 2\*5 + 1 = 11\r\n                        \r\n

By keeping track of the remainder of the previous binary number, the current remainder can be determined.

### Round 4 Hiring Manager: Face to Face

Behavioral questions along with some questions about my previous projects.

Then he gave me a technical question:

- 1) [Given a number say 180981234, return the number in words i.e One thousand two hundred and thirty four](#)

Was able to cover all the scenarios. He was satisfied with my approach

### Suggestions:

Think loud and be confident. It's okay if you don't know the answer at first. They mostly see how you solve questions for which you don't know the solution.

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# Amazon Interview Experience | Set 260 (For SDE2)

- Difficulty Level :\n[Hard](#)
- Last Updated :\n04 Jul, 2019

Online Coding Round:

1. [Parenthesis Checker](#)
2. [Maximum Rectangular Area in a Histogram](#)

1st Round:

1. [Add two numbers represented by linked lists](#) I gave recursion solution code. Then asked for optimized one.

2nd Round:

1. Detail overview of current project. roles and responsibilities.
2. Implementation of Queue but with certain kind of constraints. Basically looking for knowledge of design patterns.

3rd Round:

1. Again went through resume and asked every point.
2. [Max sum path in two arrays](#)

List all possible test cases.

3. Design a dashboard system. both HLD and LLD.

4th Round:

1. Design a system to upload images and tag them, ability to search images with two or more tags particular tags.
2. Most challenging work
3. <https://www.careercup.com/question?id=5638261762424832>

5th Round (Bar Raiser):

1. Most challenging work
2. Why Amazon?
3. Why leaving current company?
4. [Evaluation of Postfix Expression](#)
5. Design a online shipment tracking system.

Note: In all they asked for production ready code. Please take care of all edge case.

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# Amazon Interview Experience | Set 259 (1 Yr Experienced for SDE1)

- Difficulty Level :\n[Medium](#)
- Last Updated :\n04 Jul, 2019

**Round 1:** It was a written round with three question.

Q1) [Find a peak element.](#)

Q2) [Top View of binary tree.](#)

Q3) [Maximum difference between node and its ancestor in Binary Tree.](#)

**Round 2 (F2F):**

Q1) [Given an array of distinct integers, find if there are two pairs \(a, b\) and \(c, d\) such that a+b = c+d, and a, b, c and d are distinct elements. If there are multiple answers, then print any of them.](#)

Expected complexity : \xc2\xa0O(n<sup>2</sup>)

Ex : 3, 4, 7, 1, 2, 9, 8\r\nOutput : (3, 8) and (4, 7)

Q2) [Lowest Common Ancestor in a Binary Tree](#)

In both the questions, they needed a proper working code covering every edge cases.

**Round 3 (F2F):**

Q1) If I am designing a media player and I want to store songs and play them in random order

a) What data structure will you use to store songs?

b) How will you select the next song to play in a way which prevents the same song being played in consecutive turn.

I spend some time and finally came up with the working solution.

Q2) [Clone a binary tree with random pointers.](#)

(Hint: Use HashMap)

\xc2\xa0

**Round 4 (Telephonic) :**

Q1) Tell me about yourself. Your current company, your role and responsibilities. Reason for leaving current company.

Q2) Maximum triangle path Sum : Starting from the top of a pyramid of numbers like below, you can walk down going one step on the right or on the left, until you reach the bottom row:

		55		
	94	48		
95	30	96		
77	71	26	67	

One of such walks is 55 -> 94 >- 30 -> 26. You can compute the total of the numbers you have seen in such walk, in this case it's 205.

Your problem is to find the maximum total among all possible paths from the top to the bottom row of the triangle. In the little example above it's 321.

Q3) Design your own Process Control Block(PCB).

Q4) Give me an example of a project that didn't work out well?

Q5) What are some of the things that you and your supervisor have disagreed about?

#### **Round 5 (Telephonic) :**

Q1) Tell me about yourself. Your current company, your role and responsibilities.

Q2) Asked about the challenges faced in your current company. Did you ever have a boss that you did not like or get along with?

Q3) [Check for balanced parentheses in an expression. https://www.geeksforgeeks.org/check-for-balanced-parentheses-in-an-expression/](https://www.geeksforgeeks.org/check-for-balanced-parentheses-in-an-expression/)

I was asked to write code as well on collabedit site.

Q4) [Move all zeroes to end of array.](#)

\xc2\x0a

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# Amazon Interview Experience | Set 258 (For SDE1)

- Difficulty Level : \n [Hard](#)
- Last Updated : \n 04 Jul, 2019

## Round 1:

It was a written round with three questions :

1. [Find a row with maximum number of 1\xe2\x80\x99s in a sorted 2D Boolean matrix.](#)
2. [Find next greater element for every element of an array to its right in O\(n\).](#)
3. [Convert a sorted array to binary search tree.](#)

## Round 2:

1. [There is a linked list which is sorted based on their absolute values. Sort them based on their actual values.](#)

Eg., input : 1 -> -2 -> -3 -> 4 -> -5 output: -5 -> -3 -> -2 -> 1 ->4

2. [Reverse a linked list.](#)

3. [Given a 1D array where each cell represents a toll gate ticket value. Find the minimum number of tickets needed to surpass the whole array \(means till u reach the end of array\) . If ticket value is 1 then u can pass that cell alone. If ticket value is 2 u can pass that cell and the next cell.. that is how ticket values work.](#)

Eg : Input : 3 1 5 4 1 1 1 Output : In this case if v buy ticket from a[0] and a[2] meaning two tickets are enof to pass this array..

## Round 3:

Only one question was asked :

1. [Convert a BST to sorted doubly linked list without any extra space.](#) (only ptrs to nodes should be created ,no new node creation is allowed.)

## Round 4:

Telephonic Round:

1. Tell me about yourself
2. Print the boundary of a tree.
3. There are billions of URL given. Come up with a efficient data structure that returns ip address of these urls.
4. Trie data structure

I was asked to send the code snapshot within five mins after ending the call.

## Round 5:

1. Tell me about yourself
2. Projects and Internship
3. [Given a tree where each node has an additional ptr called \xe2\x80\x9cnext\xe2\x80\x9d ptr. Initially this next ptr of every node is null. Write code such that each node\xe2\x80\x99s next ptr should point to its next bfs node.](#)
4. Trending tab related question: Given a large stream of strings, return the top 10 most frequently occurring string . (Hash map + min heap of size 10 is the solution.)

## Round 6:

1. Tell me about yourself
2. Why do u like Database Mgt System (I had DB in my areas of interest)
3. Design the backend of a social networking application (Eg : linked in)
4. All OS related qns
5. Network qns

6. Oops concepts with real time examples.

7. General technical questions.

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## Amazon Interview Experience | Set 258 (Off-Campus for SDE-1)

- Difficulty Level :[Medium](#)
- Last Updated :[04 Jul, 2019](#)

I recently had interviews with Amazon at Hyderabad for SDE 1. I had around 1 year and 9 months of experience.

### Telephonic Interview :

It started with a brief introduction of mine and my work. Then he asked me a coding question

- 1) [Given a linked list eg : 1->2->3->4->5->6, make the following changes 1->6->2->5->3->4](#)

Easy but it was lengthy. Had to write production level code.

After 2-3 hours, I got an invitation for in house interview at Amazon campus:

### Round 1 : Face 2 Face

It started with a discussion about my previous work and projects. After the discussion he asked the following technical questions:

- 1) [Given a pre-order traversal, construct a binary search tree.](#)

Simple solution. Asked me to code it.

- 2) [Given an alien dictionary, find the order of the alphabets in the dictionary.](#)

Only the approach was required. I explained him the approach and he was satisfied.

- 3) [Connect n ropes with minimum cost](#)

I was asked to write production level code for the above problem.

### Round 2 : Face to Face

Again the interview started with a discussion about my projects and then he asked a technical question.

- 1) [Given m sorted arrays with n elements, merge these arrays into one sorted array of size m\\*n](#)

I did hear about this question before but never really saw the optimized solution so I gave a  $O(m*m*n)$  solution. He asked me to optimize it, but I wasn't able to do so, hence he asked me to code the  $O(m*m*n)$  solution. I took a lot of time to code it as I wanted to handle all the edge cases. Finally I coded it. He didn't find any issues but he asked me to make it better. And then I suggested using heaps to get the minimum of all the m arrays.

Lot of questions on why heap and why not BST. Asked me to prove it mathematically.

But he was satisfied once I gave the solution using heaps.

<https://www.geeksforgeeks.org/merge-k-sorted-arrays/>

### Round 3 Bar Raiser : Telephonic

Discussion on my previous projects and asked some behavioral questions like why are you leaving your current company, conflicts with your manager etc

Technical questions:

- 1) [Find the maximum element in an array which is first increasing and then decreasing](#)

- 2) [Find the Pythagoras triplet in an array](#)

Gave an  $O(n^3)$  solution then made it  $O(n^2 \log n)$ . He asked me to optimise it even further.

Finally came up with  $O(n^2)$  solution

- 3) Given a very large binary number which cannot be stored in a variable, determine the remainder of the decimal equivalent of the binary number when divided by 3

I had no clue about this question. He gave me a hint, with which I was able to solve it. But later, he asked me to find the remainder for any number k. Again he gave a hint and I was able to solve it.

Basically when we append a digit to a binary number, the previous binary number gets doubled, hence the remainder also gets doubled.

\r\nFor example :      101    -> 5\r\n                        1010 -> 2\*5 + 0 = 10\r\n                        1011 -> 2\*5 + 1 = 11\r\n                        11\r\nI

By keeping track of the remainder of the previous binary number, the current remainder can be determined.

### Round 4 Hiring Manager: Face to Face

Behavioral questions along with some questions about my previous projects.

Then he gave me a technical question:

- 1) [Given a number say 1981234, return the number in words i.e One thousand two hundred and thirty four](#)

Was able to cover all the scenarios. He was satisfied with my approach

### Suggestions:

Think loud and be confident. It's okay if you don't know the answer at first. They mostly see how you solve questions for which you don't know the solution.

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# Amazon Interview Experience | Set 257 (Off-Campus)

- Difficulty Level : \n[Medium](#)
- Last Updated : \n04 Jul, 2019

I was recently interviewed by Amazon, Bangalore for SDE position. It was an off campus drive in Delhi for TRMS team.

## Written Test :

- Q1) [Find a peak element.](#)
- Q2) [Top View of binary tree.](#)
- Q3) [Maximum difference between node and its ancestor in Binary Tree.](#)

## Round 1 (F2F):

Q1) [In a sorted array every number is present twice, only one number is present one time. You have to find the number occurring once.](#) Expected complexity : O(log N)

Ex : 101, 101, 200, 200, 301, 450, 450

Output : 301

Q2) [Clone a binary tree with random pointers.](#)

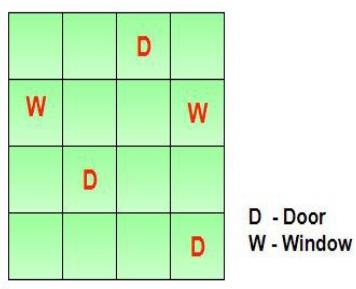
In both the questions, they needed a proper working code covering every edge cases.

## Round 2 (F2F):

Q1) [Next greater element.](#)

Q2) You have been given a grid with some doors, walls and some empty spaces.

1st part : You have to tell the least no of moves to go from random position in the grid to the nearest door. You can move in four directions only, i.e, left, right, above, below.



2nd part : Least distance of every empty cell to the nearest door. Lots of discussion was done on both the parts of the problem.

I spend some time and finally came up with the working solution using Breadth first traversal.

Q3) [Find Excel column name from a given column number.](#)

This was the toughest round.

The interviewers had their flight to Bangalore and were getting late. So, next two rounds were telephonic.

## Round 3 (Telephonic) :

This round was taken by hiring manager.

Q1) Tell me about yourself. Your current company, your role and responsibilities. Reason for leaving current company.

Q2) A 100 coin puzzle.

Q3) What happens after you write \xe2\x80\x9ca.out\xe2\x80\x9d and press enter. He wanted to know the functionality performed by the OS after executable file is created of your code.

Q4) What happens when your code encounters NULL?

Q5) Garbage collector in Java. How is it different ?

#### **Round 4 (Telephonic) :**

- Q1) Tell me about yourself. Your current company, your role and responsibilities.  
Q2) Asked about the challenges faced in your current company. Any situation where you were in disagreement with your manager. Any innovative or unique work performed in the current company.  
Q3) [Connect nodes at the same level.](#)

Proper working code was expected covering all edge cases. They shared the collabedit link.  
Q4) What is Lock? Asked about semaphores, virtual memory, process scheduling.

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# Amazon Interview Experience | Set 256 (Written Test for SDE1)

- Difficulty Level :\n[Medium](#)
- Last Updated :\n04 Jul, 2019

Recently i had an online test at hackerank platform for Amazon SDE1 position.

Following are the questions

1. Given an unsorted array, trim the array such that twice of minimum is greater than maximum in the trimmed array. Elements should be removed either end of the array.

2. Given a value V, if we want to make change for V cents, and we have infinite supply of each of C = { C1, C2, ..., Cm} valued coins, what is the minimum number of coins to make the change?

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# Amazon Interview Experience | Set 255 (On-Campus)

- Difficulty Level : \n[Medium](#)
- Last Updated : \n04 Jul, 2019

Amazon visited our campus. It started with a online coding round and followed by one telephonic and then 3 face to face interview and again a telephonic interview. All interview rounds started with brief introduction about me.

## Round 1(Online Coding Round):

Asked 2 coding question and 20 mcq from Computer science fundamentals (OS, DS, DBMS, Networks etc.)

- 1) [Given n non-negative integers representing an elevation map where the width of each bar is 1, compute how much water it is able to trap after raining.](#)

```
\r\n      Input: arr[]    = {2,  0,  2}\r\n      Output: 2
```

- 2) [Check whether two strings are anagram of each other.](#)

## Round 2 (Telephonic round):

- 1) Tell me about yourself.

- 2) [Vertical Sum in a given Binary Tree](#)

- 3) Project Discussion

## Round 3 (f2f onsite):

- 1) Tell me about yourself.

- 2) [Sort a linked list of 0s, 1s and 2s](#)

- 3) [Find duplicates in O\(n\) time and O\(1\) extra space.](#)

## Round 4 (f2f onsite):

- 1) [Design a data structure that supports insert, delete, search and getRandom in constant time](#)

- 2) Given a continuous input stream of integers, can you find the maximum N numbers at any given instance?

<https://www.quora.com/Programming-Puzzles-Given-a-continuous-input-stream-of-integers-can-you-find-the-maximum-N-numbers-at-any-given-instance>

- 3) lca of k nodes in given bst

- 4) [Kxe2\x80\x99th largest element in a stream](#)

- 5) [Lowest Common Ancestor in a Binary Search Tree.](#)

## Round 5 (f2f onsite):

- 1) Floor and Ceil from a BST

<https://www.geeksforgeeks.org/floor-and-ceil-from-a-bst/>

2) [Find the two numbers with odd occurrences in an unsorted array](#)

3) [Find the Number Occurring Odd Number of Times](#)

4) Project Discussion

### Round 6 (Telephonic round):

1) Tell me about yourself.

2) Most proudest moment in last one year.

3) Most regretted moment in last one year.

4) Asked about what data structure and algorithms did i know then asked what is segment tree.

5) Reverse the stack using recursion

<https://www.geeksforgeeks.org/reverse-a-stack-using-recursion/>

6) External merge sort

[https://en.wikipedia.org/wiki/External\\_sorting](https://en.wikipedia.org/wiki/External_sorting)

7) Project Discussion

Really want to thanks geeksforgeeks for providing great platform for learning.

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# Amazon Interview Experience | Set 254 (Off-Campus for SDE1)

- Difficulty Level : \nExpert
- Last Updated : \n03 Jul, 2019

I got a call from amazon for opening in SDE I. It started with a online screening round and followed by one telephonic and then 3 face to face interview and again a telephonic interview.

## Online screening :

There were 20 multiple choice questions from Computer science fundamentals (OS, DS, DBMS, Networks etc.) and basic input/output questions, some aptitude questions and 2 coding questions:-

1. [Given an array find the minimum difference between any pair.](#)

2. Write a function that returns true if a given undirected graph is tree and false otherwise.

<http://geeksquiz.com/check-given-graph-tree>

## Telephonic Interview :

Interview started with brief introduction about me and my projects, then started with coding questions.

1. [Given two trees return yes if the order of leaves in tree are mirror image of each other.](#)

2. [Given an array of n numbers. another array with same elements but numbers are shuffled and one element is removed. Find the missing element.\(without using any extra space and in O\(n\) \).](#)

Then if both the array are sorted then how to find the missing element. (without extra space and in  $O(\log n)$ ).

Then they called me for onsite interview and 3 face to face interview were conducted there.

## Face-to-Face Interview 1 :

He started with a brief introduction and asked me my about my projects in detail.

then moved to coding questions:-

1. [Arrange Linked List elements in zig-zag pattern such that a < b > c < d > e](#)

\xe2\x80\x93xa6\xe2\x80\x93

(without using extra space and Time complexity  $O(n)$ ).

Don\xe2\x80\x93t forget to handle edge cases.

(This is array implementation of same question).

2. [Given a binary tree. return sum of all Left Leaf nodes.](#)

Left leaves meaning leaf node which is left child of his parent.

## Face-to-face Interview 2 :

1. [Given two nodes of a binary tree,check they are cousins or not.](#) (Both Iterative and recursive solution).

<https://www.geeksforgeeks.org/check-two-nodes-cousins-binary-tree>

2. Given an array with N elements (numbers from 0 to N-1). Find all duplicate elements.

I gave a solution with hashing, he asked me to do without extra space.

Then I gave solution with sorting the array, he asked me to do with only single traversal and without extra space.

## Face-to-face Interview 3 :

Started with brief introduction and some questions from my projects and CS fundamentals

(OS, Networks).

1. Given an input string and a dictionary of words, find out if the input string can be segmented into a space-separated sequence of dictionary words.

### Telephonic Interview :

The interviewer asked me to introduce myself, and after that he asked some behavioural question like-

Have you got offer from any other company ?

Why are you interested in joining AMAZON ?

1. Design a Elevator. How you store the input from users inside the elevator, outside the elevator.

How the elevator will take decision whether to go up,down or stop.

2. There is an event in the auditorium and Given capacity of the auditorium ( $N \times M$ ). every group of person booked ticket and all the tickets are booked. Now you have to assign seat number to all of them such that minimum number of group split.

Thanks a lot geeksforgeeks.

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# Amazon Interview Experience | Set 253 (For SDE1I)

- Difficulty Level :[Medium](#)
- Last Updated :[03 Jul, 2019](#)

Amazon Bangalore location. Part of weekend interview drive in March 2016.

Role: SDE1

3 rounds  $\times 80 \times 93$  all three very similar in pattern. Workout algorithm and write production ready code.

## 1st round:

2 questions:

1. [In a BST, replace value of each node with the sum of itself and everything greater than itself.](#)
2. [There are two very large numbers, cant fit in any data type provided, so they are given in a linked list \(one digit per node\). Sum the two numbers.](#)

## 2nd Round:

2 questions:

1. [Clone a linked list with random pointer.](#)
2. [In an integer array, find the window with maximum sum.](#)

## 3rd Round (Bar raiser):

Mostly non-technical questions like challenges faced, and conflicts with colleagues etc.

Tech question: implement Linked hash map using Linked list and hash map.

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# Amazon Interview Experience | Set 252 (For SDET)

- Difficulty Level :\n[Medium](#)
- Last Updated :\n03 Jul, 2019

I got a call from amazon for the opening of SDET. It all started with telephonic interview asking brief introduction and 2 questions.

1. [rearrange a linked list in such way that all odd position nodes are together and all even positions node are together, 1->2->3->4->5->6 , convert it ot 1->3->5->2->4->6](#)

## Face-to-Face 1st Round

1. Random play a song from a list of given songs in such a way that no songs is repeated until all the songs are played
2. [Distance between two nodes of a given binary tree](#)

## Face-to-Face 2nd Round

1. [Find out whether a tree is subtree of given tree or not](#)
2. [For a given array find max of k sub-array, i.e if array is 1, 2, 3, 4, 5,6,7,8 ,9,10, then function should return an array of size n-k+1 with each element be the max of k elements](#)

output : 3 (max of 1, 2, 3), 4(max of 2,3,4), 5(max of 3, 4, 5) etc, array is not sorted  
\xf0\x9f\x99\x82

## Face-to-Face 3rd Round

1. Automating an api to getAllFriendListFromFacebook for a given email id.

**Face-to-Face 4th Round** 1. vertical sum of a binary tree, he was looking for in place solution. just 1 traversal and without using hashmap as hashmap allocates more size than the elements to store. interviewer gave hint to use doubly linked list to store the sum.

## Face-to-Face 5th Round

1. Given a binary tree return a matrix where mat(i,j) is 1 when i is an ancestor of j. only one traversal required and no extra space required, idea is to populate ancestor list as we process nodes and update the matrix

Thanks & Regards

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## Amazon Interview Experience | Set 250

- Difficulty Level :[Medium](#)
- Last Updated :03 Jul, 2019

### ROUND 1(Technical):

I initially had a telephonic interview where it started with my basic intro and some questions about my current work. He then asked a couple of binary tree related questions:

[1.1 Check if a given binary tree is BST or not.](#)

1.2 In a BST, each node has an additional attribute `score` along with the value. You need to write two functions:

a. `Update(value, newScore) -> update the score of the node with value` `value` `to the newScore`

b. `SubTreeScore(value) -> get the sum of scores of all nodes in the subtree with root having the value` `value` as the root

Interviewer wanted  $O(\log n)$  solution for Update and  $O(1)$  for SubtreeScore function. We are allowed to change the structure of the node to add additional attributes

c. Discussion on the above solution for the case where nodes are deleted from the tree(How to still have  $O(1)$  solution for SubtreeScore)

After this round, I immediately got a call for next round, which was an on-site interview event

### ROUND 2(Technical):

Around 30-40 candidates appeared for interviews on-site on that day and it all started with a written coding test having 3 questions:

[2.1 Level-order traversal for a binary tree](#)

2.2 Don't remember it exactly, something to do with pair-wise XOR operation for an array. I could only give an  $O(n^2)$  solution for this.

[2.3 Given a matrix, with each node having a value. You start from 0,0 and have to reach n,m. From i,j you can either go to i+1,j or i,j+1. When you step on each block, the value on that block gets added to your current score. What's the minimum initial score you must carry so that you can always reach n,m\(through any possible path\) having positive score at the end.](#)

<code>\r\n</code>	Eg: Matrix ->	2	3	4	<code>\r\n</code>	-5	-6	7	<code>\r\n</code>	8	3	1
-------------------	---------------	---	---	---	-------------------	----	----	---	-------------------	---	---	---

Ans -> 6 for path 2,-5,-6,3,1 we need initial score of 6 so that when we land on 1, we have a positive score of 1

After this everyone had a max of 3 interviews the same day, subject to qualification of each round.

### ROUND 3(Managerial):

Around 80% of the interview was about my current job and tiniest details about everything.

Design an automobile system -> two/three/four wheeler, petrol/diesel/gas, gear/non-gear and classifications like this

How will you detect when a keyboard/mouse is attached to the computer? I said we will have kind of listeners that listen to a port continuously and act accordingly. He insisted on a solution without listeners. Had a good 5 mins discussion on this.

### ROUND 4(Technical):

[4.1 Linked list containing characters as values. Find if a linked list is palindrome.](#)

4.2 Building Bridges Problem

[4.3 Bottom View of binary tree](#)

### ROUND 5(Technical):

5.1 pow(a,b) needed to cover each and every case possible

[5.2 LRU cache implementation](#)

[5.3 Given an array of numbers, form the largest number possible by concatenating all of them. Needed to return a string.](#)

After this, I was told that I can leave for the day, but next week will be called again for an on-site-interview.

### ROUND 6(Hiring Manager):

Again, 70-80 % of the time spent on my current work, minute details of each and everything along with typical behavioural questions like hurdles faced, disagreement with manager, conflicts and others..

Reverse a linked list again covering all possible scenarios

Some easy problem on binary tree (don't remember exactly what)

After this I had to wait for almost a week for their call, where I was asked to appear for another interview.

### ROUND 7(Bar-Raiser):

Started with some behavioural questions like Why Amazon, why leave prev company along with current job role details.

Longest Palindromic Substring in a string. The interviewer was satisfied with the first solution that I suggested, asked me to code the same, and was convinced with the code too, although I did make a small mistake which I realized later.

Initial intent was to ask two such questions, but I guess time restriction forced it to just one.

Thanks a lot geeksforgeeks. The Amazon sets here did help a lot in the preparation.

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## Amazon Interview Experience | Set 249 (Telephonic Interview)

- Difficulty Level :\n[Easy](#)
- Last Updated :\n03 Jul, 2019

Telephonic interview:

1. [Given a string, display the words in reverse order](#)

I/p: I work at xyz

O/p: xyz at work I

2. Given a linked list modify the linked list as below

I/p: a x b c y z

O/p: a b c x y z

3. What is virtual memory

4. If I am designing a media player and I want to store songs and play them in random order

a) what data structure will you use to store songs?

b) how will select the next song to play in a way which prevents the same song being played in consecutive turn

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# Amazon Interview Experience | Set 248 (4.8 Yrs Experience for SDE II)

- Difficulty Level :\nExpert
- Last Updated :\n03 Jul, 2019

## 1. WRITTEN ROUND

1. [Given lengths\(costs\) of ropes, find the total minimum cost of creating a single rope. \(cost of two ropes = length1 + length2\)](#)
2. [Find all the diagonal sums of a binary tree](#)

## 2. F2F

1. Design Movie tickets booking system
  1. Class diagram with all relevant classes & associations
  2. find out all use cases
  3. describe a typical flow of events
  4. show how each use case is handled using your class diagram (selection of seats, payment etc)
  5. how would system be designed such that you can show the user complete cinema hall with all seats in their respective locations.
  6. write a service for a front end controller which will let users to select multiple seats according to their preference. Already booked seats & available seats should be marked differently.
  7. how will the cost of a booking be determined (I used decorator pattern for it)

## 3. F2F

1. About projects I had worked on; current task; few questions on the current task
2. Challenges faced when an urgent action was required from my side during the project life cycle. What were the problems, how I tackled it, how I implemented its solution
3. Architecture (design) of the project I had worked for the longest period of time.
4. Other tasks I had done: Batch jobs & REST web services. Questions around them
5. Design a system having multiple jobs, interacting with each other such that (use a DAG for this problem):
  1. a job can run for very long periods (1-2 days)
  2. a node can fail/crash on which certain job is running
  3. system should be scalable
  4. amount of data getting transferred is huge
  5. data in the system is very sensitive and needs security
  6. job/s can fail

## 4. F2F

1. About projects, current task
2. Design a system for a Building having various Access Points & Users having multiple levels of access
  1. Class diagram with all entities, relationships
  2. how will you achieve scalability? (handle the system when the number of users accessing it is very high at the same time)
  3. write all the necessary services required
  4. how will you handle the scenario when a person misplaces his card
  5. how will the scenario for visitors entering the building be handled?

## 5. Telephonic

1. Tell about all your projects you have worked in your career till now and your role and contribution in each.
2. Reasons for switching earlier from previous company to current, project with in the company and now to Amazon
3. Toughest situations handled, your role, your solution, how feasible was it
4. Process of tackling highest priority issues, solutions, implementation, approvals and end result.
5. Flow of events in a typical development and release cycle.
6. Coding question (first design & then code on collabedit).  
Problem Statement:  
You are given n number of mutually exclusive jobs with their schedules (time of running) that need to be run on m number of nodes. Find minimum value of m such that all jobs can run in their respective times. Optimize your solution.

\xc2\x0

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# Amazon Interview Experience | Set 247 (For SDE 1)

- Difficulty Level :\n[Hard](#)
- Last Updated :\n03 Jul, 2019

## Round 1:

Coding Round on paper

1 [Add two numbers represented by linked lists](#)

2 [Spirally traversing a matrix](#)

## Round 2:

1 Tell me about yourself??

2 [Row with max 1s](#)

## Round 3: Hiring Manager

Have you use what\xe2\x80\x99s app, there are some hints come when we start type. How these hints are coming. He asked me 1 to design my own code so that I can show the hint based on number of count of particular word that I am using??

2 A At of dissussion on above question and he shows me how amazon maitain their product recommendation feature.

## Round 4:

1 [Reverse a Linked List in groups of given size.](#)

2 Minimum swaps required to arrange pairs adjacent to each other

## Round 5: Telephonic (Bar raiser)

1 A lot of dissussion on my projects.

2 Most challenging thing you have done in your both company??

3 Disagreement with your manager?

4 Is there any thing you develop which initiated by yourself??

5 Any time when you have to finished your work in short span of time?

6 Did you find any difficulty working with a team??

7 <http://www.careercup.com/question?id=6109164921159680>

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# Amazon Interview Experience | Set 246 (For SDE 2)

- Difficulty Level : \n[Medium](#)
- Last Updated : \n03 Jul, 2019

I was recently interviewed by amazon for SDE 2 position. Here is my experience.

## Round 1:

I was asked to solve 2 questions.

1. [Spiral printing of 2D matrix.](#)
2. Given an array of 0s and 1s . I was asked to return the index of a zero turning which will produce a longest continuous 1s.

Ex 1 0 1 1 0 1 0 1 1 1 0 1. here turning the last 0 to 1 will form 5 ones. this is the longest of all.

## Round 2:

In this round I was asked to solve 4 question.

1. [basic implementation of stack.](#)
2. [finding the middle element of a linked list](#)
3. [printing the vertical sum of a tree.](#)
4. [given an array of integers where the number go increasingly and at a point will start decreasing something like the following. 2 3 4 5 6 7 8 6 4 3 2. we need to find the turning point of this series. in this example it is 8.](#)

## Round 3:

Given 2 design problems

1. I was asked to design a s/w for game shop in shopping mall.

Description: The game shop will distribute preloaded cards. That card needs to be used to play any game. if the card has balance the cardholder will be allowed to play the game.

2. Design chessboard. I was asked to write all the classes.

## Round 4: (hiring Manager)

Detailed discussion about project. Discussion about my current responsibilities in the current company and details around that.

and lot of behavioral questions.

## Round 5: (Bar Raiser)

Detailed discussion about the interesting problems I\xe2\x80\x99ve faced in my past projects. The interviewer went deeply inside the project and asked questions.

I was asked to solve a problem. Given a binary tree, I was asked to serialize that tree and store it

as a file format and retrieve it back to the form of a binary tree.

I was initially saying preorder and in-order delimited by a pipe symbol. But the interviewer asked me to go with only one traversal. I finally gave a solution using only preorder, denoting null nodes as \*.

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## Amazon Interview Experience | Set 245 (For 2.5 Years Experienced)

- Difficulty Level :[Medium](#)
- Last Updated :[03 Jul, 2019](#)

### Round 1:

Q-1 [Given an array os 0s and 1s, and another input m, I was supposed to tell the longest continuous streak of 1s after flipping m 0s to 1s.](#) E.g., Array is {1,1,0,0,1,1,1,0,1,1} m = 1 (which means I can flip \xe2\x80\x98m\xe2\x80\x99 one 0 to 1)  
Answer: 6 (if we flip 0 at index 7, we get the longest continuous streak of 1s having length 6)

Q-2 [Given N ropes of lengths L1, L2, L3, L4, \xe2\x80\x9a6, LN. I had to join every rope to get a final rope of length L1 + L2 + \xe2\x80\x9a6 + LN.](#)

However, I can join only two ropes at a time and the cost of joining the two ropes is L1 + L2. I was supposed to join ropes in such a way that the cost is minimum.

### Round 2:

Q-3 [Given a BST, I needed to serialize it and deserialize it.](#) This essentially boiled down to generating the \xe2\x80\x9ctraversal\xe2\x80\x9d string and getting the BST back from the traversal.

Q-4 [There are two linked lists. Both linked lists have a single-digit number in their nodes.](#) I needed to treat this linked lists as numbers and add them up and store the digits in a new linked list.

E.g., head -> 5 -> 6 -> 7-> 9

head -> 2-> 1 -> 1

Resultant linked list: head-> 5 -> 8-> 9-> 0 (5679 + 211 = 5890)

### Round 3: Hiring Manager round

Q-5 Project discussion in detail. Most challenging problem, how did you solve it, had any disagreement with manager, how did you fix it etc.

Q-6 [Given an array {2, 4, 6, 0, 1, 8, 1}, where each element represents the height of tower located at its index. I was supposed to tell how much maximum water can accumulate in this \xe2\x80\x9cvalley\xe2\x80\x9d once it rains.](#)

### Round 4:

Q-7 Given the encoding rule:

A -> 0

B -> 1

C -> 2

\xe2\x80\x80\x9xa6

K -> 10

\xe2\x80\x80\x9xa6

Z -> 25

I was supposed to get the number of original strings possible given an encoded input.

E.g., Given input 10, two possible original strings are possible BA and K, the answer is 2.

Q-8 [Given two trees, find out if the second tree is a \xe2\x80\x9csubtree\xe2\x80\x9d of the first one.](#)

E.g., Tree 1\r\nn A\r\nn / \\\r\nn B C \r\nn / \\\r\nn D E F \r\nn /\r\nn G \r\nn

Answer: No (Tree 2 is not a subtree of Tree A)

### Round 5: Engineering manager round

Q-8 Engineering Manager round, all behavioral, why do you want to leave the company, one challenging problem, how did you overcome it, your biggest failure etc. etc.

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# Amazon Interview Experience | Set 244 (For SDE-1)

- Difficulty Level :\nHard
- Last Updated :\n03 Jul, 2019

## ROUND 1 (Telephonic, 70 mins):

1. Given an array, print the greatest element on right side, for elements having no greater element print\|xc2\|xa0\|xe2\|x80\|x9c-1\|xe2\|x80\|x9d..
2. Given a binary tree, print its boundary traversal..
3. Given a m\*n matrix, find the number of paths to reach m\*n from 1\*1..

After Round 1, I was asked for In House Interview SDC Hyderabad.

## ROUND 2 F2F (60 mins):

1. Given a mountain array and some obstacles in array, check if there is a way to reach the end cell from beginning cell..
2. Design a phone book, make search as efficient as possible.. Only approach was required on how will we store multiple numbers, multiple websites, multiple\|xc2\|xa0email ids etc and how will we search efficiently.. Many approaches were discussed: Linear Search, Binary Search then TRIE.

## ROUND 3 F2F(60 mins):

This round was easy, i think just to check my coding skills.

1. Given an array, find one pythagoras triplet..
2. Given a binary tree convert it to its mirror tree..
3. Given an n-ary tree convert it to its mirror image.
4. A 1-D puzzle. I\|xc2\|xa0could not answer it as only 7-8 mins were given to me, but at last Interviewer asked my approach before leaving, she said yes I am on the right track but left as Interview time was over.

## ROUND 4 F2F\|xc2\|xa0(Hiring Manager, 60 mins)\|xc2\|xa0:

1. Asked full explanation what i am currently doing in my company.. Asked me to explain on the whiteboard..
2. Given a large file, that cannot be loaded into the memory, with 2 fields, ItemId and its description. Entry contains the list of all items sold on\|xc2\|xa0amazon.in. Track the most sold item item at any instant.  
I could not answer this question efficiently, I tried to explain him with MinHeap, he then said to go ahead and code. I did, but there were some flaws. But he was satisfied with the approach i took to solve the problem.
3. Design a network packet class.. Class designing for Request, Response and Timeout Packets..
4. Some behavioral questions, like tell me a time when you helped a colleague, a time when you were helped, what should you improve in yourself etc..

## ROUND 5 F2F (Sr. Manager, 75 mins):

1. Asked about my current project in full detail, many questions why do we make this product, what's the use, who uses it, for what etc..

2. Design a contact list, full production level working code was required for all methods. How will we store the contacts, what classes will we use, how will we search.

So we should display all the matched contacts whenever we press some characters..

Suppose when we open contact list and it have many contacts like (\xe2\x80\xA6.Saransh Santa Sarcastic Secular Sharma Start \xe2\x80\xA6\xe2\x80\xA6\xc2\xA0)

So if we type S , the screen displays all contacts with \xe2\x80\x9cS\xe2\x80\x9d then when we type \xe2\x80\x9cSa\xe2\x80\x9d, screen must display Saransh Santa Sarcastic.

### Suggestions:

1. DO NOT\xc2\xA0mug up the code. Understand it.
2. If stuck, ask interviewer for hints, they are very co-operative.
3. Prepare Data Structures(especially Arrays, Trees, DP, Linked List, Stack, Queues, Strings, Heaps, Hashing for Amazon).
4. You should be flawless at explaining what you are currently doing and your past projects, future is a reflection of past.

At last Thank you GeeksforGeeks\xc2\xA0for helping me through this.

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Amazon Interview Experience | Set 243 (2.5 Years Experience)

- Difficulty Level : [Medium](#)
  - Last Updated : [25 Jun, 2020](#)

### Coding round (1 hour):

1. Spirally traversing a matrix
  2. Add two numbers represented by linked lists

#### **Face to Face Round 1 (Technical ~1 hour)**

1. Introduce yourself and give me a brief about what projects are you doing currently?
  2. What was the challenge you have faced in your current project?
  3. Given a running stream of integers. I need to find the median of the running stream. I gave solution using heaps. He was interested in the approach using tree, after a hint i was able to solve it using tree. He was convinced by my approach
  4. Design a data structure in which the operations like insert , delete and finding minimum element should be done in  $O(1)$  time complexity. I told him that i have already done this question so he was just interested in logic.
  5. Given n non-negative integers representing an 2-D elevation map where the width of each bar is 1, i need to compute how much water it is able to trap after raining.

```
Input: arr[] = [0, 1, 0, 2, 1, 0, 1, 3, 2, 1, 2, 1]\r\nOutput: 6\r\n      | \r\n      |   || | \r\n      |_||_|_|||_|_\r\n      | \r\n      |Trap "1\r\n\xc2\xxa0
```

### **Face to Face Round 2 (Technical ~ 1 hour 10 min)**

- 1.xc2\x00Introduce yourself and tell me the most challenging project you have done in your career. Lots of discussion on project part and challenges i have faced.
  2. Given an unsorted array which contains unique numbers from 0 to 999 and size of array is 1000. At one of the index the element has been replaced by some other element. I need to find the original element. Only logic was required.
  3. An infix expression is given and i need to evaluate this expression. I told him that this is standard question, so he just asked me the logic and ask me to convert the infix expression to post fix expression.
  4. [An binary tree is given. He asked me to serialize and deserialize the given binary tree.](#) I gave him the approach using pre order traversal and store the elements in array and using another array which will store whether a node element is leaf node or internal node. He was convinced with the approach.\xc2\x00Then he asked me to write the code for the same logic.
  5. Discussion on what data structure i will use to implement recommendation engine. e.g. if someone buy mobile from Amazon, it should recommend the ear phones, power bank etc. It was a good discussion.

\xc2\xa0

## Face to Face Round 3 (Bar Raiser ~ 1 hour 30 min)

1. [Trapping rain water](#) question was asked again. I did not tell him that i had already done this question in my first interview round. Eventually he came to know that i had done this question already. So he asked me another question.
  2. [Given a 2-D plane and number of points are given on that 2-D plane which are represented by its \(x,y\) co-ordinates. So i need to find the maximum number of points which can be lie on a single line.](#)  
Answer : I gave the solution using hashing, i calculate the slope using any two points, now one by one checks the slope with other points if slope matches i will increase the count for that particular slope in hash map. Now i will traverse the hash map and find the maximum. Time complexity  $O(n^2)$ .  
Then discussion happens on what if slope comes out to be something that can even not be stored in type `long double`, what to do then.
  3. [LRU cache implementation.](#) I told him that i knew the answer already. So he asked me a different question.
  4. Given an array of integers. I need to modify the array so that each index of array contains product of all elements except for the its own index element. Twist is that i need to do it without using division(/) operator. I was able to solve it with a little hint.
  5. [Given a post order traversal of a binary search tree. He asked me to write a clean code to create a BST using the given post order traversal and return the root of the BST.](#)
  6. [Given a stream of characters which can contain only alphabets \[a-z\]. I need to find the whether there is a duplicate element present or not and accordingly return true or false.](#) He was interested in the worst case time complexity.

\x{c2}\xa0

#### **Telephonic Round 4 (Hiring Manager ~1 hour)**

- Telephone Round 4 (Hiring Manager) – 1 hour**

  1. Introduce yourself and give me a brief career background of yours.
  2. Why you have left your previous company?
  3. Why you are leaving your current company so early?
  4. Why Amazon?
  5. What is the most challenging thing you have done in your entire career? Give me the implementation details, what was the situation and how have you handled it?
  6. Tell me a situation when you have suggested your manager a better idea of solving a problem and he has to go back and used your idea and done the things again.
  7. Tell me a situation when your manager has disagreed to your ideas and why?
  8. Given a sorted and rotated array, I need to find the search the given element in this array. Expected time complexity was  $O(\log n)$ .

\\xc2\\xa0

TIPS

1. Practice to write the code using pen and paper.
  2. Keep trying to solve the problem, they will definitely give you hints wherever you stuck and you can capitalize on those hints to solve the problems.
  3. Be honest with the interviewer

\xr2\xa0

Amazon people were friendly all during the process.  
A Big thanks to geeksforgeeks for making everything easy

$|x_2| \neq 0$

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$|x| < 2 \Rightarrow x \neq 0$

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# Amazon Interview Experience | Set 242 (1 Year Experience)

- Difficulty Level :\nHard
- Last Updated :\n03 Jul, 2019

## Telephonic round: (1 hour)

It is started with interviewer introduction followed by my introduction. Need to write the code in shared docs. They shared CollabEdit link before interview.

1) [Minimum Platforms](#)

2) [Arrange given numbers to form the biggest number](#)

After one week, they called me to Hyderabad office for on-site interview. They have arranged everything.

Every round started with interviewer introduction followed by my introduction.

End of every round, interviewer asked \xe2\x80\x9cDo you have any questions\xe2\x80\x9d?

\xc2\xa0

## Round-1: (1 hour, 2 interviewers)

1) Questions related to my\xc2\xa0exp, projects and my role, architecture of my projects

2) can we construct a tree with single traversal? NO

\xc2\xa0 \xc2\xa0 which traversal is must needed ? INORDER. Why?

Then he asked \xc2\xa0<https://www.geeksforgeeks.org/construct-a-special-tree-from-given-preorder-traversal/>

2)\xc2\xa0<http://www.geeksforgeeks.org/next-greater-element/>

\xc2\xa0

## Round-2: (1 hour 45 min, 1 interviewer)

1) Multiplication of two numbers without using multiplication operator.

2) He explained a situation like you have super market and items sold every day, blah blah\xe2\x80\xxa6 finally the question becomes as follows

Given a file which contains one product id per line(millions of products) which are sold and some product ids may repeat. We need to find how many items are unique in that file. (i.e sold uniquely)

3) [Cycle in a LL](#)

4) How we can implement a queue with one pointer

5) [Given a key , search the key in the LL, if exists swap the values of prev node and current node.](#)

After I given solution then he asked me swap nodes NOT values.

6) [Given a binary tree, construct a MIRROR of that tree.](#)

So many behavioural questions around 10 -15 questions. some are

Give me an instance

- clashes with Teammate
- when you shared your team mate burden
- your PM doesn\x9t agree with your opinion
- if time is less for the project, how you will handle
- What you have done to increase team efficiency
- big mistake you have done in the team
- your are moved to new team but you dont have any exp with that technology. how you will handle?
- you team mate is not working properly because of that you are working more time. how you will handle the situation?
- you came with idea but team doesn\x9t agree

- What are the areas/technologies which you want to improve?
- blah, blah, ... so many

### Round-3: (1 hour, 2 interviewers)

They said that first we will go with technical questions then related to exp and projects.

1) Given an array find the missing numbers. Array is not sorted and range of elements also not known.

Ex: input:  $a[] = \{1, 100\}$  output: 2,3,...99

input  $a[] = \{100, 1\}$  output: 2,3,...99

Then they asked algorithm for

- if only one number missing and range 1 to n
- if array sorted and one number missing

2) Given a two nodes in a binary tree, check those are cousins or not. Cousins means both have to present in same level but doesn't have a common parent.

They want within a single traversal of a tree we need to find. (2 traversal of a tree also not allowed.)

I have done in two traversal (f0,f99,f82 )

They given hints and finally we solved it.

3) Related to heaps

- how you will insert a value, what is the time complexity
- how you will delete a value, what is the time complexity
- how you will construct a heap with a given array, what is the time complexity

### Round-4: (1 hour, 1 interviewer)

He is senior most guy. I felt a little bit uncomfortable.

1) Asked about current projects and my role and related to exp.

2) He explained a scenario as follows:

Amazon has so many products which are selling outside. Given millions of products and he can tell how to construct a URL with product id to get the product details page which contains info about product, ratings and comments, blah blah.

Ex: if product id is 123456 then the URL becomes [www.amazon.com/product/123456](http://www.amazon.com/product/123456)

Then questions are as follows

- Retrieve the rating for each product(ex:123456) which is present in that page (ex: [www.amazon.com/product/123456](http://www.amazon.com/product/123456))
- After finding ratings for every product(millions of products). Give an algorithm to find top 10 rated products. Asked me to write production level code NOT pseudo code.
- Then he extended if product ratings are same (it may occur for some product) then we need to consider the product which has more number of comments
- Time complexity for above cases

3) Why you want to leave current job?

\xa0

### Suggestions:

1) **Need to cover (order is high to low priority):** Trees, Heaps, sorting and searching, LL, Stacks, Queues, strings, DP, Greedy, Divide and conquer, hash map and collisions, recursion and back tracking, bit manipulation, basic graph algorithms, OOD, scalability and memory units, any missing topics.

2) You should know the time complexity for STL data structures.

Ex: For hashing, we will say we can find a value in  $O(1)$  but if we are using C++ STL, map was implemented with Balanced BST so it will take  $O(\log n)$ .

- 3) You **MUST** prepare some behavioural questions, atleast standard questions like Why Amazon?  
Why do you want to live?
- 4) Practise on paper because you need to write on paper in all rounds of interview.

\xc2\xd0

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### Related Practice Problems

[Largest Number formed from an Array](#)

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## Amazon Interview Experience | Set 241 (1.5 years experience)

- Difficulty Level :[Hard](#)
- Last Updated :[02 Jul, 2019](#)

### Round-1 (World Trade Centre, Bangalore) Technical

1. [Given an array that is first increasing then decreasing, find an element in it.](#)

Example: arr[] = { 2,6,8,9,15,20,18,16,12,7,1}; x = 12, Find x.

2. [Print left view of a binary tree.](#)

3. [Given an array that contains only 1, 2 and 3. Sort the array.](#) He asked me to write code for two methods counting method and Dutch National Flag algorithm.

4. There is a irregular, haphazard, shapeless cake that needs to be divided equally among n people. Say you are one among them. How do you achieve consensus?

### Round -2 (Q-city, Hyderabad) Bar raiser

1. About projects, your contribution, your roles and responsibility, challenges faced etc.

2. Why amazon?

3. Given a pattern containing only Is and Ds. I for increasing and D for decreasing. Devise an algorithm to print the MINIMUM number following that pattern. Digits from 1-9 and digits can repeat.

\r\n Example:\r\n 1. Input: D Output: 21\r\n 2. Input: I Output: 12\r\n 3. Input: DD Output

### Round 3 (Q-city, Hyderabad) Technical

1. [Given pre-order traversal of a BST. Construct the BST.](#)

2. [Given a m\\*n matrix. m and n can be huge. We need to query the matrix for sum of submatrices. Input will be the top-left and bottom-right co-ordinates. We need to return the sum of submatrix in O\(1\) time.](#)

Solution: Do column wise sum of the matrix and store it. Again, do the row wise sum and store it.

### Round 4 (Q-city, Hyderabad) Managerial

1. About projects, your contribution, your roles and responsibility, challenges faced etc.

2. [Given m sorted arrays, merge it into one array.](#)

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## Amazon Interview Experience | Set 240 (1.5 Year Experienced for SDE-1)

- Difficulty Level : [Medium](#)
  - Last Updated : [02 Jul, 2019](#)

I recently had interviews with Amazon. Here's my interview experience.

### **Coding round on Hacker rank (1 hour):**

- ### 1. Find minimum number of coins that make a given value

Given a value  $V$ , if we want to make change for  $V$  cents, and we have infinite supply of each of  $C = \{C_1, C_2, \dots, C_m\}$  valued coins, what is the minimum number of coins to make the change?

2. Suppose you have given two strings S1 and S2. Find out if S1 is substring of S2. If S1 is present in S2 return starting index of S1 in S2 and if not present return -1.

### 3. Overlapping rectangles

## Face to Face Round 1 (Technical ~1 hour)

1. [LCA in a BST](#)
  2. [Swap two nodes in a singly linked list](#)
  3. Building bridges problem  
[Dynamic Programming | Set 21 \(Variations of LIS\)](#)  
[Building bridges problem](#) how to apply longest
  4. [Implement a data structure with push\(\), pop\(\), find minimum element in O\(1\).](#)  
[Design and Implement Special Stack Data Structure | Added](#) ( For each question they asked me to write the code and also tell all test cases.)

## **Face to Face Round 2 (Technical ~45 mins)**

1. Find the number of islands.[Find the number of islands](#)
  2. [Calculate how many paths exist from top left to bottom right corner of matrix with cost = k](#) Number of paths with exactly k coins

### Face to Face Round 3 with Hiring Manager (Technical ~1 hour)

1. Tell me about yourself.
  2. Given 4 digits , find the sum of all the 4-digit numbers that can be formed using these 4 digits.SOLUTION: Find the sum of all four digit numbers that can \xe2\x80\x99
  3. Merge two balanced BST\xe2\x80\x99s.\xc2\xa0\xc2\xa0(For each question , code and a dry run was expected)
  4. Tell me a situation when your manager disagreed with you.

**Telephonic Round 4 (Technical ~45 mins) ( held after some 3-4 days )**

This interview will be taken by some senior guy who doesn't belong to the team you are hired for.

1. He gave his brief introduction and then asked mine.\xc2\xab0
  2. Why do you want to leave the current company
  3. Why Amazon?
  4. The most challenging project/thing ever done. Why it was challenging . How would u do the same project/thing again. i need to tell some

improvements in previous approach/design/code.

5. Tell me a situation when your manager disagreed with you / or had a different opinion
6. Tell me a situation when there was a time constraint for project delivery and how you handled it.
7. [Find an element in a rotated sorted array](#). (The collabedit link was shared to me through the mail but it didn't work during the interview . So the interviewer asked me to just explain the logic)

Some suggestions:

1. Practice Trees , Linked lists , DP , Arrays , Strings , Stacks , Queue , Hashing , Heaps , Backtracking and basic Graph questions from gfg. The questions are asked as it is.
2. Don't just look at the solutions , write the whole code on paper while practising.
3. In the interview , start from the less optimized solutions and then move to more optimised solutions.
4. Practice the latest 20-25 sets from the Amazon Interview sets in gfg
5. Ask questions / take hints from the interviewers. They are co-operative.
6. Prepare behavioural questions like why leaving , why amazon , situation against manager etc. Have answers to these questions ready .Practice speaking them to yourself before the interview, otherwise you might get nervous.

A big thanks to gfg for making everything easy.

All the best folks! Prepare well.

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# Amazon Interview Experience | Set 239

- Difficulty Level : [Medium](#)
- Last Updated : [02 Jul, 2019](#)

I recently attended an interview with Amazon at WTC, Bangalore

## Round 1 \xe2\x80\x93 Written (write code for any 2 out of 3)

- [Given an array of elements which is first increasing and then decreasing, find the maximum element in the array.](#)

Points where based on how we handle the corner cases like what if we have only two elements in the array.

- [Given a string of parentheses, find if the expression is balanced or not ?](#)

- [Given a binary tree, find the level which has maximum number of nodes, consider root as level zero](#)

People were asked to write 2 or 3 lines about the approach they follow, the space and time complexity, data structures used to solve the problem

I attended 1 and 3 \xe2\x80\x93 scored 7/10, on my further analysis I had failed to handle the corner cases in question.3

## Round 2 \xe2\x80\x93 Face to Face discussion

- [Write program to escape URL string, say you are given a URL string, you have to replace \xe2\x80\x9c\(space\)\xe2\x80\x9d -> \xe2\x80\x9c%22\xe2\x80\x9d  
\xe2\x80\x9c\(double quotes\)\xe2\x80\x9d -> \xe2\x80\x9c%d\xe2\x80\x9d](#)

say <http://www.google.com/hello world> \xe2\x80\x93 -> <http://www.google.com/hello%22world%5d>

what is the space and time complexity, can we accomplish the solution with only one traversal of the string ?

- Given a million of points(x,y) in a two-dimensional plane and a utility function to compute the distance from Origin, how will you return the smallest k distances from the Origin.

Answer : Use Comparator and sort the array, return first K elements from the sorted list

Follow up: why do we need to keep all elements in the sorted list, how can we maintain only k elements in the sorted list ? Time, space complexity of the solution. time complexity of the problem.

## Round 3 \xe2\x80\x93 Face to Face discussion

- Implement hash map of your own

Follow up:

- How to handle a collision situation
- How can we reduce the time complexity of rehashing process ??

Gave my best in this round but couldn't clear it.

Amazon people were friendly all during the process.

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# Amazon Interview Experience | Set 238 (For SDE)

- Difficulty Level : \n[Medium](#)
- Last Updated : \n02 Jul, 2019

**First round** was HackerRank test:

*Your job is to write a method that will take a stream of integer values, and put them into a tree while counting the number of times each value is seen. The first value from the given list should occupy the root node. Then you need to traverse the tree breadth-first to generate a string representation of the tree. Values are to be inserted into the tree in the order that they are given.*

**Second Round** was an Event at a hotel where 5 interviewers each took about 45 min for a session of Q &A:

1. [Find the missing number in the increasing sequence.](#) i.e. :  
input: 1 2 3 5 6 7 output: 4. Tell the complexity.
2. Tell YES or NO [if two binary trees have the same numbers](#) (could be of different structures, non-unique elements)
3. [Find the nth from frequent character in string](#) (any character)
4. TPM guy: Design an elevator system (one lift, maybe more)
5.
  1. Design a Messenger like Facebook or Whatsapp
  2. Given 1M U.S. phone numbers (10 digit), choose a data structure/method for the most efficient search. Tell the complexity.

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# Amazon Interview Experience | Set 237 (For Application Engineer)

- Difficulty Level :\n[Medium](#)
- Last Updated :\n02 Jul, 2019

## 1) Written Test on Unix Shell Scripting

1. write a script/command to find files older than 7days and zip them and move to specific folder.
2. Asked write some examples on CUT
3. sked to write some examples on awk

## 2) Written test on core java

1. Binary search
2. Hash map program
3. [Psudo code for binary search algorithm](#)

Thanks and Regards

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# Amazon Interview Experience | Set 236 (Rounds 2 and 3)

- Difficulty Level : \n[Medium](#)
- Last Updated : \n02 Jul, 2019

## Round 2: Paper written coding

- 1) [Given an unsorted array with a group of characters taken from the user. Find the first occurrence of non repeating character and print the character\(s\).](#)
- 2) [Write a program to find whether the two given two strings are ANAGRAMS or not. \( built-in function should not be used \)](#)
- 3) [Find the number if words in a given paragraph and find the required word needed by the user and replace that word with an other word given by the user.](#)

## ROUND 3: TECHNICAL HR AND HR

\*) Tell about your self

- 1) [Given an string. Find the number of times a given character from the user is repeated in the array.](#)
- 2) Given two arrays in sorted manner, you need to multiply one two numbers i.e., one from each such that the pair is like the first number is taken from first array should be the largest number and the second number is taken from second array should be the smallest number. The desired product and the values in the array should be taken from the user first and accordingly produce the result.
- 3) what will you do if your facebook page doesn't get logged in? Derive the maximum number of test cases that you will perform to check the login page of facebook.
- 4) what will you do if you set the alarm clock to ring at a particular time and it doesn't ring? Derive the test cases and try to debug the issue
- 5) what will you do to check whether the facebook page UI is working perfectly on all sorts of screen sizes and browsers. Derive the test cases
- 6) What will you do if you have an issue in sending a mail after clicking the SEND button. Derive the test cases.
- 7) what are the test cases to check whether your whatsapp is running properly or not ?
- 8) write a program to sort the numbers using singly linked list.
- 9) what will you do to check the response time of a webpage and also derive the test cases if the webpage doesn't load completely.

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**Amazon Interview Experience | Set 235 (For SDE-II)**

- Difficulty Level : Medium
  - Last Updated : 02 Jul, 2019

GeeksOfGeeks has helped me a lot, so, thought of making a little contribution from my side.

## Amazon Interview for Position SDE II

## **Round 1:**

The interviewer explained about his role and team. He asked questions below,

1. Tell me about yourself and a little bit about your project
  2. Design a software to make a reservation at a chain of restaurants. All restaurants are in same Timezone. (He just wanted the class diagram)

## Round 2:

Again, the next interviewer explained briefly about himself and asked about me and my role in the current project. He asked more details about current projects

- Given an array of stock values of a company. Find out the time when a user would have bought the stock and sold the stock. Basically find the maximum positive difference of any two given elements in an array?
  - Told me to write this program.

### **Round 3:**

Interviewer introduced himself and asked about my details and my current projects.

1. You have a BST and you need to assign an appropriate value to neighbor of all nodes (Explained in below example)

Based on above tree.

Node: Neighbor

A-NULI

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Told me write a program ( $\text{It} \times \text{e2} \times \text{x80} \times \text{99s}$  suppose to be recursive method)

## **Round 4:**

- Given a price rules of parking and start time and end time of parking. Calculate the price (Below is the table of price rule) Come up with data structure you can store these price rules PriceRule

## Price Rules:

On Weekday \xc2\x96 \xc2\x96 \xc2\x96 On Weekend

Hours Price Hours Price  
0 \$5 0 \$0  
1 \$8 2 \$8  
2 \$10 2 \$13  
6 \$15 6 \$18  
12 \$20 12 \$25

The interviewer asked me to come up with an architecture for a system which shows the parking spaces available near customers' location in a mobile app.

## Round 5:

This round has been just behavioral\xc2\xa0questions.

1. What would you do when the manager disagrees with your decision even though you have a valid point?
  2. What are the challenges\you have faced in your career? How did you resolve it?
  3. Explain the instance where you have contributed towards making the improvement in your project or team.
  4. What would you do when your peer disagrees with your decision? How would you resolve the conflicts?

\xc2\xa0

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## Amazon Interview Experience | Set 234 (For SDE-II)

- Difficulty Level :[Medium](#)
- Last Updated :[23 Nov, 2015](#)

### Round 1:

- a) Twitter design considering following functionalities:  
Post tweet  
Get the top tweets from the followers
- b) Parking Lot design

### Round 2:

- a) Common elements from n sorted arrays
- b) Given list of dictionary words. Find minimum number of trials to reach from source word to destination word where word traversal is allowed through 1 letter difference.

\r\nEg: List of words - {ABC, ACD, BBC, BCC, BCD, \r\n

BDC, ABD, BDE, AGF}\r\n

ABC -> BBC

### Round 3:

- a) pow(a,n) function recursive, iterative
- b) Given list of cities, find the number of tour combinations (not permutations)
- c) BookMyShow design

### Round 4:

- a) Questions on Projects
- b) next hight number with same digits

### Round 5:

- a) Given stream of numbers, at any point of time, need to print first non-repeating digit
- b) News paper & Magazine subscription design.

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Amazon Interview Experience | Set 234

- Last Updated : \n02 Jul, 2019

location: Hyderabad QCity.  
Hiring for : Chennai Kindle team.  
Position : Software Development Engineer.

Time: 10 AM started with written test.

1. Boggle (Find all possible words in a board of characters)
  2. Find deepest node

Time: 11 AM:

Followed by explanation about my approach in solving the written test questions.

Followed by explanation detailing application in solving the written test questions.

After lunch 2 PM.

1. Add Two numbers present in two files and write it another file. numbers are too large not fit in integer bounds.
  2. Design a DS for efficiently allocating/freeing Memory. Memory Management DS.
  3. Design Hotel reservation system.

Time 4 PM.

## Hiring Manager round

Behavioural Questions like 1) Big Mistake I have done 2) Learning 3) Why I am switching

1. [Infix to post fix conversion](#) ( I have not done earlier this question but tried )  
Thought I am gone but later HR called me for next round . I think he liked/convinced my approach.

## Senior Manager round

Time 5-30 PM.

## 1. 1 byte stream

- you are at end of a character, find the previous character ( is single byte or double byte )

solved the above problem by taking Manager help.

\xe2\x80\x94\xe2\x80\x94\xe2\x80\x94\xe2\x80\x94\xe2\x80\x94

I waited 2 days and sent mail to HR about the hiring status. He replied saying that I'm working on updated. Will get back to you.

1 week and 1 day over no idea about the hiring status.

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appearing on the GeekforGeek

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# Amazon Interview Experience | Set 233 (1 Year Experienced for SDE-1)

- Difficulty Level :\n[Medium](#)
- Last Updated :\n02 Jul, 2019

I recently had interviews with Amazon.com, Bangalore.

Here\x80\x99s my interview experience**Coding round (1 hour):**

## 1. [Find minimum number of coins that make a given value](#)

Given a value V, if we want to make change for V cents, and we have infinite supply of each of C = {C1, C2, ..., Cm} valued coins, what is the minimum number of coins to make the change?

## 2. [Suppose you have given two strings S1 and S2. Find out if S1 is substring of S2. If S1 is present in S2 return starting index of S1 in S2 and if not present return -1.](#)

## 3. [Overlapping rectangles](#)

## Face to Face Round 1 (Technical ~ 1 hour)

1. [Given a linked list, reverse alternate nodes>a-singly-linked-list/](#)
2. [Valid Substring](#)

## Face to Face Round 2 (Technical ~ 1 hour)

1. [Special Stack](#)
2. [Bottom View of Binary Tree](#)
3. [Subset Sum Problem >partition-problem/](#)

## Telephonic Round 3 (Hiring Manager ~ 45 minutes)

1. Tell me about yourself.
2. Why do you want to change your current company? Why Amazon?
3. [Find a pair with given target in BST](#)

## Telephonic Round 4 (Bar raiser ~ 1.30 hour)

1. He gave a brief description about him.
2. Tell me about yourself.
3. Why do you want to change your current company? Why Amazon?
4. How Have You Gone Above and Beyond in Your Work?
5. Tell me about your current Projects. What is your role?
6. Some basic OS concepts
7. Then he gave a C code snippet and asked me what this piece of code does? What the problems that you see in this code? Fix the bug in the code.
8. Write your own function to take string as input from user.

For each question I was asked to write production level code. I had to wait for 2 days for the results. I got selected. Thank you geeksforgeeks !!

[All Practice Problems for Amazon !](#)

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# Amazon Interview Experience | Set 232 (SDE-1 for 1 Year Experienced)

- Difficulty Level : \n [Hard](#)
- Last Updated : \n 02 Jul, 2019

## Interview 1:

Before the interview began we were asked to solve 6 questions

1. [Write a function to swap a number in place without temporary variables.](#)
2. [Find out if number is power of 2.](#)
3. [Find the least common ancestor of 2 nodes in a BST.](#)
4. [Write a method to replace all spaces in a string with \xe2\x80\x98%20\xe2\x80\x99.](#)
5. [Check if binary tree is balanced.](#)
6. [Implement an algorithm to find the nth to last element of a singly linked list.](#)
7. Assume you have a method isSubstring which checks if one word is a substring of another.  
Given two string write code to check is s2 is a rotation of s1 using only one call to isSubstring  
(i.e. \xe2\x80\x9cwaterbottle\xe2\x80\x9d is a rotation of \xe2\x80\x9cerbottlewat\xe2\x80\x9d)

In the first interview i was asked how i solved Q4) replace all spaces with \xe2\x80\x98%20\xe2\x80\x99 and Q6) nth node from the end of a linked list.  
and then we discussed in details about a project I did with my previous employer.

and then He asked a few questions ->

Q1) [Dynamic Programming | Set 21 \(Variations of LIS\) \xe2\x80\x93 GeeksforGeeks](#) -> 1. Building Bridges: Consider a 2-D map with a horizontal river passing through its center. There are n cities on the southern bank with x-coordinates a(1) \xe2\x80\x9a6 a(n) and n cities on the northern bank with x-coordinates b(1) \xe2\x80\x9a6 b(n). You want to connect as many north-south pairs of cities as possible with bridges such that no two bridges cross. When connecting cities, you can only connect city i on the northern bank to city i on the southern bank.

Q2) [Write a C program to print all permutations of a given string \xe2\x80\x93 GeeksforGeeks](#) ->  
Print all permutations of a string

Q3) [Given the arrival and departure time of various trains in a station. Calculate the minimum number of platforms required such that no train has to wait for another train to vacate the platform.](#)

The question basically means calculate the maximum number of trains that would be present in the platform at any given time.

## Answer

sort the arrival time and sort the departure time, keep a count initialized to 0. compare the first element of the arrival time with the first of departure, increase the value of count if the value at current Index at arrival is less than the value index at departure and increment the arrival index, and vice versa. Keep the maximum count that you see.

## Round 2

Q1) given the x,y,z coordinates of a billion stars (basically the entire array can\x9t fit in the RAM) calculate the k closest.

Answer -> use a max heap that contains the k minimum distances.

Time-> n(log k)

then the question was changed to -> now that we have several computers which can combine to fit the entire set of stars, how will you then solve it?

Answer-> use selection algo (similar to step 1 of quick sort) to find the k closest stars in each of the computers. Time -> O(n) and then use the k in the those m computers to find the minimum k. One way is to sort all them individually. and then create a min heap to calculate k minimum.  
O( $k^2 \log k$ )

Q2) [Symmetric Tree \(Mirror Image of itself\)](#) GeeksforGeeks -> How to check if the tree is the mirror of itself

Then the question was extended to a n-ary tree.

Answer -> Please read the above link before reading this answer We create a the n ary tree like this->

```
struct node{\r\n    int data;\r\n    vector < struct node* > child;\r\n}
```

then we have the number of children of each node as `nodeName->child.size()`; we use it to compare the first child of the node with the last child, 2nd with 2nd last and so on:

### Round 3

Q1) [Write a C code to evaluate an expression tree.](#)

Answer-> It has to be done in a post order traversal method, since the value of the left subtree is independent of the right subtree.

Q2) [Articulation Points \(or Cut Vertices\) in a Graph](#) GeeksforGeeks -> Check for Articulation points

Q3) Given a stream of number, like 1,3,5,4,6,9 print 1,3-6,9

Answer-> create a hash map that contains the value of the ending index of the previous sequence.

For example\r\nwhen we get 1,3,5 the hash map is\r\nn1 0\r\nn3 1\r\nn5 2

key is the number and the value is the index where it occurs.

when we get 4, we have to check for the index of 3 and 5. (One above and one below)

the value at 3 is 1 and 4's index is 3, so they can't be paired.

We then check for 5. 5's index is 2 and 4's index is 3, since they are together, they can be paired.

1 0\r\nn3 1\r\nn5 2-3\r\nn4 2-3

and then we check for 3 again, 3's index is 1 and 4's index is 2-3, so they can match

1 0\r\nn3 1-3\r\nn5 1-3\r\nn4 1-3

We go on. I don't think I answered the questions the way it was asked, but he seemed ok with the answer I gave.

Next he modified more to include distributed systems in it. And asked me if there were several systems which received the input in round robin manner, how would I implement the above algorithms. I had no idea about this.

After round 3, I was called by Amazon and told that my first two rounds were positive but round 3 wasn't. Round 3 was the hiring manager round, and he wasn't happy that I had little idea about [RAID \( Standard RAID levels \) Wikipedia, the free encyclopedia](#)

So I had another hiring manager round.

### Round 4

<https://www.geeksforgeeks.org/find-a-pair-with-given-sum-in-bst/>

Find a pair with a given sum in a bst

more questions on what happened in Round 3 and why I want to leave my current firm.

### Round 5 (Bar Raiser)

Questions like

- 1) tell me a time when you had a different opinion than the rest of the team.
- 2) tell me a time when you were thinking that the problem is something else, but it turned out to be something else
- 3) tell me a time when your opinion were discarded.
- 4) tell me a time when you had to work on a very short notice.

Coding questions-

1) given that we can form packs of 6,9 and 20 pens. Given a number x, calculate if we can form combinations of packs to form those many pens. Eg 24 pens can be formed by having 2 packs of 9 pens and 1 of 6 and 23 pens can't be formed.

Answer

Dynamic Programming with the recursive function

DP[i]=DP[i-6]||DP[i-9]||DP[i-20];

2) Design an escalator system. Which classes would you make, etc.

After Round 5, they didn't find me a cultural fit so they conducted a Round 6.

### Round 6

Questions like- tell me something about yourself,

a time when you helped someone

A time when you shared a different opinion from your manager.

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## Amazon Interview Experience | Set 231 (On-Campus)

- Difficulty Level :[Medium](#)
- Last Updated :[02 Jul, 2019](#)

We had Amazon campus interview in our college offering an internship (performance based job conversion).

### First round(online coding round) :

20 MCQs.

2 coding questions.

- Given three huge numbers, each represented using a linked list (where each node of a linked list represents a digit), calculate the sum of the numbers and return back the number in the form of a linked list. For example, `\xc2\xd9->2->3, 4->6 and 2->5->1` representing numbers 923, 46 and 251 respectively. The result should be 1->2->2->0. This can be solved using stacks.
- [Given a graph, detect if it has a cycle.](#) We can perform a dfs here.

### Second round(Technical Interview):

I was asked to explain my work at an internship that I did. I explained for about 10 minutes. I was then given a binary search tree and asked to form a mirror of it i.e. every parent nodes left and right child should be swapped. I wrote a simple recursive code for it.

```
\r\nvoid BST(Node root) { \r\n    if (root==null)\r\n        return;\r\n    Node temp = root.left;\r\n    root.left = root.right;\r\n    root.right = temp;\r\n    BST(left);\r\n    BST(right);}
```

Given a somewhat sorted array where the numbers are in ascending order first and then follow a descending order, find the index at which the order changes and return the number at that index. For example, i/p: 1234532, o/p: 5. I wrote down a modified binary search for it (had to take care of some corner cases). The interviewer was satisfied and I was sent to the next round.

### Third round(Technical Interview):

I was asked to talk about one of the projects. I spoke about an artificial intelligence project that I did. He asked me some questions based on it. About 15 minutes.

I was asked the same question as the first one in the online round except here I had to add only two numbers. I told him that but he asked me nonetheless to write the code down and explain it. I gave him the recursive solution as well as the easier stack-based solution as a replacement of recursion.

Given positive numbers  $a_1, a_2, \dots, a_n$ , you can sum up the elements in the following way:  $1^*a(i\%n)+2^*a((i+1)\%n)+\dots+n^*a((i+n)\%n)$  where  $i$  ranges from 0 to  $n-1$ . Find the value of  $i$  at which this sum would be the maximum. For example, 5,6,7 the various sums can be  $1^*5+2^*6+3^*7$ ,  $1^*6+2^*7+3^*5$ , and  $1^*7+2^*5+3^*6$ . The answer is 38.

We can solve this in  $O(n)$ . We initially calculate the sum for  $i$  being 0. We make the following observation.

$i=0, sum_0 = 1^*a_1+2^*a_2+3^*a_3+\dots+n^*a_n$ .

$i=1, sum_1 = n^*a_1+1^*a_2+2^*a_3+\dots+(n-1)^*a_n$

$sum_1 = sum_0 + a_1 + a_2 + \dots + a_{n-1}$

Generalizing the equation:  $sum_i = sum_0 + a_1 + a_2 + \dots + a_{i-1}$  , where  $i$  ranges from 1 to  $n-1$ . The maximum of the  $sum_0$  to  $sum_{n-1}$  is the result.

Next question, you need to create an application which listens to requests continuously. The application has a common file that it can access. For every request, some information from the file has to be retrieved and returned back. Would you spawn a new process for each request or a new thread. And why? I said thread since the main processing to be done is on a shared resource and by creating threads you do not need make a copy of the file as such resources can be shared between threads.

What are the scheduling algorithms that you know in operating systems? What data structure would you use for each of the algorithms. I mentioned the following:  
First come First Serve : Queue.

Priority based scheduling : Priority Queue.

Shortest job First: Priority Queue ( this scheduling algorithm boils down to priority based scheduling)

Round Robin : Circular Queue. Interviewer told me circular linked list suits the purpose better. I added that circular double linked list would be an even better answer because of more efficient deletion of an  $i$ th node. He told me you can do this operation efficiently in a single linked list itself. I thought for a while and agreed with him while also showing him how I would go about doing this operation in a single linked list.

Given a computer with 1Gb ram and a 2Gb ram, the latter one would perform faster. Explain why would having more amount of ram would  $\rightarrow$  in normal circumstances- fare better than lesser ram powered computer. Answer : paging. I also told him how in certain computations like external sorting, it would also be more efficient if you have more RAM.

[Given a matrix of 1\xe2\x80\x99s and 0\xe2\x80\x99s, where 1 represents an island and 0 water, find the number of islands formed.](#) The interviewer was expecting me to come up with a dfs solution similar to this one.(Unlike the problem given in link, the 1\xe2\x80\x99s can be connected only horizontally or vertically). But I had a quick union find(disjoint set problem) solution in mind.

### Fourth round(Technical Interview):

I was asked about my internship work, again. I described the same one as I did in the first round. He asked me some questions based on it. We spent about 20 minutes on it.

[Print the top view of a binary tree in order](#), from left to right. I took some time to figure it out. As I was arriving at the solution I kept explaining it out loud. I had previously done a problem on printing right view of a binary tree which had a similar approach.

Given a number  $n$ , print all the squares of numbers such that the square is less than equal to  $n$ . For example, if  $n$  is 30, o/p: 1 4 9 16 25. Do this without using \*, ^ or division operations.

If we observe the sequence we get from the output, to arrive at the next number in the sequence, we add the next odd number. So,  $0+1=1$ ,  $1+3=4$ ,  $4+5=9$ ,  $9+7=16$  and so on.

I have covered almost all of the questions asked to me. I had to wait for more than a week for the results. I got selected `\xf0\x9f\x99\x82`

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# Amazon Interview Experience | Set 230 (On-Campus For SDE)

- Difficulty Level :\n[Medium](#)
- Last Updated :\n02 Jul, 2019

Recently Amazon visited our campus and take three rounds for final selection.

**First Round:** 20 MCQs, 2 Coding questions. Platform \xe2\x80\x93 HackerRank.

## Coding Questions:

1.[Print all possible words from phone digits](#)

2.A question involving optimization using modified binary search(I do not remember the entire question).

A total of 10 students were selected after this round. The aptitude were simple but coding questions were time-consuming.

## Second Round(technical):

The interviewer asked me three questions one after another.

### First question:

1.[print all permutations of a given string.](#)

The interviewer asked me the approach only.

2.[print a matrix in spiral order.](#)

The interviewer asked me directly to code.

3.print the [left](#) and [right view](#) of a binary tree.

The interviewer asked me the approach but did not tell me to code.

It was an easy round and 5 students were selected for Third round.

## Third Round(Technical):

1.[Write a program to remove the whitespaces from a given string.](#)

First i told him in  $O(n)$  time complexity and  $O(n)$  space complexity approach but he wanted  $O(n)$  time complexity with constant space complexity. I was unable to do it so he asked me second question.

2.Write a program to find the element which is common in all the rows in a two-dimensional array. I told him using binary search but he wanted more optimized approach but i was unable to do so.

I did not get selected but Overall it was a good interview experience.

I want to thank geeksforgeeks for such a good and amazing solutions to the back-breaking problems which helped me in the interview .

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# Amazon Interview Experience | Set 229 (On-Campus for SDE)

- Difficulty Level : \n [Hard](#)
- Last Updated : \n 02 Jul, 2019

**First Round:** 20 MCQs, 2 Coding questions. Platform \xe2\x80\x93 HackerRank.

## Coding Questions:

1. [A magic number is one that can be represented as a sum of powers of 5. For example  \$30 = 5^2 + 5^1\$ . Given n, return the nth magic number.](#)
2. Given a set of words as dictionary, find out whether a given string can be formed using any permutation of the words from the dictionary. The words given in the dictionary cannot be altered, more specifically anagrams of the given words cannot be used to form the given string,

## Technical Interview 1:

1. [Given an array which is sorted row wise as well as column wise, how would you find a given element?](#)
2. [Given an n-ary tree, print the spiral traversal of the tree.](#)
3. [Given an array, and a number K, find the largest of all consecutive windows of the size K.](#) For example, for the array [2, 9, 3, 4, 1, 6] and K = 3,

Output: 9, 9, 4, 6.

4. [Given an array, you can only ROTATE the array as many times you want. Return the maximum of summation of \( \$i \* A\[i\]\$ \).](#)

## Technical Interview 2:

1. Implement a circular queue using an array of a fixed size. Handle all boundary cases. This question was followed by some Operating system questions based on it.
2. [Given an array, divide it into two subsets such that the difference between the sum of subsets is minimized. Also, return the subsets.](#)
3. Discussions on the same dictionary problem asked in the online coding round.

## Technical Interview 3:

1. Given a threaded binary tree with all the threads pointing randomly anywhere, fix all the threads without using any extra space.
2. Questions on operating system, DBMS, automata theory etc.

## Technical Interview 4:

1. [Given a binary matrix \(A matrix consisting of only 0\xe2\x80\x99s and 1\xe2\x80\x99s\), where 1 represents land and 0 represents water, Find the number of islands.](#)
2. Given a paragraph and a sentence, find the smallest sub-string in the paragraph which contains all the words in the sentence, return the smallest starting index of the occurrence of such sub-string if there exist more than one sub-strings of the same smallest length.

Project based questions were also asked in between all the interviews.

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# Amazon Interview Experience | Set 228 (On-Campus for Internship)

- Difficulty Level :\nEasy
- Last Updated :\n02 Jul, 2019

Amazon came to our campus a week back and procedure was as follows:

## Round-1-

20 easy MCQ

2 coding questions:

(a)- [Find next greater number with same set of digits](#) \xe2\x80\x93 even brute force solution is working.

(b)-[Evaluation of post fix expression](#).

Note \xe2\x80\x93 Only fight for solving atleast one coding question. If you have not done any coding question then it doesn\x9t matter how many MCQ you have done you can not qualify for next round. I had started with coding question and did 1 question and only 10 MCQ and qualified for next round.

21 candidates were shortlisted.

## Round 2(Face to Face)(30 min):

Introduce yourself -(Just a formality)

Asked about test and discussed coding question.(Must solve all coding questions before appearing in interview).

Then 2nd question \xe2\x80\x93

1- [print a binary tree diagonally](#). I told him the algo within 2 min then he asked me to write complete code (specially mentioned not pseudo code). It might contain some syntax error but it was not much of a concern. They only see whether are you able to implement the algo properly.

Then he told me there was an error in the code and that it doesn\x9t go correctly to next line.

I told him it\x99s correct lets run manually and check. The code was correct.

## 2-Subarray with 0 sum

I knew its solution and answered the best solution immediately. He asked me if I had done the question previously. I told not exactly same but I like competitive coding so I have done similar question. Then he extended this question and asked to print all sub-array with some zero. (write proper code).

Then he discussed corner cases I told some then he gave some hint and after that I got the idea so, answered all corner cases.

Some questions asked from my friends->

1-[Given an array A\[\] and a number x, check for pair in A\[\] with sum as x](#)

2-[Find a pair with given target in BST](#) (expect inorder and reverse inorder solution)

3-[Maximum width of a binary tree](#)

4-[Next larger element](#)

5-[Spirally traversing a matrix](#)

Note- Same questions were asked by the same interviewer to many candidates so it is advisable to share questions with friends as they select you for next round only if you have done both of the questions.

9 people were shortlisted in this round.

### **Round 3(nearly 2 hours)-**

1-Given a stream of number how you will maintain top 10 element. Whenever asked, the answer should be top 10 element till now. (answered in 2 min using min-heap).

### **2-Alien Dictionary**

very tough question. In 1 hour with the hint of interviewer I was able to answer this.

3- Some basic C questions \xe2\x80\x93 What is difference b/w Malloc, Calloc. Scenario when to use which one.

4- Data structure to use for undo and redo in text editor.  
I took a lot of time but finally told its answer i.e. stack.

5- [Lowest common ancestor of binary tree.](#)(Proper code)

After this round 7 candidates were selected.

**All thanks to geeksforgeeks for helping me with my preparation.**

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[All Practice Problems for Amazon !](#)

### **Related Practice Problems**

[Top k numbers in a stream](#)

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# Amazon Interview Experience | Set 227 (On-Campus for Internship and Full-Time)

- Difficulty Level :[nExpert](#)
- Last Updated :[n02 Jul, 2019](#)

This year our college kicked off placement season with the Amazon. We got the job description(JD) before the placement process. We got good news that Amazon have increased total CTC. With this good news it also added tension and pressure.

## **Day 1: Coding and aptitude round**

Coding round was at 5pm so from morning I had revised very basic things like sorting techniques, B Tree, AVL tree, finding the power set and some DP questions.

Online coding exam was of two hours and was on HackeRank. There were 20 multiple choice questions and two programs. Multiple choice questions were GATE type questions mainly from OS, data-structure , algorithm, database and C. My plan was to attempt these questions as early as possible and starts programming but questions were lengthy and it took 30 mins. After 30 mins there were 3 to 4 questions which I skipped and started programming.

Program 1: Anagram

[Two words are said to be anagram when one word can be converted into another word by shuffling/rearranging characters. Given a set of words find the number of anagram for each word in given set of words.](#)

Program 2: [Find diameter of binary search tree](#) in  $O(n)$  complexity.

[Given the set of integer values, insert these values in the binary search tree and find diameter of the tree.](#)

Both the program were easy. I solved program 2 correctly in  $O(n)$  and second program in  $O(n^2)$ . Result was on next day so all of us were in tension. I could sleep only 3 hours :p.

## **Day2: Interview process**

### **Interview Round 1:**

Question 1: First question in first round of interview was how to [insert node in binary search tree](#) using recursion and without recursion. He asked me to write the code of both.

Question 2: [Given a binary tree how to find the least common ancestor of two nodes in the tree.](#)

Question 3: [Given a binary search tree find the least common ancestor of the two nodes in tree. He asked me to write the code of this program as well.](#)

Question 4: He asked about projects it has taken almost 10-15 mins.

Time: 45 mins.

### **Interview Round 2:**

Question 1: He asked me to tell about my self. During introduction I mentioned about my previous company [xe2\x80\x99s project](#). He asked next question about that project. I had worked on that project almost 2 years so I could explain him that project in detail. He asked to write the code for the Wait And Signal method of the counting semaphore.

Question 2: [Given an array with -ve as well as +ve elements find max continues sum.](#)

This question was easy.

Question 3: Given a singly circular link list containing both +ve as well as -ve numbers find max continues sum. I explained him  $O(n^2)$  algorithm but he was asking  $O(n)$ . I was not getting answer of this question. I worked on this for 4 to 5 mins but I was not getting perfect answer so he gave hint by drawing all elements on the circle. As soon as I saw circle I got answer, I told to break the ring from most -ve number and then use normal algorithm which was in 1st question. He was not sure about this algorithm he tried to break this by using 4 to 5 example but he could not. He was happy after this answer because might be he had another solution in his mind.

Question 4: [Given prices of stocks per day find maximum profit you can earn by buying and selling shares.](#) You can make only one transaction.

This question is easy and from geeksforgeeks.

Question 5: [Given prices of stocks per day find maximum profit u can earn by buying and selling shares. You can make multiple transactions.](#) He asked me to write the code of this program.

Time: 1 hour 10 mins.

### Interview Round 3:

Question 1: He saw my resume and asked me which project I find most difficult. I told same office project. He asked me which part of that project I find most difficult. I told part related to the scheduling. He asked me basic questions related the scheduling and synchronisation.

Question 2: What is copy constructor in CPP

Question 3: Explain the [LRU cache technique and how to implement it.](#) I gave various approaches like array, queue , stack, Link list. finally He agreed on Link List with hashing approach. All other approaches were  $O(n^2)$  solution but Link List with hashing approach is  $O(n)$ . He was happy with that answer.

Link-List with Hashing approach:

Size of LinkList will be size of cache. Data in list represent page number of cache. Before running algorithm we will build Hash Table. Key of HashTable will be page Number and value will be address of the node in link list which contains key. One pointer to Link List represent the most recently used page(Front of Link List) and one pointer will point to least recently used page(End of Link List). When new page come then we will get node containing page number directly from hash table in  $O(1)$ . After getting that node move that node to the front of link list which represent most recently used page. If the new page not present in the Hash Table then update the value in page pointed by least recently used pointed and move that page to front. and also update key in the hash table.

Here we are building hash only one time and not modifying its values after that.

Time: 50 mins

### Interview Round 4:

Question 1: He asked about projects. I explained him my project in details which took around 10-12 mins. During explanation he was asking like why u have used this approach why not other and like that.

Question 2: Given n Runways and m Planes. How you will efficiently design this scheduling problem so that there should not be collision. I explained this by giving view of CPU scheduling problem and semaphore.

Use priority based Scheduling where priority can be departure time and emergency. Each plane use runways as below:

```
\r\n      Plane Pi:\r\n      Wait (S) \r\n      Take off (M.E.) \r\n      Signal (S) \r\nS=
```

Question 3: This was easy question. [Given matrix which is sorted, row wise as well as column wise like below:](#)

```
\r\n      01 04 07 09\r\n      11 23 45 46\r\n      51 56 59 63\r\n      70 73 75 79
```

and key. Find the position of key in given matrix efficiently. I explained the solution which is in  $O(\log m)+O(\log n)$ . He asked me write the code this problem.

Question 4: He asked very basic questions of database. After that he asked me what is eventual consistency. I didn't know knew answer of this so I told that I don't know, He again asked that do u know about NoSQL I said no.

Time: 45 mins

Thanks to my parents, teachers, friends and GeeksForGeeks.

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# Amazon Interview Experience |Set 226 (On-Campus for SDE-1)

- Difficulty Level :\nEasy
- Last Updated :\n02 Jul, 2019

Amazon interview experience for SDE-1

## 1st round (1.5 hrs)

1. given a dictionary of words \xe2\x80\x93 {\xe2\x80\x9ccsam\xe2\x80\x9d, \xe2\x80\x9ccamsung\xe2\x80\x9d, \xe2\x80\x9ccsung\xe2\x80\x9d\xe2\x80\x9d\xe2\x80\x9a6. }. check if a given string eg. \xe2\x80\x9ccungsamsungsam\xe2\x80\x9d can be made from the words in the dictionary.
2. magic number is a number formed by adding one or more powers of 5 .find Kth magic number. 5, 25, 25+5=30, 125, 125+5=130, 125+25=150, 125+25+5=155,\xe2\x80\x9a6.

20 mcqs having c++, networking, dbms and apti Qs.

## 1st interview\xe2\x80\x93

0. introduce yourself
1. check if binary tree is BST or not.
2. go from 0,0 to m,n in a 2d matrix. find the maximum possible sum of your path. you can only move down or right.
3. given an array of integers. form pairs such that each pair\xe2\x80\x99s sum is divisible by k. return 1 if this can be done, else 0.

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## Amazon Interview Experience |Set 225 (For 1 Year Experienced)

- Difficulty Level :[Medium](#)
- Last Updated :[02 Jul, 2019](#)

I recently had interviews with Amazon.com, Bangalore.  
Here's my interview experience

### Written round:

- 1) [Insert a number at its correct position in a sorted circular linked list.](#)

For eg: `\r\na) Insert 25 in 10->20->30->40->50->10-----\r\n` o/p : `10->20->25->30->40->50->10-----\r\n` nb) Insert 60 in

- 2) Convert a Binary Search Tree into a Binary tree where value of each node in the tree is equal to sum of all nodes greater than it.

- 3) [Clone a Binary Tree with random pointer.](#)

### Face to Face Round 1 (Technical ~ 1 hour)

- 1) Given an array indicating stock prices on each day for a n days. At any given day, you could:

- a) Buy only one stock.
- b) Sell any number of stock(s) from what you have bought.
- c) Do nothing.

[Find the maximum possible profit that you could achieve by doing transactions given the price array for n days.](#)

- 2) Given a m\*n matrix with LEDs, having each cell representing the state of the LED as either ON(1) or OFF(0). Given a cell position, state of all the adjacent (in all 8 direction) cells sharing the same state as the given cell toggles and the effect cascades. Represent the final state of the matrix.

- 3) Given a deck of n cards, in each iteration the top card is removed and pushed to the end and the second card is removed from the deck. For eg: In 1st iteration, 1st card will be added to the end and 2nd card will be removed, again 3rd card will be added to the end and 4th card will be removed and so on. Find the last card which will be remained.

### Face to Face Round 2 (Technical ~ 1:30 hours)

- 1) [Given a boolean matrix with every row sorted, find the row with maximum number of 1s.](#)

- 2) [Given a paragraph and two words A and B, find the minimum distance between a occurrence of A and B.](#)

- 3) Given two valid three letter dictionary words, find the minimum number of steps required to transform first word to second word. Following are the transformation rules \xe2\x80\x93

- a) You can, in a single step, change a single letter in the word.
- b) Each transition should result in a valid word. Assume you have been provided a helper function boolean isValid (String word) which tells you if a word is valid or not.
- c) This must be done with minimum transitions.

Example: Transform CAT to TOY. One of the several possible transformations is CAT -> CAR -> TAR -> TOR -> TOY

- 4) [Sort a linked list which is in alternating ascending and descending orders.](#)

For eg :

`10->60->30->40->50->20 to 10->20->30->40->50->60`

- 5) [Find the next greater element for each element of an unsorted array.](#)

### Some Computer Science Fundamentals now :

- 1) Explain what happens in the background when you enter \xe2\x80\x98cls\xe2\x80\x99 command on unix shell.
- 2) Difference between process and threads.
- 3) What is semaphore and mutex. What is Readers-Writers problem? Explain solution with code.
- 4) Difference between TCP and UDP.

Few more questions which I don't remember now.

### Face to Face Round 3 Fa(Hiring Manager ~ 1 hour)

- 1) Tell me about yourself.
- 2) Why do you want to change your current company? Why Amazon?
- 3) Tell me about your current Projects. What is your role? Tell me architecture of this project.
- 4) Scanned through my resume and asked about everything mentioned in it.
- 5) Design question : Design an autocomplete library for a keyboard in a mobile device which does following tasks:

- a) Autosuggest words while typing from the inbuilt dictionary.
- b) Suggest words based on your previous inputs:

For eg: If you frequently type \xe2\x80\x98Thank you\xe2\x80\x99, so if you type \xe2\x80\x98Thank\xe2\x80\x99 then your library should suggest \xe2\x80\x98Thank you\xe2\x80\x99 as first result.

I was asked to tell which data structure would I use and write classes and methods for this library.

### Face to Face Round 4 (Bar raiser ~ 1:30 hours)

This round was taken by two guys from different teams and both of them were bar raisers of their respective teams. I was asked to use the whiteboard in this round.

- 1) Both of them gave a brief description about themselves.
- 2) Tell me about yourself.
- 3) Why do you want to change your current company? Why Amazon?
- 4) Tell me about your current Projects. What is your role? Draw the architecture of this project.
- 5) Then one of the interviewer gave a C code snippet and asked me what this piece of code does?  
What the problems that you see in this code?
- 6) [Connect all the siblings node in a binary tree.](#)

Follow up questions:

- a) Now connect all the non-siblings nodes as well (basically connect all nodes at the same level). ( cousins )
- b) Now write a recursive solution of the same.

I took a long time in coming up with the recursive solution for this question, but eventually solved it.

For each question I was asked write production level code.

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# Amazon Interview Experience | Set 224

- Last Updated : \n01 Jul, 2019

Here \xe2\x80\x99s my interview experience:

## Round 1: Technical

1) A bot has to go from point A to point B. Every time the bot moves, it can take either 1 or 2 or 3 steps. Find the total number of ways in which this can be done.

Input parameters \xe2\x80\x93 distance between A and B

Required output \xe2\x80\x93 number of ways

Had to write error free code with all edge cases covered. First gave a recursive solution and finally came up with a dynamic programming solution

2) [Implement least recently used cache](#). This question is there in geeks for geeks. Again had to write error free code.

3) don't remember the question. But I just had to come up with an algorithm. Code was not required.

## Round 2: Hiring Manager

1) [An array contains ones and zeros. Come up with an algorithm such that all ones come on the right side and all zeros on left side](#). You can go through the array only once \xe2\x80\x93 no code required.

2) Code for Singleton design pattern

3) Many behavioral questions like why amazon, why are you leaving your current company, a situation where you had to go against your manager etc.

## Round 3: Technical round

1) [Given a list of words, come up with an algorithm such that all anagrams are separated and placed in their respective buckets. So basically if 2 strings are anagrams of each other, then both should come in the same bucket](#).

I used sorting and hashing to solve this problem. Code was not required.

2) Given a string of binary digits (for example 010111101000), partition the string in such a way that each segment is a power of 5. If it is possible to partition the string such that at the end there are no digits remaining then return the total number of segments, -1 otherwise. Need to start with  $5^1$  and go up to the max power of 5 that is less than the string.

Had to write proper code for this problem covering all edge cases.

3) Given n people and n+1 parking slots. Each person has a car and a parking slot allocated. One night they all go to a party and get drunk. They end up parking their cars randomly.

What's the best way to go back to the initial configuration (one where every car is in the right allocated slot). (N+1)th parking slot can be used to swap the cars.

Only algorithm was needed for this problem.

Come up with a sorting algorithm with  $n \log(n)$  complexity.

Hint: Use Java's comparator class to solve the problem.

#### Round 4: Bar raiser

General behavioral questions like what have u contributed to your current project, one thing that you don't like about your project or would like to change etc.

Difference between queues and stacks?

Implement a queue using array such there is no waste of space even after a few enqueue and dequeue operations.

Hint: Think of circular array.

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# Amazon Interview Experience | Set 223 (On-Campus)

- Difficulty Level : \n[Medium](#)
- Last Updated : \n01 Jul, 2019

**First Round:** 20 mcqs from quants, os, data structures. they were easy.

2 programming questions to be solved in hackkerrank.

**First:** [some people are standing in a queue and only even people are selected. Again out of these only even people are selected. This happens until we are left with one. Find out the position of that person in the original queue.](#)

**second:** [We have to find the longest possible interval that can be formed by combining certain overlapping or constituent events from the given intervals.](#)

people who solved one question were selected to the next round.

**Second round:**

1. [find the area of largest possible rectangle from the given histogram.](#)
2. [print the boundary leaves of a binary tree.](#)

some 20 odd people were selected.

**Third Round:** Technical Interview. The interviewer is my college pass out. He asked me about my projects very briefly. Then he asked two questions.

1. [Given a number give the count of all possible words that can be formed out of it taking the digits continuously.](#) time complexity O(n).

2. [print the level order traversal of binary tree](#)

**Fourth Round:** Technical interview. three questions were asked

1. find the maximum element in a sorted rotated array. O(logn)

2. [print all the pairs of numbers that sum up to K in a given BST.](#) O(n)

3. [sort all the one\xe2\x80\x99s and zero\xe2\x80\x99s to opposite sides.](#) O(n)

**Fourth round:** basic questions on os, dbms, networks.

Since I had some projects he asked me questions on cloud, and based on my answers the topic got drifted towards distributed computing, etc.

Next round was HR interview.

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## Amazon Interview Experience | Set 222

- Difficulty Level :[Hard](#)
- Last Updated :[21 Nov, 2019](#)

### Aptitude Round: (1:30 hours)

20 MCQs

MCQs on OS, maths aptitude, and algorithms etc . Few output questions on pointers. Do have a look at old [GATE papers](#) and you may get some seen questions [here](#)

2 Coding questions: ( on hackerRank)

- Given an array having positive and negative numbers. Rearrange the array in such a way that positive and negative numbers are then alternate  
Eg Input : { -3, 1, 5 , 7, -4, -7, -6} Output : { -3, 1, -4, 5, -7, 7, -6} (Question demand;ed that order of the elements should not change)  
A similar question is given in geeksforgeeks with O(1) space but that uses quick sort concept which is not stable and hence order gets changed in many test cases.  
I used simple approach of dividing array in two parts of positive and negative numbers and then merging them one by one which worked.
- Convert a tree into it's sum tree  
<https://www.geeksforgeeks.org/convert-a-given-tree-to-sum-tree/>

### Interview:

#### Round 1:

- Talked something about my projects and introduction.
- A modification of binary search. Eg Input 5,5,8,8,9,11,11,13 .. If we give input 8 then it should return index 1 i.e. index of previous element to the first occurrence of the given input number. Even though if the number is not found then also it should work like for input = 12 the answer should be 7.
- Create links in an N-ary tree(N not fixed) into a tree where children of every node are having next pointer connected to it's siblings in a spiral fashion.  
Also on level 1 right most node's next pointer should point to level 2's right most node and in spiral way taking upwards root's next should point to left most child.  
I used two stacks to do the problem. The interviewer asked me to code it, I couldn't complete but she was convinced with my approach.

#### Round 2:

- It had easy questions, maybe they wanted to check coding skills for known problems. And also asked about projects.
- Given two strings then check if they are anagrams or not. (Character set is not just 26 alphabets it can special symbols like \$ % ! )  
Also if strings have spaces then also they are anagrams like abcdefg abcdefg & abcdefg abcdefg are also anagrams. I implemented it in Java using HashMap.
- Given two sorted linked lists, merge them into one linked list (Both iterative and recursive code)

#### Round 3:

- Tell me about your favorite subjects. I told Data structures & Algorithms , Number Theory & Cryptography. He asked me about different attacks possible on a website page. And asked me about what is man in the middle attack. Maybe he just wanted to check my knowledge on my areas.
- There is a society which has 8 parking slots and there are 7 cars. Each car is supposed to be parked in some fixed position and one slot is needed to be left. Example Let { A ,B ,C ,D ,E ,F ,G ,C } be the perfect arrangement. But society people never follow the rule and park in any position. Your work is to design a strategy which arranges the cars in perfect arrangement at the end of the day having minimum number of swaps. I was able to solve only this one question in this round. I used strategy that :
  1. first find the empty slot and will check if there is some car should be placed in that place properly and will swap the car.
  2. In case the empty slot is at correct position then find an improperly placed car and place it at empty slot and then will continue with step 1 iteratively till I get the perfect arrangement.

#### Round 4:

This was the round with main person who had come with Amazon team. He was taking interview since morning and had seen me with my friends discussing about interviews conducted by him. It was 7:30 in evening when my interview was about to start so while going to room in lift he asked me that if I know any of his questions. I honestly told that yeah I know about a few. He asked me about them and their solutions. One was similar to question 2 of round 1. Another was arranging a list of lists. He said that he will ask new questions now [here](#)

- Again a modification of binary search : Ex : {c,f,k,v} Now given an input for element we have to print the element next to it in array (even if it is not present)
 

```
\r\nInput Output\r\n a      c      f\r\n      j      k\r\n      v      c
```
- Then he asked me something about my challenging projects. Some project where I had to do submission in a fixed deadline. Also asked if I take part in online coding competitions.
- Then he asked simple question of finding maximum sum subarray (Kadane's algorithm). I did it very quickly so he asked another question to find next greater permutation. I gave the algorithm and coded it.
- Final question he asked that like in github when we save a code it makes commit points. So if some code has been saved multiple times and has many branches divided and then getting merged. We have to find the least common parent of two given commit points.  
It is similar to a linked list which is getting divided and then getting merged again number of times.

```
\r\nAA - B - C (divided in two) - D (merged into one) - F - G (divided) --- H - I - J \r\n | -----
```

I have a table given for parents of a node in chronological order and we have direct access to parents too.

Ex [here](#) In this case

Node J I H L K G F D E C B A

Parent I H G K G F D,E C C B A NULL

Given if I/P is (H, L) the output must be G. It seems similar to LCA concept of trees but it is a slight modification of it. I told about concept of stack that search for given nodes and will then store in two stacks and will pop till I get same value from stack. This popping do according

to information of table of node- parent.

I was not able to complete it but was able to show my approach and I handled the corner cases. He was satisfied with it.

- I suggest that always listen carefully to interviewer, they\xe2\x80\x99ll definitely help if you have any doubt. Tell them your approach at least if you are not able to code it. Practice writing code on paper. Be very careful while you tell about projects. They may get very interested in your projects and it will be very helpful for you. For Amazon Arrays, Linked Lists and Trees are concepts which are very generally asked. Data structures & algorithms should be proficiently practiced. Thanks a lot GeeksforGeeks \xf0\x9f\x99\x82 \xf0\x9f\x99\x82

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## Amazon Interview Experience | Set 221

- Last Updated : \n19 Aug, 2015

I gave my round 1 amazon. There were two coding questions.

1) Given an integer n in the input, find its next sparse binary numberA sparse binary number is a number whose binary representation does not contain any consecutive 1s.

For eg.

72 is a sparse binary number, because its binary representation (01001000) does not contain any consecutive 1s.

17 is a sparse binary number, because its binary representation (00010001) does not contain any consecutive 1s.

Similarly,

12 is a non sparse binary number, because its binary representation (00001100) contains consecutive 1s.

43 is a non sparse binary number, because its binary representation (00101011) contains consecutive 1s.

Now, given an integer n in the input, find its next sparse binary number. n itself can be sparse or non sparse.

where  $n \geq 0$  and  $n < 2^{31}$ \nInput 12\nOutput\nExplanation\n12 is 00001100 and next sparse no. to it is 16 (00010000).

\n2) You are given heights of n candles.\nFirst day you lit one candle\nScond day you need to lit two candles\nThird day you need to lit three candles\n.....\n.....\nuntil possible.\nAfter lighting candles the height of candles deduced by 1 each day. You can also extinguish any candle you want but only at the end of day.\nSo you need to tell the maximum number number of days , you can carry on lighting the candles.\nExample : there are three candles of heights {2 , 2 ,2 }\nAnswer : 3\n1. You light first candle on day one. heights -> {1,2,2}

2. You light second and third and extinguish first one . heights ->{1, 1,1}

3. You light all the candles. heights -{0,0,0}

Hope it helps aspirants.

Online mcq, there were around 20 and 13-14 were from [geeksquiz.com](http://geeksquiz.com)

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# Amazon Interview Experience | 220 (On-Campus)

- Difficulty Level :\nHard
- Last Updated :\n16 Apr, 2021

Amazon visits our campus for recruitment. Here I am sharing my experience of the whole process.\xc2\xab

## Round 1:\xc2\xab

First there was an online round on hackerrank and consisted of 20 mcqs and two coding questions.\xc2\xab

mcqs were mainly from c/c++ input/output DS, OS .Here are those two coding questions:\xc2\xab  
\xc2\xab\xc2\xab

Ques1: An array containing heights of building was given. Its a rainy season. Calculate the amount of water collected between all the buildings.\xc2\xab

Input: 1 5 3 7 4 2\xc2\xab

Output: 2\xc2\xab

Ques2: Two strings are given check if anagram of one string is contained in other string.\xc2\xab  
\xc2\xab\xc2\xab

## Round 2(F2F 1):\xc2\xab

Three coding questions were asked, all from geeks.\xc2\xab

Ques1: *In a party of N people, only one person is known to everyone. Such a person\xc2\xabmay\xc2\xabbe present\xc2\xabin the party, if yes, (s)he doesn\xe2\x80\x99t know anyone in the party. \xc2\xabWe can only ask questions like \xe2\x80\x9cdoes A know B?\x2\xab\xc2\xab\xe2\x80\x9c. Find the celebrity.\xc2\xab*

<https://www.geeksforgeeks.org/the-celebrity-problem/>\xc2\xab

Twist: this time celebrity may or may not know some persons in the party. Suggested him O( $n^2$ ) approach. Using stack we can minimize comparisons.\xc2\xab

Ques2: Given an unsorted array that contains even number of occurrences for all numbers except two numbers. Find the two numbers which have odd occurrences in O(n) time complexity and O(1) extra space. Told him that I know its approach already. He asked me for the approach.\xc2\xab

<https://www.geeksforgeeks.org/find-the-two-numbers-with-odd-occurrences-in-an-unsorted-array/>\xc2\xab

Ques3: An array of size n-1 is given contains numbers from 0 to n. Find the two missing numbers in O(n) time and O(1) space. Suggested him method given in :\xc2\xab

<https://www.geeksforgeeks.org/find-the-smallest-positive-number-missing-from-an-unsorted-array/>\xc2\xab

\xc2\x0\xc2\x0

### Round 3(F2F 2):\xc2\x0

He starts with my introduction and some questions on classification as in my machine learning project I have made a classifier.\xc2\x0

Ques 1: Find next Greater element for each element of the given array.\xc2\x0

<https://www.geeksforgeeks.org/next-greater-element/>\xc2\x0

Ques 2: Find if a binary tree is BST or not. Suggested method 3 given in this post.\xc2\x0

<https://www.geeksforgeeks.org/a-program-to-check-if-a-binary-tree-is-bst-or-not/>\xc2\x0

Ques 3: Given a matrix calculate minimum cost path to reach from top-left to bottom-right. Suggested him the dp approach then he asked me if this will work with negative edges or not. I said yes it would work.\xc2\x0

He then twisted the question a bit\xe2\x80\x99now one can move in either of the four direction left,top,right and bottom and can contain negative edges. Suggested him recursive approach having exponential time complexity. Asked me in which case it won\xe2\x80\x99t work. After sometime told him if it contains negative cycle. I think it can easily be done with graphs.\xc2\x0

Ques 4: coins are lined up (eg. 100 200 50 2) Two players playing this game can pick a coin from either of the left or right end. Player with maximum sum will win. Both players are optimally playing the game. You have to tell that whattur(1 or 2) should be chosen in order to win. Like in above example if you play first then can select coin 2(you want to get that 200 coin to win).\xc2\x0

\xc2\x0\xc2\x0

### Round 4(F2F 3):\xc2\x0

He started will \xe2\x80\x99tell me about yourself\xe2\x80\x9d and then he asked me about \xe2\x80\x99Virtualization\xe2\x80\x9d one of my project. A long discussion on the same. Questions like what happens if he wants to have a trace of his previous work and other project related questions.\xc2\x0

Ques 1: Sort a 2GB file line by line. Avoid use of extra space (or use minimum space).\xc2\x0

Suggested him solution with trie but he said it would take space if there are no common prefixes. Then i gave him a solution with hashing(store hash value per line and sort it) but he was not satisfied with time complexity) then finally suggested counting sort. As we can have only 256 different characters at max in any line. Time complexity was O(n\*m) n no of lines and m no of characters per line. Satisfied =D.\xc2\x0

Ques 2: He gave me a small code to debug. Below code is having four bugs.\xc2\x0

Unsigned inti;\xc2\x0

For(i=100,i<=0,\xe2\x80\x99\n\xe2\x80\x9d)\xc2\x0

Printf(\xe2\x80\x99\n\xe2\x80\x9d,%d,i);\xc2\x0

Ques 3: What happens when you hit your college url. Describe all steps. Then he asked some questions on networks like http, tcp, port, switches etc.\xc2\x0

Ques 4: Print all permutations of a string. Asked me for the approach and code it.\xc2\xa0

#### Round 5(F2F 4):\xc2\xa0

Long discussion on my summer internship project. Project was on \xe2\x80\x9cMachine Translation\xe2\x80\x9d (translation of one language document into other language). Mine was converting English to Hindi. Asked me for the approach and discussion on the same.\xc2\xa0

Then he gave me this problem.\xc2\xa0

There are number of clients requesting pages of a service. Find number of pages requested by clients in each 5 minutes. Gave a solution with queue using linked list and map.\xc2\xa0

Then a long discussion on my minor project which was on machine learning. The interviewer was having deep knowledge on machine learning So he asked me a lot on the same. Then he asked me if I have studied it as a subject. I said no. He said \xe2\x80\x9cthat is what I wanted to know\xe2\x80\x9d. He was impressed with my projects.\xc2\xa0

\xc2\xa0\xc2\xa0

Hope this experience would help you to prepare for the company. GFG helped me a lot, a great site with almost all stuff to prepare for the interview. Best of luck J keep coding J\xc2\xa0

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# Amazon Interview Experience | 219 (On-Campus)

- Difficulty Level :\n[Hard](#)
- Last Updated :\n18 Aug, 2015

Amazon came to our college. Here is my interview experience. There were total 5 rounds.

## First Round (1.5 hr)-

It consist of two sections

-> Mcq (20 questions)

-> Two coding questions

1) Given two string Str1 and Str2, Find whether any anagram of Str2 is a sub-string of string Str1 (Case Insensitive) then return True otherwise False.

Test case :if Str1 = Amazon and Str2 = omaz, Output: True

2) Given n non-negative integers representing buildings where the width of each bar is 1, compute how much water it is able to trap after raining

For example,

Given [0,1,0,2,1,0,1,3,2,1,2,1], return 6.

## Round 2(2 hr)

1. Introduce yourself.

2. Short discussion of project on machine learning as interviewer is working on machine learning stuff.

3. A tree is stored in an array such that value stored at index I is parent of node I. Firstly gave an  $n \log(n)$  approach as it came to mind first. He said to code it(coded it), then he insisted to optimize the solution with worst case time complexity  $O(n)$ , then we discuss the DP solution he agreed on the logic and asked to code it (coded it).

3. Find lowest common ancestor in a binary search tree of nodes A and B. He asked if I have seen this problem already I replied in affirmative, so he asked me to code it quickly, I coded it. But he asked what if node A or B or both are not present, I said this code wont work but we can first check if both nodes A and B present then we can use this code, he was convinced n moved to next code.

5. Find max distance between any two nodes of a binary tree with at most a single bent. We discussed a lot over this question then he asked to code my approach which we discussed, while coding I found it was the wrong one, I told him that this approach wont work. At last he said to leave this problem n moved to next.(only questions I couldn't solve)

6. find loop in LL.

7. find frequency of words in a paragraph I suggested at first a hash than trie n he was satisfied with the answer.

8. Again a short discussion on the project.

## Round 3(Design questions) (1.5 hr)

1.) Suggest auto correct if a word is misspelt.

\xc2\xab0\xc2\xab0\xc2\xab0\xc2\xab0\xc2\xab0\xc2\xab0 i) only one character is replaced by wrong character like cht then suggestion can be cat.

\xc2\xab0\xc2\xab0\xc2\xab0\xc2\xab0\xc2\xab0\xc2\xab0 ii) the word written is prefix of other word.

Used trie.

2.) A service is requested by fixed number of customers (limited 5-10 ). If the service fails at time n. Find frequency of requests made by each customer 10 minutes prior to failure of service. I suggested a DS made up of queue and map.

3.)given a set of classes and their dependencies, return if this given set can be BUILD(compiled) with or with out error.

class A:B C

class B:D

class C:E F

class D

class E:A

class F:G

class G:A

return error as classes A,C,E depends on each other.

I said questions same as find loop in a graph he agreed n asked to code.)coded it)

round 4(subject round)(2hrs)

1.)The answer sheets of previous interviews are passed on to next interview as my 3rd interviewer did not had my answer sheet of 2nd interview he asked me about the questions asked to me in the last interview.

2.)consider a service running on a server for a customer c1,but customer c1 times out after s sec for what so ever be the reason so customer again fires the same request ,so server is running duplicate query hence it gets overloaded, resolve this glitch. Some how I managed to give a solution which he said is very similar to the solution he himself implemented to resolve this glitch.

3.)given a tree find sum of all the numbers formed by appending the data of nodes from root to leaf node. In a single traversal of the tree.

Eg:

```
\r\n    1\r\n    /\r\n    \r\n    2\r\n    /\r\n    3\r\nReturn 12+13=25
```

I solved it using a reference variable to store final solution and an variable passed as value to store up to current node\*10,thus add data of current node to this variable to get number formed till this node if current node is a leaf then add it to variable passed as reference.

4.)Any idea about scheduling algorithms and there types.

5.)Given a matrix of 0\x80\x99s and 1\x80\x99s,find the maximum size of the square formed by 0\x80\x99s.

1 1 1 1

1 0 0 0

1 0 0 1

0 0 0 0

Return 2.

coded it by flipping all zeros to ones and ones to zeros than ques similar as given on GFG.

6.)what is mutex?

7.)given words of a lexicographical order of an alien language find order of characters in the language.

I said I have seen this problem it is of topological sorting and he proceeded to next question.

8.)multiple producers single consumer problem.

9.) Find all possible interpretations of an array of digits. I proposed a solution I was asked to code it I coded it but he pointed out an error for test case containing zeros like 10,20,2010,so I handled the case of zero.

**Round 5(45 min)**

1.)I was asked to tell about my projects which was not the one I discussed in first round (either they had an discussion about it prior to my interview or coincidence).

2.)I had one project on web crawler so I was asked what changes will you make to this project to scale it.

3.)another project was an android game similar to duck shooting(video game) was asked to tell the difference between the 2.

4.)I was asked to tell how to copy last 10 lines from a file, he kept on asking for other methods (I answered around 10 different ways).

5.)add and subtract two numbers without using + or \xe2\x80\x93 operator.i was asked to code it.i used xor and binary and to solve it, then he asked to prove this method works.

7.)convert 777 to binary.

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# Amazon Interview Experience | 218 (On-Campus)

- Last Updated : \n01 Jul, 2019

Hii, Everyone this is my interview experience with amazon.

## \*\*\*First Round (1:30 hr)-

It consist of two sections

:- Mcq (20 questions)

:- Two coding questions

- 1) [Given two string Str1 and Str2, Find whether any anagram of Str2 is a sub-string of string Str1 \(Case Insensitive\) then return True otherwise False.](#)

Test case :if Str1 = Amazon and Str2 = omaz, Output: True

- 2) [Given n non-negative integers representing buildings where the width of each bar is 1, compute how much water it is able to trap after raining](#)

For example,

Given [0,1,0,2,1,0,1,3,2,1,2,1], return 6.

I solved 19 mcq and both coding questions.

## \*\*\*Second Round (F2F):(1:30hr)

1) [Find LCA in BST.](#)

2) [Find LCA in Binary Tree.](#)

3) [Given a binary tree where each node contains three pointers left,right,succ, where succ pointer is pointing to any of its successor node , the question is if any of succ pointer is pointing to its predecessor node then make that pointer NULL.](#)

4) Given an array that represents the runs scored by a batsman and we have given the total score ,now we have to find out in how many ways can batsman score the run.

Ex \xe2\x80\x93 arr = {2,3,1} total run = 4

2+1+1 = 4, 3+1 = 4, 2+2 = 4, 1+3 = 4, 2+1+1 = 4 and many more.

First I have given the recursive solution than interview asked me dp solution, I told him DP approach he was satisfied.

5) [Find Loop in a linked list and remove it.](#)

6) You have 100 songs to play in a shuffling mode how will you play.

Interview want full working code for each question for last question he wanted only approach.

## \*\*\*Third Round (F2F):(1 hr)

1) Given a source string and a destination string and a dictionary consisting of various words write a program to find minimum length path to travel from source to destination. Rules for traversing:

1. You can only change one character at a time
2. Any resulting word has to be a valid word from dictionary

Example: Given source word CAT and destination word DOG , one of the valid sequence would be

CAT -> COT -> DOT -> DOG

Another valid sequence can be

CAT -> COT \xe2\x80\x93 COG -> DOG

One character can change at one time and every resulting word has to be a valid word from dictionary

I told him an approach using graph.

2) What is hashing.

3) What is modular hashing.

4) How collisions can be handled.

5) Is semaphore guarantee deadlock prevention.

### \*\*\* Fourth Round (F2F) : (2 hr)

1) [A kind of celebrity problem you have n person where one of them is celebrity](#)

condition are all non-celeb person knows celebrity and celebrity can know few other persons and all non-celeb persons can know few of them among each other so you have to find celebrity.

2) [Given a binary tree and two nodes print the path between the two nodes of binary tree.](#)

3) [Find Height of Binary Tree represented by Parent array](#)

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# Amazon Interview Experience | 217 (On-Campus)

- Difficulty Level :\n[Hard](#)
- Last Updated :\n01 Jul, 2019

Hi everyone \xe2\x80\x9cFollowing is my experience for the recent recruitment drive of Amazon in our college.

## \*\*\* First Round \*\*\*

:- Aptitude Round: (1:30 hours)

20 MCQs

MCQs on Outputs, Math, Algorithms, DBMS, OS.

:- 2 Coding questions: (onHackerRank)

1) [Given two string Str1 and Str2, Find whether any anagram of Str2 is a sub-string of string Str1](#) (Case Insensitive) then return True otherwise False.

For Ex:if Str1 = Amazon and Str2 = zmao, Output: True

2) [Given n non-negative integers representing an elevation map where the width of each bar is 1, compute how much water it is able to trap after raining](#)

For example,

Given [0,1,0,2,1,0,1,3,2,1,2,1], return 6.

## \*\*\*\* Second Round (F2F) (60 min)\*\*\*\*

1) [Check whether the given binary tree is BST or not](#)

2) [Find the lowest common ancestor of given two nodes pointer](#)

3) [Find Height of Binary Tree represented by Parent array](#)

Input: parent [] = {1 5 5 2 2 -1 3} Output: 4

I did it in O(n<sup>2</sup>) and then interviewer ask to optimize it then I optimize the code but still it is O(n<sup>2</sup>) but the interviewer was satisfied with the solution.

4) [Find the next greater element in array](#)

5) Find orphan node and cycle in linked list. I gave him the logic and Interviewer was satisfied with approach.

TIP: Interviewer should understand your code properly. So write code neat & clean.

## \*\*\*\*\* Third Round (F2F) (70 min approx.)\*\*\*\*\*

1) Again the interviewer ask the same question: Find the [next greater element](#) in array. I told him that I did it previous round then interviewer tell me that it is good u told me about this.

I think I got some loyalty point from this \xf0\x9f\x99\x82

2) Given the mathematical expression. Check for balanced parentheses in an expression with constraint of precedence like

[2\*{3+4}] = True;

{2\*[2+4]} = False;

I give him approach and written full code for this.

3) [How to detect cycle in graph](#) ( I just told my approach using DFS)

#### \*\*\*\* Fourth Round (F2F) (120 minute)\*\*\*\*

1) [Consider a row of n coins of values v<sub>1</sub> . . . v<sub>n</sub>, where n is even. We play a game against an opponent by alternating turns. In each turn, a player selectseither the first or last coin from the row, removes it from the row permanently, and receives the value of the coin.](#)

Determine that the user move first or second so that he will get the maximum possible amount of money

I gave him the recursive approach for this then he ask for optimize code for this then I make DP for this.

2) Consider a 2-D map with a horizontal river passing through its center. There are n cities on the southern bank with x-coordinates a(1) \xe2\x80\x93 a(n) and n citieson the northern bank with x-coordinates b(1) \xe2\x80\x93 b(n). You want to connect as many north-south pairs of cities as possible with bridges such that no two bridgescross. When connecting cities, you can only connect city i on the northern bank to city i on the southern bank.

I have no idea about this question I think 10 minute and told the interviewer that I\xe2\x80\x99m unable to solve this. But the interviewer asked for my approachthen I gave him brute force solution for this and Interviewer asked for the code. Then he told me to optimize the code then I gave recursive approach for butstill complexity is exponential and Interview asked me optimize this and again I think for half an hour &arrive at solution that in DP with extra space. Buthe still wants better solution and gave me five minute more. Then in the five minute one best solution strike in my mind and told to interviewer and he ishappy with effort then he ask to code.

TIP: What I learned from this round is that Push yourself to the edge. Give something different or better than geeks

#### \*\*\*\*\* Fifth Round \*\*\*\*\*

1) Some project discussion in brief and some question on project like what is your role, what difficulties you faced, and future scope.

2) [Find minimum height of tree](#) (I gave him two approach using 1) simple 2) using level order)

3) Some simple Bit-masking problem

4) Given an input file with four billion non-negative integer. Provide an algorithm to generate an integer which is not contained in the file. Assume you have 1 GB of memory available for this task.

Firstly I have no idea then interview is giving me hint and I give my approach using bit vector by mapping all integer from this bit-vector.

#### \*\*\*\*\* Sixth Round \*\*\*\*\*

1) He give me an API function that increment the counter when the client access this. And told that two client simultaneously accessing this API function. Then they get ambiguous value of counter. Why this is happening?

I give him Peterson solution and semaphore solution for the critical section problem.

2) Some more question on OS (thread, Mutexlock, and deadlock)

3) One more DP Ques: [Remove minimum elements from either side such that  \$2 \* \min\$  becomes more than  \$\max\$ .](#)

I gave him geeks solution but he ask that Have u seen this problem before? I said yes then he ask to code the recursive approach for this I write it Correctly. And He was satisfied.

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# Amazon Interview Experience | 216 (On-Campus for Internship)

- Difficulty Level :\nHard
- Last Updated :\n01 Jul, 2019

Amazon came to our campus a week back and this was the procedure followed.

## Round 1 : On line coding (1 hr 30 min)

This round has 20 aptitude+coding +OS mcq questions

2 coding questions

1-Given a linked list retain the first i elements and delete the next j elements.

2-Given an array of number give a permutation of array which when converted to a number is the greatest. eg Input-{2,985,9,3} output {9,985,3,2} as 998523 is the greatest number that can be made.

12 students were selected for the next round.

## Round 2 (Face to Face) (1 hour)

Introduce about yourself, asked my interests and then jumped to questions

First asked me dbms questions . ACID properties, transactions.

Then OOP questions , to explain the concepts of OOP.

Technical question-

Given an array which has id of songs write a song shuffle song. I first gave an hash table approach he asked me to optimize it which I reached eventually.

Given a binary tree , connect all the nodes at the same level with a next pointer.

Given a sorted,pivoted array search for an element

At the end 4 students were selected.

All thanks to geeksforgeeks for helping me with my preparation.

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# Amazon Interview Experience | 215 (On-Campus for Internship)

- Difficulty Level :\n[Medium](#)
- Last Updated :\n01 Jul, 2019

## Online Round(1:30 hrs)

20 MCQs based on OS, C, C++, 3 questions on aptitude & 1 question on DBMS.

Q1. [Write a program to separate even nodes from odd nodes and odd nodes must come after even nodes\(in place\).](#)

Input: 17->15->8->9->2->4->6\r\nOutput: 8->2->4->6->17->15->9

Q2. [Find if the Robot moves in Circular fashion.](#)

After this round 20 students were shortlisted.

Then there were 2 PI rounds

## Round 1:

Q1. [Print a matrix spirally.](#)

Q2. [How to deserialize and serialize a binary tree.](#)

After this round 8 students were selected.

## Round 2:

Q1. [Given a sorted stream of 0\xe2\x80\x99s and 1\xe2\x80\x99s, find the first occurrence of 1.](#)  
Write a full working code.

I firstly did it in O(n). Then he asked me to reduce the complexity.I reduced the complexity to O(log n) by applying binary search.

Then he asked about my project mentioned in my CV. It went on for 20 minutes.

Then he asked me another question.

Q2. What happens when you click a web address and how are web pages retrieved.

Q3. He asked me about memory management in C and C++ and how new allocates memory to objects and he asked me to overload new operator.

Q4. If you are given some functions and whenever you call that function,the timestamp is stored along with function name.

eg: f1 1:20\r\n f2 2:30\r\n f1 3:10

Suggest an appropriate data structure and write a code to make following queries within two given time stamps t1 &t2:

query 1: Return number of all the functions called between t1 & t2.

query 2: Return number of times a particular function is called between t1&t2.

Then he asked me various OS and networking Questions.

Q5. [Given an array of integers,find a subarray having least average.](#)

Q6. Suggest some data structures to maintain relationship between various hierarchies in an organization.

Thanks to geeksforgeeks for helping me out.

Read [Geeksquiz](#) for MCQs & g4g for interview questions.

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# Amazon Interview Experience | 214 (On-Campus)

- Difficulty Level : \n[Basic](#)
- Last Updated : \n30 Jun, 2021

Amazon visited our campus for recruitment. Here is my experience.\xc2\xab0

First there was an online round on hackerrank and consisted of 20 mcqs and two coding questions. Here are those two questions:\xc2\xab0

Ques 1: [Given a singly linked list, write a function to put all the even numbers at the front and odd numbers at the end of ll while maintaining the order of numbers.](#) In place solution was expected.\xc2\xab0

Ques 2: [Given a sequence of moves for a robot, check if the sequence is circular or not. A sequence of moves is circular if first and last positions of robot are same. A move can be either R\(Rotate right\), L\(Rotate left\), G\(Go one unit\).](#)\xc2\xab0

Round 1: There was some discussion on my internship project. Then I was asked the following coding questions:\xc2\xab0

Ques 1: Given an array, find a pair of elements which gives us the maximum sum.\xc2\xab0

Ques 2: Given an array of strings in sorted order, print all the same strings only once on the screen.\xc2\xab0

Ques 3: [Given a binary search tree, find the kth smallest element int it.](#)\xc2\xab0

Round 2:\xc2\xab0

Ques 1: [Given an array, find the maximum length of subarray such that the average of that subarray is the maximum of all subarrays.](#)\xc2\xab0

Ques 2: [Given the data value field of a node, print all the nodes at distance k from that node in a binary tree.](#)\xc2\xab0

Round 3:\xc2\xab0

Ques 1: Write a function which takes input as bank balance and returns a string equivalent of that integer/float.\xc2\xab0

Ques 2: What happens after we type some web address in a browser and hit enter.\xc2\xab0

Round 4:\xc2\xab0

Ques 1: Given an integer and a mapping of Roman numerals [I:1, V:5, X:10,L:50] write a function to convert any integer between 0 to 100 to Roman numerals. All the rules for conversion have to be followed.\xc2\xab0

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# Amazon Interview Experience | Set 213 (Off-Campus for SDE1)

- Difficulty Level :\nMedium
- Last Updated :\n01 Jul, 2019

Hello I have applied for Amazon after completing my 1 yr at job and got a call for a full day interview. Interview happens as in following rounds :

## **Round 1( Technical):**

1.)I was straight away asked to write code for detecting loop in a linkedlist without any formal introduction and all.

After telling my approach he asked me to give a proof of it to which I got shattered but then he gave me a hint and later discussing it we got to the proof but it wasn't a full-valid proof. But later on it I found <http://math.stackexchange.com/questions/412876/proof-of-the-2-pointer-method-for-finding-a-linked-list-loop>

After it he asked me to detect starting point of the loop. Again which is geeksforgeeks. I wrote the full code on a paper and understand him my approach which is very similar to geeksforgeeks one.

2.)He gave me another question from g4g which I haven't read before

Sort one matrix based on another matrix. I gave him one brute force approach, then he asked me to optimise it and then we discussed a bit and finally I came up with O(nlogn) approach.

I was a bit hesitant after 1st round as I've mumbled upon the proof of detecting loop in linkedlist until he gave me some hint. However, I was called after 2-3 long hours of waiting for my 2nd round of interview.

## **Round 2(Technical):**

He was a very senior guy and a very cool and calm personality. He entered the room and said sorry to me for such a long wait and then started with formal introduction as to What you do in your present company and why do you want to leave it at such an early stage.

1.)He asked me to check whether a given tree hold children sum property or not.

As soon as I heard the problem, I told him my approach and coded it on a paper. He then clarified if I haven't crammed it asked me to explain him the recursion and dry run it on different examples. I did that explaining him completely the edge cases and every aspect of that recursion. He was impressed

I think for a while and gave him my approach which he was quite impressed.

Then he started telling about his experience of startups and that of Amazon

2.) He asked me another question :

Given a stock market price for each day in an array. Give the ans as to when you will buy stocks and when you will sell so as to make the maximum profit.

I think for a while and gave him my approach which he was quite impressed.

After that HR asked me to leave and said that you'll be informed about the result and further rounds.I got a call and was asked to come for Hiring manager Round

## **Round 3 (Hiring Manager):**

He is the manager of the team for whose team interviews are going. So he started off with the formal discussion as to what are my technical interests and what did I learn in my previous jobs. Then he starts discussing my CV and asked me to pick any 2 projects at which I'm confident enough.

As I wrote technical paper on the work I did in my last job, so he started discussing over that and asked me different ways of solving that problem and how could I optimize it further. Then he asked me some of the behavioral questions as of why are you leaving when such a good work is there. I told him the concern about salary. It went fine and I thought that I impressed him.

Later on HR told me to wait for another 4 hrs for Sr Manager round.

#### **Round 4 (Sr Manager):**

He is a very senior person in the Amazon. probably their head of some main division. He started off with very behavioural questions as to why leaving so early and why Amazon. It was very hard to convince him as his expressions were not changing at that time. He fired me a series of such questions as to what is the most difficult task I have performed till yet technically. He was hoping for answers specific to work related. What are your weakness and strengths and what are you doing to improve yourself.

Then he jumped to my CV and asked me for each and every single detail written in my CV( so please make your CV as small and as specific to your strong points as you can). He asked my role in different projects I have done and in the technical paper I have written along with others. he even asked my college projects(even the 2nd sem project which I forgot to take off from my CV) to the depth and asked for the specific details( He knew about everything regarding my projects ).

Then after this discussion I thought it would get over, but he has some other plans. He asked me to give a solution to some coding problems:

1. [Check how many Parenthesis are balanced in an array of parenthesis.](#) This was easy but then he asked me to scale it such that your array can't reside it on one memory. To this I said do parallel processing, he gave me freedom of number of clusters on which I can store and compute and then it took some time to me to come up with scaled algorithm. That was quite interesting and energetic enough. All my tiredness went off.

2. [In a string detect the smallest window length with highest number of distinct characters.](#) For eg. A = abcabcdbca, then ans would be 4 as of abcd

Finally I gave him some solution which was incomplete, he asked me to relook at my solution and I found the mistake but didn't asked me to code it.

I would like to thanks G4G to be such organized forum with the help of which, we can get what are the current trends in interviews and also what they expect.

Don't copy the solution from g4g but get the approach as that will help you to solve newer problems ;). In other words train your model rightly, Don't overfit it, else your accuracy will be compromised

Thanks.

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# Amazon Interview Experience | Set 212 (On-Campus)

- Last Updated : \n01 Jul, 2019

## Online Coding Round

Time 1 hour 30 minutes.

1) Given an array of numbers, Rearrange the numbers to make the even and odd numbers alternate. If any one type is in excess, let it come in the end.

2) Given a binary tree, change the value of the node by the sum of the values of its children.

I completed both the programs, first one passed 7 test cases, second one passed all test cases. I was shortlisted for the interviews

## 1st Round F2F (Technical)

Asked what was my favorite project among the ones i have mentioned in my resume. Then he asked to explain Project, and then he asked few questions regarding it.

He asked 2 questions. One was regarding linked lists. I forgot what those questions were.

## 2nd Round F2F (Technical)

stack using 2 queues. I implemented and showed, he was happy.

Given a matrix. Each cell is either marked with a \* or nothing. One cannot go into the cells that are marked by a \*. Given 2 points a and b in the matrix, Find out if point b is reachable from point a.

I gave a solution solution, but i had missed marking the cells visited. He pointed out that it will be an infinite recursion. So i said i will mark it visited. He then told me to code it. I did. He was satisfied with it.

Robot problem. Dynamic programming. I somehow solved it, he then asked for the code. I wrote it. He tried to understand himself, but he wasn't able to. So i made him understand, he was happy and satisfied with it.

## 3rd Round F2F (Technical)

Questions on OOPs concept. Asked what a singleton class is. I answered, then he asked how can it be implemented in C++. I was weak in the C++ language, so he gave hints. I tried but he was not satisfied with my answer.

Then he asked to a question regarding trees. Given a binary tree, you have to connect all the nodes in each level through extra pointers.

I gave an approach using queue. He then asked how to do with constant space. I tried, but i had forgotten the algorithm. He tried giving hints, but i wasn't able to solve.

## 4th Round F2F (HR + Technical)

He started off by asking how was the other interviews. Then he asked the typical 'Tell me about yourself' able to solve.

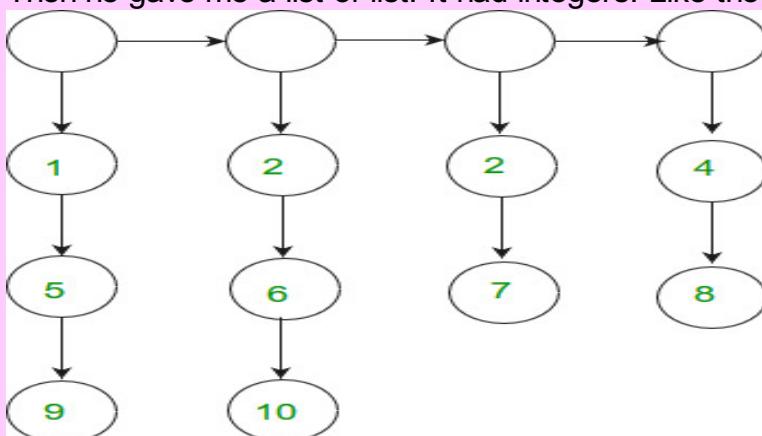
He asked me little about my favorite project. I selected the same one which i explained in the first

interview.

Next he asked, Given just a page of a Dictionary. It can be from anywhere, middle, end or start. The dictionary is for a language that one doesn't know. You have to find out the order of the alphabets, which one comes before and which one comes after. I started with an approach using generic tree. He asked me why can't graph be used. I thought a little and agreed, and started using graph. I explained him the inconsistencies that can occur. Later after few minutes of discussion, he told me, suppose he gives me a graph with letters in place of nodes, and says to find out the order of the alphabets. How would i go about doing it. I mentioned topological sort, but i said i don't remember the algorithm properly. He gave a little hint, that reminded me, and i solved it.

He gave a scenario. Suppose you type `www.amazon.com` and hit Enter. What goes on in the background after that. I gave a detailed explanation with Network layers, routing, CDN, Content Caching. I missed out NAT, so he asked me what it was and how it will be used.

Then he gave me a list of list. It had integers. Like the one shown in picture below (in Attachment).



He told me to print 1, 2, 3, 4. I did it using loops, But he wanted to optimize it, and said that i can modify the list if i wished. So i thought a little and got the idea. He asked me to write the code. I wrote, he saw and said there was a bug, but he had missed something, i explained him, so he was satisfied with the code.

Only 7 people were there till the last round. The interviews were over by 10:40pm. They took 3 hours to come to the final list. They said that we all did very well. At 1:30 night they announced 3 names. I was not selected. All in all it was a good experience, but i was a little sad after the results came out.

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# Amazon Interview Experience | Set 211 (On-Campus for Internship)

- Difficulty Level :[Hard](#)
- Last Updated :[01 Jul, 2019](#)

[Amazon visited our campus for hiring Software Developer interns for Summer 2016. All CS and IT students were eligible.](#)

## Round 1 (Coding + Aptitude):

First round comprised of problems on OS, DS, Basic Aptitude, Algorithms, Time Complexity etc. followed by 2 coding questions on HackerRank platform

1. [Find the nth Magic Number where a Magic Number is either a power of 5 or the sum of unique powers of 5.](#) Eg. 5, 25, 30(25+5), 125, 130(125+5), ...
2. [Given a dictionary find if any possible division of the input string corresponds to strings present in the dictionary.](#) Eg. If "abcabc" and "ab" are present in the dictionary, we need to find if the given input string("abcabc") can be divided such that its components are members of the dictionary.

18 students were shortlisted after this round.

## Round 2(F2F)

Problem 1 [Given a matrix containing 1's and 0's in sorted order\(all 1's should be continuous followed by all 0's\), we need to find the row which has the maximum number of 1's.](#)

Eg. Consider the matrix  
1111000      1000000      1110000      1100000

Your program should return row=1(1 based indexing)

Expected complexity = O(r+c) where r is the number of rows and c is the number of columns.

I started out with O(r\*c), then optimized to O(rlogc) and finally O(r+c).

Problem 2

Given three points in space find if a triangle exists.

Problem 3

[Given four points in space find if a square exists.](#)

Problem 4 Given points in space, how will you determine whether the points given are in clockwise order.

All the problems required full working code for the most optimized approach.

10 students were further shortlisted for the next round.

## Round 3(F2F)

We initially discussed about my project including the future course that I would like to further steer my project in.

Problem 1 [Given a Binary Tree, find if it is a Binary Search Tree](#) with constant space complexity.

Problem 2

[Suppose there are n Petrol Stations in a circle. The difference in distance between two stations P1 and P2 is L1 and so on and so forth. Now, given the fact that for every unit of petrol consumed you can only walk 1 unit distance and you can move further only for positive difference between the reserve petrol and the distance that is to be traversed. Find out if there is a vertex starting from which you can come back to the same point traversing the circle once.](#)

Expected Complexity O(n) I started with O(n^2) and gradually optimized it to O(n)

(Hint: Build a reserve array such that R[i] = P[i] - L[i])

Full working code was required in this case as well.

After this round, 6 students were selected for internship.

## TIPS:

1. Stay calm
2. Remain super confident throughout. That is the key.
3. Have faith in yourself
4. Your implementation skills must be real good.

All thanks to Geeksforgeeks for helping me with my preparation and for being an excellent repository of past Interview

Sets.

\xc2\xd0

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# Amazon Interview Experience | Set 210 (On-Campus)

- Last Updated : \n01 Jul, 2019

I am sharing here my experience in Amazon On Campus Interview. Amazon visited our campus for SDE-1 positions.

## Round 1(Coding + Aptitude)

There were 20 MCQs based on aptitude and technical questions. The quality of questions were good.

Two Coding questions were as follows:

- [Convert a given Tree to sum tree](#) (from geeksforgeeks)
- [Given an unsorted array of positive and negative numbers, create an array of alternate positive and negative numbers without changing the relative order of positive and negative numbers respectively. Suppose the array is\(zero is treated as positive\)](#)

array : 9 4 -2 -1 5 0 -5 -3 2

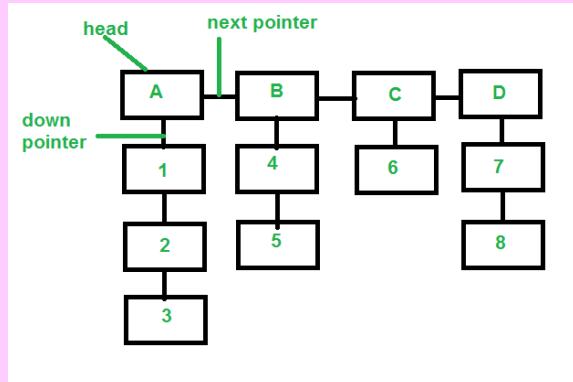
result: 9 -2 4 -1 5 -5 0 -3 2

24 candidates were shortlisted for the Interview round out of around 300 candidates.

## Round 2 (F2F)

Asked questions like, Tell me about yourself, most challenging project, most risk taking step in any project, any project in which you did something extra for your team even though it was not in requirement.

- Given a multilevel linked list with next and down pointer as shown in the image below:



[Give the following output without using any extra space: 1->4->6->7->2->5->8->3](#)

Solution: Make the next pointer of D to point to down pointer of A, followed by making next pointer of 1 to point to down pointer of B. Similarly proceed until the two heads meet.

- [Connect nodes at same level using constant extra space](#) (expected me to write a modular , clean and production level code)

## Round 3(F2F)

- [Given a string and a pattern, Replace all the continuous occurrence of pattern with a single X in the string.](#) With example it will be more clear

String: abababcdefababcdab

Pattern: ab

Result: XcdefXcdX

Initial 3 occurrence of ab is replaced by one X and then two occurrence of pattern is replaced by one X and final one occurrence of pattern is replaced by one X

Coded it incorrectly in first attempt. The interviewer gave me another chance, coded it perfectly.

2. [Print the left](#) and [right side view of the tree](#) in a same function. (wrote a clean code with no mistakes)

## Round 4(F2F)

Asked about my projects, about myself etc etc

1. Given a stream of Twitter data with hashtags generated in time construct a data structure to give top K trending tweets at a time.

I initially suggested max heap based on frequency but was unable to find top K nodes in a max heap. (\*Trouble)

Later, i suggested to maintain a hash table with frequency count as the value and hashtag as key and to implement a k-size Min-Heap to store the top K elements.(She was satisfied but not happy with the time complexity)

2. (\*Trouble) Because of my statement to find top k elements in a max-heap, i was asked to code for finding Top K elements in a max heap with size N where ( $N > K$ ). It seems to be trivial but it isn't. I tried my best and didn't give up, the interviewer was happy with my energy and my never-give up attitude :P.

## Round 5(F2F)

Asked me about a project done as a team and what was my role in it. My most challenging project etc

1. Suppose a chemical Formula is given C<sub>6</sub>H<sub>2</sub>(Cl<sub>3</sub>(OH<sub>2</sub>)<sub>3</sub>)<sub>3</sub>

Print: C-6 H-20 O-9 Cl-9 (Print the number of atoms of each element in a compound)

Solution: Gave a stack based approach where we need to push opening brackets and atoms and multiply the frequency of each atom in stack with the value after closing bracket until we find a opening bracket.

2. OOPs concept: Abstract class, Interface, Singleton class, code for constructor of singleton class.

Tips: Always practice on paper. Never give up in interviews. Pick up hints from interviewer. Be Energetic. Study from geeksforgeeks

\xc2\x9a0

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# Amazon Interview Experience | Set 209 (On-Campus)

- Last Updated : \n 30 Oct, 2019

## Round 1:-

MCQ \xe2\x80\x93 Memory management , angle between hands of clock at a certain time , Inheritance etc

Coding :- There were 2 coding questions

1) [Given 2 Strings , check if any anagram of one string is a substring of the other string](#)

2) Given some friends on Facebook say A, B, C, D. and their friendship as AB and BC  
We need to find out the minimum Hops from a query say:- for A to C the hops should be 2 A to B and B to C , ([Floyd Warshall Algorithm](#))

I solved approximately 17 correct MCQ\xe2\x80\x99s out of 20 and Both the Coding questions.

## Round 2:-

This round was the longest . (1 hour 40 min) approx

first slight discussion on a project . I was discouraged to explain in detail and asked to give high level discussion .

3 questions :-

1) [if we throw light from the left of a tree , what nodes receive light .](#)

2) extended first question and asked boundary traversal of a tree

3) asked to search an element in a sorted and rotated array

## Round 3 :-

(45 min)

2 questions :-

1) Given an array of positive and negative integers we need to find the longest subarray where sum =0

first gave o(n^3) then o(n^2) then finally o(n)time+o(n)space

2) [given an array of size n-1 and given that there are numbers from 1-n with one missing ,the missing number was to be found](#)

## Round 4:-

(1 hour 15 min)

4 questions :-

1) given a number line from -infinity to +infinity what are the mnimum number of hops required to reach a number given the condition at step j I can take j steps forward and j steps backward

2)what datastructure to use to implement best fit algorithm , I gave a skip lists solution which i thought was a strong solution

3)[Traverse a binary tree in zig zag order](#) \xe2\x80\x93 very common question

4) given some values [M] [T] [R/W]

M- memory address

T- time slice

R/W- Read/ write

the number of conflicts were needed to be found out !

I couldn't make it after this round

Why I got into such a predicament was because I was too excited and was asking too many questions and trying to discuss CS concepts which were unrelated to the problem in hand .

**Only 2 tips :-**

1) Geeks for Geeks is a MUST, so is [GeeksQuiz](#)

2) Speak as little as possible the interviewers would not be interested in answering your questions with the time constraint that they have , Short discussions are acceptable but I was trying to ask too many questions and telling them about stuff I knew without them asking .

Thank you Geeks for Geeks for making answering amazon questions easy !!

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# Amazon Interview Experience | Set 208 (On-Campus for Internship)

- Difficulty Level :\nMedium
- Last Updated :\n01 Jul, 2019

Amazon visited our campus for hiring Software Developer interns for Summer 2016.

Cut-Off : 75%

140 students were shortlisted.

## Round 1 (Coding + Aptitude):

First round mostly comprised of problems on OS, DS, Basic Aptitude, Algorithms etc.

2 coding questions

1. Given a string find the first non repeating character in it
2. Given an array of integers, find count of minimum number of elements to be removed from the array such that the maximum element of the new array is at most twice of the minimum.

39 shortlisted after this round

## Round 2(F2F)

He asked about my favorite subjects and Data Structures that I have implemented. I named few Data Structures including Segment Tree. Then he asked me about segment trees and how to solve some simple problems based on segment trees, He asked only about approach didn't ask me to code. Then he asked me about

### Connect Nodes at Same Level

I told him approach using level order traversal. Then he asked me to connect nodes on same level but this time to their left sibling. After telling my approach he asked me to code and said that he want code free of any errors. After I gave him my code he pointed out that there are some errors in code. He asked me to find and correct them myself.

Then he asked another question:

### Diameter of Binary Tree

After hearing my approach for this question he asked me to print leaves that correspond to diameter.

## Round 3(F2F)

Only one question was asked in this round. She asked me to implement a data structure that can perform 1) Insert (O(1))2) Delete (O(1))3) Count(O(1))4) Get Element(O(1))on integer inputs. Here Get Element returns any element present in DS.

I told her my approaches using array, single linked list with hashing and using two singly linked list and hashing. I couldn't reach exact solution but she was satisfied with my approach.

Solution to this problem was easy using doubly linked list and hashing.

After this round a total of 19 students were selected for internship.

## TIPS:

- Think before you speak
- Be honest during interview

- Stay Calm
- Take hints from interviewers

Finally, I would like to thank Geeksforgeeks for helping me with my preparation ?

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# Amazon Interview Experience | Set 207 (On-Campus for Internship)

- Difficulty Level :\n[Medium](#)
- Last Updated :\n01 Jul, 2019

Cut off: 75%. Around 140 students were short listed.

## Round 1: 90 minutes

It comprised of 20 MCQs on aptitude, operating system, DBMS, data structures and algorithms on Hackerrank.

There were two coding questions

1. [Given a string find the first non repeating character in it](#),  $O(n)$  was good enough.
2. [Given an array of integers, find count of minimum number of elements to be removed from the array such that the maximum element of the new array is at most twice of the minimum](#).  $O(n\log n)$  solution was required.

39 shortlisted after this round

## Round 2 (F2F) 75 minutes

The only question that was asked was

[Find the third largest element in the array](#)

I first gave him a heap solution( $k$ th largest element in the array )

He asked me to write the code for it.

Then he asked me to improve it. And then i gave him  $O(n)$  solution .

He said that i should cover all the edge cases .And left the room alone for 30 minutes. Then he came back and he was satisfied with my solution .And immediately said that wait for the 3rd round

## Round 3 (F2F) 75 minutes

Here the main focus was on Data Structures

1. [Mirror A Binary Tree.](#)
2. [Given Two BinaryTrees , check if they are mirror of each other.](#) (Told me to code it)
3. [Level Order Traversal in spiral form](#)(Told me to code it)
4. [Boundary Traversal in BinaryTree](#)
5. [Merge k sorted arrays.](#)(All approaches).
6. [Diameter of the BinaryTree](#)

Then he asked some question on OOPS(friend function etc.)

Lastly, he asked if I had anything to ask him. I asked about the role of data structures and

algorithms in the company work . He said they are used greatly that's why we judge all of you on the basis of these only.

### Tips:

Be expressive during your interview.

Strong Data Structures And Algorithms

Focus On More Than One Solution Of The Question

Stay calm and confident.

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**Amazon Interview Experience | Set 206 (On-Campus for SDE-1)**

- Difficulty Level : \nHard
  - Last Updated : \n08 Dec, 2021

Hi Everyone recently Amazon visited our campus for SDE-1 and internship and I got an offer for internship as well as SDE-1. Here's my experience.

## **Written Exam(1hr:30mints): \xc2\xa0**

There were 22 questions asked in which 20 were of MCQ\xe2\x80\x99s and 2 coding questions. Most of the MCQ\xe2\x80\x99s came from OS, Algorithm, C-o/p and aptitude (directly from previous year Computer science GATE).\xc2\xaa

First coding question: [Determine the diameter of a tree](#) (Taking input was a bit difficult as we have to take input in array of unknown size, sort it and create BST).

Second coding question: [Given a string of words separated by comma, we have to print pair of words who are anagrams](#) line by line(case-insensitive). If you don't find any such pair then print -1.

## **Interview Rounds:**

## Round 1(1hr:15mints):\xc2\xa0

- Started with Introduction then he jumped into project and discussed about 15 mints.\xc2\xab
  - Given an array print elements according to frequency and if two elements have same frequency then print it in decreasing order \xc2\xab

Gave solution using 2d matrix in  $O(n^2)$ . Then reduced the complexity by using AVL tree in  $O(n \log n)$ . Later coded AVL tree solution on paper.

3. Given a binary tree, [print boundary traversal](#)  
I gave solution by using three traversal(as given in gfg) then he asked me to do it in single traversal. I discussed a lot with him then finally came up with solution by using queue and stack data structure. Later he asked me code it and I coded correctly. He was impressed with my code.

## Round 2(1hr): \xc2\xa0

1. Started with project discussion of around 25 minutes.\xc2\xa0
  2. Given an array of stock prices, find maximum loss in buying and selling stocks. I gave him approach first, then he asked me to code. Coded it.\xc2\xa0
  3. Implement garbage collector in C without using free function.\xc2\xa0
  4. What is virtual inheritance.\xc2\xa0
  5. Explain how the file is stored in memory.\xc2\xa0
  6. Explain UNIX I node Implementation.\xc2\xa0
  7. Difference between process and threads.\xc2\xa0
  8. How threads are executing parallelly and how they share memory.\xc2\xa0
  9. Asked algorithm to schedule kernel level threads(gang scheduling).\xc2\xa0

### **Round 3(1hr:30mints):**\xc2\xa0

1. Started with Introduction\nc2\x00
  2. Detailed project discussion of around 45 minutes.\nc2\x00

3. Given me the Resource allocation graph with set of processes and resources, ask me to tell him the approach to execute all the process.\xc2\x9a

\xc2\x0\xc2\x0\xc2\x0\xc2\x0\xc2\x0\xc2\x0\xc2\x0\xc2\x0 told him to use topological sort suddenly he said very good and ask me to code. I coded it.\xc2\x0

4. Explain the need of synchronization with the help of example.

5. basics of synchronization i.e code for wait and signal operation and how the semaphore maintains their suspended list.\xc2\x9a0

At the end of this round interviewer was very impressed.\xc2\xa0

## Round 4(1hr): \xc2\xd0

1. Given a integer number n, tell its binary representation is palindrome or not.\xc2\xa0

2. He gave me a java code using lock on this keyword. Ask me is there any problem in the code using lock keyword when multiple threads are running concurrently. I found the problem then he ask me to resolve it and I resolved it.\xc2\xab0

3. What is virtual memory. Who implements it.\xc2\xab0

4. How virtual memory concept is implemented in system.\xc2\x9a0

## Tips:\xc2\xa0

1. Interviewer don't expect you to give all correct answer though they want to see your approach first and how you tackle a problem which you don't know apriori.

2. Brush up OS fundamentals thoroughly and try to practice code on paper as much as you can.\xc2\xa0

3. Along with basic data structures also have some idea of advance data structures like BBST, Trie, Graphs etc.\xc2\x9a

4. Think loud in front of interviewer and try to engage him all the time.\xc2\xa0

5. Listen his words carefully, probalbly they will have some hints to answer.\xc2\xab0

I would like to thanks geeksforgeeks team for providing such a great platform. You guys are doing awesome job.\xc2\xab0

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# Amazon Interview Experience | Set 205 (On-Campus for Internship)

- Difficulty Level :\n[Easy](#)
- Last Updated :\n01 Jul, 2019

Cut off: 75%. Around 140 students were short listed.

## Round 1: 90 minutes

It comprised of 20 MCQs on aptitude, operating system, DBMS, data structures and algorithms on Hackerrank.

There were two coding questions

1. [Given a string find the first non repeating character in it](#),  $O(n)$  was good enough.
2. [Given an array of integers, find count of minimum number of elements to be removed from the array such that the maximum element of the new array is at most twice of the minimum](#).  $O(n\log n)$  solution was required.

39 shortlisted after this round

## Round 2 (F2F) 75 minutes

1. [Given a complete BST, find kth minimum element](#). Required time complexity  $O(\log n)$  and  $O(1)$  space complexity. The interviewer was really supporting and kept giving me hints to reach the solution.
2. [Given a 2D array of 0s and 1s. Find largest square submatrix with all 1s](#). Although I made silly mistakes initially, I arrived at efficient solution later.
3. [Find the LCA of two nodes in a binary tree](#).

Around 22 shortlisted after this round

## Round 3 (Tech +HR) 45 minutes

It started with questions like

1. why do you want to join Amazon?
2. what are your areas of interest?
3. plans for higher studies?

He scanned my resume and then proceeded with a brief description of my project and its relevance.

2 coding questions

1. [Maximum sum subarray](#)
2. [Maximum product subarray](#)

covering all corner cases and proper working code

It moved on to detailed discussion on OS: thrashing, threads, processes, mutex semaphores etc. The interviewer was nice and made me comfortable throughout the process.

Lastly, he asked if I had anything to ask him. I asked about the role of interns and latest projects going on in the company.

### Tips:

Be expressive during your interview.

Have a good resume (Aggregate+Projects+Coding skills)

Stay calm and confident

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# Amazon Interview Experience | Set 204 (On-Campus for Internship)

- Difficulty Level :\n[Medium](#)
- Last Updated :\n01 Jul, 2019

Cut off: 75%. Around 140 students were shortlisted.

## Round 1 (Written Test) 90 minutes

It comprised of aptitude, operating system, complexity, hashing ,graph, and complexity related questions (20 questions).

There were two coding questions

1. [Given a string find the first non-repeating character in it](#)
2. [Given an array of integers delete the minimum number of elements such that the minimum of the arrays is at least twice of the maximum.](#) (need to return the count).

## Round 2

The round began with my brief introduction and then there was a question on arrays.

I was given an array with all elements greater than or equal to zero

I was asked to [return the maximum product of two numbers possible](#)

It was quite easy as we can find the maximum and the second maximum and their product will be the answer but the interviewer wants me two to reduce the number of comparisons. Initially I did it in  $O(n)$  and with  $2*n$  comparisons and finally came to a solution with  $3n/2$  comparisons by considering the numbers in pairs. The interviewer was satisfied with my solution and I was asked to write a production level code for the same.

example Test case

5 9 3 7

answer 9\*7

Now she added one more constraint to it we are not allowed to change the structure of array and we need to find the pair such that they are in increasing order

example

1 9 7 8

answer 7 \* 8

Initially, I did it in  $O(n^2)$  i.e. for each element  $i$ , I found the maximum to its right and then compare the maximum with the  $i$ th element then it can be the possible pair and can contribute to the result

I came up with and  $(n \log n)$  solution using a segment tree and sparse table (Range maximum query) (Interviewer was impressed).

Finally, I created a max stack from the right side and did it in  $O(n)$  with  $O(n)$  space but still, she wanted me to reduce the space to  $O(1)$

It was already 1 hr and she gave me a hint that move from the right side and bingo I was able to answer her in just 5 minutes.

She was completely satisfied with my solution.

Then there was a small discussion on my projects.

## Round 2

The round again began with my brief introduction and then he asked me about my favorite subject.

He asked me to explain any data structure. I explained him Tries and segment trees. I even told him about how tries can be used. I told him about autocomplete features available, forward DNS and how they work (He was impressed)

Now he was asking questions from the application point of view

He asked me about heaps and its uses and to comment upon it

I explained him heaps priority queues and complexity of its operations and about Fibonacci heaps.

Application for merging k sorted arrays.

He asked me to illustrate some application of circular linked list and double linked list.

I told him that double linked list can be used for LRU cache and using hashmap it can be done in O(1) expected complexity per operation.

I was asked to code it.

For the circular linked list I told him that it can be used for implementing a circular queue efficiently since we need to maintain only one pointer ie. the rear for it.

Application BFS.

He then asked me to code and dry run a circular buffer and optimize it and compare it with a standard cyclic queue.

I used a counter variable for this purpose to use the buffer completely and told him that the drawbacks can be when multiple processes try to access this shared variable then there may be inconsistency hence traditional one was better.

Then he asked for critical section, locks, semaphore, and mutex.

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# Amazon Interview Experience | Set 203 (On-Campus for SDE-1)

- Difficulty Level :\n[Expert](#)
- Last Updated :\n01 Jul, 2019

Hi everyone. Following is my experience of the recent Amazon recruit drive:

## Aptitude Round: (1:30 hours)

20 MCQs

MCQs on outputs, maths, algorithms, DBMS, OS.

2 Coding questions: ( on hackerRank)

- [Given 2 strings, check if any one of them has any anagram of the other string, as a substring of it.](#)
- Graph question : ( not mentioned directly as graph, but was implied). basically Needed to find the shortest path between two given vertices in the graph.

Tip: It is important that one should attempt both sections decently.

## Interviews:

### Round 1:

- On a number line from negative infinite to positive infinite, if you start from 0, you can either jump back or front. but every jump length is 1 more than the previous jump. Given a number on the number line, can we reach it using any combination of jumps. If yes, print the minimum length path.
- [Boolean Matrix Problem](#)
- [Row with max 1s](#)

### Round 2:

- You have n slabs with two dimensions. Stack them to get max height. No rotation of dimensions required. First he started with 2 dimensions, then 3, 4 and then for n dimensions.
- Given a binary tree, a target node in the binary tree, and an integer value k, delete all the nodes that are at distance k from the given target node. No parent pointers are available.

### Round 3:

- <https://www.geeksforgeeks.org/sort-array-according-order-defined-another-array/>
- An array of 0s and 1s is given. A sequence is given as  $f(1)=1, f(2)=2, f(n)=f(n-1)^2 \times 2$ . Print 0s and 1s alternatively according to the given sequence.

### Round 4:

- Implement the power function in log n complexity.
- [Intersection of two arrays](#)
- Given a stream of As and Bs, print 1 when no of As is odd and no of Bs is even. I just had to draw the DFA for it.
- An SQL query.

## Round 5:

- [Given an array and a window k, print the minimum in every window of k. After suggesting a few data structures like deque, heap, bst, he told me to code it using bst.](#)
- A file system is given. All the subdirectories in the root directory, the subdirectories within subdirectories and so on is given. The input is some file or subdirectory paths for which we need permission. Find the minimum permissions required to get all the permissions. No file for which permission is not asked should be given permission to.

### Tip:

- The interviewers are really very helpful and they keep on giving hints if you are stuck. Just let them continuously know your thought process. It is not necessary that you speak continuously but let them know what you think in intervals.
- They might ask you to think of better complexities and different data structures to solve the same problem. But its not that if you straight away land up in an optimized solution its bad for you because I was asked sometimes to compromise on the complexity but think of other data structures to solve it.
- While coding take your time. Make sure you cover the corner cases and if it is taking long, let your interviewer know what you are doing currently. Test it before finally approving it. If it fails, don't worry, tell your interviewer about it and think of a fix or an alternative

**Finally, a big big thanks to GeeksForGeeks for being a wonderful resource.**

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# Amazon Interview Experience | Set 202

- Last Updated : \n01 Jul, 2019

I had an interview with Amazon recently below are the questions asked.

## Qualification round

1) Rotate/Shift the elements of a square array clockwise by one at a time. (Not by 90 degrees, but by one element. Think of concentric circles)

Example:

1 2  
3 4

Output:

3 1  
4 2

2) Write a function that determines whether a two dimensional array contains duplicate values within k indices of each other

The first line of input will be a number indicating how many rows are in the matrix. This will be followed by lines of input one for each row of the matrix each row will contain the same number of columns with each column separated by a space. Following the matrix will be a single line of input containing a number indicating the k value.

Output should be \xe2\x80\x98YES\xe2\x80\x99 or \xe2\x80\x98NO\xe2\x80\x99

example:

4  
1 2 3 4  
5 6 7 8  
9 10 11 12  
13 14 15 16  
3

Output: No

## F2F Interview

5 rounds in total.

Each round was for 45 mins.

1st F2F

Tell me about yourself

Given three sorted arrays, how will you sort all the three arrays into one array, shortest time expected

2nd F2F

Design architecture that should handle millions of hits at given time, the response time of the system should be the least. \xe2\x80\x93 ( Hash Map for data storage is something i came up with and that was accepted. Couldnt come up with a solution for the entire problem.)

3rd F2F:

About project experience and how i handled it. Amazon leadership skills were mostly expected.

4th F2F:

[Sum all the values of the nodes of a Binary tree that fall on the same column and print them.](#)

The solution is to treat root as the center and any node that moves away from it (left/ right )one at a step is treated as under same column

5th F2F:

Print the values of a binary tree that occurs on the same level.

\xe2\x80\x93[Level order traversing.](#)

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# Amazon Interview Experience | Set 201 (On-Campus for SDE-1)

- Difficulty Level :\nEasy
- Last Updated :\n28 Jun, 2019

## Aptitude Round: (1:30 hours)

20 MCQs

MCQs on processes, maths aptitude, \xc2\xa0and algorithms etc . Few output questions on pointers.

2 Coding questions: ( \xc2\xa0on hackerRank)

- Given 2 strings, check if any one of them has any anagram of the other string, as a substring of it.
- Graph question : ( not mentioned directly as graph, but was implied). basically Needed to find the shortest path between two given vertices in the graph.

## Interview:

### Round 1:

- BST to Doubly Linked List ( Geeks question){code it}
- for Doubly Linked List to BST conversion,\xc2\xa0give an algorithm and prove\xc2\xa0its complexity using\xc2\xa0recurrence\xc2\xa0relations. \xc2\xa0=> O(nlogn)
- On a number line from negative infinite to positive infinite, if you start from 0, you can either jump back or front. but every jump length is 1 more than the previous jump. Given a number on the number line, can we reach it using any combination of jumps. If yes, print the minimum length path. Hint:\xc2\xa0Solved using Queue storing all possibilities, something similar to BFS. and BFS search wud always give shortest path.

### Round 2:

- Given an array of Integers, find the Maximum length subarray with sum equal to zero.\xc2\xa0 Solved by constructing Prefix sum array for the given array. In prefix sum array, any number repeating more than once, implies subarray between those indices is 0, so store length of this subarray, check for other repeated values too. ( careful coding required to eliminate bugs) Additionally had used a HashMap(java) to do this solution time efficiently. {code it}
- Return largest BST from a BT ( geeks question)\xc2\xa0{code it}

### Round 3:

- Tell me About your Internship project. ( It dealt with Performance bench-marking for embedded Systems ( SoC) with respect to latency and bandwidth \xc2\xa0done at \xc2\xa0Samsung R&D Bangalore).
- Given a 2-D matrix of zeroes and ones, any row/column containing a single 1 is made completely 1. ( available on geeks) I told him I know the space and time\xc2\xa0optimized\xc2\xa0solution to it ( as provided by geeks). Asked me to code it\xe2\x80\x99 had some bugs, took some time to debug a particular corner case.{code it}\xc2\xa0
- He Modified above question, providing conditions -> if there are no\xc2\xa0limitations on the\xc2\xa0space used, and if\xc2\xa0accessing each cell has a cost attached to it, how would you do the same problem in least cost.\xc2\xa0

- Given a tree with three pointers in every node, left, right and next, connect all the nodes at the same level in a spiral fashion. eg root\|x80\|x99s next points to right child which in turn points to roots left child which in turn points to level 2\|x80\|x99s 1st left child \|x80\|xa6 and so on\|x80\|xa6 any node could have 0,1 or 2 children.( geeks)

#### Round 4:

- Given the function : int func( int n) { if(n==1) return 1; return n\* func(n-1)\*func(n-2) +\|xa0func(n-1)\*func(n-2) + func(n-1); } \|xa0// What is its space complexity.
- Given a\|xa0\|xa0\|xc2\|xa0in-coming stream of numbers ( either 0, 1 or 2), Design a Finite state machine\|xa0which tells me if the number formed by the input stream so far, is divisible by 3. \|xa0eg stream state is \|x80\|x9c012\|xe2\|x80\|x9d return true, coz 12 is divisible by 3.. for \|x80\|x9c0111\|xe2\|x80\|x9d return false\|x80\|xa6 \|xa0\|xc2\|xa0{ Design the FSM }
- Proposition logic question with 5 statements given, determine their truth.\|xa0( Solved using common sense, but wanted me to prove it mathematically )
- Given an int represented in Big Endian form, convert into Little Endian, where the number of bytes taken up by int is not provided.\|xa0 Ex: if int is of 4 bytes and input integer n= A B C D , => o/p = D C B A => n2 \|x80\|xa6 where the alphabets represent a byte. return n2.\|xa0 Involved Bit manipulation. { Code it}
- The one thing you regret from the past 3 years in college.

#### Round 5:

- Introduce yourself.
- Given an n-ary tree, traverse it in level order, printing a particular element in each level( that particular number is returned by function \|x80\|x9cfunc1(int level)\|x80\|x9d. Gave an O(N) time and O(N) space complex solution, followed by\|xa0an O(N) time and O(1) space complex solution. {code it}
- Advantages/Disadvantages of a static variable inside a class in java.
- Performance implications of the static variable inside a function in C.

**Selected as a full time employee.\|xa0**

#### Tips:

- Have a loud thinking, the interviewer helps you if you get struck. Ask ALOT of questions. At least he will know what you are thinking or where you are going wrong at.
- Write neat code,\|x80\|x9dtake your time\|xa0\|xe2\|x80\|xa6..as much as you like\|x80\|x9d.
- Make sure the interviewer has approved the algorithm before you start coding. Discuss full algorithm before you code. He may ask you to think in a more optimized manner.
- Study \|x80\|x9c[geeksforgeeks.org](http://geeksforgeeks.org)\|x80\|x9d well, especially the tree sections, and dont mug up the code, its no use, you will not remember when needed, instead, understand why every minute detail of the code. This will take u further.
- Study basics of every computer related subject taught in class. No need to be experts, but having an idea helps.
- Mostly it is about data structures and algorithms. Make sure you are comfortable with them.
- Side note: Help others and just do good. Neither hard work nor luck pays. Its all about your destiny. Dont get worked up about these things. Life has more purpose.
- \|xa0\|xe2\|x80\|x9cKarmaane vadhi karaste ma faleshu kadhachanam..\|x80\|x9d \|x80\|x93 Gita

**above line means \|x80\|x9cKeep doing good deeds, dont expect rewards..\|x80\|x9d\|xa0**

\xe2\x80\x9cNasrum Minallaahi Wa Fathun Qareeb\xe2\x80\x9d \xc2\xa0\xe2\x80\x93 The Holy Qura\x80\x99an

Above line means, \xe2\x80\x9cWhen comes the help of Allah, Victory is near\xe2\x80\x9d

**Best of luck \xc2\xxa0\xf0\x9f\x99\x82 \xc2\xxa0**

**Thank You geeksforgeeks teams.. Thanx a ton \xf0\x9f\x99\x82 \xc2\xxa0**

**And thanx to my parents, and friends who helped me alot.**

\xc2\xxa0

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\xc2\xxa0

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# Amazon Interview Experience | Set 200

- Difficulty Level : \n [Medium](#)
- Last Updated : \n 28 Jun, 2019

## Aptitude Round: (1:30 hours)

19 MCQs

Easy MCQs on trees, semaphores, deadlocks and algorithms. Few output questions on pointers.

2 Coding questions:

- [Check if two strings are anagram.](#)
- There are n employees in a company, each having some ratings. The employees are given a hike in their salary based on their ratings, i.e employee with higher rating will get the higher raise. An employee can only know the hike and rating of two of his neighbors, one on the left and other on the right. Given an array of size n, specifying the ratings of n employees, find the minimum hike that should be raised for each employee, such that no employee feels unfair.

Example: 1 3 5 4 (ratings for 4 employees)

Output:  $1+2+3+2 = 7$

Example: 5 3 4 2 1 6

Output:  $2+1+3+2+1+2 = 11$ .

The hikes are positive integers only. The ratings are greater than zero.

Size of input array: 1-1000000

## Interview:

### Round 1:

- [Given a no, find next no greater than n and having same digits.](#) I was supposed to write a working code for this on paper.
- [There is a robot that is initially at origin. A robot have three operations, he can either turn left or turn right, or he can move one unit ahead in the direction he is facing.](#)

Given a string containing L (turn left), R (turn right), G (move one unit ahead).Find if the robot again reaches the point he has been before (find a loop).

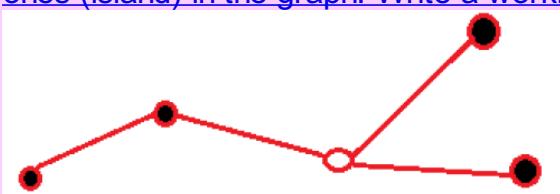
Example: LGRGRGG

Initial co-ordinate is (0, 0), it turns left and moves one unit, updated coordinates (-1,0).

Then turns right and moves one unit, updated coordinates (-1, 1).Then turns right and moves two unit (two \xe2\x80\x9cG\xe2\x80\x9d). Updated coordinates are (1, 1).

### Round 2:

- Given an 2-D array, implement an hash map which when given (key, value), insert and retrieve value in O(1). Also implement one more functionality that gives me all the keys for corresponding value in O(n).
- [Given a graph whose vertex can have only two value, either 0 or 1. Find no of distinct clustered ones \(island\) in the graph. Write a working code for this on paper.](#)



Black nodes \xe2\x80\x9c 1 marked vertices.

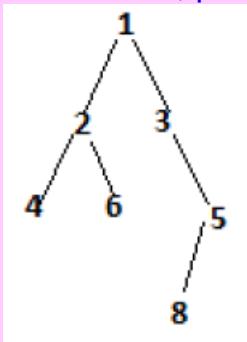
Ans = 2.

### Round 3:

- Reverse a stack using only recursion.
- Create a data structure that maintains a record for all the courses and students enrolled for that course. Each course has course id, and student is uniquely identified by its enrolment no. The data structure should provide following operations:
  - Insert of a new student for a particular course.
  - Deletion of a student for a particular course.
  - Given a (courseid, enrolment no), search if this pair exists or not.
  - At any time you should be able to give the last enrolled student for a particular course.

All of the above operations should be executed in O(1).

- [Given a tree, print left most and right most node of each level.](#)



Output: 1 2 3 4 5 8

- Given a table that has amount has its column and an integer n, write a query that give nth largest amount value in the table.
- What are the differences between child processes and threads? Explain virtual memory, paging concept, page replacement algorithms. Design a data structure for working set algorithm.

### Round 4:

- Questions on my internship and projects.
- Then the interviewer started asking questions on computer networks about framing and all. After asking 3-4 questions on CN, he then switched back to DS.
- [Given a binary tree, find whether it is Binary search tree or not,](#) without using any external dynamic memory for array. Write code for this.
- And then at last the aura got filled with all the never heard questions on OS and Computer Organization.

### Important tips:

- Have a loud thinking, the interviewer helps you if you get struck.
- Don't do silly mistakes while writing code, take your time but have a neat, optimized code.

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## Amazon Interview Experience | Set 199 (On-Campus for Internship)

- Difficulty Level :[Hard](#)
- Last Updated :[28 Jun, 2019](#)

Recently, Amazon visited our campus. Here is my Interview Experience:

Online Round: (Duration : 80 minutes)

20 MCQs and 2 coding questions. MCQs were on Algorithms, Time Complexity, Quantitative Aptitude, Probability, Operating Systems, Graphs, Data Structures, Recursion outputs etc.

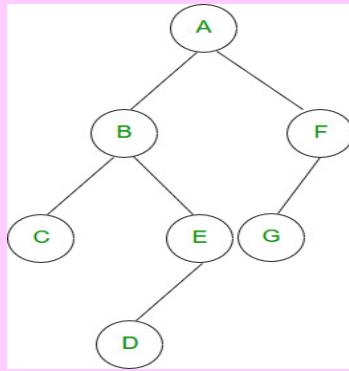
Coding Questions:

1. In one of Amazon fulfilment centres, there are a no. of empty boxes kept in increasing order in a row. Kiva robots are designed to put a product in a box. The product size is given. Design a program to find the best fit box for given product size. First line contains no. of empty boxes and next line contains size of boxes with space. The next line contains size of given product. The output shows the best fit box size and -1 otherwise.

```
\r\nFor example, Input: 6\r\n                           2 7 9 11 13 16\r\n                           12\r\n                           Output: 1
```

2. [Given a binary tree, find the longest path in the tree. If there are two longest paths print the lexicographically first path.](#)

EXAMPLE:



OUTPUT: D E B A F G

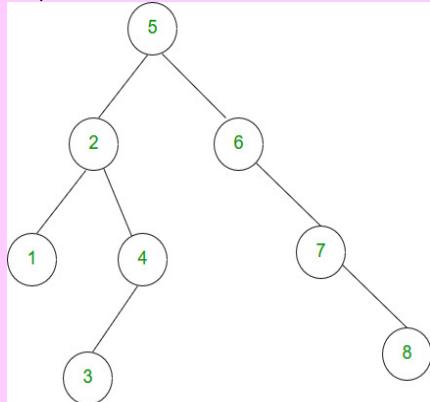
### ROUND 2: (DS CODING ROUND)

1. [Given a BST and 2 nodes in the BST, find the length of the path between the two given nodes.](#)

Example:

Input: the below tree and node 3 & 7

Output: 5



### ROUND 3: (F2F)

1. Given an array where the elements are in absolute difference 1, write an algorithm to search for an element in the array and return the position of the element. (return the first occurrence).

```
\r\nExample:\r\nInput:  8 7 6 7 6 5 4 3 2 3 4 3      search element: 3\r\nOutput: 7
```

2. [Given a linked list, check if it is a palindrome or not.](#)

```
\r\nExample:\r\nInput: madam      Output: true
```

3. It was a scenario question based on facebook. I have to find all the mutual friends of my friends and my friends of friends of friends. This list returned should be in a sorted order. To perform the above action u are given a getfriend() function which will return the list of friends for that id.

Hint: use hashing

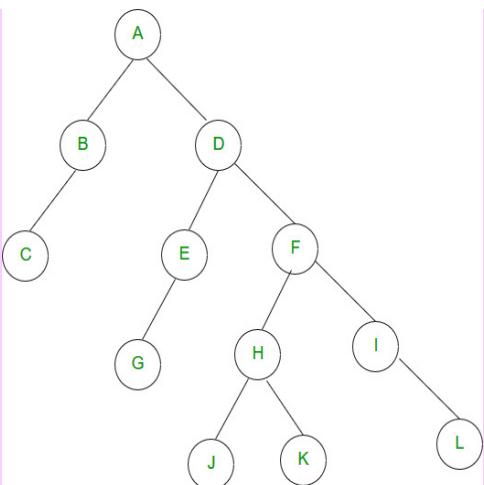
### ROUND 4: (F2F)

1. It is a graph question. A 2D graph with x and y coordinates. Given millions of points in a graph, find the k nearest point to the origin.  
Hint: use heap ( I used a priority queue )

2. [Given a binary tree, a node in the tree and a distance k. Print all the nodes at a distance k from the given node in the tree.](#)

Example:

```
\r\nInput: \r\n        given node  F\r\n\r\nOutput: A E J K L
```



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# Amazon Interview Experience | Set 198 (On-Campus for Internship)

- Difficulty Level : \n[Medium](#)
- Last Updated : \n20 Sep, 2019

Hello friends, Amazon recently visited our campus hiring for SDE. They are usually the first or second company to visit our campus, which gives little time for preparation. so better prepare yourself in summer vacations (read g4g).

I had great fun preparing for the Amazon, and really enjoyed myself through the interview process. The process spanned across two days. The interviewers were really nice and I really felt really comfortable throughout the interview process.

Let me share my experience with you.

## **First round (1 hour 30 mins) (Apti + coding):**

This was the online round, conducted on hackerank.

20 questions were asked from C/C++/Java outputs, OS, DS, Algorithms, etc. and 2 coding questions were asked.

**Q1)** [Given a linked list, check whether it is palindrome or not.](#)

**Q2)** [Given a matrix of NxM, consisting of alphanumeric characters, print the matrix spirally.](#)

After this round around 30 students were selected from 250 students.

## **F2F 1:(1 hour 30 mins) (Technical):**

This round started with some basic questions like \xe2\x80\x98tell me about yourself\xe2\x80\x99 and some questions on my projects.

after that coding questions were asked:

**Q1)** Given a matrix of NxM.

Now consider a submatrix in it having top-left coordinates as (x1,y1) and bottom right coordinates as (x2,y2).

Now many queries are performed in which (x1,y1) & (x2,y2) are entered.

We have to find the sum of elements in this sub-matrix in O(1) time complexity for each query.

Eg:

1 2 3 4

5 6 7 8

9 1 0 2

3 4 1 5

(0,0)-(1,2) : 24

(1,1)-(2,2) : 14

**Q2)** [We are given an alien language, in which we dont know the arrangement of the letters. Now we are given some words of that alien language in dictionary order. using those words we need to find the order the letters of the alien language.](#)

**Q3)** [We are given the preoder traversal of a BST, we need to create the BST using the given traversal.](#)

But we can\xe2\x80\x99t use inorder traversal(i.e. sort the elements and use the array.) and also we need to create the BST in single traversal of the preorder list.

**Q4)** [We need to reverse a Linked List using single pointer.](#) (in other words : recursively)  
He asked me to write the code for reversal.

After this round some students were selected for second round of the interview process.  
Luckily i was among them.

### F2F 2:(1 hour) (Technical):

This round also consisted of coding questions:

**Q1)** Given a tree, [print the tree in Zig-Zag manner.](#)

<https://www.geeksforgeeks.org/level-order-traversal-in-spiral-form/>

**Q2)** [Given a sorted array, we need to find that element whose value is equal to that of its index value.](#)

He asked me to do it in  $\log(N)$  time complexity.

**Q3)** Given a tree, now the given tree is special as in this tree all node has only 1 pointer which points to its parent.

Now, in this tree we are given any 2 nodes, and we need to [find their lowest common ancestor\(LCA\).](#)

Hint: This question is similar to intersection of 2 linked lists.

In the end he asked me if i had any questions to ask.

Thanks to geeksforgeeks \xf0\x9f\x99\x82

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If I ask you at 7th position(after 5), the answer is: 5

Solution:

\r\nMaintain a LinkedList, with the elements in insertion order\r\nmaintain hashMap with input integer as key and value

**Manager Round:**

1. Google crawler question.

Given a set of N documents.

Given k strings: {str\_1, str\_2, \xe2\x80\x9a6, str\_k}

Now return the document numbers, which contains all the k strings.

2. Given an N-ary tree. Mirror the tree.

Give a suitable tree Node structure for this and write code for the same to mirror it.

eg:

\r\nni/p:\r\n\t\t\tt1\r\n\t\tt2\r\n\t\tt3\r\n\t\tt4\r\n\t\tt5\r\n\t\tt6\r\n\t\tt7\r\n\t\tt8

I haven\xe2\x80\x99t done well in last two rounds. So I got rejected. But it was a nice experience altogether.

Thanks to geeksforgeeks for hell lot of questions. It takes at least a life time to prepare all the questions present in geeks for geeks, if we go by one question per day. Thanks.

If you like GeeksforGeeks and would like to contribute, you can also write an article and mail your article to contribute@geeksforgeeks.org. See your article appearing on the GeeksforGeeks main page and help other Geeks.

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# Amazon Interview Experience | 197 (On-Campus for Internship)

- Difficulty Level : \n [Expert](#)
- Last Updated : \n 28 Jun, 2019

Hi folks, Amazon recently visited our campus hiring for SDE. They are usually the first or second company to visit our campus, but this time, they came in much later, which gave me lots of time to prepare (by prepare I mean go through g4g)

I had great fun preparing for the Amazon visit, and really enjoyed myself through the interview process. The process spanned across two days, and was definitely among the most comprehensive interview sets one could ever have. The interviewers were really chill and I really felt really comfortable throughout the interview.

Let me share my experience with you.

## First round (1 hour 30 mins) (Apti + coding)

this was the standard Amazon first round contest.

20 apti questions from C/C++/Java outputs, OS, DS, Algorithms, Time and speed, mixtures, etc.: As long as you are able to solve the coding questions you should be fine.

Q1) [Given a set of time intervals in any order, merge all overlapping intervals into one and output the result which should have only mutually exclusive intervals. Let the intervals be represented as pairs of integers for simplicity.](#)

Q2) [Josephus problem](#) with k = 2

The use of IDEs were disallowed, so be comfortable with coding on the HackerRank editor. The error reports there are a little difficult to comprehend, and so make sure you are comfortable with that.

Quite a few people were selected in 4 categories based on the scores.

## Round2: (1 hour 15 mins) Hand/paper coding round.

1) [Find the largest rectangular area possible in a given histogram where the largest rectangle can be made of a number of contiguous bars. For simplicity, assume that all bars have same width and the width is 1 unit.](#)

They wanted a solution better than  $n^2$

2) [Border traversal of a complete binary tree.](#)

They wanted an efficient code, which traverses the tree only once.

They got the algos from us, and if they were satisfied, asked us to write code on the paper.

A lot of my friends who came up with efficient algos didn't make it through this round, as I believe they didn't get noticed enough

Amazon's hiring policy was to rather miss out a good candidate than hire a bad one, which was evident here. Around 20 people made it through this round (They also considered the previous round score (to an extent) for this round)

This is where the real challenge began.

## **F2F 1: ( 1 hour 30 mins)**

we began with a little bit of chatting introductions etc.

We then directly moved on to the only technical question I was asked this round, which was not particularly an easy one.

[Given a 2D array, find the maximum sum sub-matrix in it, also display it.](#)

Working code was required, which was then tested with a couple of inputs, so there is no getting away.

## **F2F 2(Manager round ~1 hour 45 mins)**

We started with a discussion about my projects. He wanted a detailed description along with all the technical problems faced and solutions used to counter them.

This went on for more than half an hour.

Then he gave me a couple of question on trees, one of them was finding the vertical sum of nodes, given a tree, and working code for the same.

Questions on database management systems, and some other technical questions from my projects.

Then more questions, which I don't remember now.

Then it was my turn to ask him questions. He really liked the questions I asked him.

## **F2F 3: Advanced Data structures and algorithms round. (~1 hour 30 mins)**

This was easily the most enjoyable interviews I have ever had for a variety of reasons.

It started off with a small discussion, and a Tell me about yourself.

1) The first question was, What are trees? I said, When people think of trees, they only conceive of binary trees, but trees can have more than 2 children and so on

So then he tells me that all his questions were going to from whatever hints I give him from my answers to his previous questions.

So the next half an hour was spent on n-ary trees.

[Serialization of n-ary trees.](#)

Serialization of n-ary trees, where n is not known beforehand.

2) Some question, which reduced to [finding the smallest element in a sorted-rotated array.](#)

Code for the same, along with all corner cases. Make sure you write all the corner cases, in your first attempt itself.

3) Examples where trees are used in Real life, and in computers. This was a very lively discussion. He didn't accept Family trees as an answer, claiming that families these days do not follow tree structures any more.

One question lead to another, and some where I said graphs.

4) So next few questions were on graphs.

5) Given three strings A, B and C. Write a function that checks whether C is an interleaving of A and B. C is said to be interleaving A and B, if it contains all characters of A and B and order of all characters in individual strings is preserved.

6) So, after all that, He wanted an ELI5 (explain like how you would to a kid) version for all my projects, and the technology stacks I had used for them.

This meant that whatever answer I gave was too complicated for him, and I had to simplify it, without using synonyms of somehow. Again, super fun.

I gave him a solution for a case where letters aren't repeated.

Then gave a solution by cloning and checking the strings as and when necessary, he wanted a better approach, and gave me quite a bit of time.

I then gave a DP solution, and he was happy with it.

After this, it was my turn to ask him questions. Again, a bunch of questions, to which I got some really great answers.

And finally, we concluded the interview with a nice talk about Snooker, and how the Chennai centre has a new brand new table

### **Final Round (Telephonic) ~2 hours.**

Other than the telephonic conversation, we also used an online collaborator, which let him see what ever code I wrote on my laptop.

We started with a bit of introductions, (turned out that, we were from the same school), and general introductions, Tell me about yourself.

He didn't have a copy of my resume, and he wanted me to make sure that didn't affect anything.

Lots of questions, like Give me an instance where you and your teammate had a disagreement during a project, and how you resolved it.

Give me a place where you showed some leadership quality to resolve conflicts, many other similar questions.

We then moved on to the technical questions.

1) Given a huge array which is stored across 100 computers, with no way to bring them all together, find the median of the above array.

I had already seen the problem with 2 instead of 100, and when I told him the answer immediately, it was evident, and so we moved on to the next question.

2) Given a chess board, and a starting position, and a set number of moves, find the probability that the knight will remain on the board after the moves are done. Handle all the corner cases, like when if during the first move, the knight goes outside the board, that traversal ends there.

I had to code the entire thing, on the collaborator, and by habit I kept pressing ctrl+s, and hence, it kept disconnecting. \*facepalm\*

He was in a real hurry, but he still made sure he answered all the questions I had for him.

But he was not too satisfied my solution, and gave me time to improve and said he\xe2\x80\x99d come back in 5 mins, but he didn\xe2\x80\x99t \xf0\x9f\x99\x81

### General tips:

- 1) Prepare well, and concentrate on DBMS and OS as well.
- 2) Be confident, and be interactive.
- 3) Ask a lot of questions when you are asked to. This is a good time to show them you are interested in the company, and that you think beyond the coding aspects of the company.

Some of my questions were:

- a) What makes Amazon any more customer centric than the other similar e-commerce websites?
- b) How do programmers contribute to how the customer actually feels about the company? because coders do after all only implement what their managers tell them.
- c) Given that this is such a tough interview, how many of such tough questions do you actually see in production?
- 4) Having a good resume\xe2\x80\x99 can help you guide your interviews.

Try to be original with your questions

And, all the best \xf0\x9f\x98\x80

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# Amazon Interview Experience | 196 (On-Campus)

- Last Updated : \n28 Jun, 2019

20 mcqs \xe2\x80\x93 OS, Apti, Puzzles, C, DSA

2 coding \xe2\x80\x93

1. [Merge intervals given in array](#)

2. [Variation of josephus problem with k=2](#)

## Interview Round 1:

A detailed discussion on my summer intern project . Questions testing the knowledge of N/W layer. I was asked to explain all the layers of TCP/IP model using the analogy of post office.

[Program to find whether a BT is BST or not](#). (Handle duplicates as well).

## Interview Round 2

1. Discussion of previous round interview questions.
2. [Merge two BSTs\(examine all cover cases\)](#)
3. [Search in a rotated and sorted array.](#)
4. [Find maximum distance between two leaves in a BT.](#)

## Tips \xe2\x80\x93

Only Hard work and Practice helps. Please be thorough with the OS,DBMS,N/W.

Luck plays its role too on interview day \xf0\x9f\x99\x82

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# Amazon Interview Experience | 195 (On-Campus For SDE-1)

- Difficulty Level : \n [Hard](#)
- Last Updated : \n 28 Jun, 2019

20 mcqs \xe2\x80\x93 OS, Apti, Puzzles, C, DSA

2 coding \xe2\x80\x93

1. [Merge intervals given in array](#)
2. Variation of [Josephus problem](#) with k=2

## Interview round 1

1. [Find Largest Sub-Matrix With All 1s](#) (Not Necessarily Square)
2. [Search element in a sorted rotated array](#) in only one (logn).

Some of my friends were asked \xe2\x80\x93

1. [Merge 2 BSTs](#)
2. [Diameter of Binary Tree](#)
3. [first positive element not in array](#)(unsorted)
4. [check binary tree is BST](#)
5. search an element in a very large array, you don\xt know its size
6. [Decreasing sorted array given , make a balanced BST.](#)
7. [Generate all permutations of string.](#)
8. 2 unsorted arrays given, find if there BSTs will be same.
9. [Find a triplet a, b, c such that a^2 = b^2 + c^2.](#)
10. Convert a [BST into a DLL](#) and DLL to BST in place.

## Interview Round 2

1. [Delete half nodes from binary tree](#)
2. [kth largest element in large array](#)
3. All strings possible from a no. for example 26, Ans \xe2\x80\x93  
\xe2\x80\x9cB\xe2\x80\x9d,\xe2\x80\x9cD\xe2\x80\x9d,\xe2\x80\x9cZ\xe2\x80\x9d,\xe2\x80\x9cBF\xe2\x80\x9d
4. [Implement a stack with push\(\), pop\(\) and min\(\) in O\(1\) time, using Class concept.](#)

## Tips \xe2\x80\x93

Only Hardwork and practice helps. And of course your luck on interview day \xf0\x9f\x99\x82

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>> Please check their Technical Requirement, and revise your concepts of OS(How Process works, Process Life Cycle, RAM, Virtual Memory, DeadLocks etc.), UNIX(Revise Basic Commands like \xe2\x80\x98grep\xe2\x80\x99 etc.).

>> Practice basic Problems like, Searching, Sorting, Fibonacci, Factorial, Recursion, Stack, Queue, Linked List and their Application.

Hope it helps for the new Applicants!

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# Amazon Interview Experience | 193 (For SDE-1)

- Difficulty Level :  
[Medium](#)
- Last Updated :  
03 Jun, 2021

I had interview with amazon.com for SDE1 position.

## 1st Round ([Written Round](#))

25 Multiple choice questions(Networking, OS, DBMS, C concepts)  
2 coding questions were also asked, for which paper code was required.

### 2nd round

1. [Placing N chess queens on an NxN chessboard so that no two queens attack each other.](#)  
[For example, following is a solution for 4 Queen problem.](#)

I had a long discussion on this question finally he was satisfied with my solution.

2. [Write a program to find the sum of maximum sum subsequence of the given array such that the integers in the subsequence are sorted in increasing order.](#)
3. [Given a Binary Tree, check if all leaves are at same level or not.](#)

### 3rd round

[Given a sorted array arr\[\] and a number x, write a function that counts the occurrences of x in arr\[\].](#)  
[Expected time complexity is O\(Logn\)](#)

[Find k largest elements in an array.](#) Elements in array can be in any order.

### 4th round(Hiring manager)

1. Questions around current job, challenges faced. Any instance of conflict and how you resolved it.
2. A lot of discussion on projects and work experience.
3. A large file is given you have to find all the anagrams. Told him to divide the file in chunks for parallel processing and then check anagrams using heap.

### 5th round(Bar Raiser)

1. Why you are leaving your current company so early?
2. An integer is given to you, first convert it into binary then reverse this binary string and print decimal corresponding to this reversed string.
3. He asked one question related to REALLOC function.

In every round, after each question, complexity of the algorithm was asked. Its good to ask questions to get more clarification about the question.

I want to thank the entire team of geeksforgeeks. It is a great portal and it helped me a lot in preparing for Amazon interview.

**Tips:** Discuss various approaches with interviewer. Try to interact continuously with interviewer. they were very friendly during interview.

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# Amazon Interview Experience | 192

- Last Updated : \n28 Jun, 2019

## 1st Round \xe2\x80\x93

1. [Write code to create a copy of linked list with random pointer.](#)
2. [Print left side view of a binary tree.](#)

## 2nd round \xe2\x80\x93

1. There is a stream of integers incoming. You are only concerned about finding whether a number exists in a window of k numbers. Write code to find the number with minimum number of comparisons.
2. [Imagine you have four operations. \xe2\x80\x98K\xe2\x80\x99 \(types k on screen\), \xe2\x80\x98select all\xe2\x80\x99, \xe2\x80\x98copy\xe2\x80\x99, \xe2\x80\x98paste\xe2\x80\x99. Find out maximum number of K\xe2\x80\x99s possible for given number of keystrokes.](#)

## 3rd round (Hiring Manager)-

1. Current position and work. Any challenges faced.
2. Why do you want to move and join Amazon ?
3. Suppose there is new UI feature given to you by Product Manager but you dont like it. If he insists that you implement it anyway, how will you handle this situation ?
4. [An array of numbers is give. Write algorithm to divide this array in two subarrays such that difference of sum between these subarrays is minimum.](#)

## 4th round (Senior manager) \xe2\x80\x93

1. Questions around current job, challenges faced. Any instance of conflict and how you resolved it.
2. [Find out whether a tree is a balanced tree or not.](#)
3. [Given an array of strings, sort it so that all anagrams come together.](#)

## 5th round ( team member )-

1. [Find out whether a tree is BST.](#)
2. [Print all permutations of given string.](#)

## 6th round-

1. [Rotate a 2D array by 90 degrees.](#)
2. [Print tree nodes in a level order. Each level on a newline.](#)

Result- HR said that you will offered a job. But a week later I got rejected. I found their process highly arbitrary.

Practice code on paper and get to know on what criteria you are getting selected.

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Amazon Interview Experience | 191

- Difficulty Level : Hard
  - Last Updated : 28 Jun, 2019

## 1st round (data structures and algorithm)

- 1) Ladder of n steps is given. Find the number number of ways to reach the end point. I can take either 1 step or two steps at a time.  
2) Find the k largest number in running stream of words.  
couldn't write the running program for the second question.

## 2nd round (problem solving)

- 1) Every path from root to leaf add to a certain number, delete all the nodes which do not satisfy this condition.
  - 2) Hash problem. To implement put(key,value) and get(key) in  $\log(n)$  time.

\|x2\|x0\|x2\|x0\|x2\|x0 Suppose there are key and value pairs like  
\|x2\|x0\|x2\|x0\|x2\|x0 (1001, 233) (2001, 3340) (8776, 9)  
you have to perform get and put operations using function

```
\r\n hash(key) \r\n {\r\n     return key%1000;\r\n }
```

and your own hash operations. Did it using hashmap with pointer to an avl tree.

\r\n divided the key with 1000.\r\n suppose  $1001 \% 1000 = 1$ ;\r\n put 233 in 1st AVL tree, AVL tree will have structure li

`\xc2\xa0\xc2\xa0\xc2\xc2\xa0` AVL will be constructed on the basis of index. index will be 1001/1000;

\xc2\xa0\xc2\xa0\xc2\xa0 ie. if I have to put(3004,996)

\xc2\xa0\xc2\x0a\xc2\x0a\xc2\x0a 3004%1000 = 4;

$\text{xc2}[\text{xa0}]\text{xc2}[\text{xa0}]\text{xc2}[\text{xa0}]$  then go to 4th AVL tree using hashmap. Now compute  $3004/1000=3$ ;  $\text{Modulus} = 1000$ ;  $\text{Quotient} = 3$ ;  $\text{Remainder} = 204$ . So the 4th node will be 111-204=111. Now we have to add 111 to the 4th AVL tree.

My node will have index = 3 and value = 996. Insert this node in 4th AVL tree on the basis of index. Thus time complexity will be  $\log(n)$  where n is the number of elements in Key%1000 AVL tree.

### **3rd round (Hiring manager round)**

- 1) About current company, explained everything in detail.
  - 2) Then a large file is given you have to find all the panagrams. Told him to divide the file in chunks for parallel processing. Maintain an array of size 26 or instead of that, you can set the bits of a 32 bit number. Set the bit of a number so that you can easily check the panagram condition.

4th round (data structures and algorithm)

- 1) 2-d matrix service tax of different cities are given in the form of the 2-D matrix. Find the least cost to go from one city to another. you can travel only in two directions right or down.
  - 2) [Find all the nodes at a distance r from the given node n.](#)
  - 3) [Find the sum of all bits from numbers 1 to n.](#)

## Bar raiser

- 1) About work experience,projects and current company
  - 2) To find the shortest sub-sequence with maximum sum.

Practice writing code on paper and take care of corner cases.

You won't want interviewer to find faults in your code.

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# Amazon Interview Experience | Set 190 (Delhi Drive)

- Last Updated : \n28 Jun, 2019

It was Amazon Delhi drive held in Jan 2015. This was conducted for various openings for Bangalore location.

## Round 1: Conducted by SDE-1

- 1) Tell me about your work experience.
- 2) Store deepest right leaf nodes in a list. There can be more than one right leaf which are deepest and at same level. Approach was to find deepest right leaf node level and connecting all right leafs at that level in a linked list by inserting new node at beginning.
- 3) Count number of balanced brackets .

## Round 2: Conducted by SDE-2:

- 1) [Stock buy sell to maximize profit](#)
- 2) [In running stream of integers find k largest integers at any point of time.](#) (hashtable plus min heap approach made by day)

## Round 3: Conducted by SDM:

- 1) Print matrix spirally from any point and using given direction. (This was very difficult to solve because usually the problem is simply [print matrix spirally](#))
- 2) He asked about most challenging faced so far. (At some point of time I realized I was telling conflict but soon concentrated to tell a challenge. Please prepare behavioral questions beforehand and be specific. Nobody is sitting there to listen a story)

## Round 4: Conducted by SDM:

- 1) Tell me about your entire work experience briefing each project starting from latest. He stopped at some points and asked tech questions.
- 2) What is the most conflicting situation faced and how you handles it?
- 3) What is the most innovative input you provided where you were appreciated by your manager?
- 4) Implement garbage collector. (Had no idea how to do that, but took some time and was able to tell an approach to maintain reference count in hashtable. He asked to code the approach)

Three rounds were completed on a day and fourth and final round was telephonic. My last round turned out to be negative because I was not able to write complete code in given time.

Still the problem asked in round 1 and round 2 were new to me and was able to solve those using different approaches which I have learned from Geeks for Geeks. \xf0\x9f\x99\x82

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Amazon Interview Experience | Set 189 (For SDE-1)

- Difficulty Level : \nMedium
  - Last Updated : \n28 Jun, 2019

Recently, I was interviewed for Amazon SDE-1 Position. There were two telephonic rounds followed by 4 F2F rounds.

## Telephonic Round 1 :

He seemed a bit unprepared for the interview. He started with some introduction and knowledge transfer about current work and then created a binary tree and asked me to write the level order, preorder, postorder and inorder traversals for that tree.

Then, the coding questions followed.

## 1) Flattening a multi-level linked list.

1st approach <code>Using a queue : T = O(n), S = O(n). Coded it.</code>

2nd approach  $\text{O}(n^2)$  Same as on GeeksForGeeks < [Flattening a Linked List](#) > : Didn't ask me to code. But this one requires changing the structure of data.

2) Flattening a multi-level linked list but the nodes in depth should be printed first. So, basically the 1st question resembles BFS and this one resembles DFS. Did this using recursion very easily.

3) Process vs Threads. What happens when you type in a URL? High-level design. Handshaking protocol. HTTPS protocol, etc

\xc2\xa0

\xc2\xa0

## Telephonic Round 2 :

I must say this guy who interviewed me was really smart. This round was a little more than 1 hour and there were 3 questions.

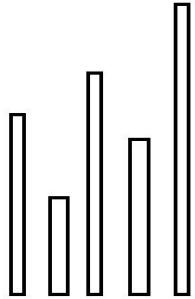
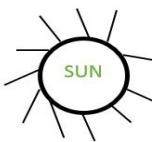
1) [BST to Singly Linked List in place. A slight modification of this problem](#) Coded it.

2) Finding Squares on the chessboard attackable by a rook

There is an  $N \times N$  chessboard. Each square on the chessboard can be either empty or can have a rook. A rook as we know can attack either horizontally or vertically. Given a 2D matrix where 0 represents an empty square and 1 represents a rook, we have to fill in all the cells in the matrix with 1 which represent squares that can be attacked by any rook present on the chessboard. One can find a much simpler version of this problem here [here](#).

X62 X80 X54

3) An array of buildings is facing the sun. The heights of the building is given in an array. You have to tell which all buildings will see the sunset. This is pretty easy. The first building will definitely see the sunset and for the rest of the buildings, just maintain a variable `max_height_seen_so_far` and check with the height of the current building. However, he then twisted the question and asked what my approach would be if I was to scan the buildings from back to front rather than front to end. I used a stack and applied the logic similar to that used in Next Greater Element problem.



## Building of different heights

\xc2\xa0

F2F R1:

\xe2\x80\x94\xe2\x80\x94\xe2\x80\x94\xe2\x80\x94\xe2\x80\x94\xe2\x80\x94\xe2\x80\x94\xe2\x80\x94

Started with introduction. A lot of questions about current company, current work, current project and then a design question.

How would you design the meeting invite feature of Microsoft Outlook? Considering each meeting invite as an object and that Web server is the storage space for the invites, design a data structure to receive and send invites to user in an efficient manner. The message objects must be received in a sorted manner based on the time of meeting. I suggested using a Binary Search Tree and justified the use of this DS. I gave an  $O(N \log N)$  solution. I was then asked to code it. I coded it in C#.

Followed with a lot of HR questions.

\xc2\xa0

F2F R2:

|xe2|x80|x94|xe2|x80|x94|xe2|x80|x94|xe2|x80|x94|xe2|x80|x94|xe2|x80|x93

1) Reverse a sub array in an array. Pretty easy.

2) [Rotate a subarray in an array where start and end indices of the sub array are provided and \xe2\x80\x99n is provided which is the number of rotations to be done.](#) The interviewer behaved really dumb in this question. All he wanted was a solution. He made me dry run the code again and again and he wasn't really bothered about the concept or the approach. I don't think he could relate to my solution which was  $O(n)$  in time and  $O(1)$  in space.

3) [Find if a linked list has a loop](#). Old question. Take a fast and a slow pointer. But to get this solution wasn't really his motive. He asked why slow pointer should move by one node at a time and why the fast pointer should move at the speed of two nodes at a time. As led by the discussion, I was then asked to find the optimal speeds of slow and fast pointers for a given linked list. Again, led by the discussion, he asked if it's given that the linked list has a loop and the size of the loop is given, can I find the optimal speeds of the slow and fast pointers?

\xc2\xa0

F2F R3:

|xe2|x80|x94|xe2|x80|x94|xe2|x80|x94|xe2|x80|x94|xe2|x80|x93

1) Same question as Q3 asked in telephonic round with the only difference that the heights of the buildings was provided in a linked list. Coded it in C. Then, the interviewer twisted the question by placing the sun after the last building(previously the sun was placed before the first building). Used a stack. However, this can simply be done by reversing the heights array and using the same function written for the first part of the problem.

2) Design a data structure to represent the hierarchy of employees in an organization. Also, the design should be such that, you can retrieve the no. of reportees of a manager(not just the direct reportees but all the employees under him) very fast( $O(1)$  was expected). Also, insertion of a new employee and removal of an employee should be fast too.

I suggested using a n-ary tree of hash tables. Also, used an additional hash table where key was employeeId and value was the address of the hash table (or the node) in the n-ary tree. My solution did give no. of reportees in O(1) and addition and removal of employees was in O(n) time, where n is the total number of employees. There wasn't enough time to code though.

\xc2\x0

F2F R4:

\xe2\x80\x94\xe2\x80\x94\xe2\x80\x94\xe2\x80\x94\xe2\x80\x94\xe2\x80\x94\xe2\x80\x94\x93

This round had a lot of HR questions. Cultural info. Current project. He also asked coding questions but he wasn\xe2\x80\x99t really bothered about the optimality of the solution.

- 1) [Two nodes in a BST are swapped. Find them](#). Told my approach. Didn\xe2\x80\x99t ask me to code it.
- 2) [Print all the permutations of a string in lexicographic order](#). Coded it. Took me a lot of dry runs to make him understand that the code is correct \xf0\x9f\x98\x80

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# Amazon Interview Experience | Set 188 (For SDE1)

- Last Updated : \n28 Jun, 2019

Recently I am interviewed for Amazon SDE-1 position for Bangalore. There are 3 F2F rounds followed by a telephonic round.

As it was a drive, they asked everyone to write code for these problems

1. [Add two numbers represented by linked lists](#)
2. [Longest Palindrome in a String](#)

## 1st F2F:

1. Why do you want to leave your current company?
2. Why Amazon?
3. [Find median in a stream](#)

I told him min heap & max heap method, then he asked me who can you do it using trees.

4. [There is a mxn matrix which contains only 1 & 0\xe2\x80\x99s. You have to print the unique rows.](#)  
[I solved it using tries, then he asked why cannot I use hash map and asked to write the code using tries.](#)

## 2nd F2F (Managerial Round):

1. Why Amazon?
2. Why leaving your current company so early?
3. Areas of Improvement , strengths & weakness
4. Given a prefix expression , convert into prefix tree and extended the qtsn for infix expression, time complexities etc.
5. [Given a dictionary , and we have to query for anagrams for the word. extended the qstn to while typing the word we have to provide the autotype. Gave him a solun using tries.](#)

## 3rd F2F:

1. [In a stack pop fn will return you the value & pop the value and push fn will push the value into stack , so how do you implement top fn. asked for O\(1\) solun.](#)
2. [Write a fun to check whether a given tree is a BST or not.](#)

## Telephonic Round (Bar Riser):

1. Why Amazon?
2. Asked about current projects and college projects.
3. Asked me which is the best project I have done and asked me how do I improve its functionality, discussion went on this.

## Tips:

They will help you are struck just think loud.

Practice writing code on paper.

I thank GeeksForGeeks for this great work. \xf0\x9f\x99\x82

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[All Practice Problems for Amazon !](#)

## Related Practice Problems

[Group Anagrams Together](#)

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cost: S2 [0.54]

Total cost:  $2.10 + 0.54 = 2.64$  with Shipment SH1 {I1,I2,I4} By S3 and SH2 {I3} by S2

Another possible way

I1, I3, I4 serviceable by W2 by Provider S2 : 2.08

I2 serviceable by W4 by S4: 0.30

Total cost: 2.38

So the shipments with minimum cost can be delivered/selected.

Write a program for the same to get optimum minimum cost for the number of shipments can be delivered from warehouses with shipping cost?

If you ship multiple items in single packet, then the cost will be minimum. Assume Shipment Provider charges per packet and not on the weight and packing charges will be minimum. Idea is to consolidate/aggregate as many items as possible to one location so that packaging cost is minimum and on top of that you should consider warehouse selection cost.

\xc2\x9a0

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# Amazon Interview Experience | Set 187 (For SDE1)

- Difficulty Level :\nExpert
- Last Updated :\n28 Jun, 2019

Hi, Recently i was interviewed for Amazon SDE-1 Position in Hyderabad. There a telephonic round followed by 4 F2F rounds.

## Telephonic Round:

1. [Given a array find all the triplets which satisfy the triangle property\(sum of 2 sides should be greater than third side\)](#)

2. [Given a array find whether it is majority array or not.](#)

Complexity: O(n) Space complexity O(1)

## F2F Round 1:

1. Given a dependency where for java packages p1,p2,p3

p1:{p2,p3}

p2:{p3}

p3:{}

This means p1 can be compiled when compilation of p2 and p3 done

p2 can compile when p3 is compiled

p3 can start as it does not have any dependence.

Figure out strategy to find the order of compilation of processes.

Ans:Topological sorting

2. Discussion on project

\xc2\xc2\x0\xc2\x0\xc2\x0\xc2\x0\xc2\x0\xc2\x0\xc2\x0 Asked all concept related to my final year project.

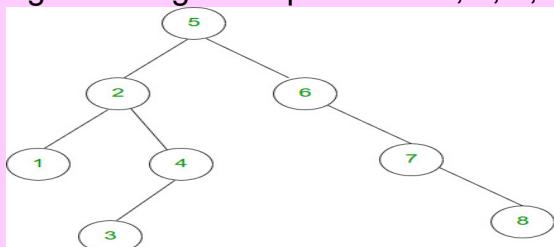
3. Current project in company

\xc2\xc2\x0\xc2\x0\xc2\x0\xc2\x0\xc2\x0\xc2\x0\xc2\x0 Challenges faced at company

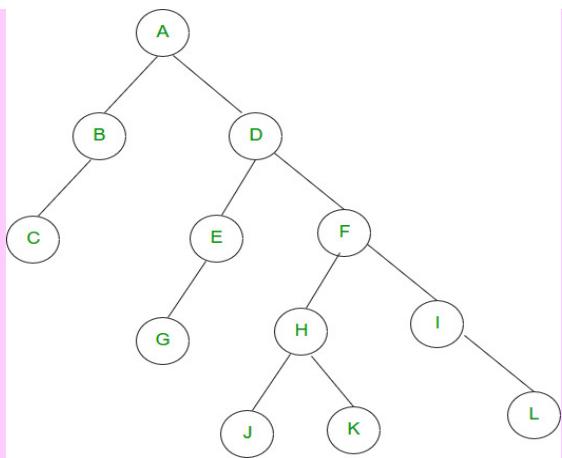
## 2F Round 2:

1. Given a binary tree print its side view from left from bottom to top and right side view as up to downward .

Eg. For image 1 output will be 3, 1, 2, 5, 6, 7, 8



and for Example 2( image 2) output should be C, B, A, D, F, I, L



2. [Given a string find largest palindrome sub string in it.](#)

3. What is virtual memory?

4. What is paging in OS?

## 2F Round 3:

1. Why are you looking for change in 6 months of experience .

2. Discussion on how to send notification to friends when a user post on social network like facebook

The discussion was on when to load friend list of user and he was expecting we should load friend list when user login.

## 2F Round 4:

1. Discussion on current project challenges faced

Situation when you have to take decision in absence of your team lead/Manager

2. Why are you looking for change in 6 months of experience

3. [Given a special binary tree structure given in image 3 A node have 3 node pointers left,right and nextTwo adjacent node share there left and right as shown in treeGive tree whose node are set with next pointer as null.](#)

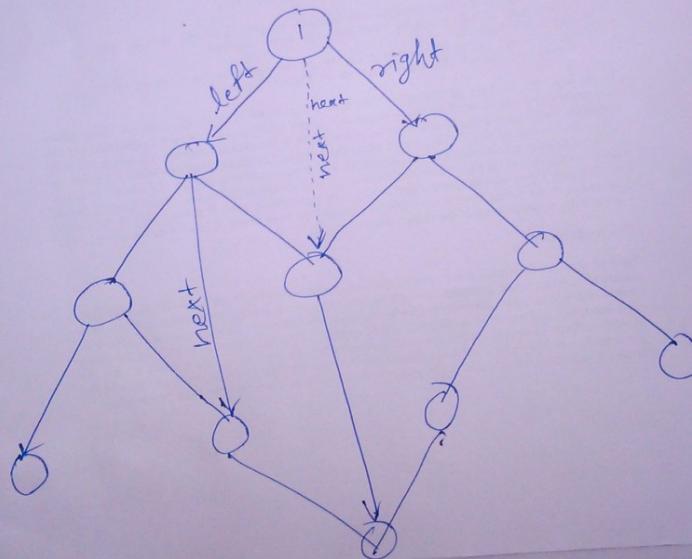
you have to set the next pointer as shown in the figure .

If any node is null then the next of its prev node should be next of that eg. a -> b -> c

(a\xe2\x80\x99s next is b ,b\xe2\x80\x99s next is c) if b is null then a\xe2\x80\x99s next should be c.

## Tree Node Structure

```
{  
    int data;  
    Node *left;  
    Node *right;  
    Node *Next;  
}
```



4. What is virtual memory?
5. What is segmentation fault?

Note :- They expect fully working code in all round.

### Tips:

1. Think loud they always support you
2. Ask for hint if not getting.

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### Related Practice Problems

[Majority Element](#)

[All Practice Problems for Amazon !](#)

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# Amazon Interview Experience | Set 186 (For SDE1)

- Last Updated : \n28 Jun, 2019

Hi, Recently I was interviewed for the SDE-I for Amazon, Chennai.

Round 1(Online Round):

1. [Given two linked lists. Add them.](#)

e.g 1\xe2\x80\x93>2\xe2\x80\x93>3

3\xe2\x80\x93>4

Output: 1\xe2\x80\x93>5\xe2\x80\x93>7

2. [Find if the binary tree has the given sum.](#)

I cleared the online coding round and I was asked to come down for the face to face discussions.

\xc2\xab0

Round 2(F2F):

1. [Find if the given binary tree is height balanced.](#)

\xc2\xab0

Round 3(F2F):

1. [Find if the given tree is the subtree of the big tree.](#)

2. [Given a sorted matrix \(row-wise and column wise\) , find kth smallest element.](#)

3. [Given an array. Pop min element in O\(1\) time.](#)

4. Implement increment operator for the array.

\xc2\xab0

Round 4(F2F):

1. Print the level-order traversal from bottom to up in a given binary tree.

2. What is process and thread?

3. What is copy constructor?

4. Design parking lot.

\xc2\xab0

Round 5(F2F) (Hiring manager round):

1. Questions on achievements, challenges faced, area of improvement.,etc.

2. Given a file with millions of URLs. Some URLs repeating , some unique. Find the first unique URL.

Coding was required in each and every round. Think loud. Tell the interviewers what you think. Give them different approaches. Be confident about your solution.

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# Amazon Interview Experience | Set 185 (For SDE1)

- Difficulty Level : \n [Hard](#)
- Last Updated : \n 05 Apr, 2015

Hi, Recently i was interviewed for Amazon SDE-1 Position in Hyderabad. There a telephonic round followed by 4 F2F rounds.

## Telephonic Round:

1. Inserting an element into a BST
2. A array is increasing and then decreasing find the point where it stops increasing.

## F2F Round 1:

1. Replace all the elements in the array with its next highest element to its right  
Expected O(n) Solution.
2. Given a binary tree and a value k. A path is called heavy path if the sum of the elements in the path (path from root to leaf) > k remove all the paths from the tree which are not heavy i.e., tree should contain only heavy paths.

## F2F Round 2:

1. Given a array find all the triplets which satisfy the triangle preoperty(sum of 2 sides should be greater than third side)  
Sol: sort then o( $n^2 \log(n)$ ) using binary search.

2. Given a dependency where for example process p1,p2,p3

p1:{p2,p3}

p2:{p3}

p3:{}

This means p1 starts once p2 and p3 are complete

p2 starts p3 is complete

p3 can start as it does not have any dependence.

Figure out strategy to find the order of execution of processes.

Ans:Topological sorting.

## F2F Round 3:

1. Design a stack with push pop and find min operations in o(1) time.

Ans:can be done using 2 Stacks

2. Given an input string and a dictionary of words, find out if the input string can be segmented into a space-separated sequence of dictionary words.

Solution <https://www.geeksforgeeks.org/dynamic-programming-set-32-word-break-problem/>

## F2F Round 4:

Discussion of projects and current work experience.

Diameter of a binary tree in o(n).

First devised o( $n^2$ ) then optimized to o(n)

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## Amazon Interview Experience | Set 184 (Off Campus for SDE1)

- Difficulty Level :[Medium](#)
- Last Updated :[20 May, 2021](#)

I interviewed with Amazon, Hyderabad. Interview was in October, 2014. I was 4 months experienced, and was applying for SDE-1 position.

I had 4 interviews, and my experiences are as follows.

### 1st Round

Q1 Given a graph. ( Similar Question -> <https://www.geeksforgeeks.org/clone-linked-list-next-arbit-pointer-set-2/>)  
Basically while cloning, when you create a new node in the cloned graph, have a hashmap which maps the old node to new node.  
So in the hashmap key = old node, value = new node.

Q2 Given an array of numbers, for each number print the first number to its left which is greater than the current number.

Example  
Input -> 5, 3, 2, 4, 8, 6  
Output-> -1, 5, 3, 5, -1, 8  
Use stacks. Simple O(n) solution.

### 2nd Round

Q1 Find the row number according to the excel nomenclature (the opposite of this, <https://www.geeksforgeeks.org/find-excel-column-name-given-number/>)  
i.e given Z, Output -> 26  
Given AX, Output -> 50

Q2 Find the number of islands in a 2d Array -> <https://www.geeksforgeeks.org/find-number-of-islands/>

### 3rd Round(Hiring Manager)

Q1 Given a number in words, print the number.

Example 1) Input - "One Hundred and Five", Output should be "105"  
Example 2) Input - "One Thousand and two hundred and five", Output should be "1002005"

There were a lot of edge cases, and discussion with regards to this. ( I took a lot of time and the manager did not seem to pleased. )

Q2- In a sorted array, find two numbers whose difference is k.

Given -> 1, 2, 3, 4, 7, 8, 9, 11 and k=7  
Output -> 1, 8 or 2, 9, or 4, 11 (Print any one)

<https://www.geeksforgeeks.org/find-a-pair-with-the-given-difference/>

A lot of questions as to Why Amazon, Why do you want to leave so early.

### 4th Round(Bar Raiser)

Q1 Given a sorted array find a number. (Simple Binary Search)

Now consider repetitions and find the left most occurrence. (Binary Search to first find number, then again Binary Search to find left most occurrence)

Similarly find the right most occurrence. (Binary Search to first find number, then again Binary Search to find right most occurrence)

Now using the above two functions, find the number of times the element is present.

Note Cases like where number is NOT present,

Q2- Assembly Line Scheduling. (Very Simple DP.)

<https://www.geeksforgeeks.org/dynamic-programming-set-34-assembly-line-scheduling/>

### Result

After three weeks, I got a generic email saying that I could not clear it. I had a really irresponsible recruiter who did not have the courtesy to give me a call and just convey some feedback. Eventually, I think I took too much time with the first question in the manager round.

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# Amazon Interview Experience | Set 183 (SDE 2 | New Grad Position)

- Difficulty Level : \nEasy
  - Last Updated : \n28 Jun, 2019

Following is my experience. I hope it helps people out there, as I got help from other posts here before my interview.

Duration: 4 hours

**interviewer #1: 8 am \xe2\x80\x93 9 am**

Q1) tell me your interest

## -> Big Data

Q2) what's the latest thing you follow in it

-> Apache Spark

Q3) What is it and explain

-> told the standard MapRed and Hadoop vs Spark

Q4) what more features

-> told graph processing and ML LIB

Q5) Actual question starts here, given the binary tree, how will you serialize and deserialize it to the file?

7

answer1: Serialize => do in-order traversal and pre-order traversal and write it to a file

`xc2[xa0]xc2[xa0]` Deserialize => build the binary tree using pre-order and in-order traversals

\xc2\xd0\xc2\xd0 DESCRAZE -> build the binary tree using pre-order and in-order traversal  
\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0 he was not satisfied, gave me hint of no need to do complex in-order, pre-order thing

answer2: BFS clicked me, told him to do BFS and write to a file level wise

he was okay with it, and asked me to write a code for it

asked the complexity

told him, was not convinced wholly, then finally told him, was still not

left the room with think over it \xf0\x9f\x99\x81

**interviewer #2: 9am \xe2\x80\x93 10 am**

Q1) bang on target, given 2 timeframes, check if they overlap

-> s1, e1, s2, e2

\xc2\xa0\xc2\xa0 ep1 = epoch(s1),

\xc2\xa0\xc2\xa0 ep2

\xc2\xa0\xc2\xa0 ep3

binary tree!!

but you need to find the [LCA](#) and you do not have access to root of tree!

some brainstorm, and I got it

what is time complexity:

worst case:  $O(n^2)$  in skewed tree

average case: was not sure, gave me hint, and I told him, was okay

told him the 1st way, was convinced but hinted me the better way

Got his hint, and gave the answer, was satisfied

Q3) [given 2 strings, how would you find if they are anagrams of each other](#)

-> solution 1: 2 hash ( was okay but asked the better way)

hinted me that no of characters are limited

solution 2: told him the way of count sort, i.e. use 2 count sort arrays

but he said no need of other array, you can do in single array

told him the way, was satisfied

### Interviewer #3:

\xe2\x80\x93 started with his long intro

\xe2\x80\x93 asked mine, and then stopped me as I was talking at length

\xe2\x80\x93 asked me about my search project

\xe2\x80\x93 asked me the basic design

\xe2\x80\x93 how did you deal with data when you cannot fit in memory

\xe2\x80\x93 how did you do intersection of posting lists

\xe2\x80\x93 what is time complexity

then asked me to design the chase game

stumbled like hell, i guess this is going to be my rejection factor

### Interviewer #4: (manager) behavioral round

\xe2\x80\x93 gave his long intro

\xe2\x80\x93 asked about myself

\xe2\x80\x93 when did you feel that something could have been done in better way after delivering it in project

\xe2\x80\x93 when did you perform best way, as in what did you come up with that other could not do

\xe2\x80\x93 when did you go out of the way i.e. against your managers, or higher authority and deliver the best according to you

\xe2\x80\x93 asked the system architecture question: design the TINYURL system in terms of server architecture i.e. HA, scalability and request processing

\xe2\x80\x93 was satisfied, and left with good note.

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# Amazon Interview Experience | Set 182 (For SDET 1)

- Difficulty Level : \n[Medium](#)
- Last Updated : \n28 Jun, 2019

## Round 1: (Written Test)

1. [Given a sorted array construct a Balanced Binary Search Tree.](#)
2. [Given a linked list, find whether linked list is palindrome or not without using any extra space.](#)
3. [Given set of strings find longest common prefix.](#) If no common prefix present print null

Example: {abcd, abbd, abdy, az}

Answer: a

## Round 2: (F2F \xe2\x80\x93 Problem Solving)

1. [Given sorted array of unique elements. Find an element which is having value equal to its index.](#)  
{-4,-2,2,4,6,9}

Ans: 2

2. [Given a brick of size 1 x 4, how many ways you can construct a wall of size N x 4](#)

## Round 3: (F2F \xe2\x80\x93 Data structures and Algorithms)

1. Give a binary tree, print all the nodes in spiral order with constant space
2. Give a binary tree and a light source fixed placed right side of the tree. Print all the nodes where the light directly falls.

Refer : [Right View of a binary tree.](#)

3. [Merge two sorted linked lists without using extra space](#)

## Round 4: (Telephonic \xe2\x80\x93 Hiring Manager from Seattle \xe2\x80\x93 All Questions on Testing and Projects)

1. Tell me about yourself
2. Roles and responsibilities of your current role
3. How do you test a search box
4. Did you ever have a fight with developer over a defect? If you had how did you solved ?
5. Few behavioral questions

## Round 5: (F2F \xe2\x80\x93 Test Automation and Testing)

1. Design an automation framework
2. Given a function InsertNode() which inserts a node to a linked list. Write all scenario\xe2\x80\x99s to test the function.

## Round 6: (F2F \xe2\x80\x93 Bar Raiser)

1. Tell me about yourself
2. Why Amazon
3. Hardest bug you found
4. [Given an array of integers. Write a program to find interval with largest producing maximum sum.](#)  
You should print sum as well as first and last index of the interval.
5. Your strengths
6. Your weakness

## Useful sources for Technical Preparation:

1. GeeksForGeeks
2. Data Structures and Algorithms Made Easy by Narasimha Karumanchi
3. Data Structures videos by Prof Naveen Garg from IIT Delhi

Use Cracking the Coding Interview book by McDowell Lakmen for behavioral as well as technical

questions.

**Tips:**

1. Think loud in front of interviewer.
2. Never keep quiet during interview
3. Prepare well on the projects which you are currently working on.
4. Be honest in behavioral questions

The beautiful part of the entire interview process was in none of the interviewer looked at my resume.

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# Amazon Interview Experience | Set 181 (For SDE 1)

- Difficulty Level :\n[Expert](#)
- Last Updated :\n28 Jun, 2019

Recently I was interviewed by Amazon for SDE 1, here is my Experience. Hope this will help others:

## Written Round :

there were 3 coding question , out of which 2 were DS related and 3rd one was Problem solving

1. [Count no of words in given string](#) .
2. [Find first non repeating character in a stream of characters](#)
3. related to slot machine and its working

Interviews

## F2F 1.

1. firstly some non technical questions where there , such as  
\xc2\x0\xc2\x0\xc2\x0\xc2\x0\xc2\x0 tell me about yourself ,  
\xc2\x0\xc2\x0\xc2\x0\xc2\x0\xc2\x0 Why Amazon etc

2. followed by 2 coding questions

\xc2\x0\xc2\x0\xc2\x0\xc2\x0\xc2\x0 1. [Given a sorted dictionary of alien language , find order of characters.](#)

\xc2\x0\xc2\x0\xc2\x0\xc2\x0\xc2\x0 2. [find minimum number of characters needed to be added to the end of a string to make it palindrome.](#)

## F2F 2.

was a senior guy ,

1.started with discussion on previous interview questions , as I had used DP in second question so a brief discussion on DP , tried to test me that does I really know the concept of DP.

2. asked few puzzles , One should be prepared for some out of box questions as they want to check the thought process . even they change puzzles and try to get different solutions. Think loud always.

## F2F 3.

was also a senior guy,

1. Started with general induction and asked about till then my interview experience and related stuff.
2. Simple Matrix multiplication problem ,with only 2 double pointer are given , we need to check sizes of both matrix , multiplication feasibility and then do multiplication .
3. Design Question from DataBase point of view , asked about table structure for the problem and had a good discussion on it , concept such as normalisation was discussed .

## Telephonic 4th

He was a very senior guy from different team ,

1. Started with general introduction followed by many Behavioural hr questions .
2. Followed by Design Question, a feature of Outlook

A Server receives meeting objects from multiple senders. Meeting object contains meeting time, sent time, recipient(s), sender id,etc. When recipient comes and checks the server, he/she should get requests based on meeting time and not based on sent time. Many discussions on space complexity and time complexity.?Eg:

12 PM From: A To: B,C,D meeting time: 4 PM meeting Id: 1

12.30 PM from: A To C,D meeting time : 2 PM meeting Id:2

1:PM From B To: C meeting time: 1.30PM meeting Id:3

When C requests the server, C should get ID3 as 1st, ID2 as 2nd and ID1 as 3rd meeting.

### **Small set of Suggestions :**

1. Practice writing code using pen and paper .
2. Try to be interactive as they are very much interested in candidate\xe2\x80\x99s thought process , think loud , be confident .
3. Firstly explain the logic and when interviewer is satisfied then start coding .
4. Have few questions prepared for the interviewer as it shows interest of candidate towards the company .Do proper home work about the company.

Thanks GeeksforGeeks for such a great content , Keep doing the great work \xf0\x9f\x99\x82

\xc2\xa0

\xc2\xa0

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## Amazon Interview Experience | Set 180 (Telephonic Interview )

- Last Updated : \n28 Jun, 2019

I had a telephonic interview. It was of 90 minutes.

Questions asked by me.

1. Tell me about yourself.
2. What was your college project as well as what type of platforms used?
3. What is TRIE?
4. [Write the function for insert and search for TRIE?](#)
5. [DFS](#) and [BFS](#) .
6. How to get the shortest path from (0 , 0) to (r , c) in a rectangular grid in which some cells are blocked.

Overall awesome telephonic interview.

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# Amazon Interview Experience | Set 179 (For SDE-1)

- Difficulty Level :\nEasy
- Last Updated :\n28 Jun, 2019

## Telephonic

1) Given an array which has elements in increasing order first , and then decreasing, suggest an algorithm for searching an element in it.

2) Check whether a given tree is a BST or not.

3) do not remember

## F2F 1

1) Number of hops required to reach the end of an array , where the maximum hop is the value at index.

Tweaked question after this, to reach any node.

2) print the path between any two given nodes in a binary tree

## F2F2

1) Project and resume discussion.

Problems faced and how you approached them.

2) A large number of emails coming into the system, at any given time find the top k issues being faced by the users. Problem reduced to find the top k trending words in a large file.

3) Implement a vector in c, using any available data structure

## F2F3

1) Given a pre-order traversal of a binary tree represented by , I for internal node and L for leaf, build the tree.

2) Find the next smallest element for all the elements in a given array.

## F2F4

Started off with a lengthy discussion on current project, was asked to draw a schematic of the same, and then was asked to discuss my roles and responsibilities as well as suggest what improvements could be made to it.

1) Given a 2-D array, in which all the elements are either 0\xe2\x80\x99s or 1\xe2\x80\x99s, and all the rows are sorted, Give an algorithm for finding the row having the maximum number of 1\xe2\x80\x99s. Was asked to code and analyse time complexity as well.

2) There is a given set of colours , say [1-N]. Now , people are coming into a stadium wearing t-shirts of any of these colors. Write an algorithm to find the first person to come in, to have worn an unique color.

The question wasn\xe2\x80\x99t clear to me at first, so after a few examples , got what he was trying to ask.

For eg. Suppose we have colors R G B

and the stream of people are as,  
G R B G G G G  
the output should be R.

Hope this helps some people.

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## Amazon Interview Experience | Set 178 (For SDE-1)

- Last Updated : Jun 28, 2019

In-house interview with Amazon Bangalore for SDE 1. Here I'll share my experience.

### Round 1:

My first round was the HM round because no other panel members were free.

1. Lots of questions on my current project. Why I am looking for a job change.

2. Write a calculator web application just like the one that comes with MS windows.

Trick was to evaluate the expression according to the BODMAS

Lots of discussion on different approach using 2 stacks, arrays, lists, Tree

with and without postfix conversion.

Asked to explain all the approach on the White Board.

### Round 2:

- [Link all the level order nodes to make a linked list with the first node of each level acting as the root of that linklist.](#)

```
\r\n      10\r\n      / \r\n      6      17\r\n      / \r\n      4      14      19 \r\nSo the Linklist will
```

Gave the answer using the 2 queue. (Level order traversal) with alternate queue for the alternate level

Than interviewer asked to solve the problem without using any other data structure (No stack or queue)

2. Question on Baggage claim token generations.

You have three containers, small, medium and large. Passenger comes in, checkin the luggage. You have to store the baggage in the appropriate container and generate a unique token number. Then passenger should get back the bag using the same token number.

Trick was if small container is full store in medium if available or large. Now if the large bag comes in and there is now a empty space in small, than move the small bag back to small & store the large bag. How to generate the unique token number and move the baggage internally without changing the token number?

Lookup should be in constant time complexity and insertion in minimum complexity.

It looks easy but kind of tricky if you start solving because token number shouldn't get changed if you move the baggage internally and space should not get wasted in the memory if baggage is removed.

### Round 3:

- [Find the size of the smallest substring in a given string that contains all the characters in given set in any order.](#)

```
\r\n      Ex: \r\n      INPUT:\r\n      String: "abfugtabecddcca"\r\n      Character Set: a,b,c
```

2. Convert a sorted doubly linkedlist into Binary search tree (Inplace)

### Round 4(Bar Raiser Round):

1. Again Lots of questions on current project. My contributions.

Most complicated problem I have ever encountered in my recent project and how I solved it.

Subject I liked the most in the college and why and what I learnt from it.

In my previous rounds, which question I found the most difficult one and why?

If I will be given a chance to change any of the my answers to the questions asked in previous round, what question it will be and why?

Was I satisfied with my interview.

Technical question:

Do a spiral transversal of a 2D matrix

```
\r\n      Ex:\r\n      a b c d\r\n      l m n e\r\n      k p o f\r\n      j i h g\r\n
```

Thank you geeksforgeeks for providing the awesome platform for preparation.

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## Amazon Interview Experience | Set 177 (First Round in Pool Campus)

- Last Updated : \n28 Jun, 2019

Today Amazon Took a Pool campus drive, including our college and many other. In which the First round was Online in our campus itself, those selected students would go for further rounds in other campus.

The First Round Was very Standard, first we had to open its Hiring test portal, in which it had 20 MCQ and 2 coding questions, which we had to complete in 1:30 Hrs.

MCQ:

- It had question from OS, DBMS, Algorithm, Infix, postfix
- OS basically from scheduling, and process management in UNIX
- DBMS questions some simple query in my SQL
- questions asking Complexity of some give Algo. number of swaps in Bubble sort, best technique to sort partial sorted list etc
- finding output of prefix expression, given Postfix finding prefix of BST etc
- full form of LDAP, qustions including privileges of User, kernel in UNIX etc

Coding:

1: given 3 Numbers in Linked list, we had to return the Linked List of representing sum of all three, covering all base and condition of addition.

```
\r\n eg:    for addition of\r\n          234+993+1 :\r\n          input Linked Lists are: 4->3->2->NULL, 3->9->NULL, 1->NULL
```

2: [Simple and same Vertical traversal of a BST as given in Geeksforgeeks.org](#)

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# Amazon Interview Experience | Set 176 (For SDE 1)

- Last Updated : \n28 Jun, 2019

## Telephonic Round 1:

- 1) [You are given an integer array. Create a Binary Search Tree from it.](#)
- 2) [You are given a Binary Search Tree. Write an algorithm to print the Path Array of a given key.](#)

### PATH ARRAY:

- a) If the given key is not present in the tree than the Path Array is equal to \xe2\x80\x9c-1\xe2\x80\x9d
- b) If the given key is present in the BST, path array tells you the path (in terms of left & right direction) that you take from root to reach the given key. If you go towards right add \xe2\x80\x9c0\xe2\x80\x9d to the path array and if you go towards left add \xe2\x80\x9c1\xe2\x80\x9d to Path Array.

## Telephonic Round 2:

- 1) [You are given an array as an input. The array is organized in such a way that its element are arranged in increasing order up till a certain index and in decreasing order after that. Write an algorithm to search an element in such a array.](#)

## Face To Face 1:

- 1) [You are given two array of \xe2\x80\x9cn\xe2\x80\x9d length. First array contains the arrival time of various trains on a particular station. Second array contains the departure time of those trains. Write an algorithm to find out the minimum number of platforms that will be required to accommodate all the trains.](#)
- 2) [You are given a binary tree. A light source is placed on the right of the tree. Print the list of all the nodes over which the light is falling directly.](#)

## Face To Face 2:

- 1) A new feature is to be implemented in Kindle. FEATURE : The user inputs the no. of days in which he would like to complete a particular book and the Kindle will create a reading plan for the user. Write an algorithm which will output the reading plan to the user. The reading plan should be created keeping in mind that the user would like to begin and end reading a particular chapter of the book on the same day.
- 2) Some general questions:
  - a) Tell a project where you had faced tight deadlines and you had to skip a few things.
  - b) How did you decide, which things should be skipped?
  - c) If given a chance to implement the same project again, how will you implement it?

I gave all the answers with respect to a college project.

## Face To Face 3:

- 1) A very brief discussion of what my current responsibilities are. It was a 5-10 minutes discussion only. I feel that the discussion was brief as my experience was just a little over 1 year.
- 2) [Given a binary tree write an algorithm for spiral traversal of the tree.](#)
- 3) You have N documents, where N is very large. Each document has a set of words lets say w1,w2..wm where m might differ for each document. Now you are given a list to K words lets say q1,q2..\xe2\x80\x9d where k might differ. Write an algorithm to print the list of document which have the K words in them.

This question required a number of hints. I finally came up with the solution of creating a combined trie for all the documents. After listening to my solution he said that it was good but could have been

better with B-Tree. I told that as of now I am not able to memorize the concept of B-Tree and he said he was satisfied with the trie solution that I had given.

#### Face To Face 4:

- 1)
- a) What are various types of tree traversals and diff between them?
- b) Which of the traversals would you require for creating the tree (unique) back?
- 2) You have a very large array, but the array can contain only three elements: 0,1& 2. Write an algorithm to sort the array.

Count Sort was one option, but it didn't strike to me at that point of time. So I came up with a trivial algorithm which sorts by putting all the 2's to the right and all the 0's to the left, 1's get sorted by themselves.

For all the questions in all the interviews I was asked for the time complexity of the problems. However they didn't expect me to do some calculation and then come up with a very tight bound solution. They just wanted a rough estimate of the time complexity of the solutions.

Allocated time for all the interviews was 1 hour.

I would like to thank GeeksForGeeks for helping me with the preparations.

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# Amazon Interview Experience | Set 175 (For SDE)

- Last Updated : \n19 Aug, 2019

Here \xe2\x80\x99s my interview experience for Amazon, Bangalore for SDE

## Round 1 (F2F)

Q1.) Given a function rev(int i) which reverses the segment of array ar[] from 0-i, Implement a function sort() using rev().

Q2.) Given an array ar[] of length \xe2\x80\x98n\xe2\x80\x99 and an integer \xe2\x80\x98k\xe2\x80\x99 such that k < n. You need to maintain a window of size '\k' starting from i=0 to i=k and print the MAX of that segment. The window moves forward by 1 element.

## Round 2 (F2F)

Q1.) (Variant of Children-Sum Problem)

Given a tree, implement a function which replaces a node\xe2\x80\x99s value with the sum of all its children\xe2\x80\x99 value, considering only those children whose value is less than the main node\xe2\x80\x99s value.

Eg: input = 60->50->80->40 , output = 90->40->40->0

Q2.) There are millions of string in the database. How would you store them for efficient searching. You also need to print all anagrams together many times, now how would you store them and insert if a new string is added to database ?

## Round 3 (F2F \xe2\x80\x93 Hiring Manager Round)

- \* Why are you leaving the company so early ?
- \* Discussions on project and current work in the previous company.
- \* Discussion on college projects.

\* Design a game \xe2\x80\x98fifteen\xe2\x80\x99 \xe2\x80\x93 [http://en.wikipedia.org/wiki/15\\_puzzle](http://en.wikipedia.org/wiki/15_puzzle)  
Game me to write code of various moves, discussed optimization strategies and time-complexity if computer is given to solve it.

\* Behavioral questions.

## Round 4 (Telephonic)

Q1.) Most challenging problem faced (obviously in projects), how you solved it.

Q2.) Discussion on Design patterns.

Q3.) Design Uber \xe2\x80\x93 [http://en.wikipedia.org/wiki/Uber\\_\(company\)](http://en.wikipedia.org/wiki/Uber_(company))

He was trying to judge what all aspects the person considers  
Classes, Objects, search and booking cab algorithms, implementation and technology

Q4.) Extension of previous question \xe2\x80\x93 Write code to search nearest 10 cabs.

Code is required in all questions. Practice code on paper.

Thanks Geeksforgeeks for providing such a good platform to prepare.

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## Amazon Interview Experience | Set 174 (For SDE)

- Last Updated :  
28 Jun, 2019

Recently I went through Interviews for SDE position in Amazon Development Centre, Chennai. Here is my Interview experience:

### Telephonic round:

1) [Given an array with lengths, you have to select 3 lengths \(a, b and c\) for a triangle such that it satisfies condition a+b>c,b+c>a, a+c>b. Find the number of possible triangles can be created from the given array.](#)

ex: 3 5 6 9 10

(3,9,10), (3 5 6), (5 6 10), (5 9 10), (5 6 9), (6 9 10)

so number of possible triangles is 6

2) [Count Inversions in an array](#)

Inversion Count for an array indicates how far (or close) the array is from being sorted. If array is already sorted then inversion count is 0. If array is sorted in reverse order that inversion count is the maximum.

Formally speaking, two elements  $a[i]$  and  $a[j]$  form an inversion if  $a[i] > a[j]$  and  $i < j$ . Example: The sequence 2, 4, 1, 3, 5 has three inversions (2, 1), (4, 1), (4, 3).

### In house Interview 1(F2F):

3) [Next Greater Element](#)

Given an array, print the Next Greater Element (NGE) for every element. The Next greater Element for an element  $x$  is the first greater element on the right side of  $x$  in array. Elements for which no greater element exist, consider next greater element as -1.

Examples:

- For any array, rightmost element always has next greater element as -1.
- For an array which is sorted in decreasing order, all elements have next greater element as -1.
- For the input array {4, 5, 2, 25}, the next greater elements for each element are as follows.

```
\r\nElement      NGE\r\n  4      -->   5\r\n      5      -->  25\r\n      2      -->  25\r\n      25      --> -1
```

d) For the input array [13, 7, 6, 12], the next greater elements for each element are as follows.

```
\r\n  Element      NGE\r\n    13      -->   -1\r\n      7      -->   12\r\n      6      -->   12\r\n      12      --> -1
```

4) [Sorted Array to Balanced BST](#)

Given a sorted array. Write a function that creates a Balanced Binary Search Tree using array elements.

Examples:

```
\r\nInput:  Array {1, 2, 3}\r\nOutput: A Balanced BST\r\n          2\r\n        / \\\r\n        1   3\r\n\r\nInput: Array {1, 2, 3, 4}
```

### Inhouse Interview 2(F2F):

5) [Detect Cycle in a Directed Graph](#)

Given a directed graph, check whether the graph contains a cycle or not. Your function should return true if the given graph contains at least one cycle, else return false. For example, the following graph contains three cycles 0->2->0, 0->1->2->0 and 3->3, so your function must return true.

6) [Convert a BST to a sorted circular doubly-linked list in-place.](#)

### Telephonic Round with Hiring Manager:

Introduction about me.

Then he asked about my college project. we discussed the OO design for the project.

Then he asked me about my current company's latest Invention

Then he asked me about Virtual memory and some in depth discussion on that.

Then he came to my current project I am working

Then he asked me why are you coming out of my current company??

Then he gave a question to solve.

7) [Given an array A\[\] and a number x, check for pair in A\[\] with sum as x](#)

Given an array  $A[]$  of  $n$  numbers and another number  $x$ , determines whether or not there exist two elements in  $S$  whose sum is exactly  $x$ .

He asked about various possible solutions for the above one.

### Bar raiser round(F2F):

8) [Given a binary tree, find the diameter of the tree.](#)

The diameter of a tree (sometimes called the width) is the number of nodes on the longest path between two leaves in the tree.

After solving the above one, he added a constraint on the above problem: (i.e) To find the diameter of the tree with atmost one turn

Examples of turns in tree:

In tree1-> start from 1 and there is a turn at root 2 towards right,

In tree2-> starts from 3 goes in left and there is a turn at 1 towards right ,

In tree3-> starts from 1 goes in right and there is a turn at 3 towards left,

```
\r\n      2           3           1\r\n      / \\\\         / \\\\       / \\\r\n      1   3         1   2     1   2\r\n      / \\\\       / \\\\     / \\\\ \\\r\n      1   2     1   2   1   2   1
```

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# Amazon Interview Experience | Set 173 (On-Campus)

- Last Updated : \n28 Jun, 2019

Recently I appeared for OnCampus Amazon Interviews for SDE position and here is my experience.

## Round 1: 1.30 hour Online Written Test

It had 20 MCQ questions on C/C++ and 2 coding questions. The coding questions were:

Q1. You are given a string that represent an expression of digits and operands. Eg.  $1+2*3$  ,  $1-2+4$ . You need to evaluate the string or the expression. NO BODMAS is followed. If the expression is of incorrect syntax return -1.

Test cases :

- a)  $1+2*3$  will be evaluated to 9.
- b)  $4-2+6*3$  will be evaluated to 24.
- c)  $1++2$  will be evaluated to -1(INVALID).

Also, in the string spaces can occur. For that case we need to ignore the spaces. Like :-  $1*2 -1$  is equals to 1.

Q2. You are given an array of both negative and positive integers. You need to rearrange the array such that positive and negative numbers alternate. Also, the order should be same as previous array and only O(1) auxiliary space can be used and time complexity O(n).

eg. -2 3 4 5 -1 -6 7 9 1

result \xe2\x80\x93 3 -2 4 -1 5 -6 7 9 1.

## Round 2:

Q1. Given a Linked list , print yes if it is palindrome else print no.

Q2. Print the level order traversal of the binary tree in the spiral form.

## Round 3(F2F):

Discussion about project.

Some question on DBMS, OS.

Q1: Maximum of all subarrays of size k(Expected Time Complexity O(N)).

Input :

arr[] = {1, 2, 3, 1, 4, 5, 2, 3, 6}

k = 3

Output :

3 3 4 5 5 6

Q2: Given Two sorted array of size size n each. Find the Kth largest element in these two array (Expected Time Complexity Log(n))

## Round 4(F2F)

Detail Discussion about project

Q1. website having several web-pages. And also there are lot many user who are accessing the web-site.

say user 1 has access pattern : x->y->z->a->b->c->d->e->f

user 2 has access pattern : z->a->b->c->d

user 3 has access pattern : y->z->a->b->c->d

user 4 has access pattern : a->b->c->d

and list goes on for lot many users which are finite and numbered.

Now the question is we have to determine the top 3 most occurring k-Page-sequence.

for the above example result will be : (k=3) a->b->c , b->c->d , z->a->b.

Q2: Given two array , one of size m+n and contains m element and other position are empty , 2nd array is of size n and contains n element.both array are sorted , now merge the second array to first one such that the resultant array is sorted. Expexte time complexity(m+n).

I would like to thanks geeksforgeeks for providing such a platform to learn algorithm and data structures\xe2\x80\x9a\x82 \xf0\x9f\x99\x82 \xf0\x9f\x99\x82

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## Amazon Interview Experience | Set 171

- Last Updated :  
28 Jun, 2019

Hi, I recently got an offer from Amazon, here is my interview experience:

### Round-1: (Written)

Q-1: Search element in infinite sorted array.

Q-2: [Find LCA \(lowest common ancestor\) of given two nodes in Binary Tree. Handle all corner cases like one element exists and other not.](#)

Q-3: [Find next greater number with same digits. Handle corner cases.](#)

### Round-2: (F2F)

Q-1 : [Median in a stream of integers \(running integers\)](#)

Discussed corner cases. Proper code was required.

Q-2 : [Clone a Binary Tree with Random Pointers](#)

Discussed different approaches. Proper code was required.

### Round -3 (F2F)

Q-1: [Word Break Problem](#)

I don't have idea about problem initially then he asked to make some test cases, some tricky one. I gave recursive algorithm then, after this came on DP solution but time doesn't permit so moved to second question. Code was required.

Q-2: Given inference rules and some input tokens find all tokens which can be possible with given rules. Example :

Rules :

A\|c3\|xa0B

B\|c3\|xa0D

C\|c3\|xa0E

D\|c3\|xa0F

Input Tokens :

1. A,C then all A,B,C,D,E,F are possible.

2. A then A,B,D,F are possible.

Ask me what data structure you will use, how processing will happen. Pseudo code was required.

### Round -4 (F2F)

Long discussion on my current work. Biggest challenge and how you solve it. Technology challenge.

Q-1: Suppose you receive 10 million mails in 10 seconds. How will you process them and find what is problem to receive these many mails. Discussed different approaches.

Q-2: longest palindromic substring of given string. I gave DP solution, he ask me don't use DP. Proper code was required.

[Longest Palindrome in a String](#)

### Round-5 ( Telephonic)

Long discussion on my current work again, Challenges faced. What you did when some mess-up happens and deadline is very strict. Conflict with manager.

Q-1 : Outlook:

A server receives meeting objects from multiple senders. Meeting object contains meeting time, sent time, recipient(s), sender id, etc. When recipient comes and checks the server, he/she should get requests based on meeting time and not based on sent time. Many discussions on space complexity and time complexity.  
Eg:

\r\n12 PM From: A To: B,C,D meeting time: 4 PM meeting Id: 1\r\n\r\n12.30 PM from: A To C,D meeting t

When C requests the server, C should get ID3 as 1st, ID2 as 2nd and ID1 as 3rd meeting.

Q-2 : [Add all greater values to every node in a given BST](#)

I gave solution using temp array, then he ask me to do in constant space in single traversal. Condition don't use pointer for sum or call me reference. Proper code was required.

**Tips:** Be yourself . Practice writing code on paper. Never give up.

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Thanks Geeksforgeeks for providing very good platform to well prepare. A knowledge repository J

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# Amazon Interview Experience | Set 170

- Difficulty Level :\n[Expert](#)
- Last Updated :\n28 Jun, 2019

## Round 1 \xe2\x80\x93 Telephonic

1. [Find element in an array which have elements in first increasing and then decreasing order.](#) (code)
2. [Find if two nodes in a tree are cousins or not.](#) (code)

## Round 2

1. [Find sum of all numbers that are formed from root to leaf path](#) (code) expected time complexity O(n)

2. [Zig-Zag level order traversal.](#)

3. [Preorder traversal](#) without using recursion.

Other questions related to my work in my current company

## Round 3

1. Grilled me about my current company and current work.
2. [Print top view of a binary tree](#) (code)
3. Why amazon?

## Round 4

1. Find median of an unsorted array. (code)
2. General discussion on heaps
3. [A stream of characters is coming, at any moment you have to tell \xe2\x80\x98k\xe2\x80\x99 elements closest to a given number](#) (code)

## Round 5 (Bar raiser)

1. Design a system which would make a schedule for a user to complete a book in given number of days. A pre condition is that the schedule for every day should end at the end of some chapter.

Ex \xe2\x80\x93 3 chapter with 10 pages each and user has to complete this book in 2 days, then the schedule should be either be 2 chapters on first day and 1 chapter on second or 1 chapter on first day and 2 chapters on second. (code)

2. Tell me about a time when you couldn't implement the best solution because of a close deadline.
3. What did you do about it afterwards.
4. General design pattern related questions like what if we use singleton design pattern for question 1

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# Amazon Interview Experience | Set 169 (For SDE 2)

- Difficulty Level :\nExpert
- Last Updated :\n27 Jun, 2019

Recently I was interviewed for the position of SDE 2 I have 4 years of work experience .Following were the asked.

Note: For all of the question production level code was required.

## Round 1:

[1. Write a program to convert a integer to its form in a given language .](#)

For example 112345 Could be one hundred twelve thousand three hundred forty five or One lac twelve thousand three hundred forty five.

[2. Find the top k frequent items in a stream of numbers Space O\(k\)](#)

## Round 2:

It was basically a design round .

1.Design a Chess board so that two players can play.Each of the play can make any warrior move.Class Diagram and basic functions were asked to be written.

2.Design a key value pair storing system in a distributed system

Questions on types of caching in distributed systems , Sharding

How will you be handling scalability , failover and latency.

## Round 3:

[Given a 2 D array with m Entry points \(which are on the edges\) and n exit points which are on the edges give the total number of paths that are possible .](#) Complete production level code was to be written

## Round 4: Bar Raiser Round

1.given a large file with contents like

1.CAT

2.DOG

3.TAC

4.ACT

5.GOD

6.ODG

Re-arrange it such that every line has the index of all of its anagrams

Eg Output

1.CAT 1,3,4

2.DOG 2,5,6

3.TAC 1,3,4

4.ACT 1,3,4

5.GOD 2,5,6

6.ODG 2,5,6

[2. Given inorder and postorder traversal of a tree give the preorder traversal without creating the tree.](#)

## Round 5 Hiring Manager Round

## 1. Nut and Bolts Problem

2.Given a million list of co-ordinates in the form of longitude and latitude just as Google maps .How will you print closest k cities to a given location .

After that a few behavioural questions

I was not able to come up with a good answer for second question.

I thank geeksforgeeks for creating this amazing platform.Great job guys.

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# Amazon Interview Experience | Set 168

- Last Updated : \n 27 Jun, 2019

## Interview 1:

The interviewer asked me about my resume which was followed by the following question. Given a function mapped from integers to real numbers, which strictly increases upto a certain point say A and strictly decreases after it, write a function to find this point. The solution was a simple binary search, the trick being to reach the other side of the peak. This can be achieved iteratively increasing  $\text{xe2}\backslash\text{x80}\text{\x98x}\text{xe2}\backslash\text{x80}\text{\x99}$  and checking for a downward slope condition. The step could be constant, but an exponential increase would let to the point faster. I was asked to prove this by giving the recurrence relation and hence showing the complexity. I was further asked to code the entire algorithm using any language of my choice where I used c.

## Interview 2

The interviewer asked me about networks in relation to sockets and ports when he saw an academic project that was mentioned in my resume.

The interview questions were as follows:

- 1) Given a binary tree where value at each node is a single digit, find the sum of numbers generated by each root to leaf path. He also asked to code the primary function for the same. I couldn't find the exact question on geeksforgeeks, but this one is close enough
- 2) Given a numpad such that every number is associated with a set of letters, give all combinations of strings that could be formed given a string of numbers. He also asked to code the primary function for the same.

## Interview 3

- 1) Given an array of integers, find a subset of numbers from this array such that, after negating the elements of this set, the total sum of all elements would be equal to zero.

I could not solve the problem and he moved on to the next one after giving me a hint to use Dynamic Programming

- 2) Given two sorted arrays find the median of the merged array without using extra space. I gave an O(N) Solution and he asked me to give an O(log(N)) solution, which I gave after I put in some thought
- 3) Print a binary tree in a zigzag order level wise. I gave an implementation using a doubly ended queue, he wasn't satisfied as this would lead to extra space complexity for storing the levels in the d-queue. He was pleased when I decided to use 2 queues for the same. He further asked me to code it up

## Interview 4

- 1) The interviewer asked me about the types of database I knew and elaborated a bit on non-relational databases like mongodb and JSON.
- 2) Next, he asked me the need for indexing in databases and its implementation.
- 3) In an auctioning system, the bidder with the highest bid wins but charged at kth highest price. Develop a system for it. Solved it using a hashmap. Was asked to write a code for the same.
- 4) Given an array such that all elements except one are duplicate, find this element. He tweaked the problem to add the condition that instead of one there are 2 such elements. I couldn't find the exact question on geeksforgeeks, but this one is close enough

arrive to a solution even after he gave me some hints. In the end he gave me the answer but immediately said that it may not work. I realized why it did work and explained the reason for the same.

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## Amazon Interview Experience | Set 167 (SDE I for 1 year 6 months experience)

- Difficulty Level :[Easy](#)
- Last Updated :[27 Jun, 2019](#)

### Round1: Online Coding Round

There were 4 coding question. Was asked to answer 2 out of 4.

1) [Given a list of N coins, their values \(V1, V2, ..., VN\), and the total sum S. Find the minimum number of coins the sum of which is S \(we can use as many coins of one type as we want\), or report that it's not possible to select coins in such a way that they sum up to S.](#)

Example: Given coins with values 1, 3, and 5.

And the sum S is 11.

Output: 3, 2 coins of 3 and 1 coin of 5.

2) [Given two rectangles, find if the given two rectangles overlap or not](#)

3) [Given two strings string1 and string2, find the smallest substring in string1 containing all characters of string2 efficiently.](#)

For Example:

Input string1: `\xe2\x80\x9cthis is a test string\xe2\x80\x9d`

Input string2: `\xe2\x80\x9ctis\xe2\x80\x9d`

Output string: `\xe2\x80\x9ct str\xe2\x80\x9d`

4) I don't remember the question.

### Round 2: F2F Technical (Hyd)

1) [Print zig zag of tree](#)

2) [Longest Palindromic subsequence of a given string.](#)

Was asked to write complete code.

### Round3: F2F Technical (hyd)

1) Lots of Question on my projects.

Since my project relates to multiprocessing, lots of questions were asked why multiprocessing/why not multithreading, difference, what is thread/process, producer consumer problem, etc.

2) Design a file structure in Linux.

3) I was asked to write flawless code for inserting an element in sorted linked list which should cover all corner cases.

### Round3: F2F Technical (hyd)

1) [Given an array of words, print all anagrams together.](#)

2) [You have an array which the ith value is the price of a given stock on day. You can buy only one share of the stock and sell one. Design an algo to find the best times to buy and sell. Also he asked me to give start date and end date.](#)

3) Graph problem:

Critical node: If a node reaches another node only through one node.

Eg: A-C-B and A-E-B are critical nodes. (A reach B through one node which is C or E)

If A reaches B through more than one node, then they are not critical nodes.

1) A-C-B

A-D-E-B (A reach B thro c which might lead to critical node but A has another path to B thro D and E, so they are not critical nodes).

2) X-Y-Z

X-A-Z (X and Z are critical nodes)

Now find all critical nodes.

### Round4: F2F Technical (hyd)

1) Many questions on my projects. He asked me to write pseudo code for one of my project.

2) Outlook:

A server receives meeting objects from multiple senders. Meeting object contains meeting time, sent time, recipient(s), sender id,etc. When recipient comes and checks the server, he/she should get requests based on meeting time and not based on sent time. Many discussions on space complexity and time complexity.  
Eg:

```
\r\n12 PM      From: A  To: B,C,D  meeting time: 4 PM  meeting Id: 1\r\n12.30 PM  from: A  To C,D  meeting time
```

When C requests the server, C should get ID3 as 1st, ID2 as 2nd and ID1 as 3rd meeting.

3) Many behavioural questions.

I would like to thank GeeksforGeeks for helping me to crack the interview.

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# Amazon Interview Experience | Set 166 (For SDE I)

- Last Updated : \n27 Jun, 2019

## Telephonic 1:-

1. [Light is falling on a tree from left side you have to find all the nodes on which this light will fall.](#)
2. [Check whether a link list is palindrome or not.](#)
3. [Minimum Edit Distance.](#)

## Telephonic 2:-

1. [ZigZag traversal of tree](#)
2. [Pair wise elements which sum to a given value](#)
3. [Intersection point of two linklists](#)

## F2F round 1:-

1. [Maximum in sliding window](#)

## F2F round 2:-

1. You have a list of program files, how will you decide which file to compile first and which later, what data structure you will use for storing these dependencies.
2. Best Fit
3. You have been given time intervals of a you tube video watched mostly. You have to find out the most watched time interval, so that you can put an ad in between that section.

## F2F round 3:-

1. Find a number in an infinite stream of sorted numbers.
2. What happens when a computer starts?
3. Write a hashing function for storing stream of words.

## F2F round 4:-

1. A lot about my projects, what is the best thing you have done so far.
2. Populate sibling pointers in a tree.
3. TCP/IP, http/https, how to establish a secure connection or send an encrypted data, PPP protocol.
4. Virtual memory.

Thanks a lot geeksforgeeks for helping me a lot in my interview preparation.

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# Amazon Interview Experience | Set 165 (For SDE I)

- Last Updated : \n 29 May, 2021

I received interview call from amazon.com (Bangalore) for SDE1 position for 1.5 year experience.\xc2\xab0

## Round 1: 1 hour \xe2\x80\x93 written test at amazon office.\xc2\xab0

Q1. Given a set of strings, find the alphabets common to all strings.\xc2\xab0  
\xc2\xab0\xc2\xab0\xc2\xab0\xc2\xab0<1 used Hashmaps>\xc2\xab0

Q3. [Longest Palindromic subsequence in a given string.](#)\xc2\xab0

Q3. [Find LCA of two nodes in a binary tree](#)\xc2\xab0

## Round 2: F2F 1.5 hour\xc2\xab0

Given a huge file with large number of words, code a function that would take a word as input and print all anagrams of that word present in the file as output. Function has to be really really fast also O(1) run time. You are allowed to take as much time and resources for pre processing the file once. But after pre-processing function should perform in O(1) time.\xc2\xab0

<Use hashmap, and fact that all anagrams have similar alphabetical order of letters>\xc2\xab0

Create a hash function for above.\xc2\xab0

He then asked, another way instead of Hash ?\xc2\xab0

How to optimize searching among this linked list of heads of other linked lists.\xc2\xab0

## Round 3: F2F 1 hour\xc2\xab0

Only one question \xe2\x80\x93 [Print leftmost and rightmost node at every level of binary tree.](#)\xc2\xab0

## Round 4: F2F 1 hour\xc2\xab0

[Given a string with some \xe2\x80\x98?\xe2\x80\x99 where ? can be 0 or 1. Print all possible strings by substituting ? with 0/1.](#)\xc2\xab0

Eg: I/p Amaz??n,\xc2\xab0

\xc2\xab0\xc2\xab0\xc2\xab0\xc2\xab0\xc2\xab0\xc2\xab0 o/p Amaz00n, Amaz10n, Amaz01n, Amaz11n\xc2\xab0

[Connect all nodes of a binary tree which are at same level.](#)\xc2\xab0

## Round 5: Telephonic 1.5 hour\xc2\xab0

Write a code (online shared collab document) [to check whether a tree satisfies children-sum property.](#)\xc2\xab0

Write a code (online shared collab document) to convert a given tree to a tree that satisfies children-sum property.\xc2\xab0

Some questions related to Operating Systems\xc2\xab0

Major difference between thread and process\|xa0

CPU Scheduling difference between process and threads.\|xa0

Necessary and sufficient conditions for a deadlock Deadlock\|xa0

Suppose you have a list of 1 billion integers, find 1 million largest integers in this list.\|xa0  
List can have repetitive elements, max memory limit is 1 million numbers\|xa0

Asked to calculate time complexity for my algorithm\|xa0

### Round 6: F2F 1 hour\|xa0

Discussion on current work. You must know what you are working on in detail as you would be grilled\|xa0

Top 3 features I would put on a website portal if \|xe2\|x80\|x99m launching a cab service. (Non-technical)\|xa0

Write code for scheduling algorithms for such a cab services provided you have a list of future bookings, and list of cabs in your fleet.\|xa0

<I was asked to write OOP paradigm code>\|xa0

#### Tips:\|xa0

Try to interact continuously with interviewer. Keep thinking aloud and keep discussing with interviewers your ideas and approaches\|xa0

Prepare Data structures, in particular binary tree very thoroughly.\|xa0

Hope this helps. \|xf0\|x9f\|x99\|x82\|xa0

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# Amazon Interview Experience | Set 165 (For SDE I)

- Difficulty Level :\nEasy
- Last Updated :\n27 Jun, 2019

Each of the rounds were of more than 1 hour and they mainly focused on logical thinking and approach. DS and algorithms were the topics asked.

## First round \xe2\x80\x93

At first round, there were two interviewers. First, they asked about me. Why do you want to leave your present company and join Amazon?

Then after brief discussion, he went on to questions.

There is a 2-d matrix with rows sorted. Convert it into 1-d sorted array. Also specify space and time complexity.

Given two binary trees, check whether two trees are identical or not. Write working code for it.  
Using the previous solution, check whether one tree is subtree of another or not. Also specify time complexity (Average and worst case) with proper code.

## Second round \xe2\x80\x93

General discussion about present company\xe2\x80\x99s work.

Given a number of friends who has to give or take some amount of money from one another. Design an algorithm by which the total cash flow among all the friends is minimized. Specify the data structure which you will use and write the code for it.

Given an array, find the index of first occurrence of a number \xe2\x80\x98x\xe2\x80\x99. First, I gave O(n) solution, after that he asked to optimize it and find it in less than O(n). There was long discussion in this question.

## Third Round \xe2\x80\x93

General questions like \xe2\x80\x93 tell me about yourself.

What are your strengths?

Why Amazon?

Why do you want to leave your current company so soon?

Did you ever been in any kind of disagreement with your management?

Work in current company ?

Design snake and ladder game. What data structure would you use, with design was needed. He then asked to optimize it further.

Given two linked list , find the sum of those linked list . With recursion and without recursion. Lists may be same or different lengths. Complete code was needed with space and time complexity.

## Fourth round \xe2\x80\x93

General discussion and Introduction. Work about current company?

What is the major challenging task that you have faced till date? Then more discussions and questions on the task.

Any disagreement with manager and any good or innovative idea that you have come up with and worked on it?

One technical question [Given a word and the dictionary, find all the anagrams of the particular word present in dictionary](#) (That are valid words). Propose the data structure you have used and time complexity of the solution.

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## Amazon Interview Experience | Set 164 (For SDE I)

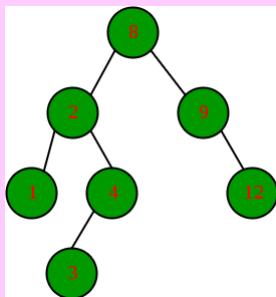
- Last Updated :n27 Jun, 2019

Applied for Chennai Kindle team, cleared few rounds but not happy with the overall interview process. Contacted again by Hyderabad office and scheduled an interview, asked me about my previous experience with Amazon. No telephonic, all F2F as I have already cleared few rounds earlier.

### Round 1

- Questions on my project with previous employer
- <https://www.geeksforgeeks.org/add-two-numbers-without-using-arithmetic-operators/>
- [Given an unsorted array of integers, assume the elements are inserted into BST. Search for an element and print the path if found. If the element is left of previous in BST then path variable is 1 else 0.](#) Eg:

```
\r\nInput: Given array[] = {8, 2, 4, 9, 12, 3, 1}
```



Corresponding BST would be

```
\r\nOutput: Search key = 3 should print \xe2\x80\x9c101\xe2\x80\x9d, \r\n      key = 11 shouldn\xe2\x80\x99t print any.
```

### Round 2

- [Count the decoding for a given digit string.](#) Let say A->1, B->2 and so on  
Eg :

```
\r\nInput: digits[] = \xe2\x80\x9c123\xe2\x80\x9d\r\nOutput: 3 //\xe2\x80\x9dABC\xe2\x80\x9d, \xe2\x80\x9c LC\xe2\x80\x9d
```

- There is a printer printing characters continuously on paper, you need to cut the required message character by character from the printed paper efficiently

### Round 3

- [Largest Sum Contiguous Subarray](#)
- [Given a 2D matrix consists of only 0\xe2\x80\x99s and 1\xe2\x80\x99s find the longest diagonal of all 1\xe2\x80\x99s](#)
- Optimization on above question with slight variations.

### Round 4 (Bar Riser from US telephonic)

- [Given an array and an integer k, find the maximum for each and every contiguous sub array of size k](#) Eg:

```
\r\nInput: array[] = [1,2,3,4,5,6], k = 3\r\nOutput: 6, 9, 12, 15
```

- [Maximum of all subarrays of size k](#) asked for minimum instead of maximum

3. Given an array of positive integers, form a largest decimal number by concatenating integers. Such that the largest number should be divided by 2, 3 and 5.

### Final Round (Manager)

- [Given a BST and a node \(say target\), find K nearest neighbors](#)
- As my work with previous employer is very similar to the team I am interviewed for, not much questions rather it was more like a discussion

Production level code on paper with all corner cases handled is expected in all rounds. The interviewers especially Hyderabad team are very friendly and helpful, talk out loud, they are ready to help and guide you to right direction.

Finally, I would like to thank GeeksforGeeks as it helped me a lot in cracking algorithm questions. It\xe2\x80\x99s a great portal, keep up the great work, cheers \xf0\x9f\x99\x82

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# Amazon Interview Experience | Set 163 (For SDE II)

- Difficulty Level : \n[Medium](#)
- Last Updated :\n27 Jun, 2019

Recently I attended amazon bangalore interview for SDE 2 position. All f2f and no phone/written screening as i had attended one before and cleared those. Total 5 rounds and below are the details.

## 1) Coding

[Given 2 nodes in a binary tree, find the length of the path connecting them](#) (standard)

## 2) Coding

[Given an continuous input stream of characters, find a method to get the earliest/oldest non repeated character at any time in O\(1\).](#) (solved using a doubly linked list and array combo)

## 3) Hiring Manager

Questions regarding the past projects, challenges (Important! please search google for preparation grid and fill it up, be honest, be consize, your interviewer has gone through hundreds of filmsy, shaky and all kinds of project descriptions and don\xe2\x80\x99t think you can fool him.)

## 4) Design round

Design a system where a buyer puts a notification to the social networking site about his transaction.

## 5) Bar raiser

Past project discussion, design a cab service system, how would you define the standerds to be ahead of your customers, how to handle scalability issue.

Note:

Brush up coding style, you may know the logic, but don\xe2\x80\x99t keep much hope if the code is messy, lengthy and without boundary checks, practice writing code on paper which can run without any modification.

Think loud, the interviewer is ready to help you, even to the extent of going into your code and finding bugs, and that does not make you look bad.

Think all possible angles when designing. if the line goes down, if there\xe2\x80\x99s a meteor hitting the server, someone is using the design after 20 years, so what might happen. scalability is important for amazon. Prepare your project details and think of your real fault, real problems to tell the manager.

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# Amazon Interview Experience | Set 162

- Difficulty Level :\n[Hard](#)
- Last Updated :\n27 Jun, 2019

## Round 1:

Q-1: [Word Break Problem](#)

## Round 2:

Q-1: [Search an element in a sorted and rotated array](#)

Q-2: [Given a string of 0s and 1s, count the number of substring which start and end with 1.](#)

I was rejected after round 2 because I did not do well in round 1, was put on hold.

Was called again

## Round 1:

Q-1: [Determine if Two Trees are Identical](#)

Q-2: [Check for Children Sum Property in a Binary Tree](#)

## Round 2:

Q-1: In a tennis tournament of N players every player plays with every other player.

The following condition always hold-

If player P1 has won the match with P2 and player P2 has won from P3, then Player P1 has also defeated P3.

Find winner of tournament in O(N) time and O(1) space. Find rank of players in O(NlogN) time.

Q-2: Given N scientists and K black holes, each scientist can query on radius, size and temperature of a black hole, what data structure would you use?

Following queries are important.

Which scientist had queried on which black hole.

What were the queries made by that scientist.

## Round 3.

Q-1: [Max sum path in two arrays](#)

Q-2: [Dice throw](#)

## Round 4:

Discussion on current project in company and college problem.

Questions on OS.

Q-1: Given 2 files find common words.

Both files are too large to be loaded in memory.

Q-2: Point of inflexion in an infinite mathematical graph which is strictly increasing then strictly decreasing. Simple binary search was not the solution.

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# Amazon Interview Experience | Set 161 (Off Campus for SDE-1, Bangalore)

- Difficulty Level : \n [Hard](#)
- Last Updated : \n 27 Jun, 2019

Off campus- Delhi drive (SDE-1 Bangalore)

## 1st round: f2f

Tell me about yourself.

Most challenging task.

[Extract Leaves of a Binary Tree in a Doubly Linked List](#)

## [Parenthesis Checker](#)

Small modification in it. Parenthesis pairs are given in a separate list. You have to optimize the problem by suggesting the method you will need to store the pairs.

## 2nd round: Hiring manager

What is the angle between hour and minute hand at 12:15. I said 90\xe2\x80\x99 but corrected myself immediately.

So he told me the importance that for huge no of clients this small mistake can create a blunder.

He asked me a scenario where I faced this thing and thereby improved the time complexity.

Lot of behavioural questions like conflicts with manager, team collaboration etc.

## 3rd round: f2f

[Level order traversal in spiral form](#)

[Find 2 missing numbers in an array of integers with two missing values](#)

He asked me if have heard of [nut and bolt problem](#).

I didn\xe2\x80\x99t so he moved to next question.

[Given an array. Find the maximum number of groups of size of 2 or 3 that can be formed such that sum of the numbers in group is divisible by 3.](#) No number can be reused.

## 4rd round: Bar raiser

Convert an integer to its roman. He asked me to consider cases with integers containing 4 and 9. I didn\xe2\x80\x99t understand properly.

He asked me if I did anything extraordinary apart from my daily work in the office and what challenges I faced.

[Largest subarray with equal number of 0s and 1s](#)

He did not accept this solution and asked me to optimize. This round didn\xe2\x80\x99t go well, so I was not selected.

**Tips:** Solve all the data structures related problems from geeksforgeeks and start practicing to write

perfect code for any problem.

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## Amazon Interview Experience | Set 160 (For SDE 2)

- Difficulty Level :  
**Hard**
- Last Updated :  
18 Dec, 2014

Amazon sde2 experience:

### Telephonic round :

Design a site similar to [jungle.com](#). Assume you are given a crawler, design a distributed system , what ds will you use , some basic api's etc.

### Onsite:

#### coding round 1:

1. zig zag traversal of binary tree O(n) algo

2. matrix question:

given matrix like :

```
a b e d  
b c f e  
a b d d  
\xe2\x80\xa6.
```

find the longest path of consecutive alphabets given a starting alphabet. You can move in all 8 directions. for eg. a->b(right)->c(down)->d(diagonal down)\xe2\x80\xa6 len = 4 , find max such len

#### coding round 2:

1. is binary tree balanced : O(n) time algo

2. given a pre and post order kindof a traversal (2 arrays) create an n-ary treee out of it with struct of the form :

```
\r\n\r\nstruct node {\r\n    int data;\r\n    struct node *child[MAX];\r\n    int child_num;\r\n}
```

did it using a hash table of linked lists and storing parents . Might be a btr way not sure.

### design round + hiring mgr 3:

Design the most recently viewed item for amazon , say 15 most recently viewed item which are scrollable for millions of products and users . scalable and extensible model. give apis , distributed systems, caching , reduce latency : critical

#### design round 4:

1. Give Object oriented design for the snake game (that was in old nokia phones) . only class and obj diag was needed, no code/implementation. it should have extensibility to accomodate different types of fruits, (eg one gives + 5 len + 10 pts) it should be scalable to diff platforms

2. Give an architecture diagram with all entities and relationships of a multi user wysiwyg editor . basically a web interface to multiple authors who can edit and store their docs . multiple ppl should be able to save it at once . also ownership should be present for documents.

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# Amazon Interview Experience | Set 159 (Off-Campus)

- Last Updated : \n27 Jun, 2019

I recently got an offer from Amazon Delhi. Here goes my interview experience.

## Telephonic Round

Q1. [Find kth element from the end of a singly linked list.](#)

Q2. [Given an array \(not sorted\) of integers and a number S, find a pair in the array whose sum is equal to S.](#) I gave the sorting solution and was asked to write the code for the sorting algorithm I used. I had used in-place merge sort.

## F2F Delhi

### 1st round:

Q1. Detailed discussion on all possible data structures which can be used to implement a set with no duplicates and which supports add, delete and find operations in minimum space & time complexity. I suggested using hashing, BST or array. They asked me to give an example of a hash function which supports uniform distribution but is not collision free. Was asked to write codes for add, [delete](#) and [find operations using BST.](#)

### 2nd Round:

Q1. [Rotate an image represented by a 2D matrix by 90 degree.](#)

Q2. [Given a singly linked list of 0s and 1s, sort it keeping the order intact.](#) I gave O(N) time and O(1) space complexity solution.

### 3rd Round:

Q1. Discussion on projects and previous work.

Q2. Given stock prices of several days, find the two days so that buying the stock on 1 and selling it on another gives the maximum profit. O(N) time and O(1) space soln was expected.

Q3. Given a doubly linked list, reverse every 2 nodes. E.g. 1->2->3->4 will become 2->1->4->3

Q4. Several questions on OS, OOP, A few are what is segmentation fault, describe the design patterns you know.

### 4th Round:

This round was Bar-raiser round. A bit tricky.

Q1. Detailed discussion on projects, best project you have got, the most challenging work, strengths, weaknesses etc.

Q2. Given a dump of items sold in a file (not organized), give the top n items sold. Eg. the file looks like:

```
< item1 sold >
< item2 sold >
< item1 sold >
< item9 sold >
```

Also, there might be same items sold but they might have different names because of different vendors. So you also need to count them together (Hint: Use ids of the items).

Hint: Use grep command to get the counts.

Q3. Collect email-ids of all the persons above 18 yrs in a city. He wanted to see my way of thinking and how do I use software approach towards daily life problems.

Q4. There is a signal and two way traffic. Cars are coming @rate 10 cars/sec. Signal remains green/red for 10 secs and when the signal is green, 10 cars/min can cross the signal. You need to tell how many cars are in the line waiting behind the signal on both sides during a particular time. Say you run the simulator at time 0, now after 1 hour you need to tell the no. of cars waiting on both

the sides.

I didn't get selected after this but got a call after 1 month as they wanted to reconsider my profile.

## F2F Hyderabad

### 1st Round:

Q1. Some discussion on previous work.

Q2. Given a sorted array S of characters say S=

{\xe2\x80\x98a\xe2\x80\x99, \xe2\x80\x99d\xe2\x80\x99, \xe2\x80\x99g\xe2\x80\x99}, you need to find the insertion point of a given character in it such that if it is less than \xe2\x80\x98a\xe2\x80\x99, insertion point is 0, if between \xe2\x80\x98a\xe2\x80\x99 and \xe2\x80\x98d\xe2\x80\x99, insertion point is 1 and if greater than \xe2\x80\x98g\xe2\x80\x99, again the insertion point should be 0. O(log n) time soln was expected.

Q3. [Given a complete binary tree, connect nodes at the same level without using any extra space.](#)

Q4. [Given a dictionary of unknown language, you need to give the sorted sequence of characters in it.](#)

E.g.

Dictionary looks like:

ABCDE

CF

DG

so the output may look like: ABCDEFG

Hint: Topological sort

### 2nd Round:

Q1. [Given two arrays S1 and S2 of characters. You need to find the smallest length of substring in S1 which contains all the characters of S2. Characters need not be in the same order as in S2. Characters might be repeating in S1.](#)

Q2. Given a dictionary like text file, find n top occurring words in it i.e. n words whose count is the maximum. Hint: Use Hashing and Min-Heap.

I would like to thank geeksforgeeks as it helped me a lot while preparing for the interviews.

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# Amazon Interview Experience | Set 158 (Off-Campus)

- Difficulty Level : \n [Expert](#)
- Last Updated : \n 27 Jun, 2019

Recently I appeared in for off-campus Amazon Interviews for SDE position and here is my experience.

## Round 1: 1 hour written test

Q1. [Given a string you need to print all possible strings that can be made by placing spaces \(zero or one\) in between them.](#) For example : ABC -> A BC, AB C, ABC, A B C

Q2. [Given a tree where there are three pointers \(left\\_pointer, right\\_pointer and a next\\_right\\_pointer\). Left and right pointers are set like that of any general binary tree. We were asked to set the next\\_right\\_pointer to the next node in the level order traversal for the same level.](#) This implies means for the last node in every level it will be null for rest it will be pointer to the next node in level order traversal.

## Round 2: 1 hour technical

Q1. There is a 12 km road and a contractor who is in-charge of repairing it. Contractor updates you about the work which is done in patches. Like \xe2\x80\x9cRoad between 3.2 km to 7.9 km repaired \xe2\x80\x9d, \xe2\x80\x9cRoad between 1.21 km to 3.2 km repaired\xe2\x80\x9d. You have a manager who enquires about the longest continuous patch so far. It was a long discussion and I gave solution in O(nlogn) where n is the number of updates by the contractor.

Q2. Several Questions were asked from my project.

## Round 3: 1 hours 20 mins

Q1. There are billions and billions of stars and at any point of time you need to tell the closest million to earth. In what way I should take input for the stars and what all do I need to represent one. I used heap of a million size. Then he also asked about the different approach when I can\x80\x9t use so much of physical memory for heap.

Q2. [Implementation of Least Recently Used Cache.](#) I started with O(n) solution using queue and ended up with O(1) solution using heap and doubly linked list.

Q3. Basically it was from [snakes and ladders game.](#) There is n x n matrix and you are at starting position. What is the no. of ways to reach n-square position if your next move will be dependent on number on dice? You have been given information about ladders (there are no snakes J ). I used DP.

There were few others that we didn\x80\x9t discuss as I told him that I know solution to them.

## Round 4: 1 hour

Q1. [Write an efficient program to count number tree structures that can be made using n number of nodes.](#)

Basically  $T(n)=\sum (T(i) * T(n-i-1))$ . I used DP as there are a lot of sub-problems used again and again.  $O(n^2)$ .

Q2. There are n nuts and n bolts represented in two different arrays and a function is\_fit(nut\_i,

`bolt_j`) which returns 0 if its perfectly fit, 1 if it's a tight fit and -1 if its loose fit. I was asked to arrange them so that every nut fits perfectly with the bolt in the same position (there is one nut for every bolt that fits perfectly). I suggested  $O(n\log n)$  solution.

Q3. [Find the kth largest element in a BST](#). Well that was easy J

We discussed about projects and he asked reasons for leaving present company.

### Round 5: 1 hour hiring manager round

Most of the questions were behavioral questions like dealing with manager in case of conflicts, reasons for leaving present company, why would you choose Amazon and not Flipkart if you have offers from both, about my projects and contribution to present company.

### Round 6: Technical + Behavioral

Q1. How to know the time between someone writes Amazon.com and the page appears on his browser for a particular user. I impressed him by suggesting to use dummy request packets after the page is loaded completely sending the time J.

Q2. He showed me the Amazon page they were working at that time and I asked me to suggest 5 changes in 5 minutes.

Q3. [Find the first circular tour that visits all petrol pumps](#)

I messed up with the solution in the beginning but reached to solution eventually.

Many behavioral questions were asked too.

### TIPS:

1. Don't jump into solutions, ask about the type of input that is given and output that is expected.
2. The interviewer always tries to take you to the most optimal solution so listen to what all he says. Many a times they are big hints !!!
3. Be honest.
4. Keep believing that you will get the job J.

I would like to thank geeksforgeeks team for such an amazing platform to learn and discuss with other geeks.

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# Amazon Interview Experience | Set 157 (On-Campus)

- Last Updated : \n 27 Jun, 2019

## Online Round

Initially a test was conducted on hackerrank on the basis of which students were shortlisted. The test contained 22 questions, 20 Gate like MCQ's and 2 Programming questions. The MCQ's were on OS(page replacement policies), output, trees etc.

The programming questions are as follows :

- 1) [Maximum of all subarrays of size k](#)

10 Bonus marks were there if one could solve in O(n) time.

- 2) Given 3 numbers in the form of linked list. Give the sum of the 3 numbers as another linked list.

Example: 1->2->3 + 2->1->3 + 3->2->1 = 6->5->7.

A slight variation to this question :

- 1) [Add two numbers represented by linked lists](#)

They shortlisted around 30 people for the interviews. Since some of them got placed on day 1, they were extending the shortlist on realtime also. There were 4 rounds in total. Every round was an elimination round. In each round, I was asked to explain the algorithm as well as implement it on the paper. Every interview started with the typical 'tell me about yourself' ice-breaker.

## Round 1 (Technical)

- 1) [Finding LCA in BST.](#)

- 2) [Finding LCA in Binary tree](#)

- 3) [Product array puzzle](#)

## Round 2 (Technical)

- 1) [Spirally traversing a matrix](#)

2) You are given n appointments. Each appointment contains starttime and endtime. You have to return all conflicting appointments.

3) Some basic discussion on memoization and dynamic programming.

## Round 3 (HR + Technical)

1) Tell me about yourself.

2) Why Amazon?

3) Where do you see yourself after 3 years.

4) What are your weaknesses? I said one, he asked me one more?

5) Lot of questions on my internship project and on the technology used in it, challenges that I faced, best thing I liked about the technology etc etc.

6) Some question on my hobbies.

7) [Finding LCA of a tree whose nodes has only parent pointers.](#)

8) [Implement a stack from 2 queues.](#)

9) [Implement a queue from 2 stacks.](#)

10) Design classes for a [Snake and Ladder game](#). The focus was on OOPS concepts.

11) Some more question on my projects and resume that I don't remember.

## Round 4 (Technical)

- 1) [Rotating an array.](#) (All approaches)

## [2\) Search an element in a sorted and rotated array](#)

In all the interviews, the approach is seen, so taking out loud what you are thinking is must. Its good to point out the problem(s) that are the crux of the question and solving it would lead to the final solution. The interviewers are always very helpful, they give hints whenever required. Just being calm, composed and patient during & between interviews and studying geeksforgeeks will do the work.

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## Amazon Interview Experience | Set 156 (On-Campus)

- Last Updated : \n09 Aug, 2019

### Written Round:

There were 21 MCQs and 2 coding questions hosted on hackkerank.

Time: 1 hr 30 mns.

The MCQs were from c, c++, os, networks for example

1. LDAP stands for?
2.  $2^30 + 2^{30} + 2^{30} + 2^{30} = ?$
3. Given three process P, Q, R . P requests resources A, B, C, Q requests B, C, D and R requests C, D, A which of the following orders is deadlock-free
4. [Given a postfix expression find the value of expression](#)
5. Which of the following is the inorder traversal for the given preorder traversal
- 6 Question-based on the precedence order of operators

### Coding questions:

- 1) [Given a graph. Find if a cycle exists and print the nodes in the cycle.](#) If multiple cycles exists print the cycle starting from the lowest index

- 2) [Given a string S and a string T, count the number of distinct subsequences of T in S.](#)

S = \xe2\x80\x99crabbbbit\xe2\x80\x9d, T = \xe2\x80\x99crabbit\xe2\x80\x9d

3

### Interview 1:

- 1) [Find the diameter in given tree](#) which can start at any node and can end at any node and should have only single turn.

\r\n 10\r\n / \\\r\n 5 8\r\n 10-8 has two turns\r\n 10\r\n / \\\r\n 45 56\r\n

10-45-10-56-45 has 1 turn

20-45-10-56 has 2 turns

- 2) [Find the number of islands](#)

### Interview 2:

- 1) [Word Break Problem](#)

- 2) [Find if an array of strings can be chained to form a circle](#)

- 3) What datastructure will you use for designing lift

- 4) Efficient data structure for minimising the following operations if we have an array arr[0 . . . n-1].

- Add a value x to array from index l to r where  $0 \leq l \leq r \leq n-1$

- Find the value of a specified element of the array arr[i] where  $0 \leq i \leq n-1$ .

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# Amazon Interview Experience | Set 155 (On-Campus)

- Last Updated : \n16 Oct, 2019

Recently Amazon came to our campus as a part of our campus recruitment.

## Online Round:

- 1) [Given a linked list of zeros and ones, sort the list.](#)
- 2) You are given three numbers. Each number is represented by a linked list. Write a function that returns sum list.  
Example: 1->2->3 + 2->1->3 + 3->2->1 = 6->5->7.

This was conducted on hacker rank. Test duration was 1.5 hrs

There were around 22 MCQs related to OS, OOPs C Input/Output questions. GeeksQuiz is sufficient to answer these questions.

They shortlisted 25 people for the interviews.

There were 4 technical rounds in total. Every round is an elimination round. In each round interviewer asks you to explain the algorithm as well as implement it on the paper.

## First Round:

Started off with a basic \xe2\x80\x9ctell me about yourself\xe2\x80\x9d question. This round is just to check if you really are capable. He asked me three questions and asked me to implement all of them on paper.

- 1) [You are given an array and a number c. Output all pairs a, b whose sum is equal to c. O\(n\) is expected.](#)
- 2) [You are given a number represented by a linked list add one to it.](#)  
I told him the obvious reversing the list and add one to it. But he wanted me to do it without reversing and using recursion.
- 3) [You are given a sorted array, find majority element in it.](#) If there is no such element output -1. You have to do it in single o(logn) operation.  
Extension to the third question: What if the array is not sorted? Provide an o(n) solution.

## Second round:

This was for about 2 hours. Although there were only two questions but the interviewer is checking if we have enough knowledge on all the data structures.

- 1) [You are given a long array and window size w. You can only view elements that are currently in the window. Window starts at the extreme left and moves one position at a time to the right. You are required to output minimum numbers in the current window.](#)

All the possible approaches were discussed. Starting from brute force, o(nw) to o(nlogw) using heaps, BSTs. He asked me to implement them. But he was not satisfied with o(nlogw) solution. He wanted me to give a o(n) solution. Finally after few hints I\xe2\x80\x99ve solved it using doubly linked lists.

- 2) [You are given a binary tree. Print the vertical order traversal starting from the root element.](#)

## Third Round:

Started off with the question Explain one project of yours. Few technical questions were asked on the project.

Few questions on OS, Multithreading vs Multiprocessing were asked. Also he asked me to tell if I have implemented any program that used multi threading. Few questions on semaphores and mutexes were asked.

Only one coding question in this round

1) [You are given a very large binary tree, return the root node of the largest BST in the given tree.](#)

Single traversal solution is expected. Implementing it on paper was little difficult than expected.

#### Fourth Round:

By this time, job offer was almost confirm.

He asked questions on my projects. He asked me to implement few algorithms from my project on a paper.

1) Implement a graph and one graph traversal using oops.

2) Given an immutable(non editable) linked list and a number k, remove all occurrences of the number in the list.

Few questions on OOPs were asked.

They gave me the result after 20 minutes

I would like to thank geeksforgeeks which helped me enormously in getting placed.

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[Majority Element](#)

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# Amazon Interview Experience | Set 154 (For SDE2)

- Last Updated : \n27 Jun, 2019

## Round 1:

1. [Print level order traversal of binary tree](#) in iterative & recursive way.  
\\xc2\\xa0\\xc2\\xa0\\xc2\\xa0 Print each level in next line. \\xe2\\x80\\x93 I used 2 variables for this.
2. convert HEAD -> TAIL and print all words in successful transformation path.  
\\xc2\\xa0\\xc2\\xa0\\xc2\\xa0 constraints: Only one character can be changed at a time.  
Transformed words should be valid. It can be checked using dictionary.

## Round 2:

1. [Check if tree T1 is a subset of tree T2.](#)
2. [find Kth minimum element in a row-wise and column-wise sorted 2-d array.](#)

## Round 3:

1. Project Role and related discussion
2. [Find distance between two nodes in a binary tree.](#)

## Round 4:

1. Design an Email client. should be having all features of email-client.
2. Transfer one file data from one PC to another PC. To transfer data some network entity is being used which cost some value. You need to reduce this cost of transferring the data. \\xe2\\x80\\x93 I used compression technique to replace repetitive data with some key on first PC and put it back on another PC.
3. How smart mobile/tv apps gets updated
4. Project role.

## Round 5 (Hiring Manager):

1. Project Role deeply.
2. Any critical problem you have faced.
3. C++ -> polymorphism, abstract class, abstraction, overloading, compiler given default n copy constructor.
4. Spiral matrix puzzle.

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# Amazon Interview Experience | Set 153 (For SDE1)

- Difficulty Level : \n [Hard](#)
- Last Updated : \n 27 Jun, 2019

Recently I had interview with amazon.com for SDE1 position for 1+ year experience. It was kindle team.

## Round 1: 1 hour \xe2\x80\x93 written test at amazon office.

Q1. [Given two link list that represents no. write a program to add two given two link list and return new link list that represents sum of no. represented by given two link lists.](#)

Q2. [Given a string, write a program to find longest length palindrome from that given string.](#) You can swap the characters of given string.

Q3. [Total Decoding Messages](#)

## Round 2: 1 hour \xe2\x80\x93 with SDE1

Q1. [find longest common prefix of given set of strings.](#)

Q2. [Check whether given link list represents palindrome.](#)

Q3. [Given sorted array, write program to generate balanced binary search tree from given array.](#)

## Round 3: 2.5 hour \xe2\x80\x93 with SDE1 + SDE2

Q1. [Count no. of inversion in a given array.](#)

Q2. In a party there are total n persons are there. every person is having one gift with him. Every person will give his gift to another such that every person at the end has exactly one gift. Any one can give his gift to anyone. say 5 people (A,B,C,D,E).

A\xe2\x80\x93>D

D\xe2\x80\x93>C

C\xe2\x80\x93>E

B\xe2\x80\x93>A

E\xe2\x80\x93>B

write a program to generate a random sequence. for every run, code should generate different sequence with equal probability. lots of discussion was there on various approaches. finally with the help of interviewer i wrote O(n) time solution with O(1) space. Hint: selection sort

## Round 4: 1.5 hour \xe2\x80\x93 with SDE2

Q1. Given a file having many words. Given K, find the words appearing >=K times. Lots of discussion was there, discussed many approaches.

Q2. [Design data structure that supports insert\(\), remove\(\), find-max\(\), delete-max\(\) operations. All operations should run in O\(1\) time.](#) Lots of discussion was there, discussed many approaches.

Q3. Given two link-list that represents polynomial. Write program to multiply both polynomial , return result as new link-list.

Q4. [Write program to find max size BST from given binary tree.](#) Algorithm and full working code was required for all the problems. Discussed space and time complexity of every problem.

Still hiring manager round and senior manager rounds are there. Once completed i will post

**Tips:** Discuss various approaches with interviewer. Try to interact continuously with interviewer. they were very friendly during interview.

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# Amazon Interview Experience | Set 152 (Kindle Team SDE-1 )

- Difficulty Level :\n[Expert](#)
- Last Updated :\n27 Jun, 2019

Recently I have participated in Amazon SDE interview for Chennai location Kindle team. Kindle team has arrived Bangalore location to take drive.

I have given 8 rounds

Questions- Answers are as below

## R-1) Written Test 1 :

Three codes were asked :

- 1) [Find whether given LinkedList is Palindrome or not](#)
- 2) [Find Whether given Binary Tree is Binary Search Tree or not](#)

3) Create Regular expression and String Matching program for ? and \*, where. \* means any null or character may appear instead \*. and ? means one or more previous character may appear in string.  
example

input :

AM\*AZO?N\*, AMAZON

AM\*AZO?N\*, ABAZOO

Both are matching as per rules of ? and \*.

After removing several candidates from process they conducted second round written.

## R-2 ) Written Test 2 :

- 1) [Stock prices are given in array. Find for which duration I can buy and sell Shares to get maximum profit.](#)

We need to first explain our method and then start writing code.

\xe2\x80\x93 After this round some 20 candidates left.

## R-3) Face to Face Round 1 :

They discussed for all this 4 questions and why I choose to write this answer, some modification in question to see whether you can think more in depth , or several conditions changed, and they asked to redesign/rewrite answer.

## R-4) Face to Face Round 2 :

Q1) Class diagram of one system ( don't remember question)

Q2) [Find Leader in Array](#) ( Leader means an element which is higher than all number which are indexed higher than element )

Solution Traverse array from behind to find such elements (simple method)

Q3) [K sorted Linked Lists are given sort them in one](#) ( write sudo code )

Then he told me to give logic to solve question without using auxiliary array ( result array )  
I did with in-place method, searching and storing nodes in one linkedlist only.

## R-5) Face to Face Round 3 :

Only One question was asked : Rotate Array  $\times 80 \times 9cD \times 80 \times 9d$ .

Different strategies discussed, He was impressed with my another method to find new array location based upon array size N and D.

## R-6) Face to Face Round 4 :

Questions were from different topics like

\xc2\x0\xc2\x0\xc2\x0\xc2\x0\xc2\x0-OS fundamentals  
like fork, child process creation and output if I use fork().  
What is deadlock, write sample C code to create deadlock.  
What is mutex, etc.

SQL Fundamentals.

## Data Structure used in Query,

Sample Query like finding Manager's name and Fundamentals of join

|xc2|xa0|xc2|xa0|xc2|xa0|xc2|xa0 -Other General Questions

How Google Search engine works. Where Query goes their server, data storing etc

What happens when you click on website address.

\xc2\xab0\xc2\xab0\xc2\xab0\xc2\xab0 -Design GAME.

GAME is like two players are fighting and ( kind of street fighter ) and design class diagrams and methods for this GAME, I can think any functionalists(like health, power, help from friend, etc ) any extra thing apart from which he mentioned.

\xc2\x0\xc2\x0\xc2\x0\xc2\x0\xc2\x0\xe2\x80\x93 API is given, and this API servers different clients, Now one client has requirement so that functionality changes, but other clients dont need such functionality, how will you design your system.

OOPS fundamentals were discussed like Static, Class can be protected or not, overloading and overriding difference and implementation of them,

Software patterns discussed like Factory and Abstract Factory

## Singleton and how to implement it.

Last Question was, If I want to store student data such that some students took Physics, some took Chemistry and some took both. I want to know all details of students, mark, name etc also. which way implement this system, which Data Structure will be used, and which design pattern.

After All this round I was told to go home and Hiring Manager Round will be taken onsite at Chennai, I was told.

for One month my rounds were not scheduled.

One fine day I got chance to give Project Manager round over phone ( they said Senior Manager will take onsite round and then HR round will be there)

## **Round 7) Hiring Manager Round.**

Over call he asked me first question

Q1) Array is given which is of 0 and 1, all connected 1 forms island. Find largest size island in given Array.

I have provided working code, He then asked me to optimize and again writing code.

Q2) Design LRU system. I have explained this and also class diagram and pseudo working code was submitted.

Again for 20 days I didnt got call from HR and when I used to mail him, He simply replied that my candidature is on hold as Senior Manager is not free to take my next round.

And Today Again I got call that I am rejected. because Hiring Manager is not convinced from my approach in round,

I still don't know what went wrong as both code given to HM were working.

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## Amazon Interview Experience | Set 152

- Last Updated : \n27 Jun, 2019

### Amazon written round \xe2\x80\x93 Time 1 hour.

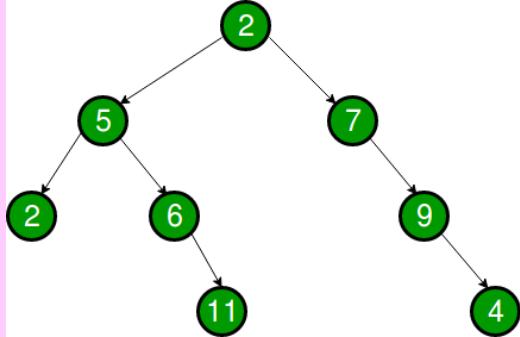
1. Given an array of 0s and 1s, find the position of 0 to be replaced with 1 to get longest continuous sequence of 1s.

\r\nEg: Array- 1,1,0,0,1,0,1,1,1,0,1,1,1\r\nOutput - index 9\r\nAssuming array index starts from 0.

2. [Given an unsorted array, find the k smallest elements](#)

\r\nArray {9, 5, 1, 4, 13, 6}\r\nnk = 3\r\nOutput: 1, 4, 5

3. [Find the minimum distance between any 2 given nodes in a tree.](#)



Minimum distance between 2 and 11 is 3

2\xe2\x80\x935\xe2\x80\x936\xe2\x80\x939\xe2\x80\x9311

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## Amazon Interview Experience | Set 151 (For SDE)

- Difficulty Level :[Medium](#)
- Last Updated :[27 Jun, 2019](#)

### Online Round

1. [Convert Binary tree to linked list.](#)
2. [Rotate a matrix by 90 degree.](#)

There were 2 more questions. But I forgot what were they?

### Telephonic Interview

Overview of my resume, current role responsibilities and asked to explain internship project in brief.

1. What is the definition of tree ?
2. What are the differences between graph and tree?
3. When can you say a graph to be a tree?
4. Write a program to show whether a graph is a tree or not using adjacency matrix.

Its always good to ask questions at the end. It shows our interest towards the company.

### F2F 1

Overview of current job responsibilities and internship project.

1. [Convert a tree to a sum tree.](#)

```
\r\nExample :\r\n      1           27\r\n                 /   \\  
                   \\\r\n                     /   2       3
```

Always take care of all the corner cases

2. [Print a pascal tree .](#)
3. [Given a 2D matrix sorted row wise and column wise .. Print the matrix in sorted way.](#) (Can be done using Min Heap).

For all the questions, complexity of the program was asked and was being asked to improve both time and space complexity.

### F2F 2

Many questions regarding my current project, tools and technology I am working on.

1. [Convert a binary tree to a sum tree . Here he had a new meaning of sum tree.](#)

Example :

```
\r\nExample :\r\n      1           1\r\n                 /   \\  
                   \\\r\n                     /   2       3
```

(I did it with Level Order Traversal) (Complete working code was required)

2. [Given an array of integers. Find the largest 3 element.](#) (Can be done using Max Heap in less time complexity)

### F2F 3

Lots of questions on my current work and tools which I was using.

Why do I want to leave my current company on such a short interval of 5 months.

Why Amazon ?

What inspires you to join Amazon? Why dream company ?

1. [Connect Sibling pointers.](#) I gave a Level Order Traversal solution. He asked to do it in O(1) space complexity. I explained the approach but messed up In writing the working code for that.

2. Explain the approach of [LRU cache](#) and implement using object oriented language.

### F2F 4

Why Amazon?

Why do you want to leave your current company in such a short interval?

Did u ask your current company to provide that type of work as u r looking in Amazon?

1. Design a system for finding the costliest element always whenever we pick up an element from a box.(concept of Max Heap)

2. A stream of data is coming. Maintain records in a page and mechanism to see previous and next page. (Concept of Doubly Linked List)

(It is always advisable to ask questions in design questions. The interviewers expect that we will be asking questions for clarification)

What is thread?

What is the meaning of memory leakage?

Followed by many OS questions but I forgot.

In every round , after each question , complexity of the algorithm was asked. Its good to ask questions to get more clarification about the question.

I want to thank the entire team of geeksforgeeks. It is a great portal and it helped me a lot in preparing for Amazon interview.

Reference \xe2\x80\x93 GeeksForGeeks and Cracking The Coding Interview

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# Amazon Interview Experience | Set 150 (SDE1 for 1 Year Experienced)

- Last Updated : \n27 Jun, 2019

## Telephonic:

1. [Determine if Two Trees are Identical](#)
2. [Transform to Sum Tree](#)

## Round 1

1. [Left View of Binary Tree](#)
2. [Peak element](#)

## Round 2

1. [Find the number of islands](#) (all 8 corners)
2. Dont remember

## Round 3

1. word frequency of a stream of words (no code required, explain trie method)
2. [code to count no of words in a stream of characters](#)

## Round 4

1. [Next larger element](#) (use stacks)
2. [Rotate and delete](#)

Time and space complexity must for all questions

Start from brute force and go to optimized solution.

All edge cases are to be covered in code?

Think out loud all the time (so that even when questions are easy they will catch your thinking with greater importance)

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## Amazon Interview Experience | Set 149 (On-Campus for Internship)

- Difficulty Level :[Medium](#)
- Last Updated :[26 Jun, 2019](#)

### Round 1 (Online):

It had 20 MCQs and 2 coding questions for 90 minutes. Questions were from Operating Systems, Data structures, Aptitude etc. Most of them were exactly same as on [www.geeksquiz.com](http://www.geeksquiz.com).

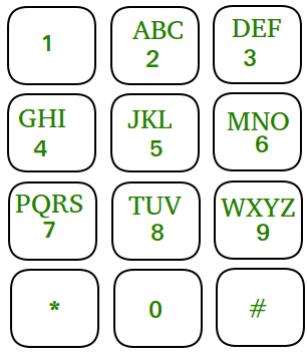
In MCQs there was 0.25 marking for every wrong answer and +1 for right answer. Coding questions were of 10 marks each.

Coding Questions:

Q1. [Find the first non-repeating character in a string.](#)

Q2. [You are given a phone keypad like following diagram, where each character corresponds to a digit mentioned in the same box.](#)

\xc2\x90



You are given n strings and you have to find their decimal representation. You have to print the string and corresponding decimal representation in descending order. For example, if you are given amazon then its corresponding decimal notation will be 262966. If more than one strings have same decimal notation then you have to print them in the order in which input is given. The given string consists of lower case alphabets only.

Test Case 1: \r\n5\r\nAmazon\r\nMicrosoft\r\nFacebook\r\nAa\r\nBb\r\nOutput: \r\n642767638 microsoft\r\n32232665 fa

### Round 2 (Face to Face):

Q1. [Given a linked list, write a function to reverse every k nodes.](#)

Example: \r\nInputs: 1->2->3->4->5->6->7->8 and k = 3 \r\nOutput: 3->2->1->6->5->4->8->7 \r\n\r\nInputs: 1->2->3->4-

Q2. [Given an array arr\[\] of integers, find out the maximum difference between any two elements such that larger element appears after the smaller number in arr\[\]\]. Print the indices of the two elements also.](#)

Example: If array is [2, 3, 10, 6, 4, 8, 1] then returned value should be 8 (difference between 10 and 2). If array is [7, 9, 5, 6, 3, 2] then returned value should be 2 (difference between 7 and 9).

### Round 3 (Face to Face):

There was brief introduction. Then he asked some questions from my resume. He asked me to tell about a project which I loved the most and felt proud after doing it successfully. He was interested in knowing the details of the implementation in that project.

After that there were 2 coding questions:

Q1. [Given a string, find the longest substring without repeating characters.](#) For example, the longest substrings without repeating characters for ABDEFGABEF are BCDEFGA and CDEFGAB.

Q2. [Given a log file of page visits of a website by different users for a day.](#)

Entry in the log file is like this:

User 1 visited Page 4

User 3 visited Page 2

User 7 visited Page 9

.

.

.

Design an efficient data structure which supports queries like the following:

Which page was visited by exactly 2 users in day?

Which page was visited by only one user exactly 2 times in a day?

Which page was visited by User 3? more than 5 times in a day?

In 2nd and 3rd round, we had to write code on paper.

The overall interview experience was quite good. They wanted the most optimal solutions and gave hints to think in that direction.

I was finally selected

Tips:

1. First explain the approach, then start coding.
2. Try to interact with the interviewer while coding on paper. They don't want to get bored while interviewing.
3. In case of any doubt, clarify it asap.
4. Never ignore the hints given by the interviewer.
5. Be 100% honest.

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## Amazon Interview Experience | Set 148

- Last Updated :n26 Jun, 2019

### Round 1:

1. Incoming stream of characters () defines an onion of depth 1, (( )) of 2. Find all onions with their in an incoming stream of characters. Discuss complexity.

Stream can be (( )) () )) ((( (

2. Biggest challenge faced / where you innovated?

Resume Project:

i. Demonstrate High Level Design

3. Parking Lot Problem A, B , C lots with different car sizes. Efficient way of allocating available slot.

A: Maintain linked list of available slots. Complexity discussion.

### Round 2:

1. Matrix of 1s and 0s. 1s are sorted in beginning of each row. Find an efficient way of finding the row with maximum 0s in it.

A: Find row which has lowest sum. Complexity discussion.

\r\n e.g.\r\n n1 1 1 0 0 0\r\n n1 1 0 0 0 0\r\n n1 1 1 1 1 1\r\n n1 1 1 0 0 0\r\n n1 1 1 1 0 0

2. How to find two sets(of size m,n) are dis-joint(have no elements common) efficiently

A: Use hash map. Complexity is O(n) in worst case.

Follow up Q: How are hash maps stored in memory?

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# Amazon Interview Questions | Set 147

- Last Updated : \n26 Jun, 2019

## Written round:

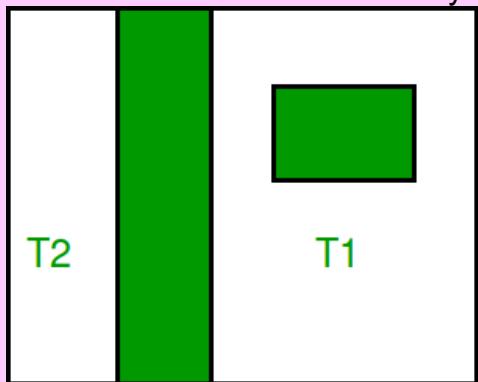
- 1- [Given a sorted array. Make a balanced binary tree from this array.](#)
- 2- [A row and column wise 2d sorted array is given which only contains 0s and 1s in each row. Find the row which is having maximum number of ones.](#)
- 3- [Find the next greater elements in array.](#)

## Face to Face 1

- 1- [Given a row and column wise 2d sorted array. Find an elements in it.](#)
- 2- [Given a row and column wise 2d sorted array. Find the kth element in this array.](#)
3. [Given a tree T1 and T2. Find whether T2 is subtree of T1 or not. If not return -1.](#)

## Face to Face 2

1. Given a 2D rectangle. In this rectangle there is some blocked areas which are shown in shaded part. Find the area which is left. Ex-like in this image one unbounded area is T1 and second is T2. You have to find both areas differently and print it. Hint-Take each block as 1\*1 and apply dfs for all blocks.



2. A big unsorted array of numbers are given. Each number is big of almost 10bits. How to sort these numbers?

Ans-[Counting sort](#)

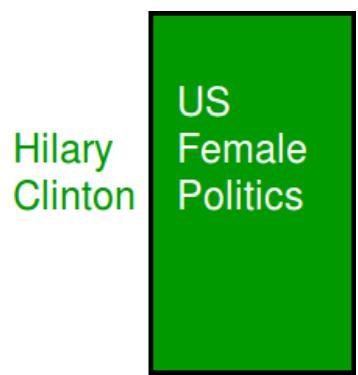
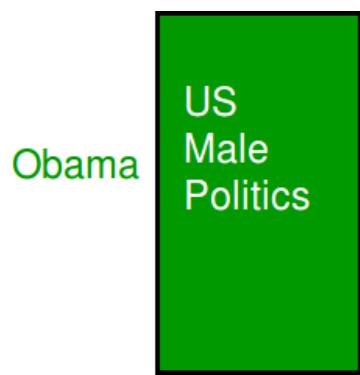
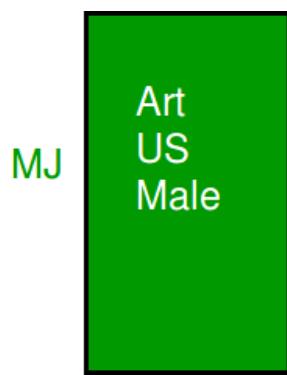
- 3- [An Adjacency matrix is given which is represented by 2d array. and each field is having cost associated. You are also given source and destination points. Find the maximum cost to reach from source to destination.](#)

## Face to Face 3

1. Discussion on work in my current company.
2. What is memory corruption, stack overflow, memory not available.
3. what is difference between multiprocessing and multithreading? Do all threads of one process is having there own code, bss, stack and heap or it is common for all.
4. what is Tail recursion. How tail recursion works.
5. Can we overload a function by only changing its return type?
6. How virtual table works and lots of c++ concepts.

## Face to Face 4 (With Manager)

1. Tell me about yourself.
2. What is the most challenging condition you have tackled in your life.
3. What you will do if you have conflict with your manager.
4. Guys this question brainf\*\*cked me. The question was based on \xe2\x80\x9c20 question game\x80\x9d. I never played this game. This was the actual question-



Given a set of words like Modi,MJ,Obama,Hillary Clinton. We need to create an intelligent computer game so that it will popup minimum questions to find out the answer the player thought. For ex- If give user choices to chose any word from Modi,MJ,Obama,Hillary Clinton. Now computer will show popup from any of the tags. Like if user chose Modi then in this case computer should ask minimum questions to find out what will be the guess. so in this case computer only askd \xe2\x80\x9cPM\xe2\x80\x9d tag and computer will show the popup \xe2\x80\x9cModi\xe2\x80\x9d.

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# Amazon Interview Questions | Set 146

- Difficulty Level : \n[Easy](#)
- Last Updated : \n26 Jun, 2019

I am happy to contribute to a community that helped me learn so much \xf0\x9f\x99\x82 This mail contains info about a recent interview I had with Amazon.

## First round

### Question 1

**Problem statement:** Given an Amazon reviews paragraph containing several words, find the minimum distance between two given words.

**Example:** Following is a hypothetical paragraph in an amazon review \xe2\x80\x93

\xe2\x80\x9cAmazon is the best company to work for. The amazon is a beautiful forest.\xe2\x80\x9d

Find the minimum distance between \xe2\x80\x98Amazon\xe2\x80\x99 and \xe2\x80\x98The\xe2\x80\x99

**Given:** You are given the position of each word in the paragraph. Meaning, you know that word \xe2\x80\x98Amazon\xe2\x80\x99 occurs at positions 1 and 10, and \xe2\x80\x98The\xe2\x80\x99 occurs at 3 and 9. You do not have to parse the paragraph to gather this info.

#### **Sub questions :**

\*Which data structure will you use to store the given info?

\*Compute the minimum distance in the most efficient way.

\*Give a working code for the same.

### Question 2

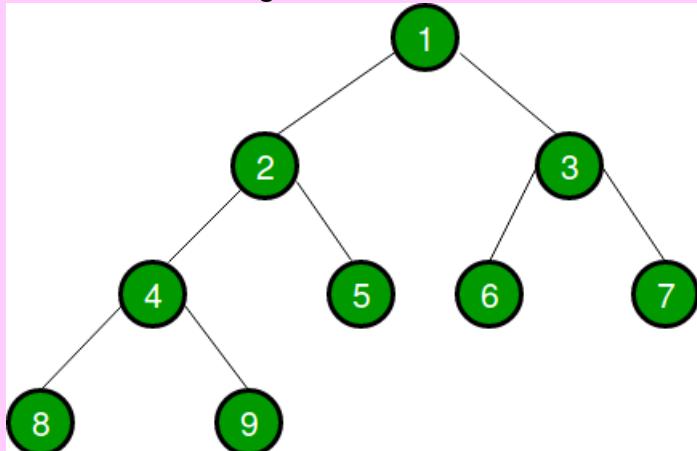
**Problem statement:** [In a binary tree, a chain can be defined as sum of length of the left node series, right node series, and 1. Find the length of longest chain in the tree.](#)

**Example:** Refer to the image given below \xe2\x80\x93

Chain length of node 1 =  $3 + 2 + 1 = \{ \text{count of 3 corresponds to node 2 , node 4, node 8 ; count of 2 corresponds to node 3, node 7 ; 1 corresponds to node 1 itself} \}$

Similarly, chain length of node 2 =  $2 + 1 + 1$

The max chain length here is of node 1 which is 5. So, the output should be 5.



### **Sub questions:**

\* Provide a solution, optimize it, give a working code or pseudo code or an algorithm for the same.

## **Second round**

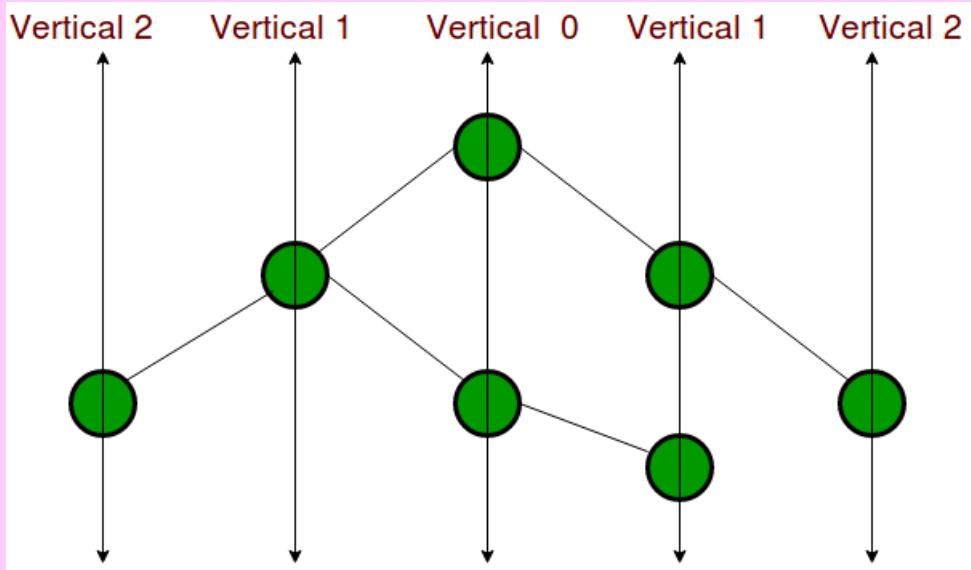
**Question 1:** Given two valid dictionary words, find the minimum number of steps required to transform first word to second word. Following are the transformation rules \xe2\x80\x93

1. You can, in a single step, change a single letter in the word.
2. Each transition should result in a valid word. Assume you have been provided a helper function boolean isValid (String word) which tells you if a word is valid or not.
3. This must be done with minimum transitions.

**Example:** Transform CAT to TOY. One of the several possible transformations is CAT -> CAR -> TAR -> TOR -> TOY

**Question 2 :** Assume you have been given a binary tree such that the angle between horizontal and the line joining node to its left child (or right child) is 45 degree. This essentially means node 5 and 6 in the tree figure above collapse into a single node. A vertical for a tree is defined as shown in the figure below. Given a binary tree of the kind defined above, find the number of verticals that can be drawn.

**Example:** Refer to the diagram below to get an idea on verticals.



?

### **Sub questions:**

\* Provide a solution and also provide a working code for the same.

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## Amazon Interview Experience | Set 145 (Off-Campus)

- Last Updated :n26 Jun, 2019

I have been working with Amazon for last 2 years and 4 months. Here, is my interview experience when I was the interviewee:

Off Campus Drive (DCE) \xe2\x80\x93 2012

### Written test:

1-> [WAP to merge two linked lists like:](#)

```
\r\n      list1: 1->2->3->4\r\n      list2: 5->6->7\r\n      o/p list: 1->5->2->6->3->7->4
```

2-> [Given two trees T1 and T2. WAP to check whether T1 is a subtree of T2 or T2 is a subtree of T1](#)

3-> [WAP to find maximum sum sub-matrix from a give matrix.](#)

### Round 1:

1->[You are given a sorted but rotated array of integer like: 6 7 8 1 2 3 4 5 You have to search an element...](#)

I answered with an O(logn) solution\x80\x96

then he asked me to write the code\x80\x96

2->[What is the diameter of a tree?](#)

I answered\x80\x96

then he asked me to write the complete code\x80\x96

3->He asked me a design problem \xe2\x80\x93 you have to design a class \xe2\x80\x9cDeckofCards\xe2\x80\x9d\x80\x96 with 2 operations: 1:Shuffle 2:Pick\x80\x96

Pick would pick a random card from the deck and Shuffle will shuffle the cards and give you back the deck of cards.

I answered with 2 options 1.LinkedList 2:Array\x80\x96then there was a discussion around 15 mins over both the solutions\x80\x96

### Round 2:(I guess it was the bar-raiser round)

1-> My Introduction and My Projects (all 1 by 1 except the last)

2-> How to compute all possible solution of  $A^3+B^3=C^3$ , where A,B,C belongs to (0 to N)?

Write code\x80\x96

3-> How to compute  $A^n$  where n<1 million\nWrite code...\n4-> A tough \xe2\x80\x9cmatrix with a mask\x80\x9d problem\x80\x96I took around 20 mins to solve it.

5-> Why Amazon, what is scalability and questions from my answers\x80\x96like how would you manage millions of requests\x80\x96

### Round 3:

1->[You r given a matrix of 0s and 1s. WAP that check if an element is 0 or not and places zeros to all the col and row of that element.](#)

```
\r\n      eg: i/p:    1 1 1 1      o/p:      :  1 1 0 1\r\n                                         1 1 0 1\n                                         0 0 0 0\r\n
```

2-> [How to find a largest palindrome from a given string?](#) Write code\x80\x96.

3-> How many Data Structures you have implemented by yourself?

4->[Given some words\(written in lexical order\) of some unknown language\x80\x96You have to find lexical ordering of all the alphabets\x80\x96](#)  
Like in english lexical ordering is A B C\x80\x96Z

### Round 4

Forth round was just related to my projects and subjects\x80\x96(Paging, Deadlock, Trashing, JAVA and C, Synchronization, etc) + 1 final algo question \xe2\x80\x93How to find all anagrams in a dictionary\x80\x96 Solution was in O(1)..

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# Amazon Interview Experience | Set 144 (Off-Campus For SDE-1)

- Last Updated : \n26 Jun, 2019

## F2F Round 1:

1. Tell me about yourself.
2. Tell me about any challenging work you did in any of your past projects, why was it challenging?
3. Given an unsorted array find maximum distance between two elements considering the following condition:

Arr[i] < Arr[j] and i < j

4. [Given a binary tree add all greater node values in a smaller node value.](#)

After this was done, he asked to do it without using pointer variable parameter.

## F2F Round 2:

1. [Given an array of words, print all the words which are not anagram of any other word.](#) For example, Input { \xe2\x80\x9ccat\xe2\x80\x9d, \xe2\x80\x9cdog\xe2\x80\x9d, \xe2\x80\x9ctac\xe2\x80\x9d, \xe2\x80\x9cgod\xe2\x80\x9d, \xe2\x80\x9drat\xe2\x80\x9d, \xe2\x80\x9dtac\xe2\x80\x9d, \xe2\x80\x9cact\xe2\x80\x9d}, Output{ \xe2\x80\x9ccat\xe2\x80\x9d, \xe2\x80\x9dtac\xe2\x80\x9d}.

2. [Given a tree connect all the nodes at same level in both directions](#)

## F2F round 3(Hiring Manager):

1. Tell me about self.
2. Why do you want to change your current company? Why Amazon?
3. Tell me about your current Projects. What is your role? Tell me architecture of this project?
4. Design a class to implement Linux File system.
5. Have you used twitter? Tell me working procedure of tiny URL.
6. How facebook works for following:  
What data structure will you use to store friends and friends of friends?  
Design structure for friends list, friend request sent list, received friend request list, store message, notification etc.
7. What happens when we type www.amazon.in ?
8. How does DNS work, what protocol does it use DNS what is difference between UDP in TCP.  
Which protocol will you use when I will ask to design DNS
9. [Insert a node in linked list in sorted order](#); again modify the same code to work for circular linked list.

## F2F round 4(Senior Technical Manager):

1. Tell me about yourself.
2. Why do you want to change in your current company. Give two reasons why do you want join Amazon.
3. Deep Discussion on Projects I have worked on, Challenging part in these projects, why was it challenging?
4. Tell me a situation where you did not complete your work in given time.
5. Have you made any mistake any time in your project and what was its impact on projects?
6. [Given array of 0\xe2\x80\x99s and 1\xe2\x80\x99s. All 0\xe2\x80\x99s are coming first followed by 1\xe2\x80\x99s. find the position of first 1](#)

Ex 0000111 o/p : 4

Again he modified it . Do the same if stream is coming

00000000\xe2\x80\xa6\xe2\x80\xa6..111111\xe2\x80\xa6\xe2\x80\xa6

In less than O(N)

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## Related Practice Problems

[Group Anagrams Together](#)

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# Amazon Interview Experience | Set 143 (Off-Campus for SDE-1)

- Last Updated : \n26 Jun, 2019

Experience: 5 months

## F2F: 1st round

1. Tell me about your college project.
2. [Write a Code to check if linked list is a palindrome without using extra space.](#)
3. Write a Code to print [zizzag traversal of tree.](#)

## F2F: 2nd round

1. Tell me about your college project.
2. Tell me about your current project.
3. Nodes of a binary tree are randomly inserted in to an array Write a Code to tell the index in array where root of tree is present.
4. [Given an array whose size is <=10^8 and each element of an array is in the range 10^-18 to 10^+18 Write a Code to find the largest subset of consecutive integers.](#)

## F2F: 3rd round(Hiring manager)

1. Deep discussion about my current project i am working on.
2. Discussion on my college project and how its useful for company like Amazon.
3. [write a code to insert an element in sorted circular linked list.](#)
4. [write a code to find the nth Fibonacci number.](#)
5. Design an linux file system.
6. Puzzle: Given 9 coins out of which 8 are of same weight except one and you are given a Beam balance.you have to find that one coin in minimum no. of comparasions.

## F2F: 4th round (senior Technical manager)

1. Deep Discussion on my current Project.he asked every minute detail of my project.
2. [given an sorted array of integers and an element x write a code to find the number of occurrences of x in array if not present return -1.](#)
3. [write a code to find the median in a running stream of integers.](#)
4. Some behavioral questions like: why do you want to leave your previous company so early?  
Tell me some incidents when you haven't meet the deadline and what do you have learned from that? etc

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# Amazon interview Experience | Set 142 (Off-Campus for SDE-1)

- Difficulty Level :\nHard
- Last Updated :\n24 Jun, 2019

## Round 1: Telephonic

Q1. Implement some functionalities of Minesweeper like connected component search and game termination check etc.

Q2. Linked list random pointer question: [Clone a linked list with next and random pointer](#)

Q3. [Given a matrix of 0s and 1s find the row that contains maximum number of 1s.](#)

Q4. [Given a node in a binary tree, find all the nodes which are at distance K from it. Root node is also given.](#)

Next day, I got the call for onsite interviews.

## Round 2: Onsite round by SDE \xe2\x80\x93 1

Q1. Given very large number of empty crates of varying sizes, we need to find the best fit crate for the given item and allocate it. Need to design a data structure for this scenario. Operations involved:

1. Insert a crate
2. Search the best fit crate
3. Delete the crate after allocating it.

e.g. 3 crates of weight 10, 20 and 30 are there. An item of size 15 appears then we\xe2\x80\x99ll allocate crate of size 20 and delete it.

Sol. Use binary search tree (balanced using red-black criteria or any) and implement ceil function.

All operations will be O (log(n)).

Q2. Optimize above data structure for weekends where amazon have lots of crates but very less search operations.

Q3. Given a function boolisValidWord(string str) you need to check whether a string is a proper string or not. E.g. iloveicecream is valid : I love ice cream.

## Round 3: Manager of some other Team

Deep discussion on projects.

In one project I used EC2 service so he asked me many details and why I preferred EC2 over other possible options.

[Buy and sell stock question.](#)

[Connect Nodes at Same Level](#)

General discussion on virtual memory.

## Round 4: 2 SDE-1s

Q1. [Given matrix of 1s and 0s where 0 is water and 1 is land. Find number of islands.](#)

Q2. Give the size of all islands in above question.

### Q3. [Maximum of all subarrays of size k](#)

**Round 5:** Dev Manager, 6yrs exp. (May be bar raiser round still I am not sure :P)

Q1. We started our discussion for very general problem where we have a long stream of characters and we need to extract all the patterns from that stream. There can be integers, fractions, words or anything.

I explained the entire process which is used in lexical analysis phase of compiler design where we give regular expressions and finally they are converted to NFAs and finally a single DFA.

Then a discussion went on how we implement this system from scratch.

There are many algorithms for converting regular expressions to NFAs and finally DFAs and some general discussion over Natural Language Processing.

<http://algs4.cs.princeton.edu/54regexp/>

Q2. Given M sorted linked lists of each of size N, we need to merge them to single linked list of size M x N using no extra space.

Next day I got the call that they would like to extend me the offer for SDE-1 profile.

### Important Tips:

1. Prepare data structures thoroughly.
2. Less efficient solution is much better than no solution.
3. Adopt incremental approach for problem solving.

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# Amazon interview Experience | Set 141 (For SDE1)

- Difficulty Level : \n[Hard](#)
- Last Updated : \n24 Jun, 2019

## Online written

20MCQS + 2 coding question in hacker rank

1. Find the pattern in string (Use [Kmp](#))

2. [Rotate matrix by 90.](#)

See in this round your code should pass all the test cases given

## Telephonic round

[Find the loop in linked list and also given the starting node from where the loop starts.](#)

[Print the tree in zig zag traversal](#)

They have share the <http://collabedit.com/> link, where i was writing the code.

Solution should be optimized.

## Face 2 face Interview at Hyderabad(4 rounds)

1. You have given n point in a coordinate system. What you have to do is to find minimum k distance point from origin.

Sol i have given the solution using insertion sort .i have taken a array of size n and while calculating the distance, entering the distance in the array in sorted fashion.

second solution i have given using heap, storing the first k distance in heap, then iterating the n-k element.

2. [Print the tree in zig-zag traversal](#)

3. [U have given large stream of m size and you have size of n window . you have to find the k minimum in each window . we are shifting the window by one at every iteration.](#)

sol: I have used self balancing tree.First i have entered n element in tree and do in order traversal upto k to find k minimum element.Now shift the window by one .Now we to remove first element(logn time req) and insert the new element(logn time). Initially i was thinking for solution using big extra space which was not accepted by the interviewer. Assume for every question they asked what if you have 10 million data so your approach will fail if you have taken extra o(n) space.Code should be scalable enough

4. N process can write at time in buffer and n process can read through buffer.Design a system for read and write.

5. [words are coming through a stream , u have to halt the problem when first repeated words appear.](#)

Used trie data structure.

6. N words are given.u have one source word and one destination word .u have reach to destination in minimum edit with the constraint that intermediate word should be from the words given.i have given the solution using graph and used BFS traversal .complexity discussion

7. what happen when u hit url .I have tried to explain it using Django, he is expecting something from domain name server. Be prepared

Complexity concept should be clear(Recursive+iterative both)

Other than this a lot of question on my company project and my performance rating. experience of

professional life.

Should know each and every single word of resume.

## Good luck

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# Amazon interview Experience | Set 140 (Experienced for SDE)

- Difficulty Level : \n [Hard](#)
- Last Updated : \n 24 Jun, 2019

Hi, Recently i had interviews with Amazon.

## 1st Round (Telephonic):

1. Given an integer array and a constant number X, print all pair of number in the array whose product is equal to X.

follow ups: how will you do in O(n)? how will you handle duplicate pairs?

Code was required on collabedit.

2. [He asked do I know level order traversal of binary tree. He ask me to code then, he changed the question and asked about spiral order traversal of binary Tree and asked me to code it.](#)

## 2nd Round (Telephonic):

1. [In a BST two nodes were swapped. Given the pointer to root node find the two nodes and rectify the tree. He asked the approach then asked me to code the same in collabedit.](#)

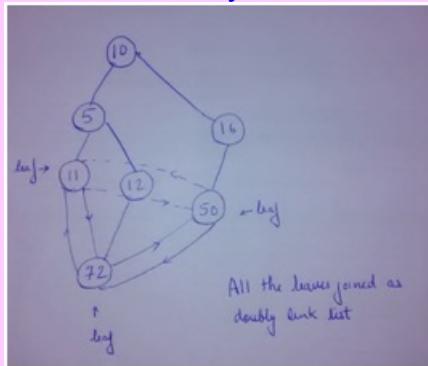
2. [Given an integer array, find and print three element in the array whose product is maximum. Code was required.](#)

## 3rd Round (face2face onsite)

1. [Given a sorted array of n integers, count and display number of triplets such that  \$a\[i\] < a\[j\] < a\[k\]\$   \$O\(n\)\$  time. Code was required.](#)

2. In a given string some of the characters are replaced by question mark, and you can replace question mark with any character. Given such a string find total number of palindrome that can be created. String contains only [a-z] characters and question marks can also be only replaced by [a-z]. Example: Input String: String str=\xe2\x80\x99da??a\xe2\x80\x99 Output: 26

3. [Given a binary tree all the leaf nodes in the form of a doubly linked list. Find the height of the tree.](#)



## 4th Round (Hiring Manager Round):

Detailed discussion about previous company work?

Why I want to leave my previous employer?

Why Amazon?

What if I don't like the work?

What are challenges I have faced in my work, how I resolved it?

Weakness and strength?

What does router do, what is static routing? Given a routing table, how would you decrease the time taken by router to decide to which router packet must be forwarded?

Details of algorithm that could be implemented and discussion time and space complexities.

### 5Th Round (Face2Face Onsite):

1. [Given N sorted LinkList of different length, merge them into a single sorted link list](#). Pseudo code was required.

2. Given a number d and size of array N. Print all combination of element in the array such that first element of array is d and next element in the array can be +1 or -1 the previous element in the array. Code was required.

E.g. Input: d=4 N=3  
Output:  
4 3 2  
4 3 4  
4 5 4  
4 5 6

3. [What is LRU and implementation of lru?](#) Write pseudo code for the same.

I would like to thanks GeeksforGeeks for providing us such a learning platform.

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# Amazon interview Experience | Set 139

- Last Updated : \n24 Jun, 2019

3 months Experience Candidate.

**1. Written test** 90 mins which consisted of 2 coding questions and 18-20 MCQ from varied computer science concepts.

## 2. Telephonic Round

1. [Find the number of occurrences of a number in sorted array.](#)
2. [LCA in a Binary Tree.](#)
3. [Clone a Tree, where each node had 3 pointers left, right and random. Random pointer points to any other node in the tree.](#)

**Interview Experience F2F (Onsite):**

### Round A with HM :

1. [Check for a complete cycle in a graph.](#) ( A complete cycle is one that covers all nodes )
2. [Construct a tree using Preorder and Inorder Traversal.](#)
3. Evaluate a random function.

Since this round was with a hiring manager he asked a few questions like why do you want to leave your organization? Why so early? Plans for further studies and basic discussion of projects.

### Round B Tech1:

Half an hour discussion on my projects. Then a question on strings. Write a program to output the minimum size window which contains all the given characters with at-least the given frequency. This was followed by Test Case design.

### Round C Tech2 :

1. [Given a Node in a tree and a value k , print all nodes at K distances from the given node.](#)
2. Given a string and k, arrange the string so that all the same characters are K distance apart. If not possible print -1.

### Round D BR :

1. Given two arrays sort the first array in the order of numbers given in the second array. For the numbers that do not appear in the second array, sort according to face value. Discussed methods and codes. He always pushed to optimize the code.

This was followed by discussion on sorting techniques, there comparisons. In the end he asked a few questions from OS mainly the scheduling algorithms.

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# Amazon interview Experience | Set 138 (For SDE 1)

- Difficulty Level : \n[Hard](#)
- Last Updated : \n24 Jun, 2019

## Screening round:

Three coding question on hackerEarth to be comiled against the testcases

1. [Merge two sorted linked list into single one](#)
2. [Difference between sums of odd level and even level nodes of a Binary Tree](#)
3. [First non-repeating character in a stream](#)

## Round -1

1. Asked me again the logic for finding first non repeating char from a stream of character. Then the discussion went how hash map internally works and what is the principle behind it . How the hash conflict get resolved and write code for the same.

2. [Find three triplet with a given sum in an array.](#)
3. [Find an element in an row and column wise sorted matrix.](#)

## Round-2

1. [Find the majority element in an array.](#)
2. [Print out all the numbers in sorted order from row and column wise sorted matrix](#)
3. How to find a given key in a sorted stream of array(less than O(n) complexity required)
4. One more ques dont remember

## Round-3 (HM round)

Lots of situational question being asked.(conflict with ur manager, ur say , leadership quality in you, ownership of project , problem solving capabiltiy)

Lots of question on your owned projects.(Impact of this on your product and time to implement it)

two tech ques:

1. [Stock Buy Sell to Maximize Profit](#)
2. [write code to find whether the tree is BST or not.](#)

## Round-4

1. [In an array find three number which fits into pythagoras theorem](#)( $a^2+b^2=c^2$ ).Find a,b,c
2. [Find the number of island in a matrix](#) of 0,1. The island which starts from edge of the matrix will not be considered island

eg: no of island are 0 here

0100

0100

0000

0000

## Round-5

Lots of in depth question about your project and its impact on the product.

Was asked to draw the architect diagram of the algorithm used in my project and explain with example.

one tech ques : For a given string and given dictionary. Find all the anagrams of the string which are also present in the dictionary.ie the string shud be a valid dictionary word.

NOTE : I WAS REQUIRED TO CODE EACH AND EVERY QUESTION WITH PROPER SYNTAX

AND EDGE TEST CASES on piece of paper after discussing the algorithm.

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## Related Practice Problems

[Majority Element](#)

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# Amazon interview Experience | Set 137 (Assessment test for SDE)

- Difficulty Level :\nEasy
- Last Updated :\n21 Oct, 2014

## Coding questions:

1) Given two words, find if second word is the round rotation of first word.

For example: abc, cab

return 1

since cab is round rotation of abc

Example2: ab, aa

return -1

since aa is not round rotation for aa

2) Given two hexadecimal numbers find if they can be consecutive in gray code

For example: 10001000, 10001001

return 1

since they are successive in gray code

Example2: 10001000, 10011001

return -1

since they are not successive in gray code.

## Aptitude questions:

1) Some based on finding relationships between given number/strings and find the missing one

Example: VTS: RPO :: AYX: \_\_\_\_\_

2) Paragraph reading and inferring information from it.

3) Facts provided and making a decision based on it.

4) Combinations possible based on facts provided.

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## Amazon interview Experience | Set 136 (For SDE-T)

- Difficulty Level :[Medium](#)
- Last Updated :[24 Jun, 2019](#)

### Phonic Interview

\*\*\*\*\*

1. Let's start with you introduction

In between introduction he asked me about my some project work experience and How have you done?

2. [Take a integer as a input and replace all the 0's with 5's.](#)

\r\n For example:\r\n 102 - 152\r\n 1020 - 1525\r\n (Do not use any array for replacing the '0' to '5')

3. [You are given two binary tree and write algorithm to check Are two Binary Trees mirror image of each other?](#)

Amazon Interview for SDET @ Hyderabad Development Center

\*\*\*\*\*

### 1st Round

\*\*\*\*\*

1. Project Detail & past experience

2. Current Technology i am working in

3. [Intersection of two sorted Linked lists](#)

4. Maximum Subsequent distinct & contiguous sub array in a character array

### 2nd Round

\*\*\*\*\*

This round was purely for checking Test Framework and Test Case Knowledge.

He has given me some scenario and ask to write test cases for them

1. you are given a web page into that simply one browse button and Image Holder is their.Write the Test Cases for this.

2. You are given application like Google Analytics. How will you test this application ?

3. what are the basic features you will add into your own test framework.

### 3rd Round

\*\*\*\*\*

This round was purely a discussion based on past project experience.Like which project do you think that was most difficult and you had a nice experience.  
He asked me each progress point of the project.

1. how will you check that each page of amazon.com is having its logo or not.he also asked me to write code for this also.

2. Some Test Framework Based question like

3. Have you worked on any automation framework or not?

4. what happen between, when you enter a URL into a browser address bar and hit enter to actually page gets loaded ?

In between he asked me few things about DNS Server,Router etc and some discussion was there.

### 4th Round

\*\*\*\*\*

1. [Level order traversal](#)

2. [Reverse Level Order Traversal](#)

3. Make a stack using 2 given queue.

4. Some Project Experience & Automation Framework Discussion,which i have worked on.

5. There was some situational questions also for Team work.

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## Amazon interview Experience | Set 135 (On-Campus for SDE)

- Difficulty Level :[Medium](#)
- Last Updated :[24 Jun, 2019](#)

Recently, Amazon visited our campus and I was interviewed for SDE position. Here is my Interview Experience:

### Online Round: (Duration : 80 minutes)

20 MCQs and 2 coding questions. MCQs were on Algorithms, Time Complexity, Quantitative Aptitude, Probability, Operating Systems, Graphs, Data Structures, Recursion outputs etc.

Coding Questions:

1. In one of Amazon fulfillment centers, there are a no. of empty boxes kept in increasing order in a row. Kiva robots are designed to put a product in a box. The product size is given. Design a program to find the best fit box for given product size. First line contains no. of empty boxes and next line contains size of boxes with space. The next line contains size of given product. The output shows the best fit box size and -1 otherwise.

```
\r\nFor example, Input: 6\r\n                    2 7 9 11 13 16\r\n                    12\r\nOutput: 1
```

2. [You have to find a string in two-dimensional array. The input contains 2-D array of characters and given string.](#) You can move in one of eight directions . The output contains location of first letter of string if string found completely, otherwise return -1. Any one out of multiple answers is accepted, if possible.

For example, Input:

```
b t g  
p a d  
r k j
```

String: rat

Output: (2,0)

### F2F Round 1:

Brief introduction about myself and my project.

1. [Given an array of positive and negative integers, rearrange positive and negative numbers in O\(n\) time .](#)

First, I solved it using 2 arrays,each for positive and negative integers and place elements of array in these 2 arrays and then combine them back by taking one element from each array. Then he told me to do without extra space. I then segregated positive and negative elements using quicksort .

2. Program to check whether strings are rotation of each other or not. I approached as below:

He then told to solve without using strstr. I used naive searching method.

### F2F Round 2 :

Brief introduction and some behavioral questions.

[Given a BST and a key sum, design an algorithm to find all pairs of integers whose sum equal to key.](#)

I first approached using an array and placing elements into it in inorder fashion and then find pairs. He told to do in-place and I solved with 2 traversals (inorder and reverse- inorder ) .

### F2F Round 3 :

Based on CS Fundamentals and also had 15 minutes discussion on my internship project.

1. What happens when we type amazon.com ?
2. Describe transaction process in detail if we want to transfer from one account to other. Also design schema for it.
3. What happens on server side on receiving HTTP requests and how operating system interacts and then discussion related with threading, thread pool ,synchronization, hashing etc.
4. Describe ACID properties in detail .

### Bar Raiser Round :

1. Given a Binary tree, full\_path\_sum is sum of all nodes from root to leaf in a path. Given a min\_sum value, delete nodes if path has full\_path\_sum less than min\_sum . Delete all such nodes . For example,

```
\r\nGiven min_sum =8          \r\n                    1\r\n                    2          3\r\n                    4          5          6          7\r\nSo we delete 4.
```

2. [How to find kth- smallest element in BST?](#)

Thank you geeksforgeeks for helping me a lot during my preparation.

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## Amazon interview Experience | Set 134 (Off-Campus for SDE)

- Difficulty Level :[Expert](#)
- Last Updated :[24 Jun, 2019](#)

I would like to start off by thanking the entire community of GeeksforGeeks for helping me out.

### Attempt 1

#### Round1:

- Given a number N, find the number of correct combination of parentheses possible.

Input: N=2 => () () \r\n Output: 2 [()(), () ()] \r\n \r\n Input: N=3 => () () () \r\n Output: 5 [() () (), ((())), () () (), () () ()]

- [Print all root to leaf paths using iterative algorithm in linear time.](#)

#### Round 2:

- [Given  \$m < n\$ , print all nodes between levels  \$m\$  and  \$n\$  in level order.](#)
- [Print a matrix in spiral order.](#)

#### Round 3:

- [Check if two trees are mirror images of each other.](#)
- [Given inorder and preorder traversals, build a binary search tree.](#)
- [Print all the boundary nodes of a given binary tree.](#)

I was rejected after this round. I applied again after few months.

### Attempt 2

**Written Round(on HackerRank):** It contained 3 simple questions on data structures. Duration 60 mins.

#### F2F \xe2\x80\x93 Round 1:

- [Given a singly linked list and a value  \$x\$  such that  \$k\$](#)

Input: A -> B -> C -> D -> E , k=2

Output: E -> C -> D -> A -> B

Input: A -> B -> C -> D -> E -> F , k=2

Output: E -> F -> C -> D -> A -> B

- [What is Paging? What do you mean by page faults? How will you handle page faults?](#)

#### F2F \xe2\x80\x93 Round 2:

- [Given a BST and given that 2 nodes are swapped in the tree. Identify the 2 swapped nodes.](#)
- [Given a BST and 2 nodes. Identify the length between the two nodes of the tree.](#)

#### F2F \xe2\x80\x93 Round 3:

- Detailed discussion of current projects.
- How would you design the meeting invite feature of Microsoft Outlook? Considering each meeting invite as an object and that Web server is the storage space for the invites, design a data structure to receive and send invites to user in an efficient manner. The message objects must be received in a sorted manner based on the time of meeting. I gave an O(NlogN) solution and he was pretty impressed. I was then asked to code it.
- An array is given whose every ith index is the child node of a[i] as shown in the example below. The root node is represented by -1. Find the height of the tree.I did it in linear time.

Input: parent[] = {1 2 -1 2}\r\nOutput: 4\r\nThe given array represents following Binary Tree \r\n2\r\n

#### F2F \xe2\x80\x93 Round 4:

- Cultural info and projects discussion. What errors have you performed in your career path? What are the major challenges that you faced?\xe2\x80\x93 and other such questions.
- Design a parking lot system. She was very much concerned with all the edge cases.
- How would detect whether a singly linked list is a palindrome or not?I gave a solution with O(n) time and space complexity. But she asked to optimize it further with O(1) space complexity.

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# Amazon interview Experience | Set 133

- Last Updated : \n24 Jun, 2019

Recently had a interview with Amazon, through employee referral. All face to face rounds. I didn't clear, so no offer. \xf0\x9f\x99\x81

## 1st Technical Round:

Given an integer, find the next biggest integer whose digits are in increasing order.

Example:

Input: 118

Output: 123

Input: 127

Output: 234

Input: 987

Output: 1234

Designing question: Design a parking space to park a car.

## 2nd Manager Round:

Explain my current project. Architecture and design flows etc. asked.

Any challenges while working on the project.

Any glitches/cases where you completed got it wrong etc.

After two rounds asked to leave. I guess I didn't answer as per standards.

Thanks anyways GeeksForGeeks.

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## Amazon interview Experience | Set 132 (For SDE Intern)

- Difficulty Level :[Medium](#)
- Last Updated :08 Oct, 2014

### Online Round :(Duration 90 minutes)

20 MCQs to solve and 2 coding questions. 20MCQs were on **Algorithms, Data Structures, C Output, Quantitative Aptitude, etc.**

Coding questions were of 10 marks each.

MCQs had negative marking.

Correct : +1

Wrong : -0.25

**Q1** Given an array of numbers, arrange them in an **alternate fashion** such that every number is followed by a number of opposite sign. Also the **order was to be maintained**. If the count of negative numbers is more keep the extra at last in array and same for positive numbers.

\r\nExample :\r\nInput: -3 -2 6 0 7 -1 -8\r\nOutput: -3 6 -2 0 -1 7 -8

**Q2** String of characters as arranged in a cellphone i.e.

1- NULL

2-a,b,c

3-d,e,f

4-g,h,i

.

.

.

9-w,x,y,z

0-NULL

Print all **combinations for given number of digits(k)** in **lexicographical order** .

Constraint :  $1 \leq k \leq 4$

For Example : Input = 234

Output : adg adh adi aeg aeh aei afg afh afi bdg bdh bdi beg beh bei bfg bfh bfi cdg cdh cdi ceg che dei cfg cfh cfi

### Round 1 F2F :(Duration 1 hr)

Introduce Yourself.

**Q1** Design a **shuffle function** which would play songs randomly in your device (unique song\_id) and code it.

After i gave him a solution with hash function , he asked me to improve the algorithm such that once a song is played it should be played only when all the other songs are played,

Solution Complexity : Space  $O(n)$  , Time  $O(1)$  ;  $n$  number of songs

After that he asked me to improve my solution and do it without using extra space.

Solution Complexity : Space  $O(1)$  , Time  $O(n)$  ;  $n$  number of songs

Hint : Maintain indices and once a song is played shift it in range of played songs index.

After that i was asked about each part of the hash function and how i came up with that.

**Q2** Add two linked lists. And code it.

\r\nInput : 1->2->3->4->NULL\r\n

8->2->NULL\r\nOutput : 1->3->1->6->NULL

First he asked to do it without recursion and then with recursion. We also talked about the problem we face if we store the value of the linked list in an integer or long if the number of digits were above certain limits in the non-recursive function.

## Round 2 F2F :(Duration 1x20x80x93 1 hr)

Introduce Yourself.

**Q1** Find the largest subtree which is binary search tree in a given Binary Tree. Then to optimise it and then asked me to code it.

**Q2** Given a linked list with a next pointer and an arbitrary pointer pointing to any node in the list , copy the linked list.

After i gave him a solution which changed the links of the initial linked list, he asked me to do without changing the links.

So i gave him a  $O(n^2)$  solution . He asked me to give another way or optimise my solution.He helped me to figure out the solution.

Hint Hash map.

The interviewers were really helping and supporting and were more interested in seeing the efforts you make and the way you get to the logic.They help throughout by giving hints.

Thank You geeksforgeeks for helping me out.

Best of luck .

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Relating to this the interviewer asked me every step in detail including all 7 layers of networks. Protocols like: HTTP, HTTPS, DHCP, DNS, IMAP, POP, TCP, UDP etc. Their uses and differences.

2. Describe ACID property of a transaction (DBMS).

### **Bar Raiser(Telephonic):**

1. Given a singly linked list, write a recursive method to reverse every 3 nodes in the list.

He asked me to inform if I have seen the question.

And I replied : Yes sir, it is the similar question I faced in coding round of Amazon-internship last year.

But he didn't changed the question.

I solved it with a silly mistake which i corrected when mentioned.

2. Long discussion on my internship and about the projects I have worked on.

3. Tell about your criticism.

4. 3 weaknesses currently i am working.

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# Amazon interview Experience | Set 130 (For SDET 1)

- Last Updated : \n12 Feb, 2018

I attended an interview with Amazon for SDET-I position, about a month back. I did not clear the interview, but I would like thank GeeksforGeeks for the great learning period before the interview. GeeksforGeeks helped a real lot in my interview preparation and in general, my understanding of data structures and algorithms got deeper and stronger. Thank you very much GeeksforGeeks and all your valuable contributors!

Here is my interview experience:

## Telephonic 1:

- Given an array and a number, check whether there are any 3 elements in the array which add up to the given number.

\xc2\x0\xc2\x0For example:

\xc2\x0\xc2\x0\xc2\x0\xc2\x0\xc2\x0 Given an array {1,2,3,4,5} and the number 9, return true, as 2,3,4 add up to 9.

\xc2\x0\xc2\x0\xc2\x0\xc2\x0\xc2\x0 Given an array {1,2,3,4,5} and the number 3, return false, as there are no 3 elements which add up to 3, in the array.

- Given a number, find the nearest perfect square(modified binary search)

\xc2\x0\xc2\x0For example:

\xc2\x0\xc2\x0\xc2\x0\xc2\x0\xc2\x0 Given 50, return 49

\xc2\x0\xc2\x0\xc2\x0\xc2\x0\xc2\x0 Given 25, return 25

## Telephonic 2:

- Write a method to check whether two binary trees are mirrors of each other

<https://www.geeksforgeeks.org/check-if-two-trees-are-mirror/>

- Write a method to print the boundaries of a binary tree

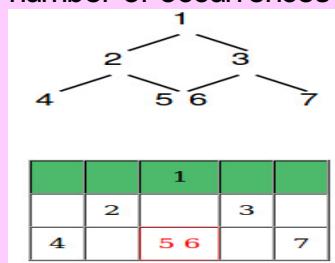
<https://www.geeksforgeeks.org/boundary-traversal-of-binary-tree/>

## F2F 1:

- Fill an array with the next greater elements (using stack)

<https://www.geeksforgeeks.org/next-greater-element/>

- Given a binary tree, count the number of occurrences where there are two nodes with the same horizontal distance. To make it clearer, if we assume each node in a cell of a matrix, then count the number of occurrences when there is a collision of two nodes in the same cell.



Here the count is 1 because 5 and 6 occupy the same cell in the matrix

## F2F 2:

- Given a linked list, write a program to check if it is a palindrome
- Write some test methods for stress testing of Furniture class
- Some discussion on automation testing

### **F2F 3: (System automation design)**

System: The user gives a book id to be downloaded and the location in which the book is to be stored. The system downloads the book (if it exists) in the location given by the user and returns a url through which the user can access the book.

I was asked to design automated test cases for the system. The interviewer kept adding more and more constraints to the system and we discussed about the pros and cons of my approach.

### **Hiring Manager:**

1. Discussion about my current job role
2. Several behavioral and team fit questions
3. What are the things you will consider (both from Developer\xe2\x80\x99s perspective and User perspective) while trying to develop an application for computer aided competitive examinations like CAT, GMAT etc.

### **Bar Raiser:**

1. Given a singly linked list, write a recursive method to reverse every 3 nodes in the list.  
I did not write a clean code for this. He moved on because of lack of time.
2. Again discussion of my current job role and about the projects I have worked on.
3. Tell me 3 things that you want to learn/change in yourself
4. Again several team fit questions.

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## Amazon interview Experience | Set 129 (For SDE 1 Off-Campus)

- Difficulty Level :[Hard](#)
- Last Updated :[30 Sep, 2014](#)

In the recent past, I attended interview with Amazon. Here is my interview experience.

### Written Round: 1.5 hours

- Given an array of integers, replace each element with the next immediate greater element.
- Given a linked list, reverse each 3 nodes.
- Given a tree, print all the nodes which are K distance from the leaf nodes.

### Face to Face Interview 1 (Data structures and Algorithms)

- Given a source string and destination string, Find the minimum number of edits (operations) required to convert one string into another. At the end of each operation, the resultant string should be a dictionary word.
- Given an array of integers where each element represents the max number of steps that can be made forward from that element. Write a function to return the minimum number of jumps to reach the end of the array (starting from the first element).
- Given the coordinates of billion stars in the sky, find the closest 100 stars from our current position (0,0).

### Face to Face Interview 2 (Problem solving)

- Given a binary tree, write code to check if it is a binary search tree.
  - Given a binary tree and two nodes, write code to find the common parent for the 2 nodes.
- Given the below tree, and nodes 18 and 21.

```
\r\n      10\r\n        5      15\r\n          2    3    12    18 \r\n                16    21
```

The result should be 15.

### Face to Face Interview 3 (CS Fundamentals)

Tell me about yourself.

Why career change ? Why Amazon?

- What happens when you compose an email and press the send button. How is the mail delivered?
- Explain how mail server works.
- Tell about the routing algorithms you know.
- How is the data transferred across the network ?
- Difference between TCP/IP and UDP.
- What are the functionalities of an Operating System?
- How does OS schedule processes ?
- Which type of scheduling algorithm is used widely ?
- How does OS replace processes in memory ?
- How does OS detects if a deadlock has happened ?
- When you type an SQL query in interpreter, what does happen? How is the query processed?
- What is Primary Key, Foreign Key ?
- Should Foreign key needs to be primary key of another table ?
- What is index ? How it is implemented ?
- How is the data stored in the database ?
- Why doesn't Java support Multiple Inheritance ?
- What are the advantages and disadvantages of Multiple inheritance ?
- Tell us about the design patterns you know.
- Do you know about Factory Design pattern ?
- Write a simple class which implements Singleton design pattern. Applications of singleton design pattern. Why do we declare the class itself as static class ? Why do we declare all the members as static ?

### Face to Face Interview 4 (Hiring Manager)

Tell me about yourself.

Why career change ? Why Amazon ?

- Discussion about my current project, I am working on. Questions related to schema design, how can we improve it ? How to make the application scalable if the operations and data (session creation & data) are going to be increased 100 times. When do we need big data ?
- What is your biggest achievement ?
- What do you expect from your manager and team members ?
- Given billion numbers in a file, get the top 10 numbers from it.
- Write code to implement Hashmap in Java. It should accept any datatype and also objects.
- Provide a high level class design for cab management system. Finding available car anytime and booking it, customers, orders, etc.

### Face to Face Interview 5 (Bar raiser)

Tell me about yourself.

Why career change ? Why Amazon ?

- What is your biggest achievement ?
- Discussion about my project. Discussion about the tasks which I have done.
- Tell me about a situation where you had a conflict with your manager and how you resolved it ?
- What is the biggest bug have you made ?
- Have you developed any tool, which is used by your colleagues ?
- Is there any task which you feel, that you could have done better in your project ?
- Have you suggested any ideas and improvements to your project, beyond your call of duty ?
- Given a binary tree, write code to get the vertical sum of all the columns in the tree, with minimum space complexity. After I told a solution with Hash, he asked me to come up with a solution without using hash and code it.

### Face to Face Interview 6 (Data structures)

- Given a binary tree, how would you serialize it, store in a file and then recreates it again from the file ?
- Given a dataset below,

\r\n	Name	Score	Rank\r\n	A	50	1\r\n	B	40	2\r\n	C	30	3\r\n	D	20	4\r\n
------	------	-------	----------	---	----	-------	---	----	-------	---	----	-------	---	----	-------

Name is a string and Rank is inversely proportional to the scores.

What type of data structures would you use to store these data to perform the following operations ?

- 1) Given Rank, Get the Name and Score
- 2) Given Name, Get the Score and Rank
- 3) Given Name, Update Score.

Though I didn't get the offer, it was an amazing interview experience with Amazon. Thanks to GeeksforGeeks, an ultimate portal for learning DS & problem solving and for cracking the coding interviews.

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## Amazon Interview experience | Set 128 (For SDET)

- Difficulty Level :[Medium](#)
- Last Updated :[24 Jun, 2019](#)

I was interviewed for the position of SDET-1 few days back at Chennai. Here is my interview experience:

### Coding round (Full code required):

- 1) [Given a linked list. Check whether it is a palindrome](#) (without using any extra space).
- 2) [Write a program to return the mirror tree of a given binary tree.](#)
- 3) [Given a 2-D array, Rotate it by 90 degrees.](#)

### F2F-I:

- 1) Given a phone number. Check whether it is unique or not(ie no duplicates)

I gave a  $O(n^2)$  TC algo first which he wanted to optimize. After 3 series of optimization ,I came up with a  $O(n)$  solution with  $O(1)$  space complexity.

- 2) [The interviewer told me to code a level order traversal in a binary tree.](#)

- 3) An array of numbers are given such that the absolute difference between adjacent elements is 1.Given a value  $x$ Return the index of the 1st occurrence of that element.

I gave an solution where in the 1st value is subtracted from the search value and hops in the array by that difference. if the reached value is the search value ,then return the index or just continue this process. The interviewer was impressed by my solution and told me to code it.

### F2F-2:

- 1) Brief discussion of work in current company

- 2) [A given array represents a tree in such a way that the array value gives the parent node of that particular index.The value of the root node index would always be -1.Find the height of the tree.](#)

```
\r\n      Ex: Array: 1 5 5 2 2 -1 3\r\n          5 \r\n          /  \\\r\n          1   2\r\n          /  /\r\n          0   3
```

I gave a iterative solution which was told to be optimized. I did optimize it using memorization concept. I had to code it too.

- 3) [Write a program to find the median of 2 sorted arrays when merged.](#)

This problem is there in geeksforgeeks.

- 4) Write an optimised program to find the number of factors for a particular number

This was a very simple qn.

### F2F-3:

- 1) Brief discussion of work in current company. Why Amazon?

- 2) Why do you want to leave current company? What do you like most and dislike most about your current company?

- 3) Design a automation framework to test a simple site with a login page .Give the various test cases also that should be considered. Later they told me to give some enhancements to the code too.

- 4) Design a automation framework to test twitter api's that is used in a particular site .

- 5) Give the various automation scripts and tools that I implemented in my current project.

### F2F-4(Hiring Manager):

- 1) Lots of HR, behavioral and team fit questions

- 2) Describe the most challenging project I have worked on and why is it challenging.

- 3) An e-commerce site has a particular functionality created by a group A and another functionality created by group B. Design a testing framework that could test the work by A as well as A\B(intersection).

- 4) I was working as a security Analyst.So I was asked about 5 critical hacking techniques that can be used to a e-commerce site and describe each.

### F2F-5(Bar raiser):

- 1) Again behavioral and team fit questions.

- 2) Write a program to check the validity of sorting algorithms used to sort Linked lists.Consider the case where 2 nodes have equal values too.  
I gave a optimized code using hash table concept. The interviewer was pretty satisfied with my coding ability and started asking me about my projects.

- 3) More questions on my projects

Thank you geeksforgeeks for helping me out during my preparation.

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# Amazon Interview experience | Set 127 (For Internship)

- Difficulty Level :[Medium](#)
- Last Updated :[24 Jun, 2019](#)

Amazon visited our campus for summer internship. I prepared from Amazon Interview Sets which were pretty helpful!

Here is my experience :

DAY 1

They had an online aptitude test on day 1. It was 90 minutes: 20 MCQs + 2 coding questions (choice between C/C++/Java for coding). MCQs were based on DSA, OS, and Math. They were apparently difficult.

**Two Coding Questions :**

1. [Keypad problem](#) Little difficult problem on backtracking.
2. [Given an array, find the count of impossible triangle](#)

Day 2:

**Surprise aptitude test:**

2 coding questions 60 mins.

Questions involved DSA and strongly based on optimising the code:

1. [Given a linked list, reverse K nodes in it](#)

eg :- 1->2->3->4->5->NULL , k = 3

3->2->1->5->4

2. [Search for an element in an array which has elements whose values are first increasing and then decreasing.](#) (Use modified binary search)

**2 One-on-one Interview rounds, both technical.**

Try giving THE most optimal algorithm which satisfies edge cases too.

I was told to write the code on the paper.

Questions asked to me were:

\xc2\xab0

**First interview round**

1. [Find the second largest element in an array.](#)
2. [Given a sorted array which can have repeated elements, find the occurrence of an element.](#) (Most optimal solution is O(logn) Using binary search to find start and end occurrence)
3. Make a data structure and implement an algorithm to print all the files in a directory. (the root directory can have sub-directories too.) I used an n-ary tree and BFS to print files. It can also be done using Stack.

\xc2\xab0

**Second interview round**

1. He asked some question about my CV
2. [Print a matrix diagonally.](#)
3. [DFS](#) of binary tree, n-ary tree.
4. Then he asked some question from other subjects.  
OS \xe2\x80\x93 Scheduling  
DBMS \xe2\x80\x93 Normalization, Transaction  
OOPS \xe2\x80\x93 Abstraction

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# Amazon Interview experience | Set 126 (For SDE-1)

- Last Updated : \n24 Jun, 2019

Recently I got interviewed with Amazon for SDE1 position and here is my interview experience which I would like to share with others.

## Telephonic round:

1. An array is given with element name and their respective pH values. Print the combination of 2 elements which make a neutral compound.

A discussion started and best solution was O(n) time complexity and O(1) space complexity. Then I got call for F2F interviews and here are those-

## Round 1:

1. [Print Matrix in spiral form.](#)

2. A store have n customers and any 1 can visit them any time through out the year. Data is stored in a file. Design a data structure to find given person visited on so n so date or not.

## Round 2:

1. There are N packages P1, P2\|x80\|xa6Pn. A package may depend on another or many other for its compilation. Given a matrix of dependency, find a sequence of package compilation.

[2.A 2D matrix is given, with each elements representing number of gold coin at that position. I have to travel from \(0,0\) to last element of matrix collecting maximum no. of coins.I can travel either right of an element or down of it.](#)

3. In Galaxy there are trillions of stars. I am provide distance of every star from earth. Tell me nearest 1Million stars to earth, provided with best time and space complexity.

## Round 3:

1. [Implement LRU.](#)

2. In Android phones we have 3X3 grid for making a pattern. Given a length, find number of combinations for that length in that grid.

## Round 4:

1. Project deep discussion.

2. Few given scenarios and how you will tackle.

3. Strengths and weaknesses.

4. Given a file with many statements. Print all the strings with their anagrams through the file. Logic to check anagrams and to store them.

## Round 5(Bar Raiser):

1. Behavioral Questions like

>Why you want to leave your organization?

>What is most challenging work you have done till date?

>Why you want to join Amazon?

etc.

2. Which data structure you know?

3. Say I have few words and their meaning, and I want to store them which DS will you use and why. I started with Hashmap and we kept on discussing about pros and cons. Finally ended up with trie. He asked me to write code for it, for adding new word and for fetching meaning from Trie.

The whole process started in 1st week and yesterday got a call from HR for I am invited to be part of Amazon.

Thank you geeksforgeeks for providing such a nice platform to learn and share.

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## Amazon Interview | Set 125 (On-Campus for Internship)

- Difficulty Level :[Expert](#)
- Last Updated :[24 Jun, 2019](#)

Online Round

In this round there were 20 MCQs to solve and 2 coding questions. Of the 20MCQs a couple of questions were on OS, Quantitative Aptitude, Data structures etc. Most of them are there on [www.geeksquiz.com](#). In MCQs there was 0.25 marking for every wrong answer and +1 for right answer. Coding questions were of 10 marks each.

Q1- Given an array of positive and negative numbers, arrange them in an alternate fashion such that every positive number is followed by negative and vice versa maintaining the order of appearance. If the count of negative numbers is more keep the extra at last in array.

constraint : Space complexity should be O(1).

Q2- Given an array of random numbers. Push all the zero's of a given array to the right end of the array in minimum possible swaps. Order of appearance doesn't matter. Print the total nonzero numbers and minimum swaps needed to do so.

input : {1, 9, 8, 0, 0, -2, 0, 1, 6}.

output :

nonzero : 6

swaps : 2 (-2 as it is and swap 1 and 6 from first two zeros.)

18 were selected out of 55 for f2f round.

### Round 1 F2F :

Q1- [Two linked lists merge at one point, return the converging node. Constraint- O\(1\) space and O\(m+n\) ,where m and n are lengths of lists.](#)

Q2- [Rotate the alternate levels of a binary tree.](#)

Input : \r\n

1

\r\n

/

\

\r\n

First he asked to do it without recursion and then with recursion. O(n) time complexity.

Q3 \xe2\x80\x93 Write an efficient [function that takes two strings as arguments and removes the second string from first string](#) (in place). (Shifting not allowed)

input:

str1: aabcabcb

str2: abc

output: ab

Q4 \xe2\x80\x93 [Insert an element into a sorted link list which is having loop somewhere and duplicate elements as well.](#)

Q5 \xe2\x80\x93 [Make your own data structure. which inserts, deletes and gives a random number in O\(1\) time.](#)

Hint: Use hash table and array.

### Round 2 F2F :

Q1 \xe2\x80\x93 You have n pencils, each having l length. Each can write 4 kilometers. After writing 4 kilometers it has l/4 length. Then you can join 4 pencils which are having l/4 length and can make 1 pencil. You can make pencil of pieces if remaining pieces are 3 or 2 or 1 in number. And you can include these remaining pieces whenever you need. Write a recursive relation independent of l,length of given pencil, for how much one can write from n pencils. Write mathematical equation also.

Q2 \xe2\x80\x93 [Find the largest sum subtree in a given Binary Tree.](#)

Q3 \xe2\x80\x93 [Reverse level order traversal.](#)

time complexity : O(n)

Input : \r\n

1

\r\n

/

\

\r\n

You are permitted to use extra space and now print them in separate levels too.

Output:

13 12 11 10 8

7 6 5 4

3 2

1

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# Amazon Interview | Set 124 (On-Campus)

- Difficulty Level :[Medium](#)
- Last Updated :[24 Jun, 2019](#)

Hello friends, recently amazon visited our campus selecting 2 FTE and 7 interns for different roles. I would like to say about rejections. I have got rejected in many companies (even in Amazon) but finally got placed in a good company. So be strong, there is always a door opened for us.

Here I share my experience with amazon.

## Round 1:

Around 500 people attended this round. As usual 20 MCQ and 2 programming questions.

We need to do at least one programming question to get through this round.

MCQs include various topics like OOPS, OS, CN, DBMS etc.

Two coding questions were:

1. [Merge two linked lists of different size such that nodes from each list are arranged alternatively.](#)
2. [Finding the minimum difference](#) (I forgot the actual question).

59 people got shortlisted in this round.

## Round 2:

In this round people are divided into groups and asked to sit in different class rooms.

We were given a question in a paper. Here everyone got a standard question. The question which I got was finding the largest contiguous sub array, start and end indexes must be printed with sum (Kadane's algo).

My friends got questions like Boundary traversal etc.

So, This round is very simple and if you are strong in standard problems, you can clear it with ease. 29 got shortlisted to next round.

## Round 3:

It was very simple for me because we were running out of time. Only one question was asked.

[Find the kth element from the end in a SLL](#)

Different approaches were discussed and he asked me to code for the best one.

19 got shortlisted to next round.

## Round 4:

It was one of toughest round for me. I was very much interested in SDE role but I was interviewed for SE/QAE role. I dint dare to ask the interviewer about the role. We are not said before the interview that they are going to interview for that roles. I mean it is in their hands to decide the role that matches your skills.

Questions were a bit tough for me in this round because am not much good in troubleshooting and testing. And this round went almost for 1 hr 30 mins.

Questions:

1. Given start and finish times of a youtube video and how do you confirm that the video is completely watched by the user or not? I gave a solution, we can set flags when the user watches a particular unit of video. He asked me how discrete? I said it may be in terms of seconds. He then asked me, If a user is just watching in terms of microseconds? I was not able to give the right answer. He was not satisfied with my solution.

2. A web application is running. We have only a text box. If we enter a name in the text box, we get the details of the person whose name is entered. Now the question is to troubleshoot the application when it stopped displaying the results after entering a name( whose details are present in the data base).

I answered many points here, like server is disconnected and there may be locks on the details such that only one user can access the data at a time. And many other, but he was not much satisfied.

3. Give the test cases for the Gmail login page. At first I got tensed on hearing this question but I answered well. I almost gave 10 test cases quickly but, the interviewer want to extract as many he can. So he started noting down all the points which I said and kept asking me further points. Finally 25 \xe2\x80\x93 30 test cases were covered.

4. Given a video whose audio is not playing in a video player. Troubleshoot.

I gave many answers here. Like, there may be two major possibilities here. 1. The video may have some problem 2. The video player software may have some problem. Then I gave many points in each category. Like OS dependent etc. He was satisfied with my answers.

5. And 2 more questions were asked (I forgot ) They were from testing and troubleshooting.

14 got shortlisted to next round.

### **Round 5: (Hr + Tech )**

This was the round which I dint get through. \xf0\x9f\x99\x81

First, Tell me about yourself. I request everyone to be well prepared for this question in any interview. It looks so simple, but its very difficult to impress the interviewer with your answer here. Next was a question from trees. [Find the vertical sum in Binary tree.](#) I said I\xe2\x80\x99ve done it before and I know the solution. He asked me to go ahead. Then I answered the same thing which was given in GFG. He then asked me to do it in a single traversal. I gave another solution but it also took 2 traversals. He scolded me that it is also taking 2 traversals. I was not able to think anymore after this. But it was very simple one. ?

Next he asked me to find the duplicate chars in a infinite length stream of chars. I gave a hashmap solution and he asked me about hashmaps. He then extended the question that we have Integers also. Even then I said hashmap solution suits. He asked me about collisions here. He asked me how much size of hashmap you need?. And also about the range of elements that can be mapped? I answered well all these questions because I\xe2\x80\x99ve read a lot about hashmaps.

Next he asked me a troubleshooting question. I answered this like the one which I faced in the previous round.

Next he asked me \xe2\x80\x9cwhat happens during withdrawal of cash from ATM \xe2\x80\x9c? (only during withdrawal ?)

I was not able to convince him with my answers. He was expecting a lot in terms of internal clocks and stuff in ATM.

Next He asked me \xe2\x80\x9cwhat happens when you enter an URL in a web Browser \xe2\x80\x9c?

I read this question in many interview experiences, so I answered it well But, He asked few questions in between. Like what is HTTPS? What does \xe2\x80\x98S\xe2\x80\x99 stands for in \xe2\x80\x98HTTPS\xe2\x80\x99?

And finally I was in a trap by this final question. What is a Web server? I really don\xe2\x80\x99t know. But I dared to answer, But to my bad luck I answered DNS server instead of Web server. He was very much angry with my answer and asked am bluffing? GONE \xf0\x9f\x99\x81

All the impression was gone by just one simple mistake of mine and I dint get through.

Finally 9 people got offers out of 14.

2 were FTE and 7 were given INTERN.

### **TIPS:**

If you are aiming for AMAZON then just try to solve as many questions as possible in GFG.

Try to be frank in the interview. If you don't know the answer, Just accept that you don't know.

Finally be Strong. Rejections are inevitable unless you are very cautious.

I hope this will help others.

ALL THE BEST.

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## Amazon telephonic interview questions for SDE 1

- Difficulty Level : \n[Medium](#)
- Last Updated : \n27 Apr, 2021

Ques1. Find top 10 selling product given the count of sales of each product.\xc2\xab

Ques2. Design a valet parking lot with basic use-case of assigning ticket to customer and retrieving the car later. Three sizes available. Use best fit and nearest distance.\xc2\xab

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[\*\*All Practice Problems for Amazon\*\*](#) !\xc2\xab

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# [TopTalent.in] Exclusive Interview with Vivek Ruparel who got into Amazon

- Last Updated : \n 05 Sep, 2014



Vivek was quite happy when he cracked his first ever interview on campus. The thought of enjoying the college life in last year without the pain of campus interviews seemed quite pleasant. He could crack this amazing company by being dedicated and disciplined in his interview preparation. As he recalls I used to practice atleast 6 problems a day for two months before my interviews. We at TopTalent.in spoke to Vivek from Jadavpur University about his experience of giving an Amazon interview and what advise he had to offer for others looking to achieve something similar.

You can also [download](#) his resume to see how you can do it too.

## TopTalent: What companies did you get offer from apart from Amazon?

As Amazon was the first company in our campus, I didn't get a chance to sit for other companies. So its only Amazon interview that I can share with you.

## TopTalent: How do you feel on achieving this feat?

It feels great. No better feeling than hearing your name in the final bunch of shortlisted students. If one puts his effort with full dedication, it does pay off.

## TopTalent: Can you give us a brief account of what you felt was the toughest interview?

Since I have only gone through the Amazon interview process, so its Amazon by default. I can definitely share the toughest round I came across during my interviews. It was a question based on arrays. It was pretty tough. I was able to solve this question and I think this question sealed my place in Amazon.

## TopTalent: What was your preparation strategy?

Not just going through the codes but finding the solution and implementing them on my own, no matter how long it took. That is the most important thing according to me that helped me crack this interview. Second thing was regular coding to crack the online coding rounds. I used to practice atleast 6 problems a day for two months before my interviews. Third was the getting familiar with all data structures and algorithms.

## TopTalent: What resources did you consult? Where did you practice problems from?

1. Geeksforgeeks is a must for Data structures and algorithms.
2. I used to do problems regularly in [leetcode.com](#)
3. [careercup.com](#) helped to go through the interview experiences.
4. Book : Programming Interviews Exposed

## **TopTalent:\xc2\x9cWhat kind of skills do you think helped you getting this job?**

CS fundamentals is very important . My 3rd round was completely on CS fundamentals. It lasted around for 1hr and 15 minutes. One should not ignore CS fundamentals when preparing for interviews . Data structures and algorithms is must as all know. Choosing one site and practice coding regularly is also very important.

## **TopTalent:\xc2\x9cWhat\xe2\x80\x99s your advice to students who are aiming for similar placement offers as yours?**

1. Don\xe2\x80\x99t just go through the codes. First try it on your own, that\xe2\x80\x99s very important. Once you have cracked a problem, write it in a paper and check for the corner cases.
2. For the coding part, once you have cracked a problem, always try to run the program at one go.
3. OS, DBMS and Networking. If you get a good hold on these subjects, it will make you stand apart from other candidates.

## **TopTalent:\xc2\x9cWhat should one keep in mind while preparing a resume?**

My resume had only one page in it. I would suggest to keep only relevant information in the resume. Most important thing, one should be ready to answer any query on everything in his or her resume.

In case you missed, you can\xc2\x9calso\xc2\x9c[download his resume](#)\xc2\x9cby logging in.

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# Amazon Interview | Set 123 (On-Campus for Internship)

- Difficulty Level :[Medium](#)
- Last Updated :[24 Jun, 2019](#)

**Online round:** In this round there were 20 MCQ's to solve and 2 coding question. Of the 20MCQ's a couple of questions were on Quantitative aptitude, relationships, OS, DBMS, Data structures etc. there was negative marking for every wrong answer so I attempted only 15 for which I was sure.

Q1- [find the first non repeating character in a string.](#)

Q2- [given a binary tree where each node has some weight. You have to return the max weight in the binary tree.](#)

Maxweight = value of root node + value in its left subtree and right subtree.

```
\r\nEx - 2\r\n      /\r\n      \\\r\n      -1\r\n      3\r\nOutput = 4
```

**1st round(50 mins):**

Q1. [Reverse link list in k chunks](#)

Interviewer was first interested in approach then he asked me to code.

Q2. [Spiral order traversal of binary tree](#)

I first told him 2 stack approach but he asked me to do without stack .Then I gave him a solution using one queue and one stack and he finally asked me to code both the approaches.

Q3. [Longest palindromic substring](#)

I first used DP but he asked me to do O(1) space complexity. I was unable to do so.

**2nd round :**

Q1. Connect sibling pointer in a binary tree

[Connect Nodes at Same Level](#)

<https://www.geeksforgeeks.org/connect-nodes-at-same-level-with-o1-extra-space/>

Q2. [Push ,pop and min operations in O\(1\)](#)

[He asked me to do middle operation also and then he asked me to code 2nd problem.](#)

<https://www.geeksforgeeks.org/design-a-stack-with-find-middle-operation/>

Q3. Given n point in a 2d plane ,find k distant nodes from the origin.

I told him min heap approach and he was satisfied.

Q4. [Problem statement was very long but it was topological sorting.](#)

I used adjacency list representation, he asked me why

And finally asked me to code it.

Overall it was a very nice experience interviewing with them.

**Some tips:**

- Never give up
- Don't start with coding ,first explain the approach.
- Be honest

- <https://www.geeksforgeeks.org/> my guidebook.

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## Amazon Interview | Set 122 (On-Campus for Internship)

- Difficulty Level :[nHard](#)
- Last Updated :[n24 Jun, 2019](#)

My interview comprised of 3 rounds. 1 Online and 2 face to face rounds.

### Online Round

In this round there were 20 MCQ's to solve and 2 coding question. Of the 20MCQ's a couple of questions were on Quantitative aptitude, relationships, OS, DBMS, Data structures etc. there was negative marking for every wrong answer so I attempted only 15 for which I was sure.

Q1- [find the first non repeating character in a string.](#)

Q2- [given a binary tree where each node has some weight. You have to return the max weight in the binary tree.](#)

Maxweight = value of root node + value in its left subtree and right subtree.

Ex     2\r\n      /      \-\r\n      -1      3\r\nOutput = 4

After this round 33 students were selected for face 2 face round. \xf0\x9f\x98\x80

### Round 1 F2F (40-50 mins)

Q1 \xe2\x80\x93 [given a binary tree where the left subtree is mirror image of right subtree. So you have to check whether the tree is symmetric or not \(structure wise\).](#) O(n)

Ex     - 1\r\n      /      \-\r\n      2      3\r\n          \-\r\n          /\r\n          4      5\r\nOutput - Yes

Q2 \xe2\x80\x93 [given a sorted 2D matrix and you are given a value you have to search that value in the matrix.](#) I gave him two solutions. O(row + col)

Q3 \xe2\x80\x93 [given two arrays in sorted form. The first array has some empty space equal to the size of second array at its end.](#) You have to merge both array in the smartest possible way in the first array. With constraint that auxiliary space O(1).

Ex \xe2\x80\x93 arr1[9] = {2,4,5,7,8,\_,\_,\_,\_};  
arr2[4] = {3,6,8,9};  
after merging arr1 should be = {2,3,4,5,6,7,8,8,9};

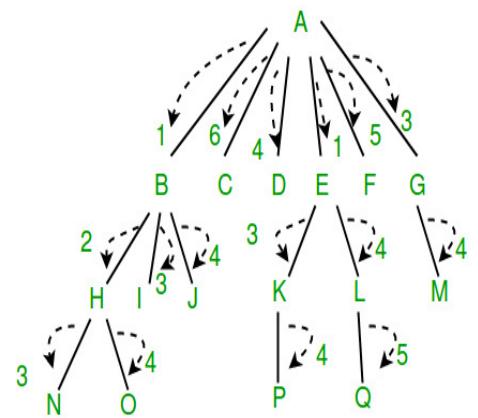
For every question I was asked to write a working code with all corner cases handled. I impressed the interviewer very much in this round :). Then I ask him some questions like \xe2\x80\x93 how an intern contribute to the amazon\xe2\x80\x93s claim to be the most customer centric company and a few more.

### Round 2 F2F (70\xe2\x80\x9380\x9380 mins)

This interview was with a senior guy.

Q1 \xe2\x80\x93 Given a very large n-ary tree. Where the root node has some information which it wants to pass to all of its children down to the leaves with the constraint that it can only pass the information to one of its children at a time (take it as one iteration). Now in the next iteration the child node can transfer that information to only one of its children and at the same time instance the child\xe2\x80\x93s parent i.e. root can pass the info to one of its remaining children. Continuing in this way we have to find the minimum no of iterations required to pass the information to all nodes in the tree.

Minimum no of iterations for tree below is 6. Consider passing root information first to any child except A-B answer will come more than 7. So 6 is the minimum answer.



I gave many approaches for this question but he was not satisfied with any approach. I said I will try to do it in a binary tree then I will generalize it for n-ary tree. He said your binary tree approach is correct but the way you are generalizing it to n-ary is wrong. The interviewer gave me many hints and said you have almost solved the question but missing a single point which I was not able to find till the end. Finally he moved to other question.

## Q2- given a binary tree you have to check whether it is BST or not.

This question was very easy. I solved it within minutes (one inorder traversal approach  $O(n)$ ) but to my surprise the interviewer was saying it is wrong. I explained to him but again he said it is wrong. His motive was to pressurize me but I stick with my solution and finally he moved to other question. My answer was correct.

## Q3 \xe2\x80\x93 given a BST find the [Nth maximum](#) and [Nth minimum element](#).

I solved it in  $O(n)$ . He was fine with it but he said do it in logarithmic time. I did it too with some preprocessing and coded both the approaches.

Overall it was a very nice experience interviewing with them.

### **Some tips:**

- Be confident. Don't let the pressure prevail on you.
- Amazon is mainly looking for those who can write code, only telling approach is not fine. So start practicing as much as you can. There is no barrier of programming language.
- Please do ask questions to interviewers when they ask and try to ask something which shows that you are very much interested in working with them
- [www.geeksforgeeks.org](http://www.geeksforgeeks.org) \xe2\x80\x93 my guidebook. Utilize the immense resource available on this portal for your benefit but don't mug up the code. Try to first solve it by yourself.

Good Luck !!!

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# Amazon Interview | Set 121 (On-Campus for SDE-1)

- Last Updated : \n24 Jun, 2019

5-quant, 15 technical, (no verbal reasoning and English).

- 1) [Given 2 binary trees check if it is symmetric \(structure only not data\).](#)
- 2) Remove duplicates in a string in O(n) time (order of input must be preserved)

## Round-1

1. Heaps-insertion.
2. Advantages of heaps over arrays.
3. [Find 2nd min element from given array](#)
4. [Given an array and a sum s find all pairs of numbers which whose sum=s](#)  
(assume array is already sorted)space complexity-O(1),time complexity-O(n)

## Round-2

1. [Given a tree construct a mirror tree and return root of mirror tree.](#)
2. [Level order traversal of a tree.](#)
3. [Given a stack output a sorted stack.](#)(hint use recursion).

## Round-3

1. [Given a tree populate the sibling of the tree node with the next node in same level.](#)space complexity-O(1).
2. What happens when you type amazon.com in browser.

## Round-4

1. Linked list problem:[Intersection Point in Y Shaped Linked Lists](#)  
<https://www.geeksforgeeks.org/write-a-function-to-get-the-intersection-point-of-two-linked-lists/>
2. A simple problem in linked list.

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## Amazon Interview | Set 120 (On-Campus for Internship)

- Difficulty Level :[Hard](#)
- Last Updated :[21 Jun, 2019](#)

Recently Amazon visited our college and details are as follows.

### Online Round:

There were two questions.

1. [N strings are given. Convert all string to corresponding decimal value typed in an Alphanumeric Keypad \(e.g. \xe2\x80\x9cbdg\xe2\x80\x9d -> 234\). Then print all strings in decreasing order of their decimal value.](#) If they have same decimal value then print lexicographically smaller first.

Input:

```
5\r\nAmazon\r\nsun\r\nrun\r\nOutput:\r\n262966  amazon\r\n786 run\r\n786 sun
```

2. Write a code to print all possible combinations(order matters) of characters of string in lexicographical order.

Input: \xe2\x80\x9cABC\xe2\x80\x9d

Output: A, AB, ABC, AC, ACB, B, BA, BAC, BC, BCA, C, CA, CAB, CB, CBA

Interview:

### Round 1: 45 minutes

This started with a brief discussion on project. She quickly moved on to Coding questions.

She made me write an error free code for \xe2\x80\x9cCount all pairs which sum to k in a BST\xe2\x80\x9d. Also she added that duplicates may be present but on left side only.

First she discussed for approach and then constrained the space complexity to be O(1). She checked the code rigorously.

Then there were 3-4 coding questions. She just discussed approach.

\xe2\x80\x93[Update all nodes in a bst to be sum of all elements greater than or equal to it.](#)

\xe2\x80\x93[Stock problem/ Given an array \xe2\x80\x98arr\xe2\x80\x99 find maximum difference between two elements \(max\(arr\[i\]-arr\[j\]\) where i>=j\).](#)

-Then there was this awesome question\xe2\x80\x9a Given a perfect binary tree.

print nodes in a specific manner. e.g-

```
15\r\n      /  \\\r\n      13    14\r\n      /  \\\r\n      9    10   11   12\r\n
```

I told her approaches having some space complexity. Again she restricted space complexity, and I got an efficient solution by recognizing some pattern \xf0\x9f\x98\x89 .

### Round 2: 25 minutes

There were just two questions.

1- [Given a string having no spaces, and a dictionary. Problem was to find if that string can be splitted in multiple strings such that all the splitted strings are in dictionary.](#) I was provided a function search(string str) which will tell if a particular string str is in the dictionary or not.

I quickly gave a recursive approach.

2- [The second question was well known vertical order traversal of a binary tree.](#) She just discussed how to implement various approaches in C++.

Then there was discussion on types of projects assigned to Interns and blah blah.

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## Amazon Interview | Set 119 (On-Campus for Internship)

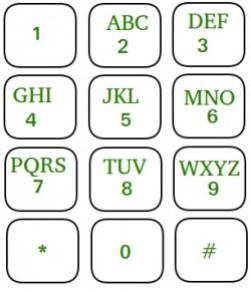
- Difficulty Level :[Medium](#)
- Last Updated :[21 Jun, 2019](#)

The selection procedure consisted of an online round followed by two Personal Interviews.

### Online Round:

The first round had 20 mcq consisting of 3-4 questions from aptitude, 2 questions from os and rest were from Basic C and Data Structure. There were 2 coding questions as well.

Question 1: [You are given a phone keypad like following diagram, where each character corresponds to a digit mentioned in the same box.](#)



You are given n strings and you have to find their decimal representation. You have to print the string and corresponding decimal representation in descending order.

Like if you are given `\xe2\x80\x99amazon\xe2\x80\x9d` then its corresponding decimal notation will be 262966.

If more than one strings have same decimal notation then you have to print them in the order in which input is given.  
(Given that given string consists of lower case alphabets only.)

Test Case 1 :  
`\r\n5\r\nAmazon\r\nMicrosoft\r\nFacebook\r\nAa\r\nBb\r\nOutput:\r\n642767638 microsoft\r\n32232665 fa`

Question 2: [Given a string. Print all Possible permutations of different lengths in sorted order.](#)

Input: abc  
Output:  
`\r\nA\r\nAb\r\nAc\r\nAbc\r\nnb\r\nBc\r\nnc`

Candidate who could solve at least one question out of 2 coding questions was selected for personal Interviews.

### Round 2(P.I. 1) :-

Firstly interviewer had a deep discussion of my project. He also asked me to write code for one of my mini project (Backtracking). Then he asked two back to back coding questions `\xe2\x80\x993`

1. [You are given a bst. You have to print the kth smallest element.](#)
2. [You are given two sorted arrays and you have to print the median obtained after merging them in log\(n\) time complexity.](#)

Then he asked the language in which I am comfortable for coding. I said C . Then he asked me to allocate the dynamic memory of 2-d array in C( I used malloc function for this). Then he asked me the difference b/w malloc and new (c++) function.

### Round 2 (P.I. 2):-

Firstly he asked me to tell about my academic background. Then he directly put a coding question in front of me.

1. [You are given a binary tree and two nodes. You have to print the horizontal distance between them.](#)

Let us say :

Given nodes are B and C : Answer would be 2.

Given nodes are A and E : Answer would be 0.

Given nodes are D and G : Answer would be 4.

We had an long discussion of 45 mins (approx.) on this problem.

One of my friend was asked the following questions:

2. [Given a linked list. You have to determine whether or not it is a palindrome in order O\(n\) time without using auxiliary space.](#)
3. [You are given an array of integers . You have to find the maximum sum sequence.\(It needs not be contiguous\).](#)

After all these rounds I and my friend both were selected `\xf0\x9f\x99\x82` :). A total of 16 candidates were selected.

I really thank to GEEKSFORGEEKS for all the support and help in my preparation.

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# Amazon Interview | Set 118 (On-Campus for Internship)

- Difficulty Level : \n[Medium](#)
- Last Updated : \n21 Jun, 2019

The selection procedure consisted of an online round followed by two Personal Interviews.

## Online Round:

The first round had 20 MCQs and two coding questions. The MCQs were based on the concepts from OS, DSA, compilers, architecture etc.

The coding questions were:

1. [Given an array of positive and negative numbers, arrange them in an alternate fashion such that every positive number is followed by negative and vice-versa maintaining the order of appearance.](#)
2. [Given a n x m matrix, print the elements diagonal wise from top to bottom.](#)

## First round of PI :

1. Given a number n find the number of balanced parentheses expressions of that length.

Input: 2

Output: 1 which is () ,

Input: 4

Output: 2 which are (( )) and ( ) ( ).

I gave a complex solution involving segment tree in which he pointed out the mistakes and then asked to write a code to check if a given expression is balanced or not.

2. [Tell something about LRU. What DS will you use for it? Write pseudo code for it.](#)

(Hint : Quite simple..Use doubly LL)

## Second round of PI:

The interviewer introduced himself first and then asked me about myself.

We had a discussion on my projects.

1. [Given two binary trees, write pseudo code to determine if one is a subtree of the other.](#) I answered it and then he modified the question to check if the other tree elements are the subset of the elements of the first tree. (Hint: Inorder traversal)
2. [Given a sorted circular linked list which is rotated at some point, write pseudo code to insert a new node.](#) Ex: 8 1 2 5 7 and insert 6.

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**Amazon Interview | Set 117 (On-Campus for Internship)**

- Difficulty Level : \nHard
  - Last Updated : \n21 Nov, 2019

Recently Amazon India visited our campus for 2 months internship. There were four rounds.

## **2 online coding questions + 20 MCQ :**

MCQs had 15 questions(not exactly) on OS (to my surprise) , one aptitude(probability) and rest on c/c++

#### **2nd Round ( Group Interview / Written round) :**

21 were selected for the second round. We had 2 questions.

- Given two strings, find whether they are anagrams of each other. (too easy).
  - Given a n-ary tree, Convert it into an array and return it. Construct the same n-ary tree from that array again. (DFS is better here as reconstruction is necessary)  $\backslashxe2\backslashx80\backslashx93$

Push the root to a stack. Pop the stack. Store the value of the root node and the number of children it has in the array. Push all the children to a stack from right to left. Do this until the stack becomes empty. The array will have DFS along with the number of children of each node.

For reconstruction, pass `\xe2\x80\x9ci` by reference( `i` is for iterating through the array) take the value at index `0 .. make it has root. increment i. for all the children of the root, recursively call the same function. return root.` (I hope this works :P)

### **3rd round (Face to Face):**

Only 5 were selected.I was asked only one question and i didnt do well. Find the square root of a number. i answered that this can be done using Babylonian method. (<https://www.geeksforgeeks.org/square-root-of-a-perfect-square/>) or binary search method.. He asked me to implement Binary Search method. I did a mistake. then he asked me to correct it.. i corrected it. I wasnt able to impress him much.

Remember the floating point arithmetic limitations.. this is where i failed.

#### **4th round (Face to Face):**

I was called for 4th round. ( Only i had 4th round because of my bad performance in the 3rd round). The interviewer asked a lot of questions. They were easy

- Given an array of 0s and 1s sorted. Find the first occurrence of 1 ( Binary Search)
  - Given an infinite array of 0s and 1s.(sorted) .Find the first occurrence of 1
  - Given a matrix sorted in ascending order both row and column wise. Search an element. This is  $O(n+m)$ . He asked me a better solution.. I tried and he helped me a lot..Though i wasn't able to deliver.
  - Given a tree, print the max sum path from root to leaf.

6. [Implement a stack using array](#). Implement two stacks using an array. Implement 3 stacks.

7. You are given an array. You have to create a stack when the user wants to do so and delete a stack when the user says. You won't stacks that will be created.

I thank geeksforgeeks for providing an excellent platform to learn new things. Check the interview corner for other company interviews.

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M. R. — INFLUENCE

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# Amazon Interview | Set 116 (On-Campus)

- Last Updated : \n21 Jun, 2019

## Round 1:-

20 MCQ\xe2\x80\x99s(Majority from OS and Java, C++, 1 aptitude)  
2 coding questions.

1. [Given an array, find the maximum sum that can be formed from the array such that no two adjacent elements are taken into consideration.](#)

for ex:- 1,2,3,5 should return 7.

2. [Print Vertical axis sum of the given binary tree.](#)

## Round 2:-

Group Coding Round

36 people made it to the next round. 2 questions were asked

1. [Given an array which initially increases and then decreases, search for an element in the array.](#)
2. [Merge \xe2\x80\x98k\xe2\x80\x99 sorted arrays.](#)

## Round 3:-

Technical interview

18 people were selected for the next round and they asked me 2 questions

1. [Given an infinitely growing sorted array which initially consists of 0\xe2\x80\x99s and then 1\xe2\x80\x99s upto infinity. Find the transition point where 0 changes to 1 effectively.](#)

2. Given a binary search tree, make 2 separate trees such that difference between the sum of elements between them is minimum.(After some time he gave me a hint which helped me solve the problem).

## Round 4:-

Technical Interview

1. Some basic OS related questions

2. [Implement a data structure which would perform insertion, deletion, search and randomize operation with minimum time complexity.](#)

We discussed a lot of data structures and I settled with a data structure (Hashtable with DLL). But he gave me clues and improvised my solution.

3. [Implement a Queue using 2 stacks.](#) Optimise your implementation

(They didn\xe2\x80\x99t ask me to code in this round. They just checked how efficiently I approached it )

## Round 5:-

Technical interview

I think this is the bar raiser round. We are aware of the game show in which a contestant will think of a famous personality and the host will try to find the personality within a finite set of questions. I was asked to design a system which would implement the same. He asked me to write a code to return the first question (like the deciding factor on which the elements will be further partitioned) so that I can find the celebrity in minimum no. of questions.

I think they were checking your approach, ideas and patience in this round. Whatever solution I gave he never seemed to be satisfied. Be confident in your approach and don\xe2\x80\x99t ever give up.

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# Amazon Interview | Set 115 (On-Campus)

- Difficulty Level :[Medium](#)
- Last Updated :[21 Jun, 2019](#)

Hai, recently amazon visited our campus for recruitment. Here is my amazon experience.

1000 people attend round 1

## Round 1: (1.30 hrs)

20 MCQ\x80\x99s + 2 coding question

19 MCQ\x80\x99s were from os,c++,java and single mcq from probability

Coding questions:

1. [Find maximum sum in a array,such that no two elements are adjacent.](#)

For example 3,2,7,10 should return 13, sum of 3 and 10. Handle for negative cases too.

2. [Given a binary search tree,print the sum of all nodes that are in same axis](#) (Modification of vertical order traversal)

I attended 12 mcq\x80\x99s. There was negative marking,so i attended the questions which i was very confident and did both programs.

I was confident that i will clear the round 1.

## Round 2: (Group Fly Activity) ( 1 hr)

Around 36 people were shortlisted for second round.

We were divided into many groups and each group was allotted a mentor.

Two questions were given and we have to discuss the approach with mentor and only after getting his approval we have to code.

1. [Given a monotonically increasing and then decreasing array with duplicates and a key, return true if key exists in array.](#)

2. [Given k sorted arrays of different or equal sizes, merge them into a single sorted array.](#)

Thanks to mentor, he was very cool and helpful, I did both the codes and handled corner cases too.

## Round 3: (30-45 min)

18 people were shortlisted for third round and i was one among them.

First the interviewer asked to tell about myself.

Then he asked why i had low cgpa when compared with my school marks.

Then came the first question

- 1) [Given n ropes of different length, combine them into a single rope,such that total cost is minimum. You can tie two ropes at a time,and cost of tying is sum of length of ropes.](#)

First i gave a solution similar to insertion sort in a linked list,he was not satisfied, and then I gave a min heap approach. He asked for time complexity. I got wrong,so he asked what steps u will do and time complexity for each step. He added all the step cost and asked me to arrive at final time complexity.

After this, I got correct.

Then he asked about 2nd code in group fly activity.I used merge sort for it and he asked why i had used merge sort, and asked to improve the code.

Then i gave a min heap solution (:P we discussed after group round). He asked me to code it. I was not good at heaps. I tried my best but unable to arrive at working code

So finally he asked if i had any questions for him. I asked about amazon\x80\x99s environment.After this i thanked and left.

I was sure that i will be eliminated and i was eliminated.

Only 10 people went to 4th round and 3 people were hired finally.

Here are some mistakes done by me

It was first f2f for me and i was very nervous and had butterflies in stomach, which ultimately decreased my performance.

I was not confident about the answer i gave.

My communication skills were very poor.

So try to avoid the mistakes done by me.

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# Amazon Interview | Set 114 (On-Campus for Internship)

- Difficulty Level :[Expert](#)
- Last Updated :[21 Jun, 2019](#)

Recently Amazon India visited our campus for 2 months internship. There were three rounds

## 2 online coding questions + 20 MCQ

The MCQ questions were mainly 6-7 questions on data structures, 7-8 C language output programs, 4-5 questions on general aptitude, Probability, Permutation and Combinations.

The two questions were:

- [Given a set of intervals, you have to group the overlapping intervals and display all the intervals in non decreasing order.](#)

Eg: (1,5),(8,11),(3,6),(10,20)

output: (1,6),(8,20)

Tip: Although this is a very easy question and can be found on many online portals, just remember that the given input is in the form of a string and it needs to be parsed carefully.

For this, instead of converting the string into integers, you could use something like

```
\r\nwhile (scanf ("%d,%d", &a, &b)) \r\n{ \r\n//store a and b as you wish to\r\n}
```

- [Given a set of integers, negative as well as non negative. You need to rearrange them such that negative and non negative integers at alternate positions.](#)

Constraints: order of all the negative and nonnegative integers must be the same as before if there are more negative integers, the integers in excess should occur at the end of the array and same goes for the non negative integers in case they are more in number.

```
\r\nneg: -5,-2,5,2,4,7,1,8,0,-8\r\noutput: -5,5,-2,2,-8,4,7,1,8,0
```

Again, for the input, you can use the above mentioned technique.

About 20 out of 150 students were selected after this round for Personal Interviews.

Following are the interview experiences of two of us.

**Person1:**

**ROUND 1:**

- [Given a binary tree having 3 pointers, left, right and sibling out of which all the left and the right child pointers are already filled, you need to fill the sibling pointers with the addresses of the next node on the same level. If it is the last node of a level, fill NULL.](#)

I first told him an approach using a level order traversal with a queue. Then he asked me to do it without a queue using recursion. I told him the approach and when he was satisfied, he asked me to write a code on paper with all the corner cases covered.

- [Given an array of size 2n+1 where n integers repeat two times and one integer occurred only once, Find that integer.](#) I told him by using XOR. then he changed the question to

Given an array of size 2n+2 where n integers repeat 2 times and 2 integers come only once. Find both of them. This can also be done using XOR. You can find the solution in the arrays section of Geeks for Geeks

- Given any binary tree in which all the leaves had their left and right pointers connected in a doubly

linked list from left to right instead of pointing to NULL. Also, the leftmost leaf's left pointer pointed to that node itself and the rightmost leaf's right pointer pointed to that leaf itself and if there was an internal node with no left or right child, that particular pointer will point to that node itself.

You need to [find the Inorder Traversal of the tree](#).

Once I told him the approach, he again asked me to write a code on paper.

4. He asked me about the data structures I knew and then started asking questions on Graphs. How we represent them?

which is better Adjacency matrix or List?

Then he gave some situations and asked me which of the two implementations should be used.

## ROUND 2:

1. He asked me in detail about my projects for about 15 minutes.

2. Then he asked me about the subjects I had studied in 3rd and 4th semesters.

I forgot what all subjects I had studied

The first subject that came out of my mouth after a lot of thinking was Unix Linux Programming. Then he asked me to write all the commands I knew in 5 minutes. I listed almost 20. He asked me the functions of a few of them and differences between some of them.

3. Finally he asked me a question on binary trees which was pretty simple.

[Replace the data of every node of a Binary Search Tree with the sum of all the nodes greater than it.](#)

I gave him the approach using reverse inorder traversal. He then asked me to write a code on paper. I had used pointers in the code. He then asked me to write a code that did not use pointers, static variables or global variables.

I wrote that. Finally he appeared satisfied.

## Person 2

### ROUND 1:

1. [Given a singly linked list and an integer k, I had to write code to reverse the list in pairs of k handling all base cases as well.](#)

eg. 1->2->3->4->5->6->7->8 k=3

o/p 3->2->1->6->5->4->8->7

She actually tried my code on a number of base cases trying to find bugs

2. [Given 2 arrays one of size n and another of size \(n+k\) but having k values filled, I was asked to merge the two into the second array without using any extra space. I quickly gave her the logic and we moved on to the next question.](#)

3. [Given a string of characters, find the index of the first repeating character in the string.](#)

eg. abcba

o/p: 0 (as 'a' came initially before 'b' though both are repeated twice).

Again error free code was required.

4. She then asked me questions on the research project I was currently working on. This went on for another 10-15 minutes.

### ROUND 2:

1. This round started with questions on my research project. Then he asked me which data structures I liked. We had a long discussion on heaps and the associated time complexities.

2. [Given a binary tree, any node in the tree and an integer k, print all the nodes at a distance k away from the given node.](#)

Mind you, the node may be above or below. We first discussed on an approach and after he was satisfied with my explanation, he asked for error-free code.

3. Given an integer n, how many BST's can you make with n no of nodes?

I told him about catalan number and the direct formula  $2^n$ . But he wanted a derivation, so I built-up a recurrence and showed him the DP to evaluate it.

4. Given n people, you are told all pairs of people who belong to the same country. You are to tell the number of pairs of people who do not belong to the same country,

I expressed it as a graph and applied dfs to get number of connected components and size of each. Then it was a simple formula over no of components.

After this he started discussing the life at Amazon, what the company expects from you and what you should expect to do at the company.

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## Amazon Interview | Set 113 (On-Campus for Internship)

- Difficulty Level :[Hard](#)
- Last Updated :[23 Aug, 2019](#)

Amazon visited our campus to offer internship for 6 months. There were 3 rounds : an online coding round and 2 face to face interviews.

### Online coding Round(Duration:1 hr 30 mins)

This round was conducted on [hackerrank.com](https://www.hackerrank.com). There were 20 mcq's related to computer science and aptitude. Many of these questions are there in the MCQ section of GeeksForGeeks. And there were 2 coding questions:

- [GeeksforGeeks Link](#)

Input : m=5, n=5.  
Mat[] = 1 1 0 0 0  
0 1 0 0 1  
1 0 0 1 1  
0 0 0 0 0  
1 0 1 0

### Face to Face Interview-1(Duration:1 hr)

Interviewer started asking questions straight away without any introduction. He asked me the worst case complexities of Quick sort and Merge sort. Then asked me 2 questions related to trees:

- <https://practice.geeksforgeeks.org/problems/tree-from-postorder-and-inorder/1>? I said no. Then he asked if i can make a binary search tree from the array to which i said yes. Then after discussing the approach, he asked to write the code.
- Then he asked me to [write the code for level-order traversal of a tree](#). Also asked me to calculate the complexity of the code

### Face to Face Interview-2(Duration:about 1hr 30mins)

Interviewer started with the general introduction. Then he started asking questions.

- Given n appointments with the start time, end time and a boolean variable hasConflict, we have to set the boolean variable hasConflict of those appointments that conflict with the other appointments.

Example: Appointment1: (2:00-3:00)      Appointment2: (2:30-3:30)      Appointment3: (4:00-6:00)

I have to set the hasConflict of Appointment 1 and 2 as true.

Initially, I did it in  $O(n^2)$ . But then he asked me to optimize the solution. After some discussion, I was able to solve it in  $O(n \log n)$ .

- Given that at Amazon.in the details page of an item shows only one field that is dynamically picked up from the database, we have to improve the performance according to the line:

$\approx 80\%$  of the users visit details page of 20% of products.  
I said we could store these 20% on the web server so that we don't have to fetch the item details from database everytime. He asked me where and how will i store it. I answered Main memory and will use BST to store it. Then after a lot of discussion(about 30 mins) on how will the get and put operations be used, he was satisfied with the solution.

- Given a linked list placed in memory, what problems can arise if simultaneous operations are performed on the list. From here he started asking about threads because the answer was related to it.
- When a single threaded application is converted to multi-threaded applications, what kind of changes operating system has to make?
- What steps are taken when the os shifts from one-thread execution to another?

Finally, I was hired. Thanks to GeeksForGeeks for helping me throughout my interview preparation.

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## Amazon Interview | Set 112 (On-Campus)

- Last Updated : 20 Jun, 2019

Amazon visited our campus and was hired as intern. These are the questions that I faced.

### Online Round (90 minutes)

20 Basic MCQs (Data structure, C, C++, OS, Aptitude, Networks).

2 programs :

1. [Given a text txt\[0..n-1\] and a pattern pat\[0..m-1\], write a function search\(char pat\[\], char txt\[\]\) that prints all occurrences of pat\[\] and its permutations \(or anagrams\) in txt\[\]](#)

```
\r\nE.g. : I/p : txt[] = e80cBACDGABCDA\r\n        pat[] = e80cABCD\r\n        no/p : 0, 5, 6
```

2. There is a matrix mat[m][n] with entries as 0 or 1 When you are at 1 you can move in all the eight directions and when at 0, you have to return back. Find the number of cluster of 1

```
\r\nE.g. input { {1,1,0,0,0}, \r\n              {1,0,0,1,0}, \r\n              {0,0,0,1,1}, \r\n              {1,0,1,0,0} }
```

### Round 1:

1) Introduce yourself.

2) Any moment when you worked really hard to solve a problem.

3) Find the best fit for a packet to be fitted in a rack rack sizes are given in increasing order in other words find the ceil value of a key in sorted array.

4) [Check given binary tree is BST or not](#)

5) [Find the lowest common ancestor in binary tree](#)

6) If I have any question to ask him

### Round 2:

1) [Find largest sum contiguous subarray in goven array](#)

2) If I had any question to ask him

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# Amazon Interview | Set 111 (On-Campus)

- Difficulty Level : [Medium](#)
- Last Updated : [20 Jun, 2019](#)

Amazon visited our campus, these are the questions that I faced.

## Online Round (90 minutes)

20 MCQs(Data structure, C, C++, OS, Probability ).

2 programs :

1. [Given an array of integers. Segregate all the non-zero numbers at the beginning. Print the number of non-zero integers](#) and the minimum number of swaps required for these operations.

Eg. : I/p : 1, 0, 0, -6, 2, 0

o/p : Number of non-zero integers : 3

Minimum number of swaps : 2

2. [Given a text txt\[0..n-1\] and a pattern pat\[0..m-1\], write a function search\(char pat\[\], char txt\[\]\) that prints all occurrences of pat\[\] and its permutations \(or anagrams\) in txt\[\]. You may assume that n > m.](#)

E.g. : I/p : txt[] = \xe2\x80\x9cBACDGABCDA\xe2\x80\x9d pat[] = \xe2\x80\x9cABCD\xe2\x80\x9d

o/p :0,5,6

## 1st PI

1. About 10 minute discussion on my project on Cloud Platforms and Big Data Analysis in Yahoo SDC. I asked him some doubts and he answered them clearly.
2. [Given a string of digits, output all the dictionary words they can represent.](#) (Basically smart dial algorithm of an android phone). Each digit represents the corresponding characters on a cellphone as follows.



e.g. : I/p : 3323 O/p : DEAD , DEAFFirst, he asked me how I would store the dictionary. When he was satisfied by my approach, he asked me to write a recursive function that would do the job if a dictionary is given as an input.

3. Then he gave me a class design. He went on changing his requirements and I was asked to add support for them in my implementation. At first, his requirement was to draw a rectangle and a

circle. Then he went on adding requirements and finally it was to draw different specializations (like curved-edges, skewed-edges, dashed-lines) of rectangles, triangles and circle. He gave a constraint that support for a new specialization can be added easily in my design.

## 2<sup>nd</sup> PI

- Given, the starting and ending time of different meetings, what is the minimum number of conference rooms that will be enough to accommodate all of them. He asked me to code it. E.g, :

I/p : Meeting I 8:30 12:50

Meeting II 10:15 11:30

Meeting III 11:45 1:30

O/p : 2

- Implementation of a doubly-linked list using a single pointer. I didn't know the answer at that time. He gave me a few hints and I was able to solve it. Then he asked me to code it.

## 3<sup>rd</sup> PI

- Given an array of integers. This array denotes own ascending order of the elements. So if the array is {2,3,1,4}, by mathematics we can say that  $2 < 3 < 1 < 4$ . Given another array, sort this new array in own ascending order. Let's say the new array is {1,2,4,3,5,4,9,2}, output will be {2,2,3,1,4,4,5,9}. Note that since 5 and 9 do not occur, they are sorted by actual ascending order at the end.
- Return the left-view and right-view of an n-ary tree in a single traversal.

## 4<sup>th</sup> PI

- 10 minute discussion about my internship in Cloud Platforms team in Yahoo SDC. He asked me a few HR questions like what do you think was your biggest screw-up in college life, etc.
- Find power(a, n) iteratively without extra space in  $O(\log n)$  time. He gave me a lot of hints. But unfortunately I couldn't solve it.
- Pre-order traversal of a binary tree without using recursion.

Fortunately, I was selected as an FTE in Amazon.

## Suggestions

I would like to give a few suggestions to all the upcoming candidates :-

- Firstly, mugging up of codes will never take you far. If you find a problem that is solved in geeksforgeeks, rather than blindly mugging up the code, read the description properly. Try to understand what is being done and why is it being done. Try to understand each and every line of code. It is naive to expect common known questions in interviews. But, if you can understand the approach of the codes solved in geeksforgeeks, you can use it to solve a plethora of problems.
- In an interview, always think out loud. Explain what you are doing and why you are doing it. If you solve a problem within a few minutes without explaining your steps, the interviewer will assume (perhaps not incorrectly), that you have mugged up the code. This creates a very bad impression.
- Follow proper etiquettes. Shake the interviewer's hands while entering and while

- leaving the room. Also, try to ask proper questions to the interviewer when he gives you the chance to do so. These are the small things that set you apart from the other interviewees.
4. Lastly, never be too tensed. Always remember, rejection is a part of life. Luck matters a lot in job interviews. So don't be disheartened if you are rejected. You can always apply later.

A very best of luck to all of you for your upcoming interviews.

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## Amazon Interview | Set 110 (On-Campus)

- Difficulty Level :[Expert](#)
- Last Updated :[07 May, 2021](#)

Hi, Amazon visited our campus few days back. Before I start off with my experience, here are few suggestions.

1. Don't just go through the codes. First try it on your own, that's very important. Once you have cracked a problem, write it in a paper and check for the corner cases.

2. For the online round. [GeeksQuiz](#) is enough to get you through the MCQs. For the coding part, once you have cracked a problem, always try to run the program at one go.

3. OS, DBMS and Networking. If you get a good hold on these subjects, it will make you stand apart from other candidates.

### First day:

20 MCQs(Data structure, C, C++, OS, Probability).  
2 programs :

1. [Given an array of integers. Segregate all the non-zero numbers at the beginning. Print the number of non-zero integers](#) and the minimum number of swaps required for these operations.

Eg. : I/p : 1, 0, 0, -6, 2, 0\n o/p : Number of non-zero integers : 3\n Minimum number of sw

2. [Given a text txt\[0..n-1\] and a pattern pat\[0..m-1\], write a function search\(char pat\[\], char txt\[\]\) that prints all occurrences of pat\[\] and its permutations \(or anagrams\) in txt\[\]. You may assume that n > m.](#)

E.g. : I/p : txt[] = \xe2\x80\x9cBACDGABCDA\xe2\x80\x9d      pat[] = \xe2\x80\x9cABCD\xe2\x80\x9d\n o/p : Found

### Second day:

Suggestion: Always think loud when you are coding

#### Round 1 : PI 45 min

1. Discussion on Project.
2. Code : [LCA of a BST](#). (check for all corner cases)
3. Code : [LCA of a Binary Tree](#) (check for corner cases)
4. Code : [Maximum sum subarray along with its starting and ending index](#).
5. Code : Heap operations

#### Round 2 : PI (With Manager) 1 hr 15 min

1. Discussion on project.
2. Code : Given an array : A1[] = 2, 1, 2, 5, 7, 1, 9, 3, 6, 8, 8  
A2[] = 2, 1, 8, 3

[Sort A1 in such a way that the relative order among the elements will be same as those are in A2. If the element is not present in A2, append them at last in sorted order.](#)

o/p : 2, 2, 1, 1, 8, 8, 3, 5, 6, 7, 9

As I carried on telling him the approach, he went on modifying the question ( what if A2 is much larger than A1 ?, what if they are of the same size ?)

A lot of discussion on complexities for all modifications. He was quite happy with my answers.  
Finally he asked me to code the O(nlogn) approach.

#### Round 3 (Subject Round) 1 hr

1. OS : Virtual Memory (lot of discussion of its advantages, thrashing, etc)

Then he asked me to design a LRU replacement policy(approach) which I did. Then he asked to implement FIFO replacement policy with stacks. I did it using two stacks.

2. Networking : He started with Transport Layer(discussion on ports. How data from applications are changed into packets ? etc).
- Then he went to Network Layer (A lot of discussion on subnet masking and how it is used by routers to map the IP address of incoming packet, how a Subnet is different from Internet).

Next we moved to Data Link Layer(Discussion MAC addresses, sliding window protocols, etc).

3. DBMS: What is indexing?, Why indexing ?, How to implement indexing ?, What are the different types of Index? .
- Differences among Inner Join, Left Outer Join, and Right Outer Join. He followed it up with a SQL query on Outer Join.

As my first three rounds went very well, fourth round was of 15 minutes only.

#### Round 4 (Bar Raiser) 15 min.

1. Logical question. Given a prime number  $p$ . Prove that  $p^2 - 1$  is always divisible by 24.
2. Find 2nd maximum element in a given array in one iteration.

All the best !

GeeksforGeeks has helped me throughout my preparation. This is the best site for clearing your concepts on Data Structures and Algorithms. [GeeksQuiz](#) has helped me to get through the MCQs in the online round. Thanks again !

Keep Smiling !

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## Amazon Interview | Set 109 (On-Campus)

- Last Updated : \n29 Jul, 2019

Amazon visited my Campus a few days back. I did not clear the final round of Amazon but I got selected in D.E. Shaw the very next day after rejection from Amazon \xf0\x9f\x98\x80  
Here is my interview experience with Amazon.

### Online Round (conducted on HackerRank):

20 MCQ questions and 2 Coding Questions (no C++ questions, C input-output questions(very hard) and aptitude questions).

Coding Questions :

1. [Merge overlapping intervals](#)(Very well known repeating problem).

2. [Given a singly linked list you have to subtract the value of first node from the last node and so on until you reach the middle node.](#)

Eg: Input: 5 -> 4 -> 3 -> 2 -> 1

Output: 4 -> 2 -> 3 -> 2 -> 1

Advice: Many people say that making 1 code is enough to clear the 1st round while this is not true, I made both the codes and many of my friends who made only one code were rejected. Everyone who made both the codes was selected. There were some students who cleared this round by making only one code but don\xe2\x80\x99t try your luck here by making only one code is my suggestion.

### Round 1(Bar Raiser):

Complete discussion on my project.

Suppose you have a file with billion entries and you have to sort the data of a file according to a column and can put only that column in memory and after putting that your memory gets full.

e.g. your file contains

name age address Pincode sex  
\xe2\x80\xa6.. \xe2\x80\xa6. \xe2\x80\xa6 \xe2\x80\xa6 \xe2\x80\xa6 \xe2\x80\xa6

And you can have to sort the file according to Pincode then you can only put Pincode in the memory.

I approached it firstly by using merge sort but this requires the entire file to be put into memory. Then, I suggested using min heap but he said that the heapify process of billion numbers will take a lot of time. He said you are getting close, then I suggested that we can use a balanced binary search tree to store the Pincodes along with indexes and then traverse the BST in inorder fashion and swap the indices of the first Pincode of file with the index of the inorder element. He was happy after hearing this and asked me to write the code and to be careful with edge cases.

I did it.

### Round 2 (CS Fundamentals)

He wanted to check my knowledge of DBMS, OS, and Computer Networks. Asked everything related to these subject including all the layers of networks and from process-threads to deadlocks to memory management in OS. Asked a SQL query to find 3rd maximum marks of the student from a database. I gave him 2 solutions \xf0\x9f\x99\x82 .

Asked me my favorite sorting algorithm. My favorite is insertion sort but I told him merge sort because I knew a lot about merge sort so I wanted to drive the interview towards merge sort and as expected he asked many questions on merge sort and I gave him all the answers.

He asked me to build a tree from given preorder and postorder traversal of the tree, I said it is impossible to build from only these 2 traversals, you have to give me in order to build a unique tree.

### Round 3 (CS Fundamentals + Coding)

Deep discussion about project.

Asked me to choose my favorite subject other than any related to coding or algorithms. I said Computer Networks. He asked why it is your favorite? Why not OS or DBMS?

He asked me What happens when you type www.amazon.in your browser. I was expecting this question :P. I knew this, told him everything.

See the links below for solution

[What really happens when you navigate to a URL](#)

[What exactly happens when you browse a website in your browser?](#)

[What happens when you type a URL in browser](#)

He asked me to solve a coding problem now.

Suppose I am given a sorted array of unknown size, then how will I search an element in this array efficiently.

I said I can increase int i by the power of 2 and check whether the given arr[i] > element to search whenever I find such element then I can apply binary search between i/2 and i. He said this approach will work but what happens if while increasing i, you cross the array length. Suppose an array is of size 6, then your i will become 8 and arr[8] will give garbage value so your program may go in an infinite loop. I said I can increase i in the try block and whenever this case

occur then I can catch the exception in catch block where I will decrease i by 1.

He smiled and asked me to write the code by taking care of edge cases.

#### Round 4 (Coding)

Deep discussion about the project which was on security. The interviewer asked me to design the database of a chat application similar to WhatsApp. I did it and said what if some intruder access the database, then I said I will apply md5 encryption on phone numbers, then he asked me how md5 works. Why only md5? He asked me what are Man in the middle attacks and asked me to remove the man in middle attacks from the message transfers. He was impressed. \xf0\x9f\x99\x82

He then asked me what is cache, why are cache fast and how it differs from RAM and hard disk architecturally. This one was a bouncer, I hated computer architecture, admitted I am a beginner in computer architecture. He laughed and said thank god, there is one thing in which you are a beginner. I laughed too \xf0\x9f\x98\x80

He moved further towards coding.

1. Suppose the structure of a binary tree is

```
\r\n    struct node {    int val;    \r\n                    struct node *left,*right,*random;\r\n    } node;
```

[Where random pointer points to any random node of the binary tree and can even point to NULL, then how will you clone this tree.](#)

This was the culprit question who led to my rejection.

I gave a lot of thought to it but wasn't able to solve it directly. I said we can use hash, then he said what if there are duplicates in the tree then your hash will fail, then I said we can convert the binary tree to doubly link list in place then clone the doubly link list, he said ok but how will you generate the original tree from doubly link list, I never said it was balanced. I gave a lot of thought here, but yeah couldn't solve it.

I got the solution by trying it after the interview, you can clone the left and right pointers easily by traversing the tree and to clone the random pointers, you can apply this: newroot->random=oldroot->random; oldroot->random=newroot; Then traverse new tree again and put newroot->random=newroot->random->random.

2. [Find the row with maximum number of 1s](#)

I solved it efficiently.

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## Amazon Interview | Set 108 (On-Campus)

- Difficulty Level :[Hard](#)
- Last Updated :[20 Jun, 2019](#)

Dear, I just got hired by Amazon in my campus placement drive. Below are the details of my selection process with amazon.

### Fist Round(Online):

20 MCQ questions and 2 Coding Questions .

Coding Questions :

1. [Merge overlapping intervals](#)(Very well known repeating problem).
2. [Given a singly linked list you have to subtract the value of first node from the last node and so on until you reach the middle node.](#)

Eg: Input: 5 -> 4 -> 3 -> 2 -> 1

Output: 4 -> 2 -> 3 -> 2 -> 1

### F2F-1:

- 1) [Given a sorted circular link list and a pointer to random node, now insert a new node. I did it , but i used if and else for some special cases in my code so he asked me to do it without if else for special cases](#) (generic & simple code ).

- 2) [Given a pointer to node in tree and a root pointer. Print all the nodes which are at a distance k from the given node.](#)

### F2F-2:

- 1) He gave me task scheduling problem:

Given a set of modules, some modules depend on previous modules and can only be executed, if the requirements of that module is complete.

```
\r\nEg: module A depends on module B,C \r\n    module B depends on module C and D\r\n    module C depends on E\r\n    modu
```

so he asked me to give a schedule for above modules such that when a module is executed then all requirements of that module are complete.  
so answer would be D E C B A

- 2) [Given a string of letters from alphabet. Remove all pairs\(2 consecutive same character\) of characters which occur consecutively.And do it recursively on remaining string.](#)

```
\r\nEg given string abcdaadhhhhzppzl\r\n    then output string should be : abchl
```

Hint: He asked me to use some data structure for it .

- 3) [Given a binary tree set the sibling pointers](#) . I told him that i already know the question so he said code it .

- 4) He asked me about hashing .

4.1 He asked me about complexity . I told him about O(logn) and O(1) .

4.2 Then he asked me about how do you get O(1). I told him my approach . He said how will you rehash it when required . I told him that i will use extra memory and copy the hash map . Then i Optimized and did it in-place using a Boolean field.

4.3 Then he took this question to OS and asked me to do it using threads .

4.4 Asked me what all problems you will need to take care about this problem while using threads and give solution to it.

- 5) Discussion on my projects

### F2F-3:

He gave me 3 coding questions :

- 1) Given a number n find the number of valid permutations of a string formed using characters \xe2\x80\x98(\xe2\x80\x98 and \xe2\x80\x99)\xe2\x80\x99 . A string is valid if it has matching opening and closing parenthesis .

Eg: given n=2 so you can have 2 possible permutations which are valid (()) and ()().

- 2) [Given a singly link list reverse every 3 nodes and if nodes are less than 3 then reverse them also.](#)

```
\r\nEg: Input: 1->2->3->4->5->6->7->8\r\n      Output: 3->2->1->6->5->4->8->7
```

- 3) Given a string of letters from alphabet insert frequency of each character in the string.

```
\r\nEg: Input: aaabbbccdefggaaa\r\n      Output: a3b3c2d1e1f1g3a3
```

Time Complexity Required O(n) Space Complexity Required O(1)

### Fourth Round (Bar Raiser):

It was a telephonic round with a collabedit screen shared on our laptops.

- 1) Tell me something about yourself .

- 2) He saw that i had given a seminar on cloud computing and sky computing so he started with cloud computing .Then he asked me why didn\x9t cloud computing exist 15 years ago .

- 3) What do you understand by 32 bit and 64 bit OS ? . He asked for explanations in terms of hardware and software . Then he asked me that will a 16 bit program run on 64 bit OS without any problem . He asked me what can be the reason for problem faced .

- 4) What happens when you type www.amazon.in in your browser ? . He asked me for the set of activities that take place during this time . Then he went into asking how do you get to know the IP address of your ISP . Then after a lot of discussion he was satisfied .

- 5) Some questions about Complexity of a algorithm . Asked me to prove complexity of few sample codes .

- 6) Some questions about storage space of a variable( data segment , stack , heap , BSS ). Some questions about Macro preprocessors and there problems & solutions .

- 7) Some questions about error in sample code given (like returning non compatible pointer type or returning address of a local variable etc )

- 8) In DOS and Linux shell when we press the up arrow we get the recently used commands . He asked me to implement this facility. Then he asked me to do it if memory bound was very tight .

- 9) This was a question to check my analytic skills . We have customers using www.amazon.in for buying phones. Let say we have a user who visits www.amazon.in for buying mobile phone . He selects a mobile then fills his address details and then when he finally goes for payment then he gets to know that

this phone is not available . So how can you improve the over all user experience . Then he asked me that will you suggest redirecting the user to some other site if the product is out of stock .

10) Some HR Questions like What are your areas of your Weaknesses ? What are you doing to improve on them ?

It was an amazing experience. Thanks a lot to GeeksforGeeks for helping me get my dream job \xf0\x9f\x99\x82

**Suggestions/Tips :**

- 1) Discuss your approach as many times as possible.
- 2) Don't start Coding the problem until the interviewer asks you to do it.
- 3) Tell everything that you are thinking about the problem. They are more interested in knowing how you are approaching the problem.
- 4) Asks for hints if you are stuck up. They will help you.
- 5) If you don't know answer to a question then please say it directly. It will save time for other questions.
- 6) First be confident about your approach then only code it.

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## Amazon Interview | Set 107 (For SDE-1)

- Last Updated : \n20 Jun, 2019

I finished interviews at Amazon few days back. Here is my interview experience:

### Telephonic round (Screening):

- 1) Discussion around work in current company. Why Amazon?
- 2) [You are given an infinite sorted array containing only numbers 0 and 1. Find the transition point efficiently.](#)
- 3) He gave me some function and asked me to arrive at the complexity of it.

### F2F-1:

- 1) Brief discussion on work in current company
- 2) [Flatten linked list](#)
- 3) Design a data structure which holds number 1 to n such that insert, remove(this operation will take in a number between 1 to n as argument and remove that number from data structure if it exists) and get valid element in the data structure operations are done with O(1) complexity

### F2F-2:

- 1) Brief discussion of work in current company
- 2) [Find and print longest consecutive number sequence in a given sequence](#)

\r\n Ex: Input: 1 2 5 3 6 8 7\r\n Output: 5 6 7 8

- 3) A fair die is thrown k times. What is the probability of sum of k throws to be equal to a number n?

### F2F-3:

- 1) Brief discussion of work in current company. Why Amazon?
- 2) Why do you want to leave current company? What do you like most and dislike most about your current company?
- 3) [Sum two numbers represented by linked list](#) iteratively and recursively.
- 4) [You are given an infinite sorted array containing only numbers 0 and 1. Find the transition point efficiently.](#)

### F2F-4:

- 1) Lots of HR, behavioral and team fit questions
- 2) User statistics are logged in the following format \xe2\x80\x93

\r\n user\_id|page|time at which page was accessed\r\n We need to identify most followed 3 page sequence by users.\r

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## Amazon Interview | Set 106 (On Campus for Internship)

- Difficulty Level :[Easy](#)
- Last Updated :[20 Jun, 2019](#)

Amazon came to our campus recently for placements and internships. I attended for internship and i am sharing my experience here.

### First Round: Online:

20 MCQs based on basic aptitude,OS,C programming and data structures.  
2 coding questions:

- Consider a coordinate system consisting of n coordinates from  $(x_1, y_1) \times (x_2, y_2) \times \dots \times (x_n, y_n)$ .  
Also there are two values  $y_{\min}$  and  $y_{\max}$  given to you. You have to return  $\min(D)$  where  $D$  is  $x^2 + y^2$  for all  $y$  lying between  $y_{\min}$  and  $y_{\max}$  inclusive. If there is no such  $y$  then return -1.
- [Given a number n and a number k. You have to find the next bigger number from n which is obtained after exactly k swaps.](#)

Eg: Take  $n=43592169$  and  $k=5$   
1st swap: 43952169  
2nd swap: 49352169  
3rd swap: 94352169  
4th swap: 94532169  
5th swap: 95432169

### First Interview:

1. [Check if a linked list is palindrome or not.](#)
2. Given an array of n integers(positive or negative). Find the maximum sum of subsequence of the array and also total number such arrays possible having the maximum sum.

### Second Interview(Final):

1. [A linked list consists of two pointers: a next pointer and a child pointer. We have to make the linked list linear](#) i.e. making all the child pointers NULL.  
eg: 1->2->3->4  
|  
5->6  
8  
|  
7  
answer would be:  
1->2->3->4->5->6->8
2. [Given a distance n. A person standing at position 0 has to reach n. He can either take 1 step or 2 steps at a time. In how many ways he can reach there.](#)

Finally some definitions from OOPS, OS and basic data structures.

I was finally hired for the Internship at Amazon. I would like to thanks Geeks for Geeks which helped me a lot in my preparation.

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# Amazon Interview | Set 105 (On-Campus)

- Last Updated : \n20 Jun, 2019

## Written Round:

20Q questions on C, data structures , some aptitude questions and other related concepts.

2 coding questions :

1. [Merge overlapping intervals](#). This question has come many times so I am not repeating it.
2. [Given a singly linked list you have to subtract the value of first node from the last node and so on until you reach the middle node](#).

Eg 5 -> 4->3->2 ->1

Output : 4->2->3->2->1.

## First PI:

1. A brief discussion on my projects that I have done .
2. One thing that I am most proud of , a discussion on this .
3. Given an array you have to write two functions:
  - a.) getMinimum();
  - b.) update(index, value);

A detailed description on my approach , I gave him 2-3 approaches which were not satisfactory, He told me to give it a fresh thought, then I have him a solution . He was satisfied and then he asked me to code it.

4. Some basic questions on operating system concepts like CPU scheduling, why CPU scheduling , advantages , types. Questions on deadlock.

## Second PI :

1. Tell me about yourself.
2. Discussion on graph data structure , then asked me to find number of three node cycles in a graph .Write code.
3. Given a string , find minimum distance between two given characters of the string, write code.

A detailed discussion on its complexity and the code I wrote.

## Third Round :

1. A detailed discussion on my projects.
2. What happens when you type in a url .
3. Suppose that a user reports that your website is taking a long time to load , suggest possible remedies .
4. Difference between TCP and UDP.
5. [Implement LRU cache](#). Code required.
6. A simple question on doubly linked list . Code Required .

#### **Fourth Round( Bar Raiser /BR Round):**

It was a telephonic round . I was given a design problem . We have a customer using amazon Kindle , suppose he wants to borrow a book for some days , lets say x and wants to finish reading the book within the days limit. The book contains ,lets say y chapters ,once he starts reading a chapter he has to finish that on the same day . He can read the book only in a sequential manner , you have to tell how many chapters should he read on each day so that he can finish reading the book .

A discussion on my approach and

Then he asked me to write a code for it.

Then he asked me some HR related questions .

1. Quote some example when you have motivated your team .
2. Quote some example when you have led down your team .
3. What projects and subjects are you interested into.

And some others, I don't remember.

It was an amazing experience, I learned a lot from it. Thanx a lot to GeeksForGeeks, you have helped me a lot.

#### **Suggestions / Tips :**

They need a code for whatever algorithm you are telling them, so be specific, take your time to jump to a conclusion .Discuss whatever you have in your mind , everything you discuss matters and creates an impact , they will also guide you at times, and stay cool and relaxed, clear any doubts you have. And an important thing is to try to justify each and every thing you say, that matters a lot.

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## Amazon Interview | Set 104

- Difficulty Level :[Medium](#)
- Last Updated :[20 Jun, 2019](#)

### Online round:

20 MCQs on mathematics, probability, operating systems, DBMS, compilers and basic DS concepts.

### Coding questions (Full code required):

1. Given an array containing zero and non-zero elements, modify the array such that it has the 0's at the end and the non-zero elements at the beginning. Print the number of swaps required and the number of non-zero elements.

2. Given a `\xe2\x80\x98pattern\xe2\x80\x99` and a `\xe2\x80\x98text\xe2\x80\x99` print the indexes of `\xe2\x80\x98text\xe2\x80\x99` where any anagrams of `\xe2\x80\x98pattern\xe2\x80\x99` occur.

```
Input:\r\n      abcdad (text) \r\n      abcd (pattern) \r\n      Output:\r\n          0, 1
```

### 1st technical:

1. Given a linked list reverse the even nodes in one pass and in O(1) space.  
So 1->2->3->4->5->6->7->8 should be converted to 1->8->3->6->5->4->7->2.

2. Given an array containing integers, modify the array such that the 0's are at the end and the rest are at the beginning (maintaining the same order).

### 2nd technical:

1. 5 minute discussion about my OCR project.  
2. Given an undirected graph, count the number of cycles with 3 nodes.

3. What is a spanning tree? Difference from tree, if any.  
4. How to find the minimum spanning tree of a graph?

5. Given an array convert it to another array such that the following condition holds:

$a < b > c < d > e < f > g < h$  where the modified array is {a,b,c,d,e,f,g,h}

Input:`\n1,2,3,4,5,6` Output:`\n1,3,2,5,4,6`

3rd technical:  
1. What do you know about memory management in Operating Systems? What is segmentation? What is paging?

2. Design problem: Given a station with n platforms. So each platform has one line. But these n lines join into one, after leaving the platform (on both sides). Each train has to wait a minimum of x minutes in the platform. Trains arrive from both ends. If all the platforms are occupied they wait. There is also a point beyond the end of the platform (on both sides). This point indicates that an incoming train has to wait at that point until a leaving train (from that end) passes that point. Design the whole system.

3. How are big files stored in memory? What are the uses of B-tree? How is it more useful than BST?

4. Given one billion file indexes and said that n files are missing. How would you identify the file indexes of those who are missing?

### 4th technical:

1. Given an array of integers. This array denotes the order of elements. So if the array is {2,3,1,4}, by mathematics we can say that  $2 < 3 < 1 < 4$ . Given another array, sort this new array in the order of the elements. Let's say the new array is {1,2,4,3,5,4,9,2}, output will be {2,2,3,1,4,4,5,9}. Note that since 5 and 9 do not occur, they are sorted by actual ascending order at the end.

2. Integers are coming in a stream. A special integer (say -9999) denotes reset. Design a data structure such that when the special integer comes the previous elements are printed in a zigzag way and all the elements are deleted (reset). And then continues to accept other integers. What DS will you use?

```
\r\nSay the input is\r\n 1,2,3,4,5,6,7,8,-9999,0,1,100,-9999,-9999,500\r\nOutput will be\r\n 1,8,2,7,3,6,4,5\r\n 0,100,
```

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## Amazon Interview | Set 103 (On-Campus)

- Difficulty Level :[Medium](#)
- Last Updated :[20 Jun, 2019](#)

First of all, I would like to convey my special thanks to geeksforgeeks for such a special guidance. Here is my interview experience:

### First day:

#### Round-1 :

20 MCQs(Data structure, C, C++, OS, Probability ).

2 programs :

- Given an array of integers. Segregate all the non-zero numbers at the beginning. Print the number of non-zero integers and the minimum number of swaps required for these operations.

```
\r\nEg. : I/p : 1, 0, 0, -6, 2, 0\r\n          o/p : Number of non-zero integers : 3\r\n                                         Minimum numb
```

- [Given a text txt\[0..n-1\] and a pattern pat\[0..m-1\], write a function search\(char pat\[\], char txt\[\]\) that prints all occurrences of pat\[\] and its permutations \(or anagrams\) in txt\[\]](#). You may assume that n > m.

```
\r\nE.g. : I/p : txt[] = \xe2\x80\x9cbACDGABCDA\xe2\x80\x9d      pat[] = \xe2\x80\x9cABCD\xe2\x80\x9d\r\n          o/p :
```

### Second day:

#### Round 2 : PI

- Discussion on Project.
- Code : [Given an array of integers. Find the minimum distance between two numbers.](#)

I did it in O(N) time complexity.

Then he changed the question and asked what if the array is sorted and contains duplicates.

I did it in O(logN) time complexity.

- Given a linked list. Segregate all the positive numbers at the beginning and all the negative numbers at the end.

I did it in O(N) time complexity.

#### Round 3 : PI

- Discussion on project.
- Code : [LCA of BST.](#)
- Code : [LCA of Binary tree.](#)
- Discussion on heap and stack.
- Code : [Maximum subarray sum.](#)
- Os concepts : What is semaphore? Brief explanation on wait() and signal() operation.

#### Round 4 : PI

- Discussion on oops concept. Asked me about copy constructor, virtual function, virtual class, Template, exceptional handling.
- Discussion on Os concepts. Semaphore, different page replacement algos.
- LRU implementation using stack ( I was not allowed to use any other data structure).

I did it using two stacks.

- It was a modification of this question.

Our chef has recently opened a new restaurant with a unique style. The restaurant is divided into K compartments (numbered from 1 to K) and each compartment can be occupied by at most one customer. Each customer that visits the restaurant has a strongly preferred compartment p ( $1 \leq p \leq K$ ), and if that compartment is already occupied, then the customer simply leaves. Now obviously, the chef wants to maximize the total number of customers that dine at his restaurant and so he allows (or disallows) certain customers so as to achieve this task. You are to help him with this. Given a list of N customers with their arrival time, departure time and the preferred compartment, you need to calculate the maximum number of customers that can dine at the restaurant.

Instead of restaurant and customers, I was given platforms and trains.

I was asked to design a data structure for that.

### Third day :

#### Round 5 :

- Discussion on project.
- Discussion on different types of sorting techniques.

Difference between merge sort and quick sort. When and where are they used.

Discussion on counting sort.

- Discussion on hash-map.

Design a data structure which will provide the same function as hash-map.

- Code : Given an array : A1[] = 2, 1, 2, 5, 7, 1, 9, 3, 6, 8, 8

A2[] = 2, 1, 8, 3

[Sort A1 in such a way that the relative order among the elements will be same as those are in A2. If the element is not present in A2, append them at last in sorted order.](#)

o/p : 2, 2, 1, 1, 8, 8, 3, 5, 6, 7, 9

I did it O(NlogN) time complexity.

#### Round 6 : (Bar-Raiser)

- Code : Convert little endian to big endian.

2. Code : [Kth max in a file.](#)

I did it using min-heap, then he asked me to use other data structure. Then I did it using Balanced binary search tree.

- Code : Find the second non-repeating character in a string.

4. Given prime number p>=5 :

Prove that :  $(p^2 - 1)/80$  will be divisible by 24.

- Given a decimal number N as a string of digits (only 0's, 1's and 2's are there), how do I check if it's divisible by 3 using regular expressions only, without converting to int? I was asked to design DFA for that.

I would like to thank GeeksForGeeks which helped me to improve my knowledge and understanding of Data structures and Algorithms

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## Amazon Interview | Set 102

- Last Updated : \n 20 Jun, 2019

I had my Amazon Interview some days back and now I am posting my experience here.

### Round 1 (Apt)

20 mcq question and 2 coding questions were there

Mcq consisted of questions from C, Data Structure, OS, and so on

**Coding Question 1** Given a String and a pattern find all anagrams of the pattern in the original string. You need to print all the index of the location where the match was found

Ex \xe2\x80\x93

INPUT \xe2\x80\x93 ABDACDBACA

ABCD

OUTPUT \xe2\x80\x93 1 3 4 5 (at index 1 BDAC , at index 3 ACDB and so on )

**Coding Question 2** Given an array containing zero and non zero digits you need to shift all the zeroes to the right of the array. Output should be number of non zero elements present in array and minimum number of swaps needed to do so.

Ex \xe2\x80\x93

INPUT \xe2\x80\x93 1 0 -6 5 0 0 2 0

OUTPUT \xe2\x80\x93 4 (number of non zero elements)

1 (swap 2 with 0 present at index 1)

### 1st PI

Started with a general introduction with the interviewer. Some basic introductory questions like Tell me something about yourself and after we were settled he started asking question

1 . Given a binary tree store the vertical sum of the tree in a list.

2. Given a number you need to output the minimum number of factors needed to represent that number such that none of the factors is divisible by a perfect square.

EX-

INPUT \xe2\x80\x93 8

So number of factors of 8 (2\*2\*2 , 4\*2 , 8) (NOTE : do not consider 1 because it is divisible by all numbers) So minimum factor will be 1 (8) but it is divisible by 4 so not allowed then minimum is 2(4 \* 2) but again 4 is divisible by 4 so not allowed so finally answer is 3 (2\*2\*2)

OUTPUT \xe2\x80\x93 3

You need to explain the logic of both the programs and then have to code both of them

## 2<sup>nd</sup> PI

General Introduction about myself and asked me my Weakness and strength and again once we were comfortable started asking questions

1. There are a number of houses in a row and each house contain some amount of money in it. Now suppose you're a thief and you want to steal money from these houses so find the maximum money you can steal. Condition was that no two adjacent houses can be robbed. After doing this he asked me to also print the houses that were robbed
2. Given an expression consisting of opening and closing parentheses you need to find the number of onions present in it.

Onion is any structure of the form ()

() onion of size 1

(( )) onion of size 2

(((( ))) onion of size 3

So suppose if input is (( )) so output will be 2 because there are only two onions present in it

Again Complete coding of the two functions was needed

Then he started asking questions on subjects OS , Networking and a SQL query

## 3<sup>rd</sup> PI

Started with introduction and then he gave me question

1. Given an n-ary tree .Print the right view of the tree.  
After that he added to print the right view in a zigzag way like first element from top element , second from bottom third from top fourth from bottom and so on. Then asked to print both the left and right view of the tree
2. Given an array of 0's and 1's print the numbers in the form of Fibonacci sequence i.e. 1<sup>st</sup> 1 zero then 1 one then 2 zero then 3 one and so on  
Ex

INPUT 00101111011101011000

OUTPUT 010011100001111110 (Number of 0's and 1's in the input and output must be same so if you run out of any of them then just simple print the remaining number)

Coding of both the program was needed

## 4<sup>th</sup> PI (Bar Raiser)

1. Given a list of cities you can travel in an number of city now you need to find the number of ways in which you can travel these cities.
2. Implement the pow function in logarithmic time.
3. Implement a DFA which will accept all strings containing even number of 0's and 1's
4. Find the 2<sup>nd</sup> maximum number from a table using SQL query
5. Check whether a grammar is ambiguous or not

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# Amazon Interview | Set 101 (On-Campus)

- Last Updated : \n20 Jun, 2019

Off late, Amazon had an On-campus recruitment. Here is the interview process.

## 1) Written Round

1. 20 MCQ\xe2\x80\x99s
  - two C code snippets
  - a couple of questions of time-dist-speed
  - easy questions on operating systems
  - find the no.of network addresses of a class C address
2. two coding questions
  - [Given a set of inputs \(x,y\) which represent intervals, merge overlapping intervals](#)  
e.x. (3,4) ; (2,5) ; (1,4) ; (8,9)  
output should be \xe2\x80\x93 (1,5) ; (8,9)  
\*note \xe2\x80\x93 my code had errors, but as i had used merge sort for sorting the inputs, i cleared the first round, whereas others with properly working code but in-efficient algorithms didn\xe2\x80\x99t
  - Given a (nXm) matrix, with values present in each cell and a few in-accessible cells marked as -1, find the path from (0,0) to (n,m) with highest sum.

## 2) Interview Round 1

1. [Given an array, find a pair with sum = k](#)

\*note \xe2\x80\x93 If you already know the approach/already coded a question before, let the interviewer know before hand!

2. Given a regular expression, and a string, validate the string against the regular expression  
e.x.

Regular expression : ab\*bbc\*c

Pattern : abbbc VALID

Pattern : abc NOT VALID

\xc2\xab0

## 3) Interview Round 2

1. A couple of questions from arrays, binary trees and BST\xe2\x80\x99s , which were directly taken from DS section of geeksforgeeks.  
(I said I have coded them all and know the approach)
2. Box stacking problem for 2 dimension, 3 dimensions.  
(I said I know the approach for all)
3. Box stacking problem for k dimensions  
(I didn\xe2\x80\x99t know the approach, so tried it out in the interview. Nearly reached the solution, with the help of the interviewer. In the end, turns out, this was the same question which was asked to him, during his interview round in amazon 2 years back. \xe2\x80\x93 SET 2\xe2\x80\x99d)

\xc2\xab0

## 4) Interview Round 3

1. Same question from interview round 1, given an array, find a pair with sum k.  
But, now I was asked to optimize the solution to O(n) time.
2. Explain how chat-messenger functions in Facebook, WhatsApp
3. Validate whether a given 9x9 matrix is a sudoku matrix or not.  
(In all cases, the goal of this round was not to check your coding skills, but your ability to handle all varieties of test cases!)

\xc2\xab0

## 5) Interview Round 4

(This I believe, was probably a stress interview a.k.a Bar Raiser Round. The motive was to shift your attention from one topic to another rapidly and see if you can handle the questions that follow.)

1. Tell me something about yourself
2. The interviewer asked me to pick up a project from all those I had worked on. I chose my B.Tech project related to Genetic Algorithm and Graphs
3. Explain the algorithm
4. How are graphs being represented in your project
5. Various ways to represent adjacency nodes (adjacency matrix, adjacency list)
6. Write code for adjacency list
7. Write code for [reversal of linked list](#) (iterative and recursive)
8. Which one would you prefer, arrays or linkedlist, if so why!
9. Why use double pointers to pass head of a linked list, why can't we just return the value from the function. Which one do you prefer and why.  
(As I had done my code using double pointers.)
10. What is a stack and heap, and how is memory allocated
11. Given a step function f(i) whose value increases just once as we move from i = 1 .. infinity, Find the value of i, where the transition occurs.  
(I suggested increasing the length for checking by a power of 2, and then when a transition occurs, do a binary search within the boundary.)
12. Why increase the length in powers of 2 and not just increase it by a constant factor of some value

\xc2\xab0

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## Amazon Interview | Set 100 (On-Campus)

- Last Updated : \n09 Sep, 2019

First of all many many thanks to geeksforgeeks for such a great guidance. Amazon visited our campus for recruitment. Here is my interview experience.

### Round -1

20 MCQs (C ,Aptitude,DS,DBMS,Networks)

2 programming questions were asked-

- [Print all root to leaf path of a given binary tree whose path sum is a given value k.](#)

Note: tree was given in the form of array (so no need to create the tree).

Input: Input contains two space separated integers K and L followed by  $2^L - 1$  space separated values

Output: All root to leaf path which has a path sum = k.

Sample Test case :

Input :

40 4 10 11 13 # 15 28 6 # # 8 4 # 9 11 #

Output:

10 11 15 4

10 13 6 11

- [Given few sets of intervals print out the entire intervals without overlapping, if they overlap then combine them into one.](#)

Sample test case:

```
\r\nInput : (5,7) (1 , 6) (2 ,4) (10 ,14) (8,9) \r\nOutput : (1,7) (8,9) (10,14)
```

### Group fly Round:

2 ques were asked in this round. We were asked to write code on paper very fast.(It was an elimination round.

- Given a binary tree as below

```
\r\n          A\r\n          / \\\r\n          B     C\r\n
```

Convert the structure of the tree like a left aligned tree whose each node contains a down pointer and a right pointer and looks like the below tree..

```
\r\n          A\r\n          |\r\n          B \xe2\x80\x93 C\r\n          |\r\n          D\x80\x94E\r\n
```

- The arrival and departure time of trains are given. [Find the minimum number of platforms to accommodate all the trains.](#)

```
\r\nEg.    Arrival      Departure\r\n        7           11\r\n        8           10\r\n        13          14\r\n        4
```

### Round 2. (F2F)

- [An array is given in which elements are first monotonically increasing and then decreasing. Search an element in the array.](#) Working code was asked which takes care of all the edge cases. Also asked the time complexity of the code.

- [Implement queue using 2 stacks .](#)

What would be the complexity of enqueue and dequeue operation. I told him O(1) for enqueue and O(n) for dequeue. Then he asked to optimize it. Then he asked the Average case time complexity.

### Round 3 (F2F)

- You are given a graph. Write a function to remove all the cycles. Means after the function call the graph must be converted into a connected acyclic graph(tree).
- What happens when u send an email to someone.
- What is socket ? What is port?
- Which protocol is secure for mail transfer? Which protocol is used by Gmail?
- What is the port number of SMTP?
- Suppose u open notepad and type something and save it what would happen.
- What is static member?
- What is singleton class??
- If a class has all its members as static would it be a singleton class? Compare them.
- What is process scheduling? How does it happen? What are various queues maintained by the system? (Where does the scheduler process run ??- This ques was asked in 2nd round of DE Shaw & co).
- Suppose various process are waiting for a particular resource? What is this situation called? How does the system overcome from this problem?
- What are the various ways of process communication?
- What is thrashing ?How to overcome from it?

### Round: 4.)(HR + Technical)

- Tell me something about yourself
- A long discussion on project. Brief description. How can you improve it?What changes will make if I ask you to develop it again? Give example of implementation of various oops concept in your project.
- What is multithreading? Then he said that there are situations where there is no need of multithreading.eg- if I want to add two numbers then no point of using multithreading. So give an example where you can actually implement multithreading. (ANS \xe2\x80\x93 Fibonacci number)
- Some behavioral questions like-  
What are you good at?  
What are you proud of?  
What are the things you want to change in yourself?etc.
- Various oops concept like encapsulation, abstraction, inheritance , etc. with example.

### Suggestions:

\xe2\x80\x93 Don\x9t start writing the code immediately.

\xe2\x80\x93 First tell him the approach .

\xe2\x80\x93 Take care of all the edge cases.

\xe2\x80\x93 Many times interview may give you hints so make the interview interactive.

\xe2\x80\x93 Very Important \xe2\x80\x93 Don\x9t focus just on a particular subject like only DS.

\xe2\x80\x93 More or less give time to everything.

\xe2\x80\x93 Study the concepts of OOPS and OS properly.

\xe2\x80\x93 Have a basic Idea of DBMS and Computer Networks also.

All the best.

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# Amazon Interview | Set 99 (On-Campus)

- Difficulty Level :\n[Easy](#)
- Last Updated :\n20 Jun, 2019

Amazon interview experience :-

## 1st Round :-

20 mcq and 2 coding questions

1. [Left view of binary tree](#)

2. addition of 3 link list

## 2nd round F2F :-

1. [check listlist is palindrome or not](#)

2. [level order traversal in spiral form](#)

## 3rd round :-

1. [Length of the longest substring without repeating characters](#)

2. Length of the longest substring who occur more than one in string like :- geeksforgeek so answer is geek.

## 4th round :-

tell me abt ur self

[check tree is BST or not and code for it](#)

Check number is power of 2 or not

what is Dns

difference btw TCP and UDP

one tough question is which i dont remember but it i dont know how to solve this question but interviewer help me alot to crack this question and ask me to code for my algorithm.

## 5th round(HR round) :-

1. about myself

2. 15 min. about my project

3. given a string return character whose count is 1 and position is right most\xe2\x80\x99 example :- aabccddeff so b and e count 1 :- so return e.

4. given a newspaper you have to find word in it.. so i solve it by trie.

## suggestions :-

1. if you dont know answer of coding question so dont worry interviewer will help you. He always give you hint and you have to think on that way.

2. GeeksforGeek

3. Always say interviewer what is your intrest subject.

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# Amazon Interview | Set 98 (On-Campus)

- Difficulty Level :\n[Expert](#)
- Last Updated :\n20 Jun, 2019

I am a fourth year undergraduate CSE. I had my amazon interview in my campus.

## First Round:

First round was a simple round. It had 20 MCQ questions on C/C++ and 2 coding questions. The coding questions were:

1.) You are given a string that represent an expression of digits and operands. Eg.  $1+2*3$  ,  $1-2+4$ . You need to evaluate the string or the expression. NO BODMAS is followed. If the expression is of incorrect syntax return -1.

Test cases :

- a)  $1+2*3$  will be evaluated to 9.
- b)  $4-2+6*3$  will be evaluated to 24.
- c)  $1++2$  will be evaluated to -1(INVALID).

Also, in the string spaces can occur. For that case we need to ignore the spaces. Like :-  $1*2 -1$  is equals to 1.

2.) [You are given an array of both negative and positive integers. You need to rearrange the array such that positive and negative numbers alternate.](#) Also, the order should be same as previous array and only O(1) auxiliary space can be used and time complexity boundation O(n).

eg. -2 3 4 5 -1 -6 7 9 1

result \xe2\x80\x933 -2 4 -1 5 -6 7 9 1.

## Second Round:

In this round, we were divided in groups of 5. And two problems were given and we need to write the code on paper for that problem.

My code were :

- 1.) [You need to determine whether the linked list is palindrome or not.](#)
- 2.) [Print the level order traversal of the binary tree in the spiral form.](#)[They also asked us the solution without any extra space and O(n)  
Time complexity].

## Third Round(F2F):

Interview asked me to write the code for the two problems which are :

1.) Reverse the alternate K Nodes of the Linked List.

eg. 1->2->3->4->5->6->7->8->NULL

Result \xe2\x80\x933->2->1->6->5->4->8->7->NULL.

2.) [You are given the binary Tree and the two nodes say k1 and k2 . You need to determine whether the two nodes are cousins of eachother or not.](#)

eg. 6

/ \ \

3 5

/ \ / \ \

7 8 1 3

and say two node be 7 & 1. result will be TRUE.

say two nodes are 3 & 5. result will be FALSE.

say two nodes are 7 & 5. result will be FALSE.

3.) Give the algorithm, data structures, time complexity and space complexity for the following

problem :

In our mobile phones when we enter say four initials of the number say 9 4 5 6, then our phone shows the whole lists of number that starts with these entered number.

Now the problem is : how it is implemented and what is the best way of doing this keeping the balance between space and time complexity. Also, user can enter any number of initials and your program should print all the numbers with those initials that are present in your phonebook.

#### **Fourth Round(F2F):**

Interviewer asked some questions on C++ . They were :

1. What are [virtual functions](#)?
2. What is the [use of virtual functions](#)?
3. What are pure Virtual functions?
4. Syntaxes of Virtual functions and [pure virtual functions](#)?
5. What are [abstract classes in C++](#)?
6. How we can implement pure virtual functions in JAVA ?

Design question :

How we can restrict our class so that only single instance of it can be created?

What is Singleton Design Pattern?

Operating system Question :

1. What are semaphores?
2. What is producer consumer problem and give different solution for it?

Two questions he asked me to code :

1.Convert one string to another string.For that purpose you can use three operations \xe2\x80\x93 SUBSTITUTE,DELETE,INSERT.Each having cost as one except substitute having cost 2.You have to determine the minimum cost required.

For eg.

First String : INCLINE

Second String :DECLINE

Minimum cost required are : 4 [change I to D and N to E].

2. [Implement the stack in which push\(\),pop\(\) and getMiddle\(\) has O\(1\) complexity at any point of time.](#)

3. [Find the maximum size BST present in the binary tree.](#)

He also asked question about my projects and why I choose them. He asked to just explain the whole set of thing that I have performed in it.

(About 10 minutes discussion)

#### **Fifth Round(F2F):**

This round started with the deep discussion about my projects. Interviewer tried to get each and every aspect of my project with lot many why and how questions. She asked me the future scope of my project and what are learnings I got from it.(About 30 minutes discussion).

Then she asked me implementation, algorithm, data structures, time complexity and space complexity for the following problem:

Say we have website having several web-pages. And also there are lot many user who are accessing the web-site.

say user 1 has access pattern : x->y->z->a->b->c->d->e->f

user 2 has access pattern : z->a->b->c->d

user 3 has access pattern : y->z->a->b->c->d

user 4 has access pattern : a->b->c->d

and list goes on for lot many users which are finite and numbered.

Now the question is we have to determine the top 3 most occurring k-Page-sequence.

for the above example result will be : (k=3) a->b->c , b->c->d , z->a->b.

[Question took the long discussion and she kept adding constraints, cases and more problems to the above problem.]

One question she asked me to code which is:

You are given a sting. Find the character in that string which is not repeated and which occur last in the sequence.

Eg.- aababaacdfffgxc

Result \xe2\x80\x93 x

I would like to thanks GeeksForGeeks which helped me to improve my knowledge and understanding of Data structures and Algorithms \xf0\x9f\x99\x82

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# Amazon Interview | Set 97 (On-Campus for SDE1)

- Difficulty Level :\n[Easy](#)
- Last Updated :\n20 Jun, 2019

I had my amazon interview few days back in my campus.

## First Round:

First round was a simple round. It had 20 MCQ questions on C/C++ and 2 coding questions. The coding questions were:

- 1.) [You have given an array in which numbers are first increasing and then decreasing. Find the maximum element](#) in  $O(\log n)$ .
- 2.) [Swap the data of alternate nodes of a list](#).

We were given 90 minutes for 22 questions. For objective questions, you should be clear with virtual functions, inheritance, data types etc.

## Second Round:

In this round, we were divided in groups. And a tree problem was given. We have to solve them individually.

My problem was:

Given a bst and two boundary values. Prune the tree if the node data lies outside the boundary values

## Round three:

In this round,

- 1) [doubly linked list](#) and a [singly linked list](#). Both iterative and recursive. Which one is better approach and why?
- 2) Can you reverse a list in less than  $O(n)$ ?
- 3) Differences between list and array. Which data structure you like and why?
- 4) [How will you find the kth node from last in a list?](#) Discussion on optimization
- 5) [Given a string. Print all permutations of it.](#) Discussion on time complexity and optimization.

## Round four:

- 1) Interleaving of a string. A big discussion on various test cases. Your code should handle the case if the string contains repeated characters.
- 2) [Check if a binary tree is a bst or not](#)
- 3) [find diameter of a tree.](#) Follow up how will find the height of a binary tree?

## Round five: Problem Solving round

- 1) Given an array of heights of poles. Find the no of poles which are visible if you are standing at the ith pole.
- 2) You have a you tube video. A person watches the video in random order. You have given the start and end time of various intervals he watched. How will you confirm whether he has watched the full video or not.
- 3) [Given a number. How will you find the next greater number with same digits.](#)

## Round Six: (HR round)

- 1) tell me about yourself.
- 2) why amazon?
- 3) Project discussions.
- 4) A little discussion on OOPS.

All the best Guys.. \xf0\x9f\x99\x82

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## Amazon Interview | Set 96 (On-Campus for Internship)

- Difficulty Level :[Medium](#)
- Last Updated :[18 Aug, 2020](#)

I'm a 3rd year grad and amazon visited our campus. My interview had only 3 rounds.

### Round 1 (Online round 20 MCQs and 2 coding questions )

MCQs were mostly on data structures ,time complexities and C,C++ outputs with 2 aptitude questions.

- 1) Given 2 linked lists of digits as data in their nodes add two numbers.

```
\r\n      Eg:  1 -> 2 -> 3 -> 4      and 4->3 \r\n      print 1 -> 2 -> 7 -> 7
```

- 2) given few sets of intervals print out the entire intervals without overlapping , if they overlap then combine them into one.

```
\r\n      Eg:      Input :    (5,7) (1 , 6) (2 ,4) (10 ,14) (8,9) \r\n      Output :    (1,7) (8,9) (10,14)
```

### Round 2 (F2F)

Tell me something about yourself.

- 1) Convert a BST into inorder, preorder and postorder linkedlists inplace.

- 2) [Make a queue out of 2 stacks](#), as it was easy he asked me to code and asked me the complexities.

- 3) [Given a linked list with a loop find the loop](#) and [make it straight](#) . I did with HashMap but he told me not to use extra space so i told him Floyd's cycle.

He asked me I had any questions.

### Round 3(F2F) (After lunch)

- 1) [Given a Binary tree convert into a BST](#) no auxiliary space (i did it with an inorder traversal) he asked me to code.

- 2) [Given an infinite stream of characters find the first non repeating character at any instance](#) , The storing,retrieval should be O(1) . I told him a solution using a hashmap then he modified that he may have millions of unique characters not just alphabets. i gave a solution with a linked list and a hashmap. This question was not asked to me but was to my friend .Its a good one.

- 3) [print all the binary values of number from 1 to n](#) , each number's binary should be printed in O(1).

for eg: n = 6

then print 1 10 11 100 101 110. printing 1, 10 ,11 ,100,101,110 should be in O(1) each

I thank Geeksforgeeks for letting me know about Floyd's cycle .

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**Amazon Interview | Set 95 (For SDE-I)**

- Difficulty Level : [Medium](#)
  - Last Updated : [03 Nov, 2021](#)

Hi, Below is my interview experience for Amazon for SDE-I position.

## Round-1(F2F)

- 1.) Traverse a binary tree in a spiral manner. (zig-zag manner)
  - 2.) Given a number, find the just greater number than the given number containing the same digits as the given number. Write code for this.

## Round-2(F2F)

- 1.) Print a binary tree in a level order traversal but in bottom to top manner.
  - 2.) Given 2 BSTs, validate their equality. Both are equal if they consist of the same set of values irrespective of their structures. (Can you traverse them parallelly).
  - 3.) [Given a infinite stream of integers, find the first non-repeated number till now](#). Write code for this.

Round-2(F2F)



Round-4(F2F) \xe2\x80\x93 with Hiring Manager

- 1.) Given an array, return the second largest number. Write code for this.

You can not modify the array, just traverse the array once and return the required number.

Handle all the edge cases. What should be the function signature.

- 2.) Given two files which contain very large size of number, say the size of the file is 5 GB.

That means that you can not load the whole file into memory. How would you add these two files and store the result in another file. Long discussion on optimization.

\xc2\xa0

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# Amazon Interview | Set 93

- Last Updated : \n20 Jun, 2019

I have just completed a full interview with Amazon and wanted to give back to GeeksForGeeks my experience because it has helped me so so much to go through it.

## 1st phone interview

Why Amazon?

How do you find out the cause of a slow UI request?

Write function to convert a stream of incoming characters to an integer.

Write function to convert one character to one digit number.

## 2nd phone interview

Get nth to last element

[Check if 2 binary trees are equal recursively and iteratively](#)

## On-site interview

1st interview

Write a url shortner. Design scalable architecture that host this service.

## 2nd interview

Array vs linked list. Rest vs Soap. What is a hashtable? Write code to handle hashtable collisions?

## 3rd interview (lunch)

Situation where you missed a deadline.

What are you proud of the most in your career?

Situation on how you handled conflict.

Other behaviour questions

## 4th interview

Why Amazon?

[Build a clone of a binary tree sent from a different machine](#)

## 5th interview

[Design and implement algorithm to find the shortest path from start to finish of a maze.](#)

I thank GeeksForGeeks for all the help it gave me.

\xc2\x80

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# Amazon Interview | Set 91

- Last Updated : \n20 Jun, 2019

I recently got interviewed with Amazon for SDE position for their Hyderabad office.

## Round 1: (F2F)

1. Discussion around current company and work I was doing there. Why Amazon?
2. There is a robot standing at first cell of an  $M \times N$  matrix. It can move only in two directions, right and down. [In how many ways, it can reach to the last cell i.e. \(M, N\).](#) Discuss all the approaches and then asked to code it.
3. Remove the nodes in the binary tree for that the sum of all values from root to leaf is less than K.

## Round 2: (F2F)

1. [Convert a Binary Search Tree to DLL in-place.](#)
2. [Implement LRU policy.](#)
3. [Find the First Non Repeating Character in a stream of characters.](#) Use Constant Space and linear complexity in terms of character count.

## Round 3: (F2F)

1. Why do you want to leave your current organization?
2. Current Project Discussion and your contribution in the project.
3. Some Nice Behavioral questions.
4. Given a magazine of thousands of pages. You have to construct a note out of it by cutting the words out of it. You can only cut whole word from magazine and you can't add any words. Also, you can't cut partial words or alphabets from it.

## Round 4: (F2F)

1. Given an array of size  $N = k^s$ . In this array, construct blocks of  $k$  size each (Number of such blocks will be  $s$ ). Now find all combinations of these numbers such that difference among the  $k$  numbers in the block should not be greater than  $d$ . e.g.  $N=6$ ,  $k=2$ ,  $s=3$   $A=\{2, 4, 6, 8\}$  and  $d=2$ . So the answer should be 2  $\{\{2, 4\}, \{6, 8\}\}, \{\{4, 6\}, \{6, 8\}\}$ .
2. Given a binary tree with usual left and right pointers and one additional pointer called adj. modify the tree in-place such that adj pointer should point to the right node in same level as current node or if it there is no node right to it, adj should be NULL.

## Round 5: (F2F)

1. [How many Binary Search trees can be constructed using sequence of N numbers?](#) Write Code for it.
2. How many cycles of length 3 can be constructed using edges of an undirected graph?

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# Amazon Interview | Set 90

- Difficulty Level :\n[Medium](#)
- Last Updated :\n20 Jun, 2019

## 1. Phone Interview

- a. Given sorted array in decreasing order. Find first occurrence of given key.
- b. [Find diameter of a binary tree.](#)

## 2. Face to face 1 (Programming skill)

- a. [Optimal Strategy For A Game](#)
- b. [Merge N sorted lists to a single sorted list but comparisons should be minimum](#)

## 3. Face to face 2 (DS round)

- a. [1 represent A, 2 rep B etc and 26 rep Z. Given a number, find number of possible decoding for this number. No need to consider number starts with zero. Eg: input \xe2\x80\x93 1234, output \xe2\x80\x93 3\(ABCD, AWD, LCD\)](#)
- b. [How to find a loop in linked list. How to remove this loop.](#)
- c. [How to design LRU cache](#)(looking for the DS\xe2\x80\x99s used and their interaction)

## 4. Face to face 3(Design)

- a. A device need to upgrade and downgrade its software. Eg: mobile phone need to upgrade its OS. Design high level and low level.  
(follow-up \xe2\x80\x93 1. form version X to Y is not possible but z can. 2. from current version to latest version not possible but we can upgrade to an intermediate version and then to latest version.  
What  
DS will be effective here)
- b. Design a semaphore.

## 5. Face to face 4(curtain raiser)

- a. HR questions including prev projects, best work etc
- b. [Given a linked list where each node contains an extra arbitrary pointer which points to any node in the list. Write code to clone the list.](#)
- b. [Print vertical sum of a binary tree.](#)
- c. Print a binary tree in vertical zig-zag order.

## 6. Manager round

- a. manager round HR questions. Team fit questions etc.
- b. Given a mathematical expression. How to design this expression evaluator using OOPs concept.

Each round consists of 1 to 1.30 Hrs.

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## Amazon Interview | Set 89

- Difficulty Level :[Medium](#)
- Last Updated :[08 Feb, 2022](#)

### Online round:

- 1) [Program to check if two rectangles overlap.](#)
- 2) [Program to find if a given string, say S, contains another given string, say P.](#)
- 3) [Write a program to check if the coins can be summed up to a given number, if yes print the coins that sums upto the given sum.](#)

### Telephonic round:

1) Given a singly linked list, modify the value of first half nodes such that 1st node's new value is equal to the last node's value minus first node's current value, 2nd node's new value is equal to the second last node's value minus 2nd node's current value, likewise for first half nodes.

```
\r\n Ex: \r\n 1) 1 -> 2 -> 3 -> 4 -> 5 -> 6 -> 7\r\n Modified list: \r\n 6(7-1) -> 4(6-2) -> 2(5-3) -> 0(4-4) -> 5
```

- 2) [Reverse the alternate level nodes of the binary tree.](#)

```
\r\nEx: Given tree: \r\n          a\r\n                  /\r\n                  \\\r\n                  b\r\n                  /\r\n                  c\r\n                  /\r\n                  \\\r\n                  d\r\n                  /\r\n                  e\r\n                  /\r\n                  f
```

### Face to Face Rounds:

#### Round 1:

\xe2\x80\x22 Thorough discussion about one project that I considered as the most interesting or challenging.

\xe2\x80\x22 Suppose we need a service to perform certain task every day at some specified time. How do we ensure that everyday at the specified time the service will do that task?

\xe2\x80\x22 Design a stack that supports push, pop, and retrieving the minimum element in constant time.

\xe2\x80\x22 [Program to get the maximum distance between two nodes in the binary tree.](#) The interviewer further generalized this problem for n-ary tree. Then he asked how to get the longest path in a graph.

#### Round 2:

\xe2\x80\x22 What happens when we enter the url in the browser?

\xe2\x80\x22 Difference between inner join and outer join.

\xe2\x80\x22 How does the garbage collector works in java?

\xe2\x80\x22 Questions on stacks and heaps(memory management).

\xe2\x80\x22 We have n gold coins. We need to amalgamate all the n coins to create one single coin, we can merge two coins at once. The cost of merging two coins is equal to the value of those coins. How do we ensure that the cost of merging n coins is minimum.

Ex: 5, 8, 4, 3, 9, 6

We will merge 3 and 4, cost=7 {Remaining coins: 5,8,9,6,7}

Then we merge 5 and 6, cost=11 { Remaining coins: 11,8,9,7}

Then we merge 7 and 8, cost=15 { Remaining coins: 11,15,9}

Then we merge 9 and 11, cost=20 { Remaining coins: 20,15}

Then we merge 20 and 15, cost=35 { Remaining coins: 35}

Total cost: 7+11+15+20+35 = 88

If we had merged the coin array {5, 8, 4, 3, 9, 6} in different fashion:

Merging 5 and 8, cost=13 {Remaining coins: 13, 4, 3, 9, 6}

Merging 13 and 4, cost=17 {Remaining coins: 17, 3, 9, 6}

Merging 17 and 3, cost=20 {Remaining coins: 20, 9, 6}

Merging 20 and 9, cost=29 {Remaining coins: 29, 6}

Merging 29 and 6, cost=35 {Remaining coins: 35}

Total cost: 114

As we can see that the cost is less in the first case. Program to get the minimum cost of merging all the n coins.

\xe2\x80\x22 Replace BST nodes with the sum of nodes greater than or equal to the node.

#### Round 3 (Hiring Manager):

\xe2\x80\x22 Detailed discussion of my work in the current company.

\xe2\x80\x22 Some behavioural questions like how do you handle certain situations etc.

\xe2\x80\x22 Design a restaurant reservation system. I was also asked to write some sql queries in this regard.

#### Round 4 (Bar Raiser):

\xe2\x80\x22 [Given a linked list, write a function to reverse every k nodes](#) (where k is an input to the function).

\xe2\x80\x22 [Given a sorted array which may contain duplicates, write a method to find the starting and the ending index of the given number if present.](#)

Suppose we are give array: 1,2,2,2,5,6,6,9,10,10,10

If the number given is 9 then starting index and the ending index will be 7.

If the number given is 2 then the starting index will be 1 and the ending index will be 3.

If the number given is 7 the starting and the ending index will be -1 as the number is not present in the array.

\xe2\x80\x22 [Write a method to compress a given string](#) \xe2\x80\x99caabbbccc\xe2\x80\x9d to \xe2\x80\x99ca2b3c3\xe2\x80\x9d. It should be an inplace compression, no extra space to be used.

\xe2\x80\x22 Discussion about my current project.

\xe2\x80\x22 Describe a scenario when you failed, when you helped our colleague etc.

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# Amazon Interview | Set 88

- Last Updated : \n20 Jun, 2019

## Online Test:

1. [Rectangle overlap problem](#)
2. [String searching problem](#)
3. [Coin change problem](#)

## 1st Telephonic interview:

Questions regarding processes in OS(how it is represented in memory like code segment, data segment, stack , heap), garbage collection , stack and heap , what happens when a URL is entered in browser and then proceeded to 2 programming questions

1. [Given a BST, transform it into sum tree where each node contains sum of all nodes greater than that node.](#)
2. [Shuffle an array](#)

(All arrangements were done by Amazon including travel, stay)

\xc2\xab0

## Onsite F2F 1:

Started with general introduction , asked about my work , know any design patterns and where you applied them in your project etc.

[He asked a single question to design a single stack with push , pop and pop mid operations , followed by working code.](#)

\xc2\xab0

## F2F2:

Again started with general introduction , work I do , then he gave a question about finding [count of each occurrence of words in a document](#).

I gave hashing based solution (with working code), it lead to a great discussion on hashing , then he led me to give a solution with tries . As much time is not left he asked me to tell the approach only.

\xc2\xab0

## F2F3 (With Bar raiser):

Bar raiser will be from a different team.

He asked me a question to [connect siblings at each levels of a binary tree](#) , as i knew this question already. He wanted working code. After i gave the code he found a bug and i found one myself.After resolving the code he moved on to different question.

Next question is optimal implementation of 3 or more stacks in a single array.I gave some approached based on heuristics and with extra memory.He dint seem satisfied and then asked many questions about work i do and grilled me on many aspects.

\xc2\xab0

## F2F4(With Hiring Manager):

Asked me to design Automated Air traffic controller system . Gave me few requirements , made me

identify classes and its members , and some high level code for identifying probable aircraft collisions.

He asked me about situations where i missed the deadlines and learnings from it , How do you build trust with Customer .

Then i asked him few questions like What specific qualities you look for in a potential candidate , How an SDE can contribute to Amazons claim to be most customer centric company and any concerns about my employment background (as i am working in manufacturing industry currently).

Interviews were held on friday , i got a call from HR lady on Tuesday following week.

\xc2\xa0

### **Some tips:**

1. Practice lot of pen and paper code.
2. Folks at amazon do not want pseudo code , they want working code with minimal syntactical errors.
3. Online plus telephonic rounds are for screening only.Also , Don't pass the time in telephonic rounds, they want to give at least two questions (easy though)
4. McDowell's book and recent 40 sets of amazon interview experiences will make you good to go.

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Interviewer was of friendly nature. He was very senior and very cool guy. Started with my project question and then some behavioral question and in last one technical question

\xc2\x0

1. \xc2\x0

What is your current project, What value you added in your project till now.

1. \xc2\x0

What challenges you faced while working in project and how did you overcome.

1. \xc2\x0

What was the important learning for you in last project.

1. \xc2\x0

If you have the option to go 3 year back in life, then what would you like to change in life, means which skills and steps/decision you want to gain or change.

1. \xc2\x0

What you did in past on which you feel proud.. blaa blaalxe2\x80\x96

1. \xc2\x0

Given a tree, how will you find the vertical sum of nodes

1. \xc2\x0

refer this link to understand more about question

1. \xc2\x0

[Print a Binary Tree in Vertical Order](#)

1. \xc2\x0

I gave the solution using Hash map, but he was not satisfy with answer. He told to give other solution because Hash map will increase the space complexity. I used array solution which was increase time complexity, then i used circular link list and finally solve it using doubly link list. He was satisfy with solution. Told me to code for it.

#### **5. Forth f2f round(OOPS, design pattern and OS fundamental)\xc2\x0**

\xc2\x0

1. \xc2\x0

Started with my project details, my project was in android mobile, so he told me to design a \xe2\x80\x9ccContact application\xe2\x80\x9d. Class diagram and their relationship was expected from me. What all design pattern you can use in that.

1. \xc2\x0

Explain inheritance and Base class is given you need to stop exposing the base class methods without touching the base class at all. It was really tricky. \xc2\x0  
question i liked it.

1. \xc2\x0

What is deadlock and How to detect deadlock in system.

1. \xc2\x0

Concept of Database normalization and various types of it.

1. \xc2\x0

He also started asking some networking question. Like TCP/IP, socket connection.

1. \xc2\x0

How the chat between 2 user work internally, internally how the packets flows between layer. And suppose user A send \xe2\x80\x9ch\xe2\x80\x9d message to user B and user B just shutdown the system. What will happen in that case.

#### **6. Fifth f2f (Hiring manager)\xc2\x0**

\xc2\x0

1. \xc2\x0

Why you want to join Amazon.

1. \xc2\x0

What did you know about Amazon.

1. \xc2\x0

Current project explanation.

1. \xc2\x0

What new code you implemented and how much impact it put on other.

1. \xc2\x0

Given a tree, write the In-order traversal. I wrote in 2 min using recursion.

1. \xc2\x0

Next addition was, can you write it using iteration tried and wrote some buggy code.

1. \xc2\x0

He started checking and told the bug and told me to correct it. Even-through i solved the same question at my home, Still it was not clicking my mind. I started correcting it but failed. After that interviewer gave one hint. I used the hint and solved the whole code again. He was running out of time so took the code sheet and told i will check it later in free time.

1. \xc2\x0

Refer this link for actual solution and proper understanding of last question

1. \xc2\x0

[Inorder traversal without recursion](#)\xc2\x0

\xc2\x0

\xc2\x0

\xc2\x0

**Message for all :-**\xc2\x0  
Amazon expect accurate and precise code with less complexity. So discuss first with your interviewer the approach. Don't jump into code.\xc2\x0  
Even if you don't know the right answer, keep on discussing various possibilities to solve the question and try crack that problem with different angle.  
Practice more and more verify of questions.\xc2\x0

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# Amazon Interview | Set 86

- Difficulty Level : \nExpert
- Last Updated : \n19 Jun, 2019

This is an account of my recent interview experience with Amazon. My process started off at one their hiring drives. It was a tiresome process that comprised a written round followed by six rounds of interview, spanning around 37 days.

Following is an account of my experience:

## Round 1 (Written round):

1. Given two linked lists each of which represent a number, write a function that returns a linked list that represents the sum.
2. Given a sorted array of numbers. Construct a balanced binary tree with the numbers in the Array as keys.
3. Given a sorted Array of numbers that has been rotated by a few positions, write a function to search an element in the Array.

## Round 2 (F2F):

1. Given a binary tree in which the node structure has an additional field called \xe2\x80\x9cnext\xe2\x80\x9d which of pointer to tree node type, fill up this field of each node to point to the next node at the same level (NULL if last node).
2. Sort an almost sorted Array. An almost sorted Array being an Array in which a number is at the most k positions away from its position in the sorted Array.
3. You are given a 2D grid in which each cell is either empty, contains an entry \xe2\x80\x9cD\xe2\x80\x9d which stands for Door, or an entry \xe2\x80\x9cW\xe2\x80\x9d which stands for wall (Obstacle). You can move in any of the four directions from each empty position in the grid. Of course you cannot move into a cell that has \xe2\x80\x9cW\xe2\x80\x9d in it. You need to fill each empty cell with a number that represents the distance of the closest door to that cell. (They asked me only for the Algo as there wasn\xe2\x80\x99t much time).

## Round 3 (F2F):

1. Given a 2D (Rectangular) grid of points. You need to find the shortest path from a given source point to a destination point. You can only move up or right. Now among these points, there a few special points from which you can directly jump to the diagonally opposite point (Top-Right diagonal). You are granted a function which when invoked on the point returns 1 if it is a special point and 0 if it is not.
2. You are given a sequence of black and white horses, and a set of k stables numbered 1 to k. You have to accommodate the horses into the stables in such a way that the following conditions are satisfied:
  - a. You fill the horses into the stables preserving the order of horses. For instance, you cannot put horse 1 into stable 2 and horse 2 into stable 1. You have to preserve the ordering of horses.
  - b. No stable should be empty and No horse should be left unaccommodated.
  - c. Take the product (number of white horses \* number of black horses) for each stable and take the sum of all these products. This value should be the minimum among all possible accommodation

arrangements.

#### **Round 4 (F2F with Hiring Manager):**

1. Discussion on my current work, difficulties and challenges faced at work, difficult people I have had to work with, instances when I went out of my way to propose creative solutions to existing problems at work etc.

2. [Given a parentheses string, determine if it is a valid / legitimate parentheses string. For strings consisting of single parentheses type and those consisting of multiple types.](#)

#### **Round 5 (F2F \xe2\x80\x93 Bar Raiser):**

1. Discussion on my current work, difficulties and challenges faced at work etc:-

2. Given a floor of dimensions  $2 \times W$  and tiles of dimensions  $2 \times 1$ , write code to find the number of ways the floor can be tiled.

3. Given a graph, if we were to print all nodes within  $k$  hops of a given node, which algorithm would we use, the answer to this was obviously a Breadth first search. He followed it up asking, if one were to use Depth first search instead to code this problem instead, one would encounter bloated running times for Graphs with certain attributes (Perhaps Dense graphs or some such). Describe what types of graphs would a DFS algorithm falter with and why.

#### **Round 6 (Telephonic Interview):**

1. Given that you want to maintain a backend for a bookstore Application that would store names of Authors and books, such that the application can return all the books written by a specific Author and all the Authors of a specific book which is specified in a query. The query can be such that only a substring of the Authorname or the bookname is specified and all the matches should be returned. I proposed a trie based solution, and was asked to code the solution on a collabedit shared document.

2. Describe multithreading.

3. Describe all the processes that happen between you typing in a URL and the webpage appearing on your screen.

4. What is a singleton set What is the data storage model (Data structures) used to store records in a relational Database.

5. [Given an Array containing numbers between 1 to n, out of which 1 number is missing, find the missing number.](#)

6. [Given a sorted Array and a number, print all pairs of numbers in the sorted Array that sum to the given number.](#)

I got the confirmation call the same evening that I had the telephonic interview. ***GeeksForGeeks is a godsend for interview aspirants aiming at top companies. Keep up the outstanding work guys, your website has shaped careers and lives. J***

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## Amazon Interview | Set 85

- Difficulty Level :\n[Hard](#)
- Last Updated :\n19 Jun, 2019

### 1st Telephonic round

After few project and introduction related question.

1. [Write a program to find an element in sorted and rotated array.](#)
2. [Write a program to print all path whose sum is equal to a given number path must start from the root node and it may or may not end at the leaf.](#)

### 2<sup>nd</sup> Telephonic round

After 3-4 days

Some c/c++ question what is malloc how does it work and memory layout and allocation related questions

1. [Write a program to find longest repeating substring In a given string running code were required covering all base cases.](#)
2. U have given 10 files and you have given a string suggest data structure which ll facilitate efficient search of string in the file if string appears more than ones in that case u have to print line number and file in which they appear.

After 15 days I got cal that I have cleared the telephonic round and my F-2-F interview is going to take place in Hyderabad

### F-2-F round 1

After introduction and project related questions

1. [Write a program to print a tree in vertical order asked more than one approach to do this problem and modified problem many times.](#)
2. [Write a program to convert a tree to doubly link list](#) in post-order fashion only change of pointer are allowed that is left pointer can work as previous and right pointer s as next.

This interview went well :)

\xc2\xab0

### F-2-F round 2(Bar raiser)

Few question related to OS what is deadlock, Race-condition, Semaphore and many more, few question Related to DBMS what is Normalization define all normal forms(I directly told him I don't remember I read it in 5<sup>th</sup> semester )

1. Why amazon??
2. Why do u want to leave company XYZ.
3. Your biggest challenge till the date.
4. Many project related question.

Data structure

1. U have given 10 files each having 1 million integer in sorted order, physical memory have size of 3 million suggest method to extract 1 million integer in sorted form efficiently.
2. [Write a program to convert a decimal number into binary](#) your code should work on both big endian and small endian machine. U have given a variable which tell u whether machine is big endian or small endian

DBMS and few bar raiser question made this round average L

### F-2-F round 3

1. [You have given an n-ary tree write a program to check whether this tree is sum tree or not.](#)
2. [Given an array write a program to find kth smallest element in the array.](#) He was hardly interested in the solution he just want to know how many ways u can solve it solved using 5-6 method at the end he was satisfied with the answers.

### F-2-F round 4

Longest one! this interview went on for 1 hour and 30 minutes but was interesting one(interviewer looked like a frustrated guy!) some times I felt that he is going to punch me! :P)

1. You have given M arrays each of size n all arrays are sorted separately write a program to make a big sorted array of size  $m \times n$ . during discussion he told me to prove many lemma like height of tree is  $\log(n)$  (for n elements) sum of n natural numbers is  $(n^2+n)/2$  and many more. He modified problem many times don't use extra space do it in place etc. discussion went on for almost 1 hour but at the end he was happy with the solutions(I suggested 2 methods and further optimization in them).
2. [U have given an binary matrix which is sorted row wise and column wise write a program to search a row in the matrix having maximum number of zeroes.](#)

Finally this interview also went well he was happy with my performance

After 2-3 days I got mail from the HR that I'm rejected. Reason was bar raiser! advise to all don't take BR round lightly it does not matter how well you performed in other round if you didn't do well in BR round then there is no way you can make it. An average round tech interview is fine but average BR round means rejected.

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## Amazon Interview | Set 84

- Difficulty Level : \n[Hard](#)
- Last Updated : \n19 Jun, 2019

I attended a hiring event for Amazon in world trade center in bangalore.

### First round was coding test (Written round) :

1. [Given a string of parenthesis, write a function if it is balanced.](#)
2. [Convert BST to a Doubly linked list.](#)
3. Find the number of occurrences of words in a paragraph.

### First Round :

1. Asked Why Amazon?
2. Asked some questions on resume.

After some friendly talk, jumped on technical but easy questions :

1. [Implement BFS.](#)
2. Difference between Dijkstra and BFS.
3. [Given a linked list, find out if the list is circular, also find the point from where the cycle start.](#)
4. [Given an array, find the max sum over a sub array.](#)
5. If you have two eggs, how many max steps you need to find the floor, from which the eggs break.

And some more easy questions.

It was already 5, so they decided to have further rounds later.

10 days later I had attended interviews :

### First Round :

1. Asked about heaps, given an array, tell if it is min heap, if not, apply operation min-heapify.
2. Is a heap a complete binary tree?
3. Asked What is hashmap.

\xc2\x{a0}\xc2\x{a0}\xc2\x{a0}\xc2\x{a0}\xc2\x{a0} a. What happens when two numbers map to same key?

\xc2\x{a0}\xc2\x{a0}\xc2\x{a0}\xc2\x{a0}\xc2\x{a0}\xc2\x{a0} b. how does chaining work?

\xc2\x{a0}\xc2\x{a0}\xc2\x{a0}\xc2\x{a0}\xc2\x{a0}\xc2\x{a0}\xc2\x{a0} c. What to do when you have a bad hashing function, and only we can modify the structure of hashmap not hashing function?

\xc2\x{a0}\xc2\x{a0}\xc2\x{a0}\xc2\x{a0}\xc2\x{a0}\xc2\x{a0}\xc2\x{a0}\xc2\x{a0} d. What do to when your hashmap is filled completely (as in all the linked list are filled up to their capacity)

4. What is [quicksort](#)? Implement for a linked list and tell complexity.

### Second Round :

1. What is [quicksort](#)?

\xc2\x{a0}\xc2\x{a0}\xc2\x{a0}\xc2\x{a0}\xc2\x{a0}\xc2\x{a0}\xc2\x{a0} a. What is complexity when all elements are sorted and how can you improve it? (Randomization)

\xc2\x{a0}\xc2\x{a0}\xc2\x{a0}\xc2\x{a0}\xc2\x{a0}\xc2\x{a0}\xc2\x{a0}\xc2\x{a0} b. Will randomization work when elements are same?

\xc2\x{a0}\xc2\x{a0}\xc2\x{a0}\xc2\x{a0}\xc2\x{a0}\xc2\x{a0}\xc2\x{a0}\xc2\x{a0}\xc2\x{a0} c. What algorithms sort equal elements in O(n) time ?

\xc2\x{a0}\xc2\x{a0}\xc2\x{a0}\xc2\x{a0}\xc2\x{a0}\xc2\x{a0}\xc2\x{a0}\xc2\x{a0}\xc2\x{a0}\xc2\x{a0} d. using the information, how can you improve quick-sort? Think about it, its good. Don't want to spoil it for you by writing answer here.

\xc2\x{a0}\xc2\x{a0}\xc2\x{a0}\xc2\x{a0}\xc2\x{a0}\xc2\x{a0}\xc2\x{a0}\xc2\x{a0}\xc2\x{a0}\xc2\x{a0}\xc2\x{a0} e. implement this modification.

2. Given two river banks (visualization : two parallel lines), one bank has numbers written (1\x{e2}\x{80}\x{a6}.n) in sorted order. On the other bank the numbers (1\x{e2}\x{80}\x{a6}n) are arranged randomly. A bridge can be formed from the ith point from bank 1 to ith point in bank 2. Find the max number of non-intersecting bridges you can form?

3. Given  $1 \rightarrow 2 \rightarrow \dots \rightarrow n$ , and given some statements like i hates j, then find some arrangement of n numbers such that if i hates j then in the arrangement i comes before j. Say 1 hates 2, then 123456789 is acceptable but 213456789 is not.

4. Asked about internet. What happens when you type a URL on your browser?

### Third Round (Hiring Manager):

1. Why do you want to leave current company?
2. Why do you think amazon is the right place for you?
3. Implement a calculator which takes a maths expression and evaluates it and prints the result.
4. Given statements like A is connected to B. D is connected to E. And transitive connections are allowed. Write a code which takes input such connected statements and two numbers i and j and returns true if i and j are connected (can be transitively), and false if not connected.

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# Amazon Interview Questions

- Difficulty Level :\n[Medium](#)
- Last Updated :\n07 Jul, 2021

## Most Asked Questions

1. [K largest elements from a big file or array.](#)
2. [Find a triplet a, b, c such that  \$a^2 = b^2 + c^2\$ .](#) Variations of this problem like find a triplet with sum equal to 0. Find a pair with given sum. All such questions are efficiently solved using hashing.  
\xe2\x80\x93 Practice [here](#)
3. Binary [tree traversal questions](#) like left view, right view, top view, bottom view, maximum of a level, minimum of a level, children sum property, diameter etc.
4. [Convert a Binary tree to DLL](#) \xe2\x80\x93 Practice [here](#)
5. [Lowest Common ancestor in a Binary Search Tree and Binary Tree.](#)
6. [Implement a stack with push\(\), pop\(\) and min\(\) in O\(1\) time.](#)
7. [Reverse a linked list in groups of size k](#) \xe2\x80\x93 Practice [here](#)
8. [Given two numbers represented by two linked lists, write a function that returns sum list](#)  
\xe2\x80\x93 Practice [here](#)
9. [Rotate a matrix by 90 degree.](#)
10. [Stock span problem](#)
11. [Next greater element](#)
12. Some Dynamic Programming problems like:
  - [Maximum sum subarray such that no elements are consecutive](#) \xe2\x80\x93 Practice [here](#)
  - [Edit distance](#)
  - [Assembly line scheduling](#)
13. Why Amazon?
14. Questions about projects done in previous company or final year.

## Important Links :

- [Amazon Interview Experiences](#)
- [Amazon Practice Questions](#)
- [Amazon\xe2\x80\x99s most frequently asked Questions \xe2\x80\x93 Set 2](#)
- [Amazon Recruitment Process](#)
- [Amazon Test Series](#)

[Amazon Interview Video.](#)

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# Amazon Interview | Set 83

- Difficulty Level :\n[Hard](#)
- Last Updated :\n19 Jun, 2019

## Written (50 Minutes)

- 20 aptitude and general cs objective questions
- Code: [Find minimum # elements to be removed from int array so that max element is <= 2x of min element](#)
- Code : For given array a of size n we create a set of a[i] , a[a[i]] , a[a[a[i]]] \xe2\x80\x94 i varies from 0 to n-1 , find the max size of such set.

## Face to Face 1\xc2\xa0

- Design MP3 player which would play only unique songs in random order from given list of songs
- Code : [Print left and right most elements at all levels of a binary tree.](#)
- [Max elements in sliding window of size k over int array of size n.](#)\xc2\xa0

## Face to Face 2

- Code : [Find min element at given level in binary tree](#)
- How would you combine lots of big sorted files residing on disk ( file size >>> memory )\xc2\xa0
- What happens when you enter URL in browser.
- Design multiple stacks in a Single one big int array as efficient as possible ( real world example multiple process function stacks creation and deletion in memory of linux os )

## Face to Face 3\xc2\xa0

- Discussion on challenging work projects.
- Design in-memory file system.

## Last round Telephonic

- Toughest work project\xc2\xa0experience.
- [A robot standing at top left corner of a grid, it can only move in right or bottom direction , determine total number of possible paths are their to reach bottom right corner.](#)
- Code : Prune binary tree so that only nodes which are part of K-Heavy path remains, K-Heavy path means total of all elements in a path from root to leaf is > K.

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## Amazon Interview | Set 82 (For SDE-2)

- Difficulty Level : \n[Hard](#)
- Last Updated : \n19 Jun, 2019

### Round 1 (F2F):

- 1) [Find the merge point between two lists.](#)
- 2) [Given a sorted array find the number of BSTs you can form.](#)

### Round 2 (F2F):

- 1) Discussion projects I have worked on.
- 2) Given millions of files process them sequentially in multiple stages and make sure it has good scalability, error handling, elegantly handles changes to the system. etc.

### Round 3 (F2F):

- 1) [Given a matrix with each cell containing each number of candies, and a constraint that you can move only right or down, from the top left corner to the bottom right corner, find the path that gets you maximum candies.](#)

- 2) [Convert a Binary tree to its mirror in-place.](#)

### Round 4 (Telephonic + online coding):

Given a continuous stream of strings, maintain strings such that duplicate are eliminated on the fly. The interviewer wanted working code. So coded the solution during the interview and emailed it to him 10 mins after.

So if you get \xe2\x80\x9cTed\xe2\x80\x9d, \xe2\x80\x9cJohn\xe2\x80\x9d, \xe2\x80\x9cMark\xe2\x80\x9d, \xe2\x80\x9cDavid\xe2\x80\x9d, at the moment in time, the list should contain John, Mark, David.

### Round 5 (Hiring manager in US, telephonic + online coding):

- 1) Discussion on current projects.
- 2) Why Amazon
- 3) [BFS vs DFS](#)
- 4) Given a function to getFriends that gets a list of profiles of friends of a particular friend, implement a function to get the shortest path between two given profiles.

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## Amazon Interview | Set 81 (For SDE-I)

- Difficulty Level :[Medium](#)
- Last Updated :19 Jun, 2019

Hello Geeks, I had interview in amazon few days before. I'm sharing you my experience. It was for SDE-I Profile for Hyderabad(India) location.

### Round 1: Online Coding(Interviewstreet)

Q1. [Print the nth largest node of the given BST](#). In this question you will have to write a function.

Q2. [Convert the BST into sorted doubly linked list](#). In this question also you will have to write a function.

Q3 & Q4 was simple algorithm based.

### Round 2: Telephonic Interview-I

Q1. Given Matrix, and co-ordinates of sub-matrix of given matrix find sum.

\r\n Eg                  1    2    3 \r\n                  4    5    6 \r\n                  7    8    9 \r\n                  \r\n                  C

Q2. [Given a linked list reverse every n chunks](#).

EG: 1 -> 2 -> 3 -> 4 -> 5 -> 6 \r\n \r\n a6n = 3

Output: 3 -> 2 -> 1 -> 6 -> 5 -> 4 \r\n \r\n a6

later they extended this Question \r\n \r\n a6If there is only one node and give many conditions.

### Round 3: Telephonic Round-II

Q1. [Design a data structure for insertion, deletion & get minimum element in O\(1\)time complexity? Implement the same](#).

Q2. Given a Binary Search Tree and two nodes find parent node which is parent of both nodes in a given binary search tree. Later they extended it to simple binary tree.

### Round 4: F2F-I

Q1. [Is given n-ary tree is Sum tree or not? implement function](#)

Q2. [find Nth largest element in an array](#)

### Round 5: F2F-II

Q1. [Vertical traversal Order of tree](#)(implement it).

Q2. Lots of discussion on project.

### Round 6: F2F-III

Q1. Given a circular array and a pointer find the given element in the array.

Q2. Lots of discussion on current company & company's work.

### Round 7: F2F-IV

Explain:

1. Customer Producer problem,
2. Semaphore
3. Deadlock how to solve it.

Q: Favorite Sorting Algorithm. why, where to use it? and various question on the sorting algorithm which I answered.

Every time they ask for time complexity for code. Ask to optimize my solution.

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# Amazon Interview | Set 80

- Difficulty Level : \n [Hard](#)
- Last Updated : \n 19 Jun, 2019

## Online Written

1. Cant remember the question exactly, but it was bit easy and was easily solvable using the substring function for the string.
2. [Need to find whether two rectangles overlap or not](#)
3. Need to find the matching percentage, if we are given two paragraphs

## Telephonic

1. [Need to find the least common ancestor for given two nodes](#)
2. [Implement Min stack problem with other optimizations](#)

Fully functional code and covering all boundary conditions was required

## Face to face 1 (Hiring manager)

1. Top K words from the file containing millions of words. Proper code for the scenario.
2. Why do you want to change the company
3. What is your manager review for you in your current company
4. What all projects you worked on and detail
5. Some other non tec questions

## Face to face 2

1. [Given a number n where n means 0,1,2,3\xe2\x80\x9c n-1. Compute the no of BST which can be formed using this range as input in any order](#)
2. Given a string input : aaabbccdeeabb output should be : a3b2c2de2ab2  
Challenge here is that we need to do it in place, without any other string or data structure

For both the problems full code with all the boundary conditions was required

## Face to face 3

1. Rotate a 2D matrix by 90 degree, but here the matrix is stored in 1D form
2. Given a linked list which contains representation of any number, like for 1234, the representation will be 1->2->3->4. Now we need to add 1 to the number, so that the output is 1->2->3->5
3. Then he asked me 1-2 questions for which I immediately responded the solution, through that he got the idea that I already know the solution
4. Moved to the white board, he draw [a matrix, each contains only 0 ad 1 but in sorted manner. I need to return the row which is having the max no of zeros.](#) Then he asked me optimized solution for finding the first \xe2\x80\x9c n-1 \xe2\x80\x9d in the array
5. Then he explained me a production line problem, Many factors were involved in that, robotic arm need to draw some lines with various colors on some wall. We need to minimize the cost of drawing

those lines, Code was not required in that situation, as the problem set was very big, but we discussed the complexity plus solving procedure for each of the factors of the problem. Every minute detail of how will I solve the problem.

Basically problem itself was composed of many different types of sub problems, keeping mind open at that time is very important.

Then after few days, I mailed the HR regarding the result, she told me one round is still pending, will update soon and after 1-2 week, they sent the mail for halting the process, didn't get any solid reason, as it was totally unexpected, all my rounds went well.

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## Amazon Interview | Set 79 (For SDE-1)

- Difficulty Level : \n [Hard](#)
- Last Updated : \n 26 Jun, 2020

I have 8 months of experience and I recently appeared for interview of Amazon for role of SDE-I.

### Written Round:

Q1: [Convert a binary tree to DLL.](#)

Q2: [Given a random node address in Singly linked list. Delete that node.](#)

You need to write full code in the language of any choice with all the edge cases covered.

### Interview 1:

Q1: [Given a sorted array and a number and element K. find K nearest elements to the number in sorted array.](#)

Q2: MsExcel columns has a pattern like

A B C \xe2\x80\x9a Z

AA AB AC \xe2\x80\x9a AZ BA BB \xe2\x80\x9a ZZ

AAA AAB

A has code 1

Z has code 26

AA has code 27

AAA has code 626

given a number return a column name as string

### Interview 2:

Q1: Given 4 YouTube servers which are processing user requests.

i> At any given time If someone requests for currently running videos, then return the number of videos running at a time.

ii> Which server will actually get the request?

iii> How the servers will communicate with each other?

iv> Other methods to do this task to reduce overhead on servers?

v> How many videos running given a time constraint?

Q2: [Given a binary tree and each node has an extra next pointer apart from left and right. Connect all the nodes using next pointer in Zig-Zag Manner.](#)

### Interview 3:

Q1: Discussion about project in current company.

Q2: Given a shared memory between multiple threads, how will you ensure safe access to memory in different scenarios like reading and writing? If at the point of writing there are multiple read requests from threads how pending requests can be managed.

Q3: Given an array that has positive numbers and negative numbers and zero in it. You need to separate the negative numbers and positive numbers in such a way that negative numbers lie to left of zero and positive numbers to the right and the original order of elements should be maintained

### Interview 4:

Q1: Discussion about current project in company.

Q2: Why you want to leave your current company?

Q3: Why Amazon?

Q4: Which phone you have

Q5: Which one will you buy next

Q6: given a function with signature

bool isFactorialDivisible( int x, int y)

Return true if  $x!$  is divisible by y

else return false

After 3 days I got the confirmation call.

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## Amazon Interview | Set 78

- Last Updated : 19 Jun, 2019

The first round was an online test hosted on Interviewstreet.com. Around 350 students appeared in the online test. The duration was 90 minutes. It consisted of 20 MCQs based primarily on Predicting The Output, OS, CN and Data Structures.

These questions were pretty basic and easily solvable.

Apart from that, there were 2 coding questions.

- Given a string, find the first element which is non-repetitive i.e that element must not be present anywhere else in the string.

```
\r\n      Eg : Input : teeterson      \r\n      Output : r, as it is the first element which \r\n
```

- Given a string of digits, find the next smallest number using the same digits. If its not possible to get such a number print -1;

```
\r\n      Eg : Input : "123"  Output : "132"\r\n      Input : "12453" Output : "123534"\r\n      I
```

After a week, the results came out and 25 students were shortlisted.

### Personal Interviews:

#### Technical Interview 1 :

- Given an array of 1s followed by 0s, find the number of 0s.

```
\r\n      Eg : Input : 111100      Output =2\r\n      Input : 1      Output =0
```

I solved it by using Binary Search to find the first and last occurrence of 0 in the array and subtracting the results.

- Given an array of positive and negative numbers, find the pair of elements whose sum is closest to 0.

```
\r\n      Eg : Input : 3 5 -9 -4 17 11      \r\n      Output 3 , -4
```

The brute force solution would be  $O(n^2)$  by comparing each pair of elements. As expected, he asked me to optimize my solution. So I sorted the array using merge sort. (I know its not in-place but it did not strike me at the time)

Then used two indexes at the beginning and end of the array and incremented/decremented the indexes as needed.

- Given a Binary Tree, print all the root to leaf paths.

I started by telling him my approach and the logic behind the recursive solution that I had in mind. Then he asked me to write test cases for the function that I had written.

6 students were selected after this round.

#### Technical Interview 2

- Given a binary tree convert it to a double linked list.

- Given an array of integers, replace each element with the product of the remaining elements.

```
\r\n      Eg : Input - 1 2 3 4      \r\n      Output : 24 12 8 6
```

First, I gave the obvious solution. I computed the product of the whole array and then divided it by each element to get the resultant array.

But he asked me to do it without using the division operation. After some cross questioning I gave the following solution. Store the product of the left side elements for each integer in an array L[].

```
\r\nFor eg : Here , L[] = {1 , 1 , 2 , 6 } \r\n\r\nDo the same for the right side elements.\r\nHere R[] = { 24 , 12 ,
```

Finally 2 people were selected.

Result: Selected for a 6 month long internship as SDE-T (Testing)

GeeksForGeeks has been instrumental in my preparation for the interviews and I am really glad that I discovered this website at the right time.

PS : Could you guys tell me if the SDE-T position is inferior to the SDE-1 position or are they of the same level?

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# Amazon Interview | Set 77 (Off-Campus For SDE-1 / 1.5yrs experienced)

- Difficulty Level :\nHard
- Last Updated :\n19 Jun, 2019

Amazon SDE1 Off campus

## Written Round

1. Given an array in which elements are first increasing and then decreasing. find the maximum element in the array.
2. Given an array of unsorted elements, find the minimum difference between any 2 elements in the array.

### 1st f2f

Discussion about my projects (nearly 20 mins)

1. Given an array of positive numbers, find the maximum sum of a subsequence with the constraint that no 2 numbers in the sequence should be adjacent in the array. (extended to negative numbers)
2. Write a function to print the level order traversal of a binary tree in spiral form.

### 2nd f2f

Small discussion about my projects

1. Write a function to find the next smallest palindrome number of the given number. for example: if given number is 12345, then the next smallest palindrome is 12421.
2. Given 2 strings str1 and str2. What is the efficient way to navigate from str1 to str2? The constraints are i) a string can be changed to another string by changing only one character. ii) all the intermediate strings must be present in dictionary. If not possible, return \xe2\x80\x9cnnot possible to navigate from str1 to str2\xe2\x80\x9d. (pre-processing is allowed and enough memory is available). for example: str1 = feel and str2 = pelt, then the navigation is feel -> fell -> felt -> pelt (Hint: Graph)

### 3rd f2f

Discussion about my projects (nearly 20 mins)

1. Given two numbers represented by two linked lists, write a function that returns sum list. The sum list is linked list representation of addition of two input numbers. It is not allowed to modify the lists. Also, not allowed to use explicit extra space.
2. Given a matrix of characters and a string, find whether the string can be obtained from the matrix. From each character in the matrix, we can move up/down/right/left. for example, if the matrix[3][4] is

o f a s\r\n\r\nl q w\r\nr\nr\nz o w k

and the string is follow, then the function should return true.

### 4th f2f Hiring Manager

Deep discussion about my current project (nearly 45 mins)

(application architecture, challenges faced and a lot of technical discussion)

1. [Write a program to check whether the given binary tree is BST.](#)

## 5th f2f Bar Raiser

Deep discussion about my current project (challenges faced, etc) nearly 20 mins

Deep discussion on REST api authentications (Hash key vs Encryption & Decryption) nearly 20 mins

1. [Given an input string, write a function that returns the compressed string for the input string in INPLACE.](#) (no extra memory) (length of compressed string  $\leq$  length of input string) For example, if the input string is \xe2\x80\x9caaabcdeeee\xe2\x80\x9d, then the function should return \xe2\x80\x9ca3b1c1d1e4?. GeeksforGeeks helped me a lot in improving my skills in DS and Algorithms. If you like GeeksforGeeks and would like to contribute, you can also write an article and mail your article to contribute@geeksforgeeks.org. See your article appearing on the GeeksforGeeks main page and help other Geeks.

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## Amazon Interview | Set 76 (For SDE-1)

- Last Updated : 19 Jun, 2019

Hello Guys, I was recently interviewed by Amazon for SDE-1 position. Following is my interview experience.

### Round-1 (Written on InterviewStreet)

1. Rotate a N\*M matrix 90 degrees clockwise
2. Given a string find the repeated characters and print them in lexicographical order. e.g i/p string- ABCCAD o/p- AC
3. [Given a binary tree, find the k-th largest element](#)
4. [Convert Binary tree to DLL](#)

### Round 2 (Telephonic)

1. [Given an MxN array, in which the rows are sorted. Need to sort the complete array](#)

### Round 3 (F2F)

1. [Spiral Level order traversal of Binary tree](#)
2. Given a huge file 100 million integers. He further divided the file to 100 files with 1 million integers each. Each file is sorted. Find the efficient way to find smallest integer. Note that 100 million integers are very less in comparison to a billion
3. [Given sorted & rotated array find the index of given integer](#)

### Round 4 (F2F)

1. [Given a Binary Tree and a sum k. Print all the paths with sum = k.](#) Path can or cannot start with root
2. [Reverse k elements of linked list](#)
3. [Given a 2D array find the maximum sum rectangle](#)
4. Given a list of n mp3 songs. Play them randomly. No song should repeat until all the others are played.

### Round 5 (F2F with Development Manager)

1. Tell me about yourself and the projects done in previous company. A discussion on those projects followed.
2. Why do you want to leave your previous company
3. Given a binary tree

\r\n 1\r\n / \\\r\n 2 3\r\n

### Round 6 (F2F)

1. [Given stock price of Amazon for some consecutive days. Need to find the maximum span of each day's stock price. Span is the amount of days before the given day where the stock price is less than that of given day](#)

\r\nE.g i/p = {2, 4, 6, 9, 5, 1}\r\no/p= { -1, 1, 2, 3, 2, -1}

2. [Given a Binary tree each node should contain the sum of left and right subtrees.](#) Leaf nodes will become 0 in the resulting tree.

### Round 7 (F2F with Project Development Manager)

1. Tell me something about yourself
2. Tell me about your previous company and projects
3. Why do you want to leave the previous company in such a small time.

Finally got the offer after few days

Tips:- Be clear to the interviewer, they are quite helpful. Try to discuss the various approaches that come up in your mind if you are struck somewhere. All the best!!

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# Amazon Interview | Set 75 (For SDE-1)

- Difficulty Level :\n[Medium](#)
- Last Updated :\n19 Jun, 2019

I am currently in my 8th semester . I recently attended the off campus drive for SDE1 at Amazon. Here\xe2\x80\x99s my journey.

## Round 1:- (Written)

This was a written round . It was hosted on interview street.

It was a 90 minutes test with 20 mcq and 2 codes

1> [Return the longest palindromic substring in a string](#)

2> [Count the number of 2\xe2\x80\x99s in all number from 0 to n](#)

Mcq\xe2\x80\x99s were based on ds algo,operating system and maths.

After two days I got a call from the hr that I have cleared the written and a phonescreen is to be scheduled.

## Round 2:- (Phone screen 1)

This was supposed to be a 1 hour round. The interviewer shared a collabedit link.

1> [Divide an array into 2 subarrays such that the absolute difference of their sum is minimum. It was then extended to divide into two subsequences](#)

2> [Convert a sorted array to a balanced binary search tree](#)

3> Convert a linked list with positive and negative integers into a list with first all negative integers, then positive. order amongst negative and positive numbers to be maintained.

Generally if first phonescreen is convincing the next step is direct face to face interview , else one has to go through another phonescreen. I had one phonescreen only . After a month i was called for inhouse interviews . All arrangements were made by them .

## Round 3 :- (Face to Face 1)

1> Define a BST. [Now check if a binary tree is a BST](#)

2> [Given an array of size n, and an integer k. find minimum number in every subarray of size k](#)

3> [Given n non-negative integers representing an elevation map where the width of each bar is 1, compute how much water it is able to trap after raining](#)

4> [Given an array find all triplets whose sum is equal to a given number k](#)

## Round 4 :- (Face to Face 2)

1> [Find the diameter of a tree](#).

2> Print the diameter of a binary tree . (U have only left and right pointers)

3> Assembly scheduling problem (Dynamic Programming paradigm)

## Round 5 :- (Face to Face 3)

1> How to check if two sets are disjoint ?

2> How to implement hashing for a set .

3> Given n sets , give the minimal number of sets which must be removed so that the remaining sets are all disjoint (Variation of set packing problem)

The interviewer was interested in some greedy heuristic as he knew its an np complete problem and no solution can be better than exponential

4> [You are given a matrix of 1\xe2\x80\x99s and 0\xe2\x80\x99s . The property is that every row of matrix is sorted in descending order . Return row with maximum number of 0\xe2\x80\x99s](#)

## Round 6 :- (With senior manager)

Interview started with detailed discussion of projects.

1> Implement lastindexofastrings(String s1, String s2) . If s2 is present multiple times return the last index of s2 in s1 , else return -1.

2> Given a paragraph of text, write a program to find the first shortest sub-segment that contains each of the given k words at least once. A segment is said to be shorter than other if it contains less number of words.

The interviewer then asked me if i had done something on multithreading . As i was not very confident so i said no and he dint go further .

He then asked me what is my biggest regret in my student life in college .

Amazon hr\xe2\x80\x99s were extremely helpful. After 3 days I got a confirmation call that I was hired. Geeksforgeeks has been instrumental in helping a lot of people to land up in good companies. Keep up the good work \xf0\x9f\x99\x82

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## Amazon Interview | Set 74

- Last Updated : 19 Jun, 2019

### Phone Interview:

- 1) Given a 2D matrix where every row is sorted, give the index of row which has maximum number of one's.
- 2) Given a Binary tree, print its every level in a new line.

### Face to Face Interview (Round 1):

- 1) you have an array which has a set of positive and negative numbers, print all the subset sum which is equal to 0.

```
\r\neg 2, 1, -1, 0, 2, -1, -1\r\no/p: 1, -1\r\n1, -1, 0\r\n0\r\n2, -1, -1
```

- 2) How do you check whether a binary tree is a binary search tree.

### Face to Face Interview (Round 2):

- 1) you have a billion numbers how do get kth top elements

- 2) given a number n, print all pairs of valid parenthesis

```
\r\neg: n=2 -> (()), ()()\r\nn=3 -> ((())), ((())(), ()(()), ((())()
```

I did not clear after this round, I hope this helps others.

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# Amazon Interview | Set 73 (For SDE-1)

- Last Updated : \n19 Jun, 2019

I have been interviewed for SDE1 by amazon. Here are the questions.

## 1st Round \xe2\x80\x93 Online Coding

1. [Contiguous elements in an array whose sum is k.](#)
2. [Convert sorted array to binary search tree.](#)

## 2nd Round \xe2\x80\x93 Telephonic

1. [Implement stack with Push, Pop, GetMin and GetMax in constant time. Algo + Code](#)
2. [Given a matrix, sorted both horizontally and vertically, algo and code for finding an element in it. Algo](#)
3. [Given a stream of characters, convert it to a sentence with valid words. Assume you have a function IsWord which returns true if the passed string is a word.](#) He asked me to write code and mail him. Algo + Code

Ex: Iamgoodboy \xe2\x80\x93 I am good boy

## 3rd Round \xe2\x80\x93 Telephonic

1. [Given an array of characters, find the longest continuous non-repeating sequence of characters. Algo + Code](#)
- Ex: aabcdefg hijk \xe2\x80\x93 efghijk
- I have given a hash based solution, so he asked me to write a custom hashfunction and how to handle collisions.
2. Find the next largest palindrome number of the given number. Algo + Code
- Ex: 120 -> 121, 123 \xe2\x80\x93 131

## 4th Round \xe2\x80\x93 InHouse technical round

1. [Find the mirror image of a binary tree.](#) Algo + Code
2. [Given a string, find the largest repetitive sequence.](#) Algo + Code
- Ex: abcdefbcd \xe2\x80\x93 bcd, banana \xe2\x80\x93 ana

## 5th Round \xe2\x80\x93 InHouse technical round

1. [Given a string, remove \xe2\x80\x98a\xe2\x80\x99, \xe2\x80\x98b\xe2\x80\x99 from the string and print the result.](#) Algo + Code
- Ex: asdbc \xe2\x80\x93 sd
2. [You will be receiving an infinite sequence of numbers continuously and at any particular moment find the 10 largest ten numbers received till now.](#) Algo

## 6th Round \xe2\x80\x93 Bar raiser round

1. [Given a graph, find the nodes which are at less than k distance from the given node.](#) Continuation: find all the nodes which are less than k distance from m nodes. Algo + Code
2. [Implement a queue using an array.](#) All base conditions. Code
3. Given a very big array of millions of integers, find sum of all the elements. Parallel processing and threads is the answer. Threads concept, synchronisation and so many of it.
4. OS concepts \xe2\x80\x93 virtual memory, paging, process states, paging algos.
5. In detailed explanation of projects done till date.

## 7th Round \xe2\x80\x93 Manager Round

Asked dilemma situation. Any process development work, work experience and all.

geeksforgeeks helped me to refresh all kinds of topics. Thank you.

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# Amazon Interview | Set 72 (Off campus for SDE-1)

- Last Updated : \n12 Dec, 2019

Amazon Interview (Off campus for SDE-1)

Experience: 8 months

Interview Process : 2 (telephonic) + 3 (f2f : 2 Bangalore) + 1 bar raiser (telephonic)

## Telephonic 1 (25 minutes only)

Q1. [Two strings s1 and s2 are given; find a minimal length substring in s1 which does not contain s2 as a substring.](#) (Do include all edge cases)

Q2. [Swap all nodes of a linked list with their next nodes.](#)

## Telephonic 2 (65 -70 minutes)

Q1. [An integer array of size n is A\[\] given, find the three numbers s.t. A\[i\] > A\[j\] > A\[k\] and i < j < k.](#) (algo only)

Q2. [An array of integers is given, trim the array such that 2\\*min > max. min and max are the minimum and maximum elements of the array. You can remove elements either from start or from end of the array if above condition does not meet. No of removals should be minimum.](#) (algo + code)

For example a, b, c, d, e f are the elements of array, c is the min num and e is max no condition  $2*c > e$  is true then we are done but if false then remove either from start i.e. a,b,c or from end i.e. e, f such that new min or max would satisfy the condition and removals should be minimum.

Q3. A sorted array of integers and a number K is given, find the closet number to K. (algo only)

## F2F 1 (60 minutes)

Brief introduction about my self and my work experience in current company

Q1. [Equilibrium Point in an integer array](#) (sum of left side elements should be equal to sum of right hand side elements)

Q2. Extend above for multiplication (multiplication of left side elements equal to multiplication of right side elements)

(special case of Zero and some discussion on arithmetic exception and range bound errors)

## F2F 2 (60 \xe2\x80\x93 65 minutes)

Some general introductory questions; why are looking for a change and work experience.

Q1. For a given number K, print all pairs of valid parenthesis combination and return the total count of such combinations.

Q2. There are n balls kept on a table and connected in random fashion but there is no cycle (no back edge). Write the code to select a ball such that after lifting the whole structure from that ball height will be minimum. (algo+code+ mathematical proof of correctness)

Q3. Difference b/w http and https.

Q4. Suppose you are handling Amazon website and you have 10 MB size home page. Optimize the homepage for a customer who has 100 kbps internet connection.

Further he asked for the customer who has 100 mbps internet connection.

## F2F 3 (with Hiring manager, 80-90 minutes)

Lots of discussion about current project. He will ask you everything from bottom level to your contribution.

Q1. Implement memcpy (\*src,\*target) function.

Q2. [Reverse contents of a linked list.](#)

Q3. I code in java so lots of question on oops and java like swing and awt difference , vector and array list difference , interface and abstract classes.

Q4. Client and server code in chat window, background process in server and network, networking layers.

Q5. Process and threads and code for thread safe situation (take an example and explain)

### Bar raiser (Telephonic one hr)

Hr Question like biggest challenge so far, projects, why are you looking for a change, why amazon, biggest mistake.

Q1. Given flat files (for an entire year, 1 per day) of train schedules (arrival and departure times at a given station) find Min platforms required to accommodate the trains in that station.(algo only)

Q2. I want to write a ransom note. But I don't want to write it by hand, I'm going to cut letters out of a magazine. How can I tell if the magazine has enough of the right words to spell out the note I want to write? Let's assume we have a way to digitize the text of the magazine. (algo only )

I asked him about Amazon kindle and Amazon instant video. Show him that you know lot about amazon.

Advice for Amazon: except from all data structure, read Trie data structure very well and how to process big data.

Next day I got call from HR that I am Hired !

Thanks a lot to geeksforgeeks team.

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## Amazon Interview | Set 71 (For SDE-2)

- Difficulty Level : \n[Hard](#)
- Last Updated : \n18 Jun, 2019

Recruitment Drive \xe2\x80\x93 Delhi (22 March 2014)

Position SDE-2

### 1st Round \xe2\x80\x93 Coding and Algo (50 Minutes)

1. [Find In order predecessor in BST.](#)
2. [Find Nodes which are at \xe2\x80\x9cK\xe2\x80\x9d distance from given node.](#)

Interview asked to explain logic and write full code with all boundary conditions.

### 2nd Round \xe2\x80\x93 Design Round (50 Mins)

1. Asked about abstract classes and abstract class there uses and where they have to used.

Asked me to design online cab booking system for amazon. Then asked me to design High Level diagram for it.

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### 3rd Round \xe2\x80\x93 Coding and Algo Round ( 1 Hour)

1. Asked to explain how to [check Binary tree is BST?](#) then asked me to write whole code of it.
2. [Then asked me about assembly line problem.](#)
3. [Then asked me to solve Knapsack Problem](#)

### 4th Round \xe2\x80\x93 Manager Round (45 Min)

Asked me about my experience with current company and details of my project  
Then asked about singleton pattern.

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## Amazon Interview | Set 70 (On-Campus For Internship)

- Difficulty Level :[Hard](#)
- Last Updated :18 Jun, 2019

### Online Round Coding Question:

1. [Given a float number 7.64, convert it into the string WITHOUT using any inbuilt function/library.](#)

```
for eg:\r\ninput\r\nfloat no.: 7.64\r\noutput\r\nstring: 7.64
```

2. [Given the inorder and preorder traversals of a Binary Tree, output the postorder traversal of it.](#)

```
for eg:\r\ninput:\r\nInorder: 7, 8, 4, 1, 6, 2, 5\r\nPreorder: 1, 4, 7, 8, 2, 6, 4\r\noutput:\r\nPostorder: 8, 7, 4,
```

### Round 1 written:

1. [Given a string find the length of longest substring which has none of its character repeated?](#)

```
for eg:\r\ni/p string:\r\nabcabcb\r\nlength of longest substring with no repeating characters: 3 (abc)
```

2. Given a link list with right pointers and each element of the list has a down link contains another link list with down pointers as:

```
5 -> 7 -> 9 -> 18\r\n|     |     |\r\n  10    6    14   20\r\n|     |     |\r\n  11    8    19   22\r\n|     |     |\r\n  12    13   14   15\r\n|     |     |\r\n  16    17   18   19\r\n|     |     |\r\n  20    21   22   23\r\n|     |     |\r\n  24    25   26   27
```

each right and down list are sorted.

[Write a function flatten\(\) which flattens this link list to a single link list with all the elements in sorted order as:](#)

5->6->7->8->9->10->11->12->13->14->15->18->19->20->22->24

### PI Round 1:

The interview started with discussions and questioning about the internship project and other projects mentioned in my Resume.  
After the discussions about projects interviewer asked a question on string the question was:

1. [A string of length n and an integer m was given, give an algo. to rotate the string counter clockwise by m.](#) I was asked to give all the check conditions for input m.  
Then the interviewer asked me to write a code for the same with a strict guideline that there should not be any mistake in the code ;).
2. [After this he asked me about heap, min and max heap, insertion and deletion in a heap.](#) He asked me to prove that the time complexity of inserting n elements in a heap.  
At-least he asked about the uses of heap data structure and other data structure which are implemented using heap.

### PI Round 2:

1. [What is the difference b/w abstract and interface class?](#)
2. Write a program to create single thread and print Hello World, stating all the arguments of createThread function?
3. [What is a deadlock and what are the condition necessary for the deadlock to occur?](#)
4. [What is a cache memory and how it is implemented?](#)
5. [Explain LRU, FIFO and other page replacement algorithms?](#)
6. [write a code to implement LRU cache and then implement full cache memory?](#)

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# Amazon Interview | Set 69 (For SDE-1)

- Difficulty Level :\n[Hard](#)
- Last Updated :\n18 Jun, 2019

## Online Coding Round:

1. Find if a given string contains duplicates
2. Given a BST, find the maximum N elements of the tree
3. [Given a BST, convert it into Doubly Linked List](#)
4. [Rotate a 2-D Matrix by 90 degrees](#)

## Telephonic Interview 1:

1. [Sliding Window Problem](#): Given a larger integer buffer/array (say size, x), now given a window size (say, n) and a number (say, k). Windows starts from the 1<sup>st</sup> element and keeps shifting right by one element. The objective is to find the minimum k numbers present in each window.
2. Given a binary tree, each node having an integer data, the objective is to create a new Doubly Linked List using this binary such that each node in DLL has vertical sum of nodes in binary tree. The order of nodes in DLL shall be left to right as that of binary tree\x80\x99s vertical nodes i.e., leftmost vertical sum shall be 1<sup>st</sup> node in DLL and the rightmost vertical sum shall be the last node in DLL.

## Telephonic Interview 2:

1. [Given the root of the binary tree and a pointer to any random node in that tree, the objective is to print all the nodes at \x80\x98k\x80\x99 distance from the given random node.](#)

## Face to Face:

**Note:** Time and space complexity were discussed in each of the following questions. And for each question I was asked to optimize the algorithm and later write the working code for it. Also in each round the current project was discussed.

## Round 1:

1. [Given a matrix \(m\\*n\), source \(0, 0\) & destination \(m-1, n-1\) \(i.e. last cell\), Find out total number of ways to reach the destination from the source.](#)
2. Given a binary tree, defining a term \x80\x9cccomplete path sum\x80\x9d as, sum of values of nodes lying in a path from root to the leaf; Now given a value \x80\x98k\x80\x99, we have to find the k-heavy path and prune the binary tree i.e. prune/delete nodes for which complete path sum is smaller than k.

## Round 2 (Manager\x80\x99s Round):

A thorough discussion on an issue: If I am an owner of company which is selling some product. So, how shall I store my data in Database such that when any analyst comes and asks for any information then I could provide him most precise values. It mainly consisted which data should be stored and how it should be stored.

1. [Given two sorted arrays, create a final sorted array.](#) Later, the problem was extended saying that, now we have \x80\x98m\x80\x99 number of sorted arrays each of size \x80\x98n\x80\x99, now efficiently create a final array. A lot of discussion was done on

complexity of the approach (both time and space).

### Round 3:

1. Given a binary tree, where cost of travelling to the left child is  $\text{cost}_l$  and same for the right child is  $\text{cost}_r$ . Now, given the root of the tree and a value  $v$ , find the total number of nodes that are at a distance/cost of  $v$  from the root.
2. Given an unsorted integer (positive values only) array of size  $n$ , we can form a group of two or three, the group should be such that the sum of all elements in that group is a multiple of 3. Find the maximum number of groups that can be generated in this way.
3. Given an integer array, find minimum number of jumps to reach the end of the array.

### Round 4:

1. Given a BST, convert it into a Doubly Linked List in place. **NOTE:** We don't have to create a new data structure i.e. we have to modify the links/pointers in given BST.
2. Question was framed this way: Given street of houses (a row of houses), each house having some amount of money kept inside; now there is a thief who is going to steal this money but he has a constraint/rule that he cannot steal/rob two adjacent houses. Find the maximum money he can rob.

**NOTE:** I didn't face any HR round, all though in each rounds I was asked about the reason for the change.

In all it was a great experience, and interviewers were really cool and gave a plenty of time to think and code, sometimes suggested/hinted if I got stuck.

GeeksforGeeks has been extremely helpful for me in preparing.

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### Related Practice Problems

[Maximum money](#)

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## Amazon Interview | Set 68 (For SDE-1)

- Difficulty Level :[Hard](#)
- Last Updated :18 Jun, 2019

I went through the Amazon interview process for SDE-1, I didn't make it past the 3rd F2F round.

### Online Round:

1. Find if a given string contains duplicates
2. Given a BST, find the maximum N elements of the tree
3. [Given a BST, convert it into Doubly Linked List](#)
4. [Rotate a 2-D Matrix by 90 degrees](#)

### Telephonic Interview:

1. Given an array of integers (+ve and -ve), give a contiguous set of numbers that add to 1

Eg. 4 3 5 -3 -1 2 -3 10 2

Ans: 5 -3 -1 2 -3

2. [Check if a given tree is a BST or not](#)

3. In a 2-D Matrix with the following properties:

\x{2}xa0\x{2}xa0\x{2}xa0\x{2}xa0\x{2}xa0. Contains only 1s and 0s

\x{2}xa0\x{2}xa0\x{2}xa0\x{2}xa0\x{2}xa0\x{2}xa0ii. Every Row is sorted

[Find the row with maximum zeroes.](#)

### F2F:

#### Round 1:

1. Print all the cycles in a directed graph

2. Given an unsorted array, assign every element to its immediate larger number after the current number, assign to -1 if no such number exists

Eg. 3 1 2 5 9 4 8 should be converted to

5 2 5 9 -1 8 -1

#### Round 2:

1. [In a 2 D array where every row and column are sorted, give the nth smallest element](#)

2. [In a Binary tree, every element must contain the sum of its sub-trees](#)

Follow up question: how would you solve this if you can ONLY increment the value of a node

Eg. If a node's value is 20 and its sub-tree sum is 10, the node's value can be set to 10 because you can only increment

3. Given n, find the smallest number for which product of the digits is n, if no such number exists, print -1

Note: Digits can only be split as single digits, i.e., 132 can be considered as 1 \* 32 or 13 \* 2, it would only be 1 \* 3 \* 2

Eg. Answer for 36 would be 49

#### Round 3:

1. [Convert a Binary tree into another binary tree whose in-order traversal gives a sorted list](#)

This has to be done in-place

Eg.

1\r\nn 2 3\r\nn 4 5 6 7\r\nn\r\nn should be converted into\r\nn\r\nn 4\r\nn 2 6\r\nn

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## Amazon Interview | Set 67 (For SDE-1)

- Last Updated : \n18 Jun, 2019

1) Round 1 telephone interview \xe2\x80\x93 implement division without using division operator in  $\log(n)$  time.

solution: use bitwise shifting

2) Round 2 telephone interview \xe2\x80\x93 [write a program to buy and sell stocks to maximize profit](#), can only do 1 action per day i.e. buy or sell.

solution: I used 2 pointers to keep track of best buy and sell rates. I implemented it in  $O(n)$  time. He was happy with the solution.

After a few days I got a call from the recruiter saying the team was very happy with my interviews and wanted to meet with me in person.

I had to actually reschedule my on-site interview as I couldn't locate the office since it was not locatable on Google maps!!

I got in the office in Toronto. I was given a visitor pass and escorted to a meeting area where the interviews took place.

3) F2F(HR round)

This was easy, the interviewer asked basic questions about my background and what made me choose computer science. I talked about my favorite project and she answered some of my questions.

4) F2F(Director) he wanted me to do [BFS search](#). Given a level, child index return the child node for a binary tree. I gave him an inorder search instead, he was okay with the solution.

5) F2F(SDE) this is when things started to get tough. He wanted me to design a library reservation system. He wanted me to explain him a design and draw some diagrams and then implement the classes.

We didn't have enough time to do all of it. He wanted to know what data structure I would use to perform searches for books. I choose LinkedHashMap because it allows  $O(1)$  lookup and  $O(1)$  insertion.

6) F2F(SDE) [He wanted me to build a boggle game](#). This is where I got a little mixed up with some java and C# syntax and he was not too impressed. I tried to write the algorithm using 2 for loops and he gave me some hints as to how to implement it.

7) F2F(SDE) [Given a list of words, find anagrams](#). This was easy enough to implement. He asked runtime in the end.

The interviewers communicated with you all the time, it's not like you go in an exam and quietly write what you have memorized. There is lots of pressure and lots of explaining to do as you write the code.

All in all it was a great experience. The guys were cool and fun to interview with.

GeeksforGeeks was a tremendous help towards the interview.

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# Amazon Interview | Set 66 (For SDE)

- Last Updated : \n19 Sep, 2019

## A F2F

1. [Min stack problem](#) (algo+code)
2. filling next pointer in tree but in zig-zag order (algo+code)

## B Hiring manager

1. A big file (some TB\xe2\x80\x99s) containing custid, page and time stamp, find out the repreating customer( the one who visits after 24 hrs)(algo)
2. [In a paragraphs tell the frequency of the words](#)(algo)
3. [A sequence of array, print the kth largest number](#)(algo+code)

## C F2F

1. [Left view of a tree](#) (algo+code)
2. Swap two node pointers in a singly linked list(algo+code)

## D F2F

1. Given some sets of people who fight against each other. They are represented as graph. if a link exists between A and B, the it means that A and B are fighting against each other. Likewise there are some more links. The question was to divide the nodes into groups such that no person in a group fight with another member in that group. (More of bipartite graph) find the groups (algo)
2. [A singly linked list, find the kth element from the last.](#) The question was further modified to not to process a node more than once. (algo)

## E Bar raiser

1. Questions on projects, what is it, what did you do (deep diving)
2. Situation that has to miss deadline
3. Any situation encountered with performance issues
4. Any situation where you need to convince your team mates
5. Any situation where you can see there are some improvements required and proposed
6. There is a large file( 1TB) containing braces. Question is to check for their balance. I said will use a counter, will increment on an open brace and decrement on an close brace. If counter goes negative or counter is non zero at the end of the file, braces are not balanced. Otherwise balanced. Followup question was to make this process parallel (meaning to see if this problem can be solved through parallelism, like dividing the problem into sub problem\xe2\x80\x99s.) Remember the file is very large.

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# Amazon Interview | Set 65 (Off-Campus for SDE-2)

- Difficulty Level : \n [Hard](#)
- Last Updated : \n 19 May, 2021

My experience for Amazon\xe2\x80\x99s Software Development Engineer-2\xc2\xa0

## 1st Round (Face-to-Face)\xc2\xa0

1. Design ATM\xc2\xa0
2. Design Car Service center\xc2\xa0

\xe2\x80\x94 Deep dive into design and focus on specific module called

\xe2\x80\x98Service\xe2\x80\x99\xc2\xa0

\xe2\x80\x94 Supervisor should be able to allot a Best Engineer to Service customer request, How do you code to get best engineer to fix the car service request.\xc2\xa0

## 2nd Round (Face-to-Face)\xc2\xa0

1. [Write a program to get all list of nodes without siblings in Binary tree](#)\xc2\xa0
2. How do you implement \xe2\x80\x98Car service center\xe2\x80\x99 application to achieve Reliability, Scalable and Consistent in distributed environment.\xc2\xa0

## 3rd Round (Face-to-Face)\xc2\xa0

1. Some behavioural Questions\xc2\xa0
2. Core java Q: Why do we need equals method ? Can we check equality using hashCode method. Difference b/w them ?.\xc2\xa0
3. [Get all nodes K distance away from leaf nodes.](#) I could able to tell him my idea, but I couldn\xe2\x80\x99t able to come up with program within given time.\xc2\xa0

## 4th Round (Face-to-Face)\xc2\xa0

1. Specific questions on current working project.\xc2\xa0
2. Implement my own Connection pooling\xc2\xa0
3. [Given a linked list, write a function to reverse every k nodes.](#) Initially I told him solution with help of Stack , then he asked without using extra space, With his clue, I could able to tell him using recursive logic to solve it.\xc2\xa0

Inputs: 1->2->3->4->5->6->7->8->NULL and k = 3\xc2\xa0

Output: 3->2->1->6->5->4->8->7->NULL.\xc2\xa0

## 5th Round (Face-to-Face)\xc2\xa0

1. [Given a string, find the longest substring which is palindrome.](#) For example, if the given string is \xe2\x80\x98forgeeksskeegfor\xe2\x80\x99, the output should be \xe2\x80\x98cgeeksskeeg\xe2\x80\x99. I have seen this question , but never thought about solution.\xc2\xa0

Same question i got in interview, I was very happy to get solution, interview asked me optimize further. I could fix 1 improvement and he suggested 1 improvement.\xc2\xa0

2. Identify all possible entities/domain objects in Cricket. Went little deep.\xc2\xa0
3. Given Channel, Program and TRP ratings, How do you consume those at server side,\xc2\xa0 and what do you do to retrieve specific data like 1Get all programs in given channel where TRP is > 10\xe2\x80\x98.\xc2\xa0
4. Some behavioral Questions\xc2\xa0

Overall it was great experience, Myself satisfied with my performance in all rounds except 3rd round :(.\xc2\xa0

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## Amazon Interview | Set 64 (Off-Campus for SDE)

- Difficulty Level : \n [Hard](#)
- Last Updated : \n 18 Jun, 2019

I am sharing my off campus SDE interview experience with Amazon.

### Online round: (1hr)

1. [Given coin array and a sum K, find min. number of required coin to make sum K.](#)
2. [Two rectangles are given in two D space. Find if these are overlapping or not](#)
3. [KMP for pattern searching](#)

After two days I got the call to come Amazon office for F2F interviews:

### 1st Round:

1. [Program to construct binary tree from its inorder and preorder traversal.](#) (algo+code)
2. [Reverse every k-element in a linked list](#)(algo+code)

### 2<sup>nd</sup> Round:

1. Tell me about one of your best project in detail.
2. Design Restaurant reservation system.

### 3<sup>rd</sup> Round:

1. [Given a binary search tree of n nodes, find all the pair of \xc2\x9a0 nodes whose sum is equal to a given number k](#) in O(n) time and constant space.(algo+code)
2. Given a function \xe2\x80\x9cf\xe2\x80\x9d in which 0 occurs with probability 0.4 and 1 occurs with probability 0.6. Using function \xe2\x80\x9cf\xe2\x80\x9d deduce a new function \xe2\x80\x9cf1\xe2\x80\x9d such that both 0 and 1 occurs with probability 0.5
3. Given a matrix, find the maximum sum subarray in it.(algo+code)

After one week I got the call from HR for my BR round.

### 4<sup>th</sup> Round (BR Round):

1. \xc2\x9a0Tell me about yourself.
2. \xc2\x9a0Why are you looking for change?
3. \xc2\x9a0How will you handle conflict with your manager?
4. What is the most challenging work done by you \xc2\x9a0in your current company?
5. Lots of discussion happened about current company\xe2\x80\x99s project.
6. Given a number N, find the smallest 3 digits number\xc2\x9a0 such that product of its digits is equal to N. ( algo+ optimal code)

In all the rounds, the most optimal production quality working code was required and if you get stuck, then they will give you HINTS but don\xe2\x80\x99t consider this in your favor!

\xc2\x9a0

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## Amazon Interview | Set 63 (For SDE-1)

- Difficulty Level :\n[Medium](#)
- Last Updated :\n18 Feb, 2018

I have a total experience of two years. I am sharing my interview experience with Amazon. This is for SDE1 Amazon.

A very big thanks to whole team of geeks for geeks. It is because of them only that I was able to make Amazon and get a job in my dream company. Otherwise it was impossible for me.

The interview questions of this interview experience are deleted on request.

You may find below links useful.

[Amazon Company Preparation.](#)

[Amazon Interview Experiences.](#)

[Videos for Amazon Interview Preparation.](#)

[All Practice Problems for Amazon !](#)

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# Amazon Interview | Set 62 (For SDE-1)

- Difficulty Level : \n[Medium](#)
- Last Updated : \n18 Jun, 2019

I recently went through the Amazon interview process for the post of SDE-1.

## Round 1 (Written)

1. [Given an array, output an array where every index contains nearest greatest element to that element on right side.](#)
2. [Program to convert sorted array to Binary Search Tree](#)
3. [Find first non-repeating character in String](#)

ex: geeksforgeeks: f  
geeksforgeeksFirst:o

## Round 2 (F2F)

1. Given linked list as a-x-b-y-c-z

output it as a-b-c-z-y-x

that is [reverse alternate element and append to end of list](#)

2. Output nearest number greater than given number such that output is palindrome

ex: 121:131

900:909

99:101

## Round 3 (F2F)

- 1.<https://practice.geeksforgeeks.org/problems/vertical-sum/1>( I told him I know the solution, he proceeded further)
2. Given stream of Strings find top 5 words with maximum frequency or count
3. [Given 2 nodes in Binary Tree find distance between them](#)

## Round 4 (F2F with hiring manager)

1. Projects done so far, HR questions

2. Design LinkedIn and find till 2nd level connections and path between 2 connection  
for ex: if A is friend of B which is friend of C

print between A and C A-B-C

3. Programming language: Java

About synchronisation, serialization, transient and volatile keyword, Singleton Class

## Round 5 (Bar Raiser)

1. [Count Inversion in array](#) that is if i a[j]

Told the solution nlogn of divide and conquer. He asked another solution, then told by inserting in BST and whenever node goes to left side then adding 1 and number of children on right side . We have to keep track of count of right subtree in every node

## Round 6 (F2F)

1. HR questions (Why leaving company, projects, SWOT)

2. [Program to check for mirror tree](#)

3. Data Structure so that push, pop, getmin, getmax O(1) (using 3 stacks)

4. Data Structure so that push, pop, pop min, pop max

Told Solution till O(logn) by using min heap, max heap with pointers to doubly linked list nodes

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## Amazon Interview | Set 61 (For Internship)

- Difficulty Level :[Hard](#)
- Last Updated :18 Jun, 2019

Hello geeks, Last month I appeared for the **Internship Interview of Amazon**.

What my personal experience says is that never try to jump to the right solution straight-away, instead take your time and **think progressively** about the possible solution to the given problem.

**Check for boundary test-cases** carefully and also don't remain completely blank during your conversation with interviewer but keep on telling him about the **tentative solutions** that are coming to your mind.

My entire process consists of **3 rounds**:

1. Online Round.
2. 1st Telephonic Interview
3. 2nd Telephonic Interview

### Round 1:

It was an online round consisting of 20 Multiple Choice Questions (from C language, Operating Systems, Data Structures and Algorithms and Software Development Concepts) and 2 Coding Questions:

- [Given 2 linked lists constructed another linked list containing the sum of those 2 linked lists.](#)

e.g Given : 1 -> 2 -> 3 and 4 -> 5 -> 6 Ans: 5 -> 7 -> 9

- [Find the Vertical sum of the given Binary Tree.](#)

### Round 2 (Telephonic):

The duration of telephonic Conversation was about 60 minutes and the Interviewer asked me 2 coding questions:

- Given an array of +ve as well as -ve numbers, find out whether it is possible or not to convert it to 0 by adding/subtracting operations on all the elements.

e.g arr[]={1,2,3} YES (1+2-3) narr[]={3,6,2} n3+6-2 != 0 n3-6-2 != 0 n-3-6-2 != 0 n-3+6-2 != 0 n-3+6-2

- Given a binary Tree where the structure of each node contains an extra `next` pointer (initially all NULL), modify the binary tree such that all the nodes at the same level gets connected by utilizing these given extra pointers.

**Solution :** ([GeeksforGeeks Link](#))

The interviewer also asked me to write the code for the same.

### Round 2 (Telephonic):

The duration of telephonic Conversation was about 90 minutes and the Interviewer asked me 2 coding questions:

- [Write a code to find the Diameter of the given binary tree](#)

Firstly I gave the solution which has complexity  $O(n^2)$  then he asked me to optimize it so finally I did it in  $O(n)$ .

- [Given a number design the algorithm to find the next greater number which contains exactly same digits.](#)

e.g. n= 123 next greater with same digits = 132 The number can be very large so its better to consider it as a sequence.

I was also asked to write the code for the same.

I had a very great time preparing for the interview and got to learn a lot of new concepts.

I am really very thankful to **GeeksForGeeks** for being the primary source of my preparation and believe me guys this website is just **awesome**.

And ya forgot to mention I finally got the confirmed offer for Internship at Amazon

Many Many congratulations to the author. If you like GeeksforGeeks and would like to contribute, you can also write an article and mail your article to [contribute@geeksforgeeks.org](mailto:contribute@geeksforgeeks.org). See your article appearing on the GeeksforGeeks main page and help other Geeks.

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# Amazon Interview | Set 60 (For Internship)

- Difficulty Level : \n[Medium](#)
- Last Updated : \n18 Jun, 2019

Believe me or not before I faced an Amazon interview round I was never sure whether all those gratitude that people usually present to GeeksforGeeks were actually worth. But it is always easier to connect the dots looking backwards and now I can say with assurance that this website really deserves all the applause.

I was recently interviewed for an internship position at Amazon and had to go through a total of 3 rounds i.e. one online followed by two telephonic rounds.

## **Online Round**

As usual the online round had two coding questions and 20 MCQs. This was a pretty easy round and its duration was 90 minutes. The round consisted of questions from various domains like Algorithm, Data Structure, Operating System and Aptitude.

A few days after appearing in this round, I was informed that I have been qualified for the next round.

## **First Telephonic Round\nc2\x00\nc2\x00**

I had just three days to prepare for this round and truly speaking, it was my first experience of appearing in any such interview.

This round lasted for almost 60 minutes. It began with my general introduction followed by a brief discussion on my projects. After this, the interviewer asked me four questions.

### 1. **Question 1:**

[Given an array of numbers find all such triplets that satisfy the given condition. Condition: a\[i\] < a\[j\] < a\[k\] where i < j < k.](#)

At first go I thought that it was a pretty easy question but slowly the mist started to clear and I realized how tough it was. The interviewer wanted me to solve it in linear time i.e. O(N)

### 2. **Question 2:**

[Given two trees check if they are mirror images of each other or not.](#)

This was a straight forward question and it took me less than 10 minutes to code it.

### 3. Now the interviewer wanted to test my understanding of operating systems and asked two fairly direct questions, to which I gave my answer based on my understanding (not bookish definition as I did not remember any of those \xf0\x9f\x98\x89 ).

### 4. **Question 3 & 4:**

[What is semaphore](#) and [what do you mean by a deadlock](#).

After two days I got a call from the HR informing me I have been selected for the next round. Now it was the time for the last and the decisive round.

## **Second Telephonic Round\nc2\x00\nc2\x00**

For this round I had slightly more time than the last, due to the fact that the weekend fell in between. The interviewer was very cool and helping this time, something which I kept at the last in my list of probable things that can happen during an interview. Duration of this round was around 90 minutes.

This time I had to face three technical questions and one general question on Amazon.

1. **Question 1:**

[Given a BST, replace each node with the sum of the values of all the nodes that are greater than that node.](#) Only constraint being that I was not allowed to use any global or static variable. Although I panicked a bit and made few mistakes, I got through.

2. **Question 2:**

[Given an array of numbers find the maximum count of duplets and triplets such that their sum is a multiple of three.](#)

Number that has appeared once can't be included anywhere else.

I solved this question using a property of modulus.

3. **Question 3:**

Given the stock prices of 10 days find the best possible buy sell pair.

For this question I started with a  $O(N^2)$  solution but then finally managed to reduce it to  $O(N)$  solution with constant space complexity.

I was also asked few questions on Amazon like what are domains in which Amazon deals.

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# Amazon Interview | Set 59 (Off-campus for SDE-1)

- Last Updated : \n18 Jun, 2019

I recently went through the Amazon interview process for the post of SDE-1. It was an amazing experience for me.

## Online Round (2 hours):

Q1- Program to rotate a matrix by 90 degree clockwise.

Q2- [Program to convert a binary search tree into doubly linked list.](#)

Q3- [Program to find a node which is just greater than a given node in a tree.](#)

Q4 \xe2\x80\x93 [Given a sentence. Find all the characters which are repeated more than 1 time and print them in lexicographical order.](#)

## F2F interview 1(45 minutes):

Q- [Given a MXN matrix. To find the number of ways to reach the mth row and nth column cell from 0,0 cell. Find the same if some of the cells are marked as not reachable.](#)

First implemented using recursion then through dynamic programming.

Q- Given a linked list like a1-a2-a3-a4-b1-b2-b3-b4. Convert it into a1-b1-a2-b2-a3-b3-a4-b4.

## F2F Interview 2(50 minutes):

Q- [Given a sorted array of 0 and 1. Find the first occurrence of 1.](#) Production working code was required. I provided him O(logn) solution. He asked me how it is O(logn). Then I explained him and generated the formula for same. He was convinced finally.

Q- [Implement the cache using LRU technique.](#) Production working code was required.

## F2F Interview 3(1.5 hours):

Discussion on my current project. He asked every minute details of my project and made me feel like he knows better than me about my project \xf0\x9f\x98\x9b

Then he asked me to implement a data structure for showing the currently visited items by a customer on any website. You will find the same on Amazon website at bottom left side.

Program to sort m sorted arrays. I told him that I knew this. So we moved ahead.

Data structure to push, pop and find min element in O(1) time.

## F2F Interview 4(45 minutes):

Q- To delete all the nodes from a binary tree that lie on a path whose sum from root to leaf is less than a given value K. Twist was that the node values can be any integer. It may be a negative number.

He asked me to find the time complexity and space complexity.

I did it using recursion with O(n) time complexity and O(1) space complexity. He said that there is some space being used by my program that I am not taking into consideration. I got his point. Since I was doing it using recursion, So some internal stack space was being used and that would be O(logn)i.e height of tree. That was bit tricky.

Q- [Given two sorted arrays. Find the median of the combined array.](#)

One thing that you need to keep in mind is that you need to provide them the optimized solution with respect to time and space and don\xt forget to consider the corner cases.

After 4 days I got a confirmation call from Amazon \xf0\x9f\x99\x82

Many Many congratulations to the author. If you like GeeksforGeeks and would like to contribute, you can also write an article and mail your article to contribute@geeksforgeeks.org. See your article appearing on the GeeksforGeeks main page and help other Geeks.

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# Amazon Interview | Set 58 (On-campus for Software Development Engineer)

- Difficulty Level : \nEasy
- Last Updated : \n18 Jun, 2019

I\xe2\x80\x99m in E&CE and I\xe2\x80\x99m sharing my interview experience with Amazon on IIT campus to help you prepare for your interviews. There was online test for 300 students. 25 were selected for interviews. There were 4 back-to-back rounds on the same day. My interview process lasted for around 5 hours and finally I got hired. \xf0\x9f\x99\x82

## Round 1:

1. [Given 1 billion integers. Find 100 maximum integers. Memory available is insufficient to store 1 billion integers.](#)

2. [Given array of N integers ranging from 0 to N-1. Output maximum repeating integer.](#) Use only O(1) memory.

## Round 2:

1. [An array of integers is given such that it is first ascending and then descending. Find index of some given integer in that array.](#) Ex. 2,4,6,8,7,5,4,3. Input: 4. Output: 2, 7. Write code on paper.

2. [Two sorted arrays are given. Find median when both arrays are merged and sorted.](#) Write pseudo code on paper. Take care of boundary conditions.

## Round 3:

Basic OS, DB concepts.

1. You are given some integers. Propose a data structure to implement \xe2\x80\x9ccadd\xe2\x80\x9d, \xe2\x80\x9cdelete\xe2\x80\x9d, \xe2\x80\x9cfetch\xe2\x80\x9d and \xe2\x80\x9cfetch any\xe2\x80\x9d operations. All four operations must complete in constant time.

2. There is a B-tree with two type of nodes A and B. Return nth A or nth B while doing inorder traversal in O(1) time. And write pseudo code on paper.

## Round 4 with manager:

There is very huge text file consisting several rows and columns of integers. Memory available is not sufficient to store whole text file. One column can be stored in memory. Sort whole file corresponding to given column keeping all rows unchanged. You cannot make new text file. Write neat code on paper.

## Solution:

### Round 1:

1. Make min heap of first 100 elements. For each remaining elements, if it is greater than root (min) node then remove root node, add that element then heapify. Time = 1 billion \* log(100)

2. Simple. For i = 0 to N-1, A[A[i] % N] += N. Return i with max A[i]. O(n) time.

### Round 2:

1. Find pivot point. O(log n) Binary search in both left and right arrays. O(log n)

2. Compare median of both arrays. Accordingly select right half or left half array. Repeat. O(log n)

### **Round 3:**

1. Make a hash table and a linked list. When you add an element add it in both hash table and linked list. But in hash table along value caralso store pointer to the same value in linked list. To delete an element find it in hash table, use stored pointer to delete the same element from linked list also. For fetch any operation return head node of linked list. Memory =  $2*N$

2. Preprocess in  $O(n)$  time: Make two vectors for A and B. Traverse in-order. When you get A add its pointer in vector of A. Same for B.

### **Round 4:**

Read whole column. Heap sort (saves memory). Now you know old indices and new indices. Shift entire rows from old index to new index. Keep one row in temp storage to avoid overwriting.

### **Some tips that may help you:**

1. Always be confident for whatever you are saying.
2. Listen carefully. Ask doubts until the question is perfectly clear to you.
3. Think out loud. Start with obvious approach and then improve upon it.
4. They will test your way of approach, thinking process. Don't give up. Interviewer may give you hint if you are stuck.
5. Direct them to ask you about your strong topics.

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# Amazon Interview | Set 57 (Off-Campus for SDE-1)

- Last Updated : \n18 Jun, 2019

Hi geeks, I recently hired for amazon. I just want to share my Interview experience with You all.

Totally 1 Written + 5 F2F

## **Written round:**

Q1: [Convert a sorted integer Array to balanced binary search tree](#). This is very simple one and I could do it in  $O(n)$  time and  $O(1)$ extra space.

Q2: [Write a Program to reverse every k nodes of singly linked list without using extra space.](#)

Constraint:  $k \geq 2$

## **F2F round 1:**

Q1: Find the largest element in the sorted rotated integer array in  $O(\log n)$  time.

Q2: [Find Height of a Binary Tree](#). This is very easy question, so I did quickly.then he move on to next one.

Q3: Find your own method to balance an unbalanced binary tree.(you must not use existing methods like AVL, red black or b trees).

Hint: There is no restriction on placing nodes. You can remove any node from any place and put it in any place.

I devised an algorithm which will make use of two lists.\xc2\xa0One list contains nodes far away from the root and this is sorted in decreasing order of levels and left to right if nodes are in same level.\xc2\xa0Other list contains nodes which are not fully filled. This is sorted increasing order of levels and left to right if nodes are in same level .

Remove the first node (listed in list1) and insert as a child of first node in list2.add this node also in list 2.\xc2\xa0Do this operation until the height of the tree becomes  $\log(n)$ . \xc2\xa0Interviewer was impressed with this and finished the interview.

## **F2F round 2:**

Q1: There is a file which contains N words. There may be M anagrams in that file, K words on each anagrams.  $K \geq 1$ ,  $M \geq 1$ ,  $N \geq 1$ . You need to write an algorithm which will create one list for each anagram with k words and group all M lists with one data structure (This is the main area.we need to think a data structure which will minimize the space and time complexity of word Finding appropriate List and Inserting word).

I could do the insertion in  $O(1)$  time by keeping track of tail pointer in each list.\xc2\xa0But finding the appropriate list needs\xc2\xao( $n$ ) in case of linked list,  $O(\log(n))$  in case of binary search tree. Using hash table, you can do this in  $O(1)$ , but writing a hash function is difficult and inefficient in terms of time. Then I suggested Trie data structure.with this, we can reduce the time complexity well. But space complexity will be more.\xc2\xaoI told all the ideas to interviewer. They were much satisfied with this. And moved to next question(without writing code J)

Q2: Find min and max element of an unsorted integer array.

Very simple question you can do two pass on the array and find it, but number of comparisons will be  $O(2n)$ . He asked me to reduce it.

I gave an algorithm which will do the same in  $O((n/2)^3)$  which is fairly less than  $O(2n)$ . They were impressed on my solution and asked weather I have any question .

## **F2F round 3: (CS fundamentals and system programming)**

Questions were in C++ patterns, Network Programming, Linux, since I did project on networking, Linux I could perform well in this round.

#### **F2F round 4: (Hiring manager round):**

Interviewer was keen on testing cultural fit. Nearly 10 to 15 questions on my previous project, Why amazon?

Why you want to leave previous company?

What initiative you took in previous company?

How will you manage conflict with your manager?

How will you demonstrate ur product to customer?

#### **F2F round 5: (bar raiser)**

This also had cultural fit questions and then a data structure question.

Qn: [Find the distance between two nodes in a binary tree](#), no parent pointers are given. I could solve this in post order traversal in  $O(n)$  time complexity. He asked me to code in home and send it via mail.

Geeks for geeks is my Wikipedia for interview preparations. Thanks to geeks for geeks.

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## Amazon Interview | Set 56 (Off-Campus)

- Last Updated : \n 28 Nov, 2019

The most important thing about Amazon interviews is that you need to produce Flawless, Most Optimal solution in the First try itself. Take your time to think, but when you code make sure you Cover every edge case before handing your solution to the interviewer.

### Online Round (90 mins)

20 MCQ questions spanning Aptitude, basic C/C++ skills

2 Coding Questions

-> [Vertical Sum in binary tree](#)

-> [Add 2 link lists](#)

### Phone Screen ( PS1 ) ( 45 mins )

Basic questions about OS, Virtual memory, multi-threading, etc.

-> [Next Greater number for every element](#). ( Algo + Code )

-> [Reverse link list](#) ( Algo )

-> [LCA in Binary Tree](#) ( Algo + Code )

### F2F Interview 1: (45 mins)

-> LCA of K given nodes in a n-ary tree .( Algo + Code )

-> [Sliding window minimum](#) . ( Algo + Code )

Discussion about Internship project .

### F2F Interview 2: ( 60 mins )

Discussion about Internship project .High level Design was to be produced

-> [Given a boolean 2-D matrix, find the number of unique rows in it.](#)( Algo + Code )

I gave 3 different solutions. One of them used Hashing .The interviewer then went into GREAT details of hashing .

After a lot of discussion about various Types of hash implementation, pros/cons, uses , he gave me a Scenario for which i needed to build a good hash function.

### F2F Interview 3(Stess Interview) ( 60 mins )

Discussion about Internship project .

-> [Given a Binary tree and a arbitary node of that tree , find all the nodes at a Distance of K from that Node .Nodes DONxe2\x80\x99T have parent pointers.](#)( Algo + Code )

-> Implement 2 stacks in an array .( Algo + Code ) .

Follow up question ->What do we do if we want to change the size of array dynamically.

-> Implement 3 stacks in an array .( Algo )

-> Implement K stacks in an array .( Algo )

### F2F Interview 4 ( 60 mins )

-> Lot of OS questions . Mutex,semaphore,Deadlock ,Virtual memory , Scheduling algos .

Then he gave me a Code, and asked to make it Thread Safe .

I had used SQL in my internship project, so was asked basic DBMS questions and SQL queries.

SQL query to find maximum in a column, without using aggregate MAX function .

-> [Given a binary tree, where every node value is a Digit from 1-9 .Find the sum of all the numbers which are formed from root to leaf paths](#) . ( Algo + Code )

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## Amazon Interview | Set 55 (On-Campus)

- Difficulty Level : \n[Expert](#)
- Last Updated : \n16 Apr, 2021

### Online Test on InterviewStreet:-\xa0

18 MCQs (Normal C loop questions, networking, dbms, os, analytical)\xa0

2 Coding questions\xc2\xa0

1. Check if an undirected graph is a tree or not.\xa0

2. [Given an array of integers, print the 2 elements with least absolute difference.](#)\xa0

### Interview Rounds:-\xa0

#### Round 1:\xa0

Tell me about yourself.\xa0

1. [Given a matrix\(not necessarily square\) in which the elements in a row, as well in a column are sorted. Find a given integer in the matrix.](#)\xa0

Tell the approach. And then code.\xa0

2. Given a position where a knight is placed on an nXn chessboard. Find the maximum number of knights that can be placed on the board, so that no 2 knights attack each other.\xa0

Remember that you need to just give the number of knights, not all their positions. I first could arrange ceil( $n^*n/3$ ) knights. Then he asked me find a better solution. Finally I got to ceil( $n^*n/2$ ). Then he asked me to code it. Then he asked me to remove the ceil condition(check for even and odd separately).\xa0

He asked me if I had some question for him. I asked \xe2\x80\x93 Amazon strives to be the most costumer centric company on earth. What, as a programmer/developer, do you do to achieve this, because generally, the customer\xe2\x80\x99s problems are an issue for high level managers and planners.\xa0

#### Round 2:\xa0

Started with some questions from my Intern project.\xa0

1. [Given a Binary Tree, replace the data of each node by the sum of data of all its descendent nodes.](#)(Leaf nodes will have 0)\xa0

2. Given a sorted array of positive integers, find the least missing positive integer. First I gave an O(n) solution. Then he asked me to optimize it. Finally I gave an O(log n) solution.\xa0

3. Given a stream of numbers, find k random numbers from them. I explained him Reservoir Sampling approach. He asked why this approach works. What is the probability of each number being selected? What is the probability of any number being selected if stream has less than k numbers(its 1).\xa0

He asked me if I had some question. I said I had one, but I already asked it to previous interviewer. He asked me if I got a satisfactory answer to it. I said the answer was very much satisfactory.\xa0

#### Round 3 (CS Round):\xa0

He asked me if I am comfortable with writing SQL queries. I prefered not to.\xa0

1. What is an interface? Why it is used? Give an example. What is an abstract class? Why it is used? Give example. Why 2 different concepts of interface and abstract class?\xa0

2. Do you know about singleton class? What is it? Implement a simple singleton class. I made some mistakes in making attributes static etc. He guided me and finally I corrected all bugs.\xa0

3. Given a binary tree, where each node has an extra next pointer. Fill the next pointers so that each node\xe2\x80\x99s next pointer points to its next sibling node. First I gave a solution where I would require a map, where each map key will be a level number, and value will be pointer to the last currently accessed node of that level. Then he asked me to do it without space. Finally I gave him a

solution without space. I gave a non-recursive approach, and he asked me to code it.\xc2\xa0

#### **Round 4(Senior SDE 3 from Seattle Office):**\xc2\xa0

He told me about himself, his team, his work and his team\xe2\x80\x99s work.\xc2\xa0

1. Tell me about one of your challenging project/internship/class assignment.\xc2\xa0
2. Give a situation from your life where you were given a negative feedback, and how did you tackle the situation.\xc2\xa0
3. Explained me a cache situation, where, keys will be in cache, and each key will point to a string. It was LRU cache condition, and I had to implement the LRU cache. Then write a function to retrieve a string, given its key, from this cache. Retrieval should be O(1) (if you give O(n) retrieval, he will ask you to make it O(1)).\xc2\xa0

Finally got an offer !! \xf0\x9f\x99\x82 \xf0\x9f\x99\x82\xc2\xa0

While you are answering a question, clarify any doubts that come to you mind. Dont take any assumptions by yourself at all.\xc2\xa0

Keep on speaking your approach as you think. Keep speaking, if possible, even when you write code. They want to test if you really know the approach, and not just copying code. All rounds were technical and elimination. The last round has the highest weightage in their procedure. Write clean code, ask for some time if you want.\xc2\xa0

Thanks a lot to the GeeksForGeeks team for helping with interview preparations!

\xf0\x9f\x99\x82\xc2\xa0

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# Amazon Interview | Set 54 (On Campus for SDE)

- Difficulty Level : \n [Expert](#)
- Last Updated : \n 18 Jun, 2019

Hi All, I got the following question for the On-Campus placement process. Hopefully it\xe2\x80\x99ll help you too.

## Screening Test

Q1. [Left View of a tree](#)

Q2. Add three numbers represented as linked lists

example

n1: 1->2->3

n2: 4->5

n3: 6->7->8->9

sum: 6->9->5->7

## Round 1 (F2F Interview)

Connect same level nodes without level order traversal. (Code)

[Given an array where all numbers but one occurs in pairs, suggest all ways to find the unique number.](#) What if the array was sorted? (Code)

## Round 2 (F2F Interview)

Print cousins of a given node (Not sibling)

Given a 20 GB file and 2GB RAM, how to parse it and detect where to break it, concepts of memory management

Implement 3 stacks in array, all approaches and code

Deepest left leaf of a binary tree

## Round 3 (F2F Interview)

Longest path in a tree with just one bend. May or may not start with from the root. (Complete code)

Code for deadlock and how to resolve.

OOPS concepts, polymorphism

## Round 4 (Telephonic Interview)

[Check if a tree is a subtree of another.](#) (Code)

Convert a given number to Roman numbers.

Thanks a lot to the GeeksforGeeks team again. Appreciate the hard work you guys have put. Also a big thanks to all the contributors.

\xc2\xab0

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## Amazon Interview | Set 54 (For Internship)

- Difficulty Level :[Hard](#)
- Last Updated :18 Jun, 2019

Hi All. Here is my interview experience for internship at Amazon.

Position: 2-Month Intern

No. of Rounds: 1 Online + 2 PI (2 F2F)

### Round 1: (90 minutes)

20 MCQs and 2 coding questions

There were 20 MCQs based on C output, probability, basic maths, OOPS, algorithm analysis and Operating Systems.

**Question 1:** [Given a linked list, write a function to reverse every k nodes](#) (where k is an input to the function).

Example:

Inputs: 1->2->3->4->5->6->7->8->NULL and k = 3

Output: 3->2->1->6->5->4->8->7->NULL.

Inputs: 1->2->3->4->5->6->7->8->NULL and k = 5

Output: 5->4->3->2->1->8->7->6->NULL.

**Question 2:** [Given a string containing words separated by arbitrary number of spaces. Write a function that returns a string consisting of the first letter of each word.](#) (Note: there may be any number of spaces at the starting of the given string, at the end of the given string or in between words of the string.)

Example:

Input: \xe2\x80\x9d this is a test case \xe2\x80\x9d

Output: tiatc

(Function prototypes and main was given for both the questions. Although many solutions passed the initial test cases, they were rejected later as they did not satisfy boundary cases.)

### Round 2: (face to face) (1 hour 20 min)

**Question 1:** [Given two numbers represented by two linked lists, write a function that returns sum list.](#) The sum list is linked list representation of addition of two input numbers.

Example

```
Input:\r\n First List: 5->6->3 // represents number 563\r\n Second List: 8->4->2 // represents number 842\r\nOutput\r
```

I reversed the linked lists and simply added the corresponding nodes along with the carry. Then he asked me to solve the question without reversing the list. Then I solved the question iteratively without reversing the lists.

The interviewer then asked me to write a recursive code for the same problem.

After that he asked me to modify the code so that the carry at each place is passed by value instead of using pointers(which I had used in my code).

**Question 2:** iterative and recursive code to [reverse a linked list](#)(Take Care of corner cases: when list has no nodes or contains a single node)

**Question 3:** [Write a function to check whether a binary tree is a sub-tree of another binary tree](#) (Check for all corner cases).

I solved it in O(n^2) time complexity. He did not ask me to optimize my code.

**Question 4:** Which data structure would you use to keep records of stock market?

I asked him to clarify the problem statement.

He then asked me : Suppose you have to maintain the stock values of various companies during various periods and return minimum stock value of a particular company over a given period of time.

I answered segment tree (Probably the correct answer was queue data structure).

However the interviewer proceeded with questions on segment tree.

He asked me to write a code for

- a) Creating a segment tree
- b) Performing range minimum query in a segment tree
- c) Updating the segment tree

He asked me to analyze the time complexity for building the segment tree and performing the range minimum query in the segment tree.

He then asked me: If you are to maintain the stock value of a company for the past 6 months..then you have to update the segment tree every day by deleting a stock value and inserting a new stock value. How would you do that?

Here I got stuck and could not perform the upation in better than O(n) time.(However using queue it can be performed in O(1) time) .

He finally asked me if I had any questions.

### Round 3: (face to face) (20 min)

Only one technical question was asked to me in this round.

a) He asked me to speak something about myself and my technical achievements..

b) How to store a binary tree in a file & then read back.(It is not necessarily a BST)

First I answered that I would store level-order traversal of the tree.

He then asked me how I would maintain the nodes at various levels (which I was unable to answer). So, I changed my approach and told that: I would store in-order and pre-order traversals of the tree from which the original tree can be easily retrieved.

But then he told me to optimize my approach (As this approach would require twice the original space to store the data in the nodes). I could not further optimize my approach (However the better approach was to use parenthesization).

\r\n

A\r\n

/ \\\r\n

If this is the binary tree then it can be stored as (A(B(D),(E)),(C)) in the file.)

c) Then there was a 10 min discussion my project , the problems I encountered and how I solved them.

d) Finally he asked me if I had any questions.

I asked about the intern projects at Amazon and the use of DBMS and NETWORKING in it.

He started elaborating the entire work-process at Amazon and his work-experience\x80\x9a\x80\x80\x80..most of which I could hardly understand. He also told me to have a good knowledge of JAVA as it will be required at some stage during the projects.

Finally I got selected.

Many Many congratulations to the author. If you like GeeksforGeeks and would like to contribute, you can also write an article and mail your article to contribute@geeksforgeeks.org. See your article appearing on the GeeksforGeeks main page and help other Geeks.

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## Amazon Interview | Set 53 (For SDE-1)

- Difficulty Level :[Hard](#)
- Last Updated :18 Jun, 2019

In each round they ask me why I want to join amazon, why I am leaving my previous company with such a short span(around 2.5 months) and project stuff. Interviewers were quite friendly. They would explain you till the point you fully don't understand. And even while discussing approach and solving, they would clear your doubts if any.

### Online Test on InterviewStreet

- [Given 2 string , find whether 2nd is sub-string of 1st or not](#). (it would be great if you solve with KMP)
- [Given 2 rectangles , find whether they are overlapping or not](#).
- [Given list of coins with various values \(unlimited coins of each type\) , find how many ways you can make a given value.](#) (DP was expected.) Since it was not guaranteed that coin of value 1 would be present , we have to return -1 if the given value is not possible.

All rounds on same day.

### 1st f2f:

First I was asked to introduce myself and give a brief over my projects. Latter he asked me to explain any one of my project and the hardest task I have done. We have used infix to post ix and postfix evaluation for our generic search expression's evaluation. Here we had a lot of discussion on why conversion from infix to post-fix was needed and all.

- Given a String s and int r , first fill each character row wise and print column wise.

for e.g. String s = abcdefghijklm and r = 3

so filling column wise would give :

```
a d g  
b e h  
c f
```

and final ans would be adgbbehcf.

he just wanted the exact output. Internally how we handle string was not concern.

- given a string or say number .. for e.g. 134 now with each number , as per mobile's keypad , some letters would be associated. here 1->abc , 3->ghi, 4->jkl . So we should print all the permutation such that we take 1 character from each of the number. input number can be of any arbitrary length.

lets say each digit has m numbers associated , then for the input of length n , we need to generate  $n^m$  possible strings.

Took a map of which would return all the letters for the number. solved it using recursion. its quite similar to permutation of string. . Interviewer seemed quite impressed here.

### 2nd f2f

- Find integer part of sqrt of given number. Initially I gave  $O(\sqrt{n})$  solution. Later solved with binary search( $O(\log n)$ ).

- [Given an array of integers. replace each number with next higher number on its right side , which is nearer.](#)(if not present than keep it as it is.) for e.g. input > 3 4 6 1  
output->4 6 6 1

I suggested we can traverse from right side , we will take extra array ( $O(n)$  space complexity here) and in that array , we would store index of next higher nearer number.

so it would be like

```
\r\nif (a[i] < a[i+1])\r\n    then store i+1;\r\nelse\r\n    traverse using index stored in auxiliary array
```

Since we needed extra space to store indexes, he asked that the input is array of a structure which has number and higher Index, 2 fields. So that we don't need extra space and extra traversal.

```
\r\nclass Node {\r\n    int val;\r\n    int higher;\r\n}
```

He was very interested to see how i keep track of indexes and how i traverse between them. It is  $O(n)$  with  $O(1)$  space complexity. (when we have  $a[i]>a[i+1]$  we don't do linear search , but we jump using the indexes, so its not  $O(n^2)$ ) It was hard to convince him on complexity.

- [given a binary tree. connect all the node at the same level.](#) each node would have left,right and nextSibling pointers. we need to fill nextSibling. solved with level order traversal . Similar to BFS on tree with queue. Only approach was needed, no code for this one.

### 3rd f2f (Hiring Manager)

- It was a design question. You have to design a game. it has different types of monsters and different weapons. hero would shoot monster. each monster would have some initial health. Each weapon would do some predefined damage to monster. when its health gets 0, monster would die/disappear. and there would be multiple levels. based on level, monster and their behavior would change.

- [Given a read only linked list with next and random pointer , clone the list.](#) I told him that i know the solution and explained him the approach. It was with the use of hashmap and takes  $O(N)$  extra space. Then he ask me whether I know a  $O(1)$  space solution, since I didn't knew, i was told to solve this. With this , he told that I can modify link list.

Initially I struggled, but with his help, in the end came up with working code. He was looking fine with implementation.

Here I ask about the work culture and the process being followed at amazon.I ask lot of questions regarding tools and technology they use. Since I had work on scrum model , it was quite interesting. He seemed to be impressed here.

### 4th f2f(Dev Manager)

- Given 2 sorted linked list , merge them into single sorted list. Change the pointers, don't copy data. (same as merge part of mergesort on SLL)

- Given binary tree, connect all the nodes which are in same column. 1 caveat was that same 1 node can have 2 parents. Here as in example, node 7 is being pointed by 2 and 6.

Solved it using level order traversal. Used a Map : columnNo, Node. it would store the last visited node of that column. So whenever we visit a node, first we check if its corresponding column is present in hashmap. if not , it means its the first node of column, put into map. if the column present , then we will get the node stored in map and current node would be its nextVerticalSibling. and we update the map.

He did the dry run with example and code and he was OK with final approach.

```
\r\n    1\r\n    / \\\r\n    2     6\r\n    / \\\r\n    3     7     8\r\n    / \\\r\n    4
```

Finally after two days, I got call from HR that I am selected \xf0\x9f\x99\x82

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## Amazon Interview | Set 52 (For Internship)

- Difficulty Level :[Medium](#)
- Last Updated :[18 Jun, 2019](#)

Hi All, Here is my interview experience with Amazon for internship. Hope it helps:

### Round 1:

Online round with 20 objective questions on (Questions related to data structures, analysis of algorithms, C Language and some puzzles.) and 2 coding questions in 90 minutes

- [Write a program to reverse k alternate nodes of a linked list](#)

Ex: 1->2->3->4->5->6->7->8->9\r\nIf k is 3 Output should be: 3->2->1->6->5->4->9->8->7

- Given a string. [Write a program to form a string with first character of all words.](#)

Ex: The bucket is full of water\r\nOutput: Tbifow

Check all edge and corner cases.

### Round 2: Face to face round

1. [Given a binary tree. Modify it in such a way that after modification you can have a preorder traversal of it using only right pointers.](#) During modification you can use right as well as left pointers. Write complete code and dry run it for some test cases.
2. [Given 2 linked lists. Find out if they intersect or not. If yes, find intersection point](#) .Write complete code for it.

I could not remember the simple way: find the length of the lists and simply move forward the shorter list by difference of the lengths and find the intersection point. Instead, I joined the end of first list at the end of the 2nd list and then went for cycle finding by Floyd Cycle finding Algorithm. Although both are O (n), but he was impressed as it was a new approach.

### Round 3: Face to face round

1. [Given a sorted array of 0\xe2\x80\x99s and 1\xe2\x80\x99s. Find out the no. of 0\xe2\x80\x99s in it.](#) Write recursive, iterative versions of the code and check for all test cases.
2. [Spiral level order traversal without using extra variable for detecting level](#) (using one stack and one queue) and few other implementations as well.

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## Amazon Interview | Set 51 (On-campus for SDET)

- Difficulty Level : [Medium](#)
- Last Updated : 18 Jun, 2019

Hello Everyone!! Recently, I have been through the interview experience of Amazon India and I would like to share my experience with everyone.

Position : SDET

No. of Interviews : 1 Written + 4 PI (3 F2F and 1 telephonic)

Suggestions : Your code should be optimal, have proper variable naming, consider all corner cases and should not be lengthy.

### Round 1: (90 minutes)

20 MCQs and 2 coding questions

Coding questions :

1. A string consists of parenthesis and letters. [Write a program to validate all the parenthesis.](#) Ignore the letters.

eg. ((alf)ls) valid

(dkk)() invalid

2. You are involved in a betting game whose rules are as follows :

a) if you win a round, the bet amount will be added to your sum and next bet amount will be \$1;

b) if you lose a round, the bet amount will be reduced from your total sum and next bet will be twice the previous.

c) game ends when all the rounds are complete or you dont have sufficient sum.

Initially, you are given with a string of the form \xe2\x80\x9cWLWWL\xe2\x80\x9d where W indicates a win and L indicates a loss and initial sum. Initial bet amount will be \$1.

You need to find the amount at the end of the game.

Function prototypes and main was given for both questions

### Round 2: (face to face) (1 hour 15 min)

1. [Given a 2d matrix in which rows are sorted in ascending order and columns are also sorted in ascending order .I need to find an element in optimal time complexity](#)

2. [In the same \(M X N\) matrix I have to print the matrix in increasing order of elements .write code for it\(I used heap for that purpose and used concept of merging k sorted array\).](#)

3. Given an array , each element is one more or one less than its preceding element .find an element in it.(better than O(n) approach)

4. [Given two strings STR1 and STR2 .we need to find longest substring in STR1 whose all characters are taken from string STR2\(was asked to write code for it in optimal time\)](#)

```
\r\n      STR1=abcdefacbccbagfacbacer\r\n      STR2=abc\r\n      ans : length : 7\r\n                  acbccba (from position 7 to 1
```

5. Given a binary tree. I need to print the nodes in vertical line zigzag manner. For example: 1st vertical line from top to bottom, 2nd vertical line from bottom to top,3rd vertical line from top to bottom and so on

```
\r\n          5\r\n          /     \\\r\n          3       7\r\n          / \\\r\n          1   2 3 4 6 9 7 8 10
```

Answer would be \xe2\x80\x93

1

2 3

5 4 6

9 7

8

10

### Round 3: (face to face ) (50-60 minutes)

I was asked about my project in details. He asked me project related questions for first 20 minutes.

Next he asked to convert a binary tree in a doubly link list.

I told him various approaches like by using space complexity and in-place conversion.

I was asked to code all those approaches.

Then he gave a hint about one more approach and asked to code it.

### Round 4: (face to face) (60-70 minutes)

Again, I was asked about my project in details and he was questioning me on every part of it. Next he asked me to name the subjects that I have studied so far \xf0\x9f\x99\x82 . He asked many theoretical questions on database management systems, SQL, operating systems, OOPs concepts and their real life examples and also two coding questions.

1. [Code for dfs of a tree](#)(tree can be any general tree)

2. [Print pascal triangle](#) and your output should be same as pascal triangular form (have to consider the space separation) .I told him two approaches and wrote the code.

### Round 5: (telephonic) (1 hour 30 min)

For first 40 minutes he asked me about my achievements, about amazon company, my project in details and what problems I faced in project and how I resolved them. next he asked one coding question.

1. Find the square root of any number (square root can be a real number) without using any library function .

I told him an approach using Newton-Raphson method. It was faster but he asked simple and optimal method so then i suggested binary search method ( O(log n) ) and I was asked to code it and dictate and he ran the code on his system also.

Finally, I was hired with three of my friends. \xf0\x9f\x98\x80 \xf0\x9f\x98\x80 :

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## Amazon Interview | Set 50 (On-campus for SDE)

- Difficulty Level :[Basic](#)
- Last Updated :[18 Jun, 2019](#)

Recently, I have been through the interview experience of Amazon India and I would like to share my experience with everyone.

**Number of interviews:** 1 online exam (will be completely evaluated by the compiler itself, then code of those who will clear the cut-off will be analysed by the hiring team) + 3 Face to face technical + 1 Telephonic (Technical again)

### Online exam:

20 MCQ: Aptitude questions, if you are good in logical reasoning then don't worry about it (basic permutation and combination), C output questions, and most of them were pretty simple.

2 Online coding questions: 1. [Print the first non-repeated character in a string.](#)

2. [Print the left view of a binary tree.](#)

### 1st Face to face:

A skeleton of a binary tree with nodes having garbage values is given and an array is given. Had to fill up the binary tree skeleton with the values in array such that the resulting tree is a BST.

Solution: sort the array, enter the values in an in-order fashion (A long discussion on which sorting algorithm is the best and why? We ended up discussing how merge sort can be optimized, just optimized, not like reducing the order of time or space complexity). Then told me to write the merge-sort function for the discussed solution for merge-sort such that say I am a developer, I can test on a machine, and this class will be used by a million number of users.

### 2nd Face to face:

Was asked 4 questions: [Print all string permutation](#) (String might have repeated characters).

Least distance between two values in a very big binary tree (Binary tree may contain same value in many nodes).

\r\n                5\r\n                1                7\r\n                4                3                8                2\r\n                1

{Least distance is 3 between 1 and 2 (not 5). }

[Vertically print the value in a binary tree.](#) Like in the previous example:

4, 7  
1  
5, 3, 8  
7  
2

Next, I was asked to design an efficient data structure for two lifts in a building of n floors.

### Round 3 Face to face:

[Had to find maximum profit in an array of stocks prices for consecutive days in two cases](#), one I can sell and buy any number of times I want, second, I can only buy and sell one time.

Another question was to define a function `cinorder_it(Node A, Node root)` which will return the next node in a binary tree to a particular node A. Was asked to write code for both of them.

### Round 4: telephonic:

Kind of HR + Technical, asked a lot about my internship project and other academic projects. Then we discussed the problem of sorting rows of a file based on a particular column. Like as in Excel file, you can sort file based on roll\_no, first name, last name, any column you want.

File is very large, so you can just store the whole file into memory.

Solution: sort it out yourselves.

All the best everyone.

And yes, I got through along with 5 other mates from my college.

Many many congratulations to the author. If you like GeeksforGeeks and would like to contribute, you can also write an article and mail your article to [contribute@geeksforgeeks.org](mailto:contribute@geeksforgeeks.org). See your article appearing on the GeeksforGeeks main page and help other Geeks.

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# Amazon Interview | Set 49 (On-campus for SDE-1)

- Difficulty Level : \n[Easy](#)
- Last Updated : \n18 Jun, 2019

Recently, I have been through the interview experience of Amazon India and I would like to share my experience with everyone.

Position: SDE- 1

No. of Interviews: 1 Written + 4 PI (3 F2F and 1 telephonic)

Before telling you the questions and interview procedure, I would like to offer some suggestions. There are always instances when your interview is not off with a great start. You need not panic and keep your calm. Secondly, to compensate all the shortcomings in the technical part, interact with the interviewer as much as you can. Show him that you are really interested in the company. They are looking for future managers not just coders, so you have to have people skills.

Okay, so here we go:

## Day 1:

### Round 1 : (Written on Interview Street)

20 MCQ questions consisting of Data Structure, Algorithms, Operating Systems, Probability, Combinatorics and Quantitative Analysis.

Suggestion: Always code your solution on the editor provided on the website. It takes screenshots of the page so if you copy a large chunk of data even from your notepad that\xe2\x80\x99s considered as cheating.

#### Coding Problems :

1. [A string consists of parentheses and letters. Write a program to validate all the parentheses. Ignore the letters.](#)

eg. ((alf)ls) \xe2\x80\x93 valid  
)dkk() \xe2\x80\x93 invalid

2. You are involved in a betting game whose rules are as follows :

a) if you win a round, the bet amount will be added to your sum and next bet amount will be \$1;  
b) if you lose a round, the bet amount will be reduced from your total sum and next bet will be twice the previous.

c) game ends when all the rounds are complete or you dont have sufficient sum.

Initially, you are given with a string of the form \xe2\x80\x9cWLWWL\xe2\x80\x9d where W indicates a win and L indicates a loss and initial sum. Initial bet amount will be \$1.

Function prototypes and main was given for both questions.

### Round 2 : (Face to Face)

The interview started off with a light discussion about myself, achievements. Then he asked me about my project and the difficulties faced. Then we moved on to coding problems.

Q1: [You are given an array in which you\xe2\x80\x99ve to find a contiguous subarray such that the sum of elements in it is equal to zero.](#) (I coded using hashtable in java)

Q2: [Given a binary tree. Find out if it is a binary search tree or not.](#)

### Round 3: (Face to Face)

Q1: You are given a generic tree. Design a structure for it. Now for every node of the tree make the leftmost child of the node as a duplicate of the node itself and return the root of the tree.

Q2: He: Tell me the time complexity of 8-queen problem.

Me: (I did not exactly remember the complexity so I coded)

#### Round 4: (Face to Face)

He asked me variety of theory questions, I was stumped as I did not know many things. He asked me about ACID properties, oops concepts, SQL etc. out of which I could answer only a few. Then we switched over to coding.

Q1: He: You are given various time intervals and you have to merge the overlapping ones.

Me: I had already coded it in the Code Ninja questions on the amazon\xe2\x80\x99s website, so he just asked me the approach to the question.

Q2: [You are given a binary tree. Tell me if it is height balanced or not.](#)

#### Round 5: (Telephonic)

The interview started with if I had any questions, and then proceeded with the projects I\xe2\x80\x99ve done.

Q1: [You are given a file with many words. You are given a word as an input and you have to find every anagram of that word in the file.](#)

Q2: [Given two words, tell if they are anagrams or not.](#) Extend your solution for unicode as well.

Finally after a long wait of almost 8 hours the result came and I was hired!! \xf0\x9f\x99\x82\xf0\x9f\x99\x82

I would like to thank geeksforgeeks for all the pain they take in compiling every article so that people may understand every concept clearly.

Many many congratulations to the author. If you like GeeksforGeeks and would like to contribute, you can also write an article and mail your article to contribute@geeksforgeeks.org. See your article appearing on the GeeksforGeeks main page and help other Geeks.

[All Practice Problems for Amazon !](#)

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# Amazon Interview | Set 48 (On-campus for SDE-1)

- Last Updated : \n17 Jun, 2019

Recently, I have been through the interview experience of Amazon India and I would like to share my experience with everyone.

Position: SDE- 1

No. of Interviews: 1 Written + 4 PI

## Day 1:

### Round 1 : (Written)

20 MCQ questions consisting of Data Structure, Algorithms, Operating Systems, Probability, Combinatorics and Quantitative Analysis.

### Coding Problems :

1. [A string consists of parentheses and letters. Write a program to validate all the parentheses.](#)

Ignore the letters. eg. ((alf)ls) \xe2\x80\x93 valid

)(dkk()) \xe2\x80\x93 invalid

2. You are involved in a betting game whose rules are as follows :

a) if you win a round, the bet amount will be added to your sum and next bet amount will be \$1;  
 b) if you lose a round, the bet amount will be reduced from your total sum and next bet will be twice the previous.  
 c) game ends when all the rounds are complete or you dont have sufficient sum.

Initially, you are given with a string of the form \xe2\x80\x99cWLWWL\xe2\x80\x9d where W indicates a win and L indicates a loss and initial sum. Initial bet amount will be \$1.

Function prototypes and main was given for both questions.

### Round 2 : (Face to Face)

Some discussion on my projects, and then a couple of questions.

1. [An array of integers is given, find all the ranges present in the array.](#)

eg. 1 6 4 2 3 \xe2\x80\x93 ranges will be {1-4} and {6}.

I used sorting to solve this problem, so some follow up questions about which sorting technique i would prefer here.

What is the difference between merge sort and quick sort and when quick sort is preferred over merge sort, etc.

2. Two strings are given. One of them is the initial string and other string contains characters as per their priority. Sort the initial string as per the given second string. characters in initial string may or may not be present in the second string. If not present, sort them in lexicographical order at the end of output.

eg. String1 \xe2\x80\x93 ddloyc, String2 \xe2\x80\x93 oddlcy

Output \xe2\x80\x93 oddlcy

Again, some discussion over various approaches to solve this problem.

### Round 3 : (Face to Face)

Discussions over my projects.

1. (Reservoir sampling problem) <https://www.geeksforgeeks.org/reservoir-sampling/>

2. Generate all valid permutations of n pair of parenthesis. <https://www.geeksforgeeks.org/print-all->

[combinations-of-balanced-parentheses/](#)

3. Given a bst, update the value of every node with sum of value of all nodes greater than and equal to the value of current node.

Counter Question : I had used global variable for this purpose, so he asked me to solve it without any global or static variable.

4. [Inorder Successor of a node in bst.](#)

5. Given a list and a number k, invert first k elements and leave next k elements. Repeat this throughout the list.

#### Round 4 : (Face to Face)

1. N number of jars are kept in a linear fashion. Each jar contains a color whose value ranges from 0-99. Now you can mix any two adjacent jars having colors  $\text{a}$  and  $\text{b}$  (both integers), and it will produce a new color of the value  $(a+b) \bmod 100$  and will also produce smoke with value  $(a*b)$ . Mix all the jars in a way such that in the end only one jar remains and total smoke produced is minimum.

#### Day 2 :

#### Round 4 : (Telephonic with someone very senior)

He said that i must have been through many coding questions already, so he will start with the basics.

1. What is the difference between C and C++ ?

2. Which one will you prefer, when and why?

3. What is the difference between C++ and JAVA.

4. Which is better, C++ or JAVA. Support your answer.

5. Give one use case where C/C++ can use pointers to solve it, but it can't be done in Java.

6. Again, some discussion over my projects. Which project i liked most and why? What problems did i face during that project and how i handled them.

7. [Given a stream of 0s and 1s in which 0s come first and then 1s, find the first occurrence of 1.](#)

8. Design a data structure for phone-book of mobile phones. Implement it and discuss about its benefits and limitations.

In the evening they announced the result and i was hired!!!

Suggestions :- Write a neat code with indentations. It's a good idea to mention all the test cases(in case of an algorithmic problem) and all the use cases(if needed to design a data structure) beforehand. And, don't just respond to the questions of the interviewer, try to interact with them.

This article is compiled by Kumar Vivek Ranjan. Many congratulations to the author. If you like GeeksforGeeks and would like to contribute, you can also write an article and mail your article to contribute@geeksforgeeks.org. See your article appearing on the GeeksforGeeks main page and help other Geeks.

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# Amazon Interview | Set 47 (Off-campus for SDE-1)

- Last Updated : \n17 Jun, 2019

## Round 1: Written

20 MCQs and 2 coding questions

(1) [Mirror a tree.](#)

(2) [Find if an array has pair of elements with sum k.](#)

## Round 2: Telephonic Interview

(1) Given a number, find the next minimal greater number with same number of set bits(Approach+code)

(2) [Given a linked list with next and arbit pointer. Clone the list](#)(Approach + code)

(3) AVL Tree(Approach)

## Round 3: Telephonic Interview

(1) Given a number which denotes number of pair of parenthesis(only one type of parenthesis). Print all the valid permutation of those parenthesis(Approach + code).

(2) [Connecting all nodes at the same in Binary Tree](#)(Approach + code )

## Round 4: F2F(manager)

Discussion on all projects I have done.

(1) [Convert BT to DLL](#)(Approach + code)

(2) How to find if nodes in LL are odd or even(Approach )

(3) How to [detect loop in LL](#)(Approach)

(4) Segment Tree(Approach + code)

## Round 5: F2F(Two interviewers)

This one was bar raiser I guess

(1) [Convert a BST in such a way that every node contain sum of it and every greater element than it](#)(Approach + code)

(2) Garbage collector(Approach)

(3) [Finding median in array](#)(Approach)

(4) [Finding k closest elements to an element in an array](#)(Approach)

(5) [Deleting a node from LL provided the tail nodes points to mid element. After deletion property should be maintained](#)(Approach)

## Round 6: F2F(Senior guy)

A long discussion on projects.

(1) Circular Buffer array problem(Approach + code)

(2) [BT is BST or not](#)(Approach + code)

### Round 7: F2F (Two interviewers)

(1) [Given coins of 1,2 and 5 and given a number N. Find in how many ways you can make the change](#)(Approach + code)

(2) Swapping alternate nodes in LL(Approach + code)

(3) Swapping k nodes in LL(Approach)

### Round 8: F2F(Again with manager)

Discussion on projects. Every positive , negative point he discussed on each projects

Now All HR type questions

(1) How will you handle conflict with teammate.

(2) How will you handle conflict with manager.

(3) Your teammate is not sharing required information with you. What will you do?

(4) If you are given 10 requirements and you don't have to fulfill each and every requirement what will you do?

(5) Given some languages which one you prefer and why?

(6) Given some tasks with one you prefer?

(7) If you are about to meet deadline and one of your teammates need some help.Would you cross deadline to help him?

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# Amazon Interview | Set 46 (On-campus for Internship)

- Difficulty Level :\n[Medium](#)
- Last Updated :\n17 Jun, 2019

## Written:

20 MCQ on basics of C, OS, Networking + 2 Coding.

- 1) [Left view of Binary Tree.](#)
- 2) [Rotate a matrix by 90 degree.](#)

## Interview (Round-1)

1. You have to find p,q of matrix  $p^*q$  such that it fill n elements(n given) Such that
  - a) matrix should be nearest to a square matrix and
  - b)  $0 \leq ((p^*q)-n) \leq 2$ . [Zig-zag traversal of tree](#)
3. You are given an array of length k and it have numbers from 0 to n (where  $k >> n$ ) in  $O(n)$  time and no extra space find occurrences of each element in  $O(n)$  time only

## Round-2

1. You are given row and column wise sorted matrix you have to find and delete an element such that it is still sorted in  $O(n)$  time.
2. [Find if sum of any 2 elements in an array equal to k in O\(n\) time using extra space.](#)
3. [In a BST to every element add sum of elements greater than it.](#)

Result \xe2\x80\x93 Got Selected from Campus Internship Interviews.

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# Amazon Interview | Set 45 (For Internship)

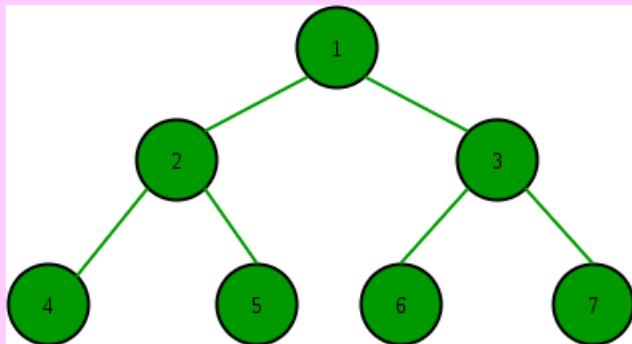
- Difficulty Level : \n[Medium](#)
- Last Updated : \n17 Jun, 2019

Hello everyone! Recently I sat for an on-campus internship recruiting process of Amazon. The process consisted of a written round followed by two face to face interviews.

## Written Round:

This round consisted of 20 MCQs and two coding questions. We had to complete the test in 90 minutes. The MCQs mainly focused on C and general aptitude. They were easy to solve. The students having faster question solving skills were in advantage! The two coding questions were:

- [We were given the edges of the graph and we had to find if a cycle exist in the graph or not.](#)
- [Given a binary tree, we had to print all the nodes in the Zigzag order.](#)



For the given tree, we should print: 1324567

A total of 18 students were selected for the next round from around 150+ students.

## Face to Face Interview:

The interviewer started with the question about what projects I have done. I explained the two recent projects which I did. Then he started asking technical questions. He asked about:

- Given a sorted array which has been rotated, we have to find the point of rotation.  
I did it in  $O(n)$ . Then he asked me to write a more optimized code. I then did it in  $O(\log n)$  using modified binary search.
- About heaps, maps.
- About Job Scheduling.
- Scaling of websites as one of project was an online portal.

Then he asked me if I have any questions. I asked about how to improve. He said that I should blue practice the problems more and more. I should work more on algorithms rather than solving the problems relating to the limitations of any language. He even emphasized on the fact that companies like Amazon are looking for the students having good knowledge of algorithms. He even mentioned that GeeksforGeeks is a perfect site for preparing for companies like Amazon.

I was not lucky enough to be selected in the 2nd round of the interview but it was a motivating experience. \xf0\x9f\x99\x82

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## Amazon Interview | Set 44 (For Internship)

- Difficulty Level :\n[Medium](#)
- Last Updated :\n17 Jun, 2019

The written round was relatively easy. It contained 20 multiple choice questions on basic c, algorithms and finite automata. Some questions from OS and networking were there too but were easy. Coding questions were:

1. [Find the nodes of the tree as seen from the left view of the binary tree.](#)
2. [Rotate the given matrix by 90 degrees i.e. the first row becomes the last column and second row becomes the second last column and so on.](#)

### Interview round 1:

Two questions were asked. One puzzle and the other coding question.

1. Given n coins for two players playing a game. Each player picks coins from the given n coins in such a way that he can pick 1 to 5 coins in one turn and the game continues for both the players. The player who picks the last coin loses the game. You have to tell that for given n coins who loses the game?
2. [Given a number n, find the number just greater than n using same digits as that of n.](#)

### Interview round 2:

1. Given in facebook find an efficient way to find the mutual friends between you and one of your given friends.  
Hint: hashing, dictionary data structure implementation
2. [For two very long numbers given, find the product of these numbers in an efficient way.](#)  
Hint: using binary multiplication effectively.

Finally I got internship offer from them\xe2\x80\x9a

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# Amazon Interview | Set 43 (On-Campus)

- Last Updated : \n17 Jun, 2019

Questions asked in Amazon Interview.

## Round 2: Written

1. Find the SQRT of a number.
2. Simulate [Reversed level order traversal](#).

## Three F2Fs.

### F2F 1:

1. Given a binary tree, no two adjacent nodes have same color, but all leaves should be in same color. You can fill only with two colors. Write a function to find whether a given tree can be colored using above scenario.
2. Given a binary tree, change the right pointer of every leaf node to the next leaf node (right to it but may be on different level).
3. Given a class with n people, where each person plays a game with all other people. Results are with you. You have to arrange them in a queue with a condition that,  $a[i]$  should have won  $a[i-1]$ , for all  $i$ , you don't need to care about  $a[i-2]$ . ( $a[i]$  may win or lose  $a[i-2]$ ).

### F2F 2:

1. Write prime numbers from 1 to 100000.
2. Another simple question from tree. can't remember
3. Question from probability. Given c containers, r red balls, g green balls. Give a condition that if a guy randomly picks a ball from any of the containers, it should be red.(more probable)

### F2F 3:

1. [Reverse a linked list](#) iteratively, recursively.(Ice breaking question :P)
2. Given a matrix with 1s and 0s, you have to construct a matrix such that  $a[i][j]=1$ , if only every element in ith row and jth column is 1, otherwise 0. You have to use constant space and  $O(mn)$  time complexity.
3. Maze solve problem. Given a matrix with 1s and 0s, 0 represents free path, 1 represents blocked area, and you can move in any of the 8 directions. Find the path from source to destination and print it. Then he told me that he can change destination at run time. And asked me to do for that.

This article is contributed by Karthick Raja R. If you like GeeksforGeeks and would like to contribute, you can also write an article and mail your article to contribute@geeksforgeeks.org. See your article appearing on the GeeksforGeeks main page and help other Geeks.

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# Amazon Interview | Set 42 (On-Campus)

- Last Updated : \n17 Jun, 2019

Following questions were asked during interview.

- Given an array, find the longest increasing subsequence of size 3 with max product, all numbers are positive.
- Given 3 linked lists representing 3 numbers, add them and return the result as another list (take care that your method handles overflows).
- [Find the length of longest path in a binary tree\(diameter\).](#) I gave a O (nlogn) solution. He wanted O (n) solution. did that
- [You are standing at 0 0 and you have to get to i, j. Find the number of ways. Did that with recursion then with DP. Then he extended the question saying some edges are not traversible. Then edges have weights, find min weight path.](#)
- Delete all leaf nodes in a tree.
- [Find the peak in an array, array is first increasing then decreasing. Peak is the max element.](#)
- Given a binary tree. A complete path is defined as any path from root to leaf. A k heavy path is a complete path with sum of node values on that path > k node values can be -ve too. Delete all nodes in a tree which do not lie on any k heavy path.
- [Given a rotated sorted array, find the minimum element.](#)
- Infinite stream of bits is coming, after every bit comes, you have to determine whether the number formed with bits till now is divisible by 3 or not, you cannot form the number as it will overflow at some stage.
- Imagine a binary tree lying on the floor with nodes as balls and edges as threads, you are given a pointer to a node. When you pick the tree from that node up what will be the structure of the tree. You have gravity changing the structure of the tree.
- An array is given representing the colors of n jars, colors have values 0-99. When two jars are mixed the resulting volume is same as volume of one jar. Smoke is  $\text{color1} * \text{color2} \times 100 / (100 + \text{color1} + \text{color2})$  and resulting color is  $(\text{color1} + \text{color2}) \% 100$ . Keep on mixing colors such that you end up with just one jar with minimum smoke.
- A question on paging, processes also.

Selected \xe2\x80\x99 thanks to geeksforgeeks team.

\xc2\xaa

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## Amazon Interview | Set 41 (On 17 Jun, 2019)

- Difficulty Level : [Medium](#)
- Last Updated : 17 Jun, 2019

The first round had 20 multiple choice questions covering C programming, Data structures, Algorithms, Maths and puzzles, and a question from Networking and Operating systems. The duration of the test was of 90 minutes and marking scheme was +1, -0.25

It also had 2 coding questions.

i) [Given an array of numbers, find the minimum value of the absolute difference that can be obtained from any pair of numbers from the array.](#)

ii) [Find the first non-repeated character in a string.](#) If there are no such chars then return -1.

There were 4 rounds of technical interview, no HR round. Following are the major questions asked to me in the tech rounds. I had to first suggest the logic, discuss that with the interviewer and then he asked me to code it up.

### Round 1

1) [Check if a given tree is a Binary Search Tree or not.](#) Simple enough question.

2) You are given an array whose each element represents the height of the tower. The width of every tower is 1. It starts raining. How much water is collected between the towers?

Eg. [1,5,3,7,2] then answer is 2 units between towers 5 and 7.

Looks easy, but if you don't observe well, then you might end up with the wrong logic like I did at first. Also there are lots of possible corner cases. Luckily I could identify them all.

3) [Given an array and a fixed window size X, you have to find out the minimum value from every window. De-queue was not allowed.](#) So I had to do it using 2 stacks.

### Round 2

1) Some DBMS questions like how is database stored in memory, how an image stored in database and a few more questions from it.

2) What is a [height balanced tree](#). Give an O(n) solution to balance it. Then he changed the definition of a balanced tree as- a tree is balanced if every node in a particular level should have the same number of descendants (and not only direct children). And every node can have any number of children. I had to design the class and then write the code for it.

3) [Given an array of integers, find an index such that if you split the array into two parts the absolute value of the difference between the sum of elements in both parts had to be minimum.](#) After giving him the logic, he changed it to split it into 3 parts such that sum of elements in all of them are equal. I had to code this one.

### Round 3

1) There is a sentence that your friend knows, but while giving it to you, he lost all the spaces. You have to dictionary with you. How would you reconstruct the original sentence using it.

2) How to delete a particular node from a circular Linked list.

3) You are given an encrypted file. You don't know the key used to encrypt it. Like A might be mapped to B, B to some D and D to some other F. But you don't know this encryption scheme. You have the dictionary with you. How will you decrypt the file? I suggested lots

of solution like exhaustive searching, then using some variants to minimize the complexity. He gave me just a one word hint- histogram. So I gave him a logic that counting the frequency of every letter used in the dictionary. Then replace the most used letter in the file with the most used in the dictionary. And then compare words with the dictionary. In case of a mismatch back \xe2\x80\x93 track and use the second largest and so on. I also discussed with him that it could also have high complexity in worst case, but he moved on.

4) What is indexing in DBMS. How will you implement an index.

#### Round 4 \xe2\x80\x93

- 1) A complete path in a tree is from a root to a leaf. A k-heavy path is a complete path whose sum of elements is greater than k. Write a code to delete all nodes which are not in any of the k-heavy paths.
- 2) You have an array whose elements firstly strictly increase and then strictly decrease. You have to find the point of change.

All the questions in all the rounds required the minimum possible complexity possible (both time and space). And I had to write the code of my final solution as well. Finally the results came and I was selected by them.

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## Amazon Interview | Set 40 (On-Campus Round 1)

- Difficulty Level :[Easy](#)
- Last Updated :[31 May, 2021](#)

20 Objective type questions (Technical: OS, Java, Networking) and 2 programs. Time given was 90 minutes.

1) Longest Remaining Time Scheduling

2) Threads

3) subnetmask classB 64 departments

4) Match the following

SMTP

BGP

TCP

PPP

5) On recursion, value of f(513,2)

```
if (n<0) \n    return 0; \n else \n    return ( n%10 + f(n/10, 2) )
```

6) Complexity?

```
f(i) = 2*f(i+1) + 3*f(i+2) \nFor (int i=0; i < n; i++) \n    F[i] = 2*f[i+1]
```

7) Frog steps either 1, 2 or 3 steps to go to top. In how many ways it reaches the top?

Based on recursion, options

a)  $f(i) = f(i+1)+f(i+2)+f(i+3)+1$

b)  $f(i) = f(i-1)+f(i-2)+f(i-3)+1$

c)  $f(i) = f(i+1)+f(i+2)+f(i+3)$

d)  $f(i) = f(i-1)+f(i-2)+f(i-3)$

8) Based on java 2 questions, one from Exceptions

9) Preorder is given, we had to find out the postorder

10) Memory management, pa=32bit, la=36bit , frame size=2^12, first page entry, second page entry

11) This question is from GATE CS previous question papers

```
for (int i=0; i < n; i++) \n    Fork(); \n    No of child process?
```

Programs:

1) [Print left view of binary tree](#)

2) Sum of 3 linked list

```
Digit.. 123----1->2->3-----linkedlist1\n          234---2->3->4-----linkedlist2\n          34567---3->
```

Sum(linkedlist1, linkedlist2, linkedlist3)

We had to print the linkedlist form of the digit.

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# [TopTalent.in] Interview with Pradeep Verma from NIT Trichy who talks about his internship at Amazon

- Last Updated : \n28 Apr, 2017



Pradeep Verma calls himself just one of those Indian kids but Amazon usually doesn't recruit every other kid out there. Pradeep did his internship at Amazon last summer and not surprisingly got a full time offer from the e-commerce giant thanks to his excellent performance. In an interview with [TopTalent.in](#) he talks about his internship experience and how it benefited him.

You can also download his [resume](#) to see his credentials and understand what made him standout.

## 1. Can you briefly describe your background?

I hail from Visakhapatnam, a city in Andhra Pradesh. I ended up with an AIR 6025 in IIT and an AIR 1745 in AIEEE. Now, I am pursuing my B Tech final year in Computer Science and Engineering at NIT Trichy. My dad works for the Government and my mom is a homemaker. Prior to engineering, I was not any different from other Indian kids. As I entered NIT, I quickly grabbed some interest into Computers and worked my way through to get into a Computer Club at college (called DELTA). Apart from this, I am into many other teams at college conducting and organizing events/fests. I am the Marketing Chairman for NIT Trichy's International Cultural Festival, Festember. I pursued research on Parallel Algorithms Task Assignment for some time and I am expecting to publish a paper on this topic very soon.

## 2. Can you describe the complete hiring process? Did your internship help you grab this offer?

Amazon came to our campus to hire interns. The Selection Process consisted of a written test, programming test followed by two interviews. We were tested on Data Structures, Algorithms and OOP Concepts during the interviews. I did an intern at Amazon in the summer of 2013 post which I have been offered a Pre-Placement Offer from them.

## 3. What project did you work on during your internship?

Amazon, as all of us know is a giant in e-commerce. Something very astonishing about Amazon is the scale at which they function. At some points the servers at Amazon need to handle something close to 10,000 orders per minute. So in this company, speed and complexity handling is a great challenge considering the scale at which they function.

My project was along the same lines I had to bring down the running time of a process [confidential and cannot be disclosed] from 2 to 4 hours to something close to 15 minutes. I used AWS and Java Technologies to achieve the same.

## 4. What were the tricky questions you encountered? How did you tackle them?

I was questioned on Data Structures, Algorithms, OOPs and other basic concepts. I still remember one question in which they asked me to choose a favorite game and give an OOP model for the same. This is something real and application of what we read in books. This involved a lot of thinking and I liked the way they asked it. Apart during the intern I required concepts from Operating System, Threads, Basic Algos and DBMS to complete my project.

## 5. How much preparation did you put in to get this opportunity?

I should say I dint put any focused preparation for the above. I went with the flow, grabbed all opportunities to learn and innovate. I feel what companies look for is an overall well developed person. So I guess my involvement into a lot of clubs and activities, decent tech knowledge and my projects got me this opportunity.

## 6. What is your advice to other aspirants looking for similar opportunity?

Technically, get to know all basics of Algos, DS, OS, DBMS, Networks etc. I would recommend interview designed books like Cracking the Coding Interview by Gayle Lakmann and Data Structures and Algorithms by Narasimha Karumanchi. Apart one great opinion I have is, it is just not enough to be a good coder, develop in all aspects. Have a decent pointer, grab all opportunities (you have a lot of them in IITs and NITs), get social, learn some tech, do some cool projects and any company would be more than happy to have you with them.

## 7. What should one keep in mind while preparing a resume?

A resume is one page reflection of YOU. It is important to customize a resume for companies. For eg Research projects would interest Microsoft R&D profile and Coding projects would attract Facebook or Google. And one thing I find in most resumes is people put a lot of unnecessary stuff. No one out there really bothers if you had won some Bronze medal in a quiz when you were in 6th Class at School Level. Get to real stuff. Put yourself into a shoe of a recruiter and think what you would look for in a resume. And it is very important to proof read your resume. Having spelling mistakes on a resume could be a blunder.

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## Amazon Interview | Set 39 (SDE)

- Difficulty Level :[Expert](#)
- Last Updated :[04 Oct, 2019](#)

I recently attended the walk-in process for Amazon Off campus recruitment drive. This was for SDE position at Chennai. I would like to share my interview experience with Geeks for Geeks.

### Written Round :

a) [Given a linked list and 2 integers M and N.. Keep M nodes and delete N nodes repetitively till the end of linkedlist.](#)

b) [Given a BST , replace a node value with the sum of all the elements larger than the current node.](#)

\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0 could solve it with Reverse Inorder traversal and an int pointer to keep track of the sum.

c) [Given a BST and a value , check if the path sum from root to leaf equals the given value.](#)

### 1st F2F round:

a) [Multiply two linked lists represented by numbers. Only one linked list must be used to do all additions and store the result i.e., intermediate additions should not be done with extra linked lists and finally computing the result.](#)

b) [Given a BT check if there is a BST in it. If it exists print the largest BST in the BT.](#)

c) [Given a large file with huge number of words group the anagrams of a word](#)

\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0 hai how are you. iahohw done woh.

o/p:

hai ->iah  
how ->woh ->ohw  
done  
are

### 2nd F2F round:

a) [Given a linked list , print the nth last node. He asked me to give the optimised solution for it.](#)

solved using slow pointer.

b) [Find the LCA in Binary Tree](#)

\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0 He asked me to optimise the code with bottom up approach and gave lots of boundary conditions

c) Given a zigzag traversal construct a tree from it. Full working code was asked.

\r\n eg. 1 3 2 4 5 6 7 9 8\r\n 2 3\r\n 4 5 6 7\r\n \r\n

\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0 Solved it with double ended queue.

### 3rd F2F round :

a) [Given a chess board of finite length, start position of a knight , an end position.](#)

\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0 ->find whether the end position is reachable by the knight.

\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0 -> Number of minimum hops required to reach that position.

\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0 I came up with a BFS solution instantly . He posed several conditions in the same question as I have seen the question already.

b) He changed the question to infinite length chess board and if given two knights in a chess board .find minimum hops required for them meet.

\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0 ->gave a lot of space and time constraints.

\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0 ->asked me to write the complete code without STL.

c) if we encode A-1 , B-2 , C-3 , I send a word CAMP encoded as 311316. It can be decoded as 3 11 3 16 (CKCP), 3 1 13 16(CAACP) , 3 1 13 16 , (CAACAF) . given a input encoded string find the no. ways it can be decoded. (ACODE prob. in Spoj)

\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0 311316 \xe2\x80\x99 4

\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0 ->Could n\xe2\x80\x99t come up with DP solution at first so gave a solution with recursion tree. He asked me to optimise to avoid unnecessary computations.. Finally Solved it using DP.

### 4th F2F round ( Bar Raiser Round):

The Round started with the projects I have done so far. Few basic questions in cloud computing. I have used Amazon Web Service (AWS) in one of my projects.

\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0 a) Lots of questions on AWS . Why we used it when there are so many alternatives.

\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0 b) When i convinced him with scalability issues, he posed questions on how AWS handle load Balancing and scalability issues .

\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0 c) Obviously questions on Elastic Map Reduce and Elastic Block Storage. Questions piled up until I could explain every nook and corner in that project.

\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0 d) Strengths and Weakness.

\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0 e) Why Amazon and why do I leave my previous company within 2 months.

\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0 f) [Given a linked list with random pointers , clone the linked list.](#)

\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0 Gave few solutions and he asked me to clone without manipulating the original linked list but with extra space. Came up with little tweaks using HashMap

Map < node \* , node \*> key is the node and value is the random ptr node.

\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0 g) Find the ceil and floor of a value in a given BST without extra space.

\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0 if a BST contains 1 3 6 7 9 12

\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0 \xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0 ->if the given value is 8 floor is 7 and ceil is 9.

\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0 \xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0 ->if the given value is 9 both floor and ceil is 9.

P.S. Be cautious in explaining your projects.

### 5th F2F round: (Hiring Manager Round):

Few questions on projects and advantages of AWS.

\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0 a) Asked me about the different inter process communication methods.

\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0 b) Which method is faster and why. Then he asked me to explain about shared memory

\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0 c) Asked to write the code to implement LRU cache.

\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0 d) Then code for malloc implementation given an array.

\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0 e) He asked me to write a thread safe code for the given scenario.

\xc2\x0\xc2\x0\xc2\x0\xc2\x0\xc2\x0 given two writer threads and two reader threads . give a mechanism to handle the writer and reader threads. The writer thread writes a value 1 2 3 4 in a queue or array and reader thread reads it and print the output as 1 , 2 ,3 ,4 \xe2\x80\xa6.In the same order as given and only once\xe2\x80\xa6

\xc2\x0\xc2\x0\xc2\x0\xc2\x0\xc2\x0 ->i handled it with a binary semaphore and a single queue for both reader and writer..

\xc2\x0\xc2\x0\xc2\x0\xc2\x0 f) conditions for a deadlock and he asked me to associate with the real life scenario.

\xc2\x0\xc2\x0\xc2\x0\xc2\x0\xc2\x0 mutual exclusion and all the cases.

\xc2\x0\xc2\x0\xc2\x0\xc2\x0\xc2\x0 g) Different types of scheduling and what type of scheduler does linux have and why.

\xc2\x0\xc2\x0\xc2\x0\xc2\x0\xc2\x0 h) does linux have preemptive scheduling and few questions on virtual memory.

\xc2\x0\xc2\x0\xc2\x0\xc2\x0\xc2\x0 He just analysed my approach towards the problem and checked my basic understanding in OS concepts.

Finally got offer from Amazon after two days. I owe a great thanks to GeeksForGeeks. It helped me a lot to improve my data structure and problem solving skills. Hope this will help you. All the Best .

If you like GeeksforGeeks and would like to contribute, you can also write an article and mail your article to contribute@geeksforgeeks.org. See your article appearing on the GeeksforGeeks main page and help other Geeks.

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## Amazon Interview | Set 38 (SDE-I)

- Difficulty Level :[Hard](#)
- Last Updated :[27 May, 2021](#)

### 1) (Telephonic round 1)

a. [Print a matrix in spiral order](#) (Code)

Soln: Solved it using recursion. Each recursive call was supposed to print boundary elements. On every recursive call, shifted the origin point and passed the new size of the matrix.

b. [Given a pair of brace {}, Validate it.](#) (Code)

Soln: using two variables (i.e open\_count and close\_count) and proceed further.

c. What if we have multiple types of braces? (Approach)

Soln: Using stack.

### 2) (Telephonic round 2)

a. Given the list of songs. How would you shuffle it? (Code)

Soln: Gave various approaches from naive to optimal. The optimal one was similar to the shuffling of the array of ints.

b. [Give list of words. Print all anagrams together.](#) (Code)

Soln: Used Hashmap with key as  $\text{str[i]}$  and value as List which is anagrams.

### 3) 3: In-house 1

There are various varieties of clothes (say shirt). Varieties are based on parameters like pattern, size, color, etc.

a. What will be your input format so that it can store all values of all parameters?

List<List<String>>. Each List<String> denotes values for a particular parameter

b. Design a class for a shirt for the same requirement.

c. You have to return all different types of shirts that can be formed based on various combinations of input parameters. (Code)

d. Assuming you have all types of shirts available. Now there are various queries like:

i. Show all types of shirts having color  $\text{x}$

ii. Show all types of shirts having size  $\text{x}$  and pattern  $\text{y}$  etc. etc.

So how will you store I/P so that this requirement can be fulfilled efficiently?

### 4) In-house 2

a. Given a Binary Tree. Assuming each node denotes some x,y coordinate. root node denotes (0,0). Write a code to display the coordinate of all nodes.

case (i): Tree is complete and no node's x-coordinate is overlapping. (i.e all nodes will expand along the x-axis so that no node overlaps).

(Code)

○ (0, 0) / \ \\ ○ (-1, -1) ○ (1, -1) / \\ / \\

Here we can see that many nodes are overlapping over x-coordinate.

case (ii): Tree is incomplete and no node's x-coordinate is overlapping. (Approach)

case (iii): Tree is incomplete and the node's x-coordinate can overlap. (Approach)

b. Design a DS to perform

Insert

Search

Delete

get Random

All in O(1).

Soln: Focus on Delete and get\_Random. On further analysis, the only get\_Random was required to be modified. Only a bit of tweak will serve the purpose.

### 5) In-house 3

a. Given the array of ints. Assuming total no. of elements is even. We need to tell whether this array can be grouped in sets of pairs such that the sum of each pair is divisible by K.

eg: 0,2,4,8,12,20,18,4 and k=4

so (0,8), (2,18), (4,20), (4,12) is one such set in which sum of each pair is divisible by k. (Code)

b. There is a vertical rod. Discs of various radii are inserted in it. When we will try to take out any disc then 1st all the discs above it has to be taken out. Taking out a disc and putting it back is counted as one step.

Considering this, what will be the minimum no of steps in which these discs of the various radius can be stored in sorted order in the rod.

Only a minimum no of steps was required. (Approach)

c. Given array of ints. find  $\text{ar[i]}, \text{ar[j]}$  such that  $j > i$  and  $\text{ar[j]} - \text{ar[i]}$  is maximum. Famous problem. (Code)

### 6) (Semi-Technical- Hiring Manager)

a. Normal HR questions. Why Amazon over your previous company, some areas where you want to improve, define dream job, and similar other questions as per the discussions.

As per feedback: my answer for Why Amazon over prev company was not clear here.

b. Given two arrays of ints of size m and m+n in sorted order. merge it inplace. Famous problem. (Code)

c. Given string.

Ques: [Find the char occurring max no of times.](#)

Soln: Simple one. Take an auxiliary array of size 256 and maintain the frequency of each char. Scan auxiliary array and get the required char. O(k+n) where k=256 here.

Counter Ques: Why O(k+n)? Why can't it be O(n) only?

Soln: At the time of maintaining freq of each, compared to get max freq char also. No need to travel aux array again. O(n)

Counter Ques: What if memory size is only 100 bytes?

Soln: Detailed one.

Counter Ques: Assuming updating freq of each char takes 1sec, so it will take N secs roughly. How can we improve it?

Soln: Use multi-threading for parallel programming.

Counter ques: Will there be any issue?

Soln: In case one acquires lock, the other one that needs lock will go in waiting. This adds extra time and so can take more than N secs.

Counter Ques: How to improve this?

Soln: Detailed one.\xc2\x9a0

And many more such counter questions.\xc2\x9a0

### 7) (Amazon Seattle. Semi HR. Analysis of thought process- BAR RAISER)\xc2\x9a0

a. Again the same question. Why Amazon over the previous company?\xc2\x9a0

This time I was prepared \xf0\x9f\x99\x82\xc2\x9a0

b. One +ve point and one -ve point from the amazon India site.\xc2\x9a0

c. Was prepared for this and already did some pre-analysis on the site.\xc2\x9a0

Many more such HR questions.\xc2\x9a0

d. Analysis of thought process:\xc2\x9a0

Assuming a new building is going to be constructed for IT official purpose. 75 floors. You are builder. This building will be on lease for diff companies.\xc2\x9a0

i. How many lifts you will add in that building?\xc2\x9a0

ii. At which floor each lift will stop?\xc2\x9a0

Note: At each step, I had to identify the required data after analysis and then only data for the same was provided.\xc2\x9a0

Soln (i): (As it is totally based on thought process, so counter-question from your side is good point)\xc2\x9a0

1. No of Lifts are determined by many factors. Major factors are height of lift and no of persons working in that building.\xc2\x9a0

2. I was knowing height of building. To calculate no of persons, I asked size of each floor. It was 100 sq m each floor.\xc2\x9a0

3. Each floor will have cubicles and other rooms and passages. Assuming 70% of total area is used by cubicles.\xc2\x9a0

4. Each cubicle will have 4 persons. After calculation, it came to be 40 employees per floor. So 3000 employees in whole building.\xc2\x9a0

5. Next analysis was: In most of the IT companies, the in/out timing is flexible. Generally in time is b/w 9:00-11:00 and out is b/w 5:00-7:00.\xc2\x9a0

6. We have 2hrs of the window in which all employees will use the lift. So no of lifts will depend on this factor also.\xc2\x9a0

7. After calculation, it came out to be approx 9 lifts (which was a good no according to him).\xc2\x9a0

Soln (ii): Now the qusn is at which floor each lift will stop.\xc2\x9a0

8. AS we don\xe2\x80\x99t know how many companies will be there in this building at any time, so it is advisable to provide equal chance for employees on the basis of floor no. rather than on the basis of the company.\xc2\x9a0

9. Best way would be to minimize the no. of stops of each lift.\xc2\x9a0

10. This can be done by giving each lift equal no of floors on which it will stop.\xc2\x9a0

11. It can simply be calculated as  $75/9 = 9$  (round off).\xc2\x9a0

12. So 1st lift will have floor buttons b/w 1-9, 2nd will have b/w 10-18, and so on.\xc2\x9a0

13. This approach was best (according to him) for the current scenario.\xc2\x9a0

14. Remember that each floor should get an equal chance and we don\xe2\x80\x99t know how many companies will be there.\xc2\x9a0

Tips: Geeksforgeeks, Careercup, Cracking the coding Interview (Book) +++++.\xc2\x9a0

Finally got offer in few days. \xf0\x9f\x99\x82 Very satisfied.\xc2\x9a0

If you like GeeksforGeeks and would like to contribute, you can also write an article and mail your article to contribute@geeksforgeeks.org. See your article appearing on the GeeksforGeeks main page and help other Geeks.\xc2\x9a0

\xc2\x9a0

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## Amazon Interview | Set 37

- Last Updated : \n01 Jul, 2021

Interview Experience for placements at AMAZON.\xc2\x9a0

It consists of 1 online round (20 MCQ + 2 coding question) and 4 F2F interviews.\xc2\x9a0

### Online Round 1:\xc2\x9a0

20 MCQ 1 question each from OS, pigeon hole principle, probability, DBMS, networks, NP problem and other questions from C/C++ input output and logical question\xc2\x9a0

22 from batch out of 300 students were selected for F2F interviews\xc2\x9a0

### Interview Round 1:\xc2\x9a0

As they were short in time as it was 9 at night so they asked me single coding question.\xc2\x9a0

Que 1: Given an array of n numbers with repetition of numbers. You need to find the max length of continuous sub array with at max 3 unique elements.\xc2\x9a0

For eg\xc2\x9a0

array: 1 2 3 1 4 3 4 1 2\xc2\x9a0

ans: 6 (3 1 4 3 4 1)\xc2\x9a0

Solution: Time complexity O(n)\xc2\x9a0

Extra Space O(1)\xc2\x9a0

### Interview Round 2:\xc2\x9a0

They asked me 3 questions but I am not remembering the 2nd one. Sorry for that\xc2\x9a0

Que 1: You are given two binary trees. You need to tell that if one tree is rotated 90 degree and placed at bottom of that tree and each leaf nodes at max depth of two trees will meet each other or not.\xc2\x9a0

for eg:\xc2\x9a0

lets assume () as a node\xc2\x9a0

Tree 1\xc2\x9a0

(1) \n / \\\n (2) (3) \n \\ / \n (4,5) \nnode 4 and 5 are overlapping\nTree 2\n (1)

So it returns true as node 4, 5 of tree 1 is overlapping with node 4 of tree 2\xc2\x9a0

Firstly I was asked to give algorithm then when i gave he asked me to code it\xc2\x9a0

Solution: Time Complexity O(n+m) (where n and m are nodes in tree 1 and tree 2 respectively). Space Complexity O(n+m)\xc2\x9a0

### Que 3:\xc2\x9a0

Suppose u given normal deck of cards 4 suites and 13 cards of each suite in which one card is missing\xc2\x9a0

you are picking a card one at a time and sees that card and putting it aside\xc2\x9a0

Find the suite and number of missing card.\xc2\x9a0

Then he said change the number of suites to K (very very large you cant add till k)\xc2\x9a0

and N numbers (again very large numbers)\xc2\x9a0

### Interview Round 3:\xc2\x9a0

It was an easy round for me atleast but not for others\xc2\x9a0

Que 1: Find the palindrome of a given number without using extra space\xc2\x9a0

Que 2: 100 floors and 2 egg problem changed to 50 floors and 2 eggs\xc2\x9a0

Que 3: [You are given array of numbers which increasing first then decreasing. Find the greatest number.](#)\xc2\x9a0

eg: 1 2 3 4 5 4 3\xc2\x9a0

answer: 5\xc2\x9a0

Solution : Time Complexity O(logn)\xc2\x9a0

Space Complexity O(1)\xc2\x9a0

### Interview Round 4:\xc2\x9a0

He asked me about my myself apart from coding and as I said \xe2\x80\x9chacking\xe2\x80\x9d so we discussed about hacking a lot.\xc2\x9a0

He also asked me about my projects\xc2\x9a0

Then he gave me a puzzle:\xc2\x9a0

Assuming I have a chessboard (8X8)\xc2\x9a0

a knight is placed at (x,y) and he moves N hops\xc2\x9a0

Find the probability that he will be inside after N hops.\xc2\x9a0

On a condition that if a knight moves outside then he will remain outside he cant come inside.\xc2\x9a0

For eg. (x,y)=(0,0)\xc2\x9a0

n=2\xc2\x9a0

probability=(12/64)\xc2\x9a0

4th round was type of HR as he wants to know about myself and how I do different things.\xc2\x9a0

If I stuck in a position what will I do.\xc2\x9a0

If your boss says that you have to do X and you are not satisfied with this then what will you do and how will you approach.\xc2\x9a0

After that I waited for 3 hours and I got selected with 4 of my friends \xf0\x9f\x98\x80\x9c2\x9a0

Hope this will help, I try the possible way to support you.\xc2\x9a0

All the best for your placements \xf0\x9f\x98\x82\x9c2\x9a0

This article is compiled by anomaly404. Many Many congratulations to him. If you like GeeksforGeeks and would like to contribute, you can also write an article and mail your article to review-team@geeksforgeeks.org. See your article appearing on the GeeksforGeeks main page and help other Geeks\xc2\x9a0

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## Amazon Interview | Set 35

- Last Updated : \n17 Jun, 2019

On-campus, 1 MCQ round, 2 coding rounds, 4 face-to-face rounds.

### MCQ round(45 min)

\xe2\x80\x93 5 questions on mathematics, one was from probability, all easy 15 questions technical, from each-demand paging, dining-philosopher, humming codes, 3-4 C programs output, etc

### 1st Coding round\xe2\x80\x93 2 questions(45 min)

1. [Given an array, find minimum distance between two given integers in the arrays.](#) Note that the two given integers may be same.

2. Given three linked lists, each representing an integer, add them  
eg

3-7-0-8

2-1

5-4-2

ans\xe2\x80\x93 4-2-7-1

explanation-  $3708 + 21 + 542 = 4271$

### 2nd coding round(45 min)

1. [Given an array containing both positive and negative elements, arrange in such a manner \xe2\x80\x93 1 positive number, then 1 negative, then 1 positive and so on. If number of negative numbers are more, extra numbers should be kept in end and vice versa. Note the order of negative and positive elements should be same in the modified array and you are not allowed to use any extra space](#)

2. [Given a binary tree, replace each node value by sum of its children value.](#)

### Face to Face rounds\xe2\x80\x93

#### Round 1

1. [Level order traversal](#) and then [level order traversal in spiral](#) form. Only algo, no code

2. Given a dl representing the spiral level order traversal of a binary tree, convert it to a binary tree inplace. In Last level, nodes will be either to the right or left only. complete code in C

\r\nneg 1-2-3-4-5-6-7-8\r\nno/p-\r\nn 1\r\nn / \\ \r\nn 3 2\r\nn / \\ / \\\r\n

3. Glass pyramid problem. Measure amount of water in j\xe2\x80\x93th glass of i\xe2\x80\x93th row.(algo+code)

#### Round 2-

very few technical questions

1. [Given an array which is first increasing and then decreasing, how will you search an element?](#)(only algo)

2. Convert a n-byte integer from little endian to big endian.(code was required)

3. [Find k max elements from a large file.](#)(only algos)

#### Round 3

no technical questions at all

#### Round 4

After some personal questions, the interviewer asked some technical questions as well

1. Suppose we receive requests for a page, but we want to ensure that max no of request per sec is \xe2\x80\x98x\xe2\x80\x99. If there are more than x requests, what will you do?

We want a continuous flow. How will you do that?

2. Suppose in a system, some processes are already running. Now when an user will give new task(or process), he will give a list of processes his process is dependent upon. Some of those may be running, some may not be running right now. You have to ensure that there is no contention, i.e., If a process, Pj is dependent on process Pi,

Pj should not execute along with Pi. How will you ensure that? Complete algorithm with code was required. The interviewer went on complicating the problem. At last I used graph and 3 hashmaps to solve the problem. He was ok with it.

That\xe2\x80\x99s it. My last round completed and I was selected.

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# Amazon Interview | Set 34

- Difficulty Level : \n[Hard](#)
- Last Updated : \n17 Jun, 2019

First of all, a very very big thanks to whole team of geeks for geeks. It is because of them only that I was able to crack the interview process of amazon and get a job in my dream company.

**No of Rounds:** 1 MCQ round + 2 online test round + 4 PI

**Type of Interviews:** Campus Interview for freshers

**MCQ round(Time) : 45 minutes** 20 Objective Questions:

5 question on maths which included 3 on probability

Some c output questions easily available on [geeks quiz](#)

Questions on heap, hashing, time complexity of recursive functions

One sql query, one question on fcfs and round robin scheduling, page fault in demand paging, dining-philosopher problem, one on propositional logic, one based on Huffman code.

**Online test 1 (Time): 45 Minutes**

2 Questions:

1. Given three linked lists, where each linked list represents a number, add the three lists and return the resultant list.

5->1->2->NULL

9->1->NULL

7->2->2->NULL

Output :: 1->3->2->5->NULL

2. [Given an array and two numbers x and y, find minimum distance between two numbers x and y.](#)  
[assume that x and y always exist in array and it may be that x and y are same also\xe2\x80\x99](#)  
\xc2\xab0

**Online test 2 (Time): 45 Minutes**

1. [Convert a given binary tree to sum tree.](#)

2. [Given an array consisting of both positive and negative numbers, 0 is considered as positive, rearrange the elements such that positive and negative numbers are placed alternatively, constraints are that it should be in-place and order of elements should not change.](#)

\xc2\xab0

**Interview Round 1(75 Minutes):**

Technical Interview

Asked to give a brief idea about my project.

**Question 1:** [Given a linked list, reverse every k nodes of the linked list.](#)

**Question 2:** given a matrix of size m \* n, place k students in such a way so that cheating in an exam could be minimized\xe2\x80\x99. Was asked to just explain the approach, no code required.

**Question 3:** suppose a online chat between customer and serviceman, serviceman wants to reply

to customer as soon as possible\xe2\x80\x96 suppose text which is to be sent as reply takes 10 sec for being typed. How can he make typing faster ?

My answer was using autoprediction feature, by which he will need to type less number of characters, so typing will become faster..

Then question was extended to how to store the words for being used in prediction\xe2\x80\x96

I answered a trie data structure which allows prefix matching..

Then question was further extended to write a code to traverse all the words stored in dictionary in lexicographic order..

\xc2\xa0

### **Interview Round 2(50-60 Minutes):**

Technical Interview

First of all was asked to tell something about myself.

Then a detailed discussion about the project, conversation continued nearly for 20 minutes, he wanted me to explain him everything from the scratch.. I used genetic algorithm in my project..so he wanted to explain him the concept of genetic algorithm..

Then a coding question:: stable stock problem.

You are given prices of stock of a company at consecutive days in an array..write a code to find the maximum profit one can make by keeping a stock value for as long as possible..that value of a stock is called a stable stock value.

Example::

6 5 9 8 3

So maximum profit is 15, because stock of value 5 would be hold for 3 days. So max profit is 15.

The problem basically was a variation of finding index of next smaller element.

I solved it using the concept of largest rectangular area in a histogram where need to keep track of previous smaller will not be required.

\xc2\xa0

### **Interview Round 3(60-75 Minutes): (Bar Raiser Round)**

Technical Interview

Interviewer was very cool.. he first asked about me, did some casual talk to do away with my nervousness.

Infact, he told me that it looks like that you all have studied geeks for geeks very thoroughly so I am going to ask you a question that is not present in geeks for geeks. He challenged me it will be a question you have not heard of before. At the end of round, he showed me it was a question from top coder, but I had never heard of anything called top coder before.

**Question 1:** Given a string, find the longest sinusoidal sequence in it. If there are multiple such sequences of same maximum length, return the one which comes first in lexicographic order in a dictionary..

Sinusoidal means increasing then decreasing then increasing and so on.

Example ::

a r u n ::

a u n , a r n , r u n are three such sequences of length 3\xe2\x80\x96. But, a r n is output since it comes first in lexicographic order.

Interviewer gave me hints that if I had to found the sequence in which all elements were increasing, then I answered LIS will give me the solution , this was the hint. So, basically, it was a variation of LIS. I answered it in O(n<sup>2</sup>) and 2n space\xe2\x80\x96

Then was asked to do it in (n) space and o(n).

**Question 2:** Suppose a student needs to implement a bst structure to solve a problem, but instead he used a linked list\xe2\x80\x96. Then give an example of input sequence, in which his implementation works\xe2\x80\x96 new value will always be added at beginning of a linked list.. so.

Basically at each step after insertion , root of bst and head of link list should point to same node. I was asked to provide the sequence.

\xc2\x0

### Interview Round 4( 35 Minutes)

This round started off with some nontechnical questions.. what will I do in different situations? They seemed to have found out every detail of terms involved in my project..so, there was a detailed discussion on project\xe2\x80\x96 my project involved concepts of statistics, so he asked me questions regarding stats\xe2\x80\x96. This discussion went nearly for half an hour\xe2\x80\x96. In the end, he told me lets see whether your project could bring you to amazon\xe2\x80\x96.

After the 4th round, I nearly have to wait for 4 hours before the result were announced. Finally, the interviewer said they were highly impressed by me and I was hired.

In total 7 students were selected among us.

Once again a big thanks to whole geeksforgeeks team.

This article is compiled by Arun Jain. Many Many congratulations to Arun. If you like GeeksforGeeks and would like to contribute, you can also write an article and mail your article to contribute@geeksforgeeks.org. See your article appearing on the GeeksforGeeks main page and help other Geeks.

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## Amazon Interview | Set 33

- Last Updated : \n17 Jun, 2019

I recently attended a walk-in for Software development Engineer (SDE- 1) at Amazon, Bangalore.

Here is my experience of Amazon interview.

As I was from the same city, there was no phone interview. I have listed down all questions that I remember.

### Round 1: Data Structures, Algorithms and coding (1 hour)

Interviewer just started off with questions without introduction and stuff.

#### 1) Given a singly linked list, swap every 2 nodes, for odd number of input; retain the last node as it is.

Eg: Input: 5 13 15 18 20 11 6 7

Output: 13 5 18 15 11 20 7 6

I was asked to write the code straight-away.

Wrote the same, verified boundary cases and discussed.

#### 2) Given a binary tree, find the number of pairs where sum of 2 nodes\xe2\x80\x99 values equal to k

Eg:

\r\n 1\r\n 2 3\r\n 4 5 7

Say k=7, output =2 ( 2+5, 3+4)

Suggested an approach where !\xe2\x80\x99s use inorder traversal of this,

Then interviewer asked me to solve the simplified problem, find k in sorted array instead of tree.

Got solution for this one, to have 2 pointers at each end, and traverse accordingly.

I was asked the approach for extending same to BST.

Then, I implemented the same for BST using stack.

### Round 2: Data Structures, Algorithms and coding (1 hour)

#### 1) Given input as k sorted arrays, generate a single sorted list as output.

Eg:

Array1: 1 5 8 9 11 \xe2\x80\x9a6.

Array2: 2 12 24 44 \xe2\x80\x9a6..

.

Arrayk: 3 15 79 115 \xe2\x80\x9a6.

Output: Array1: 1 2 3 5 8 9 11 12 15 \xe2\x80\x9a6.

Discussed the approach, and complexity, then wrote the code for the same.

#### 2) Given a function isGreater, compare user defined objects and then return the object that is greater than all other objects.

Twist: obj1 > obj2 and obj2 > obj3 does not mean obj1>obj3

I asked for the use case for the same, as I was not convinced with the problem.

He gave an example of games/ 1 team winning another.

Discussed the approach and then wrote the code.

#### 3) Given an input sentence, output the non repeated words in the sentence.

#### 4) How are maps implemented?

Interviewer then clarified my questions about Amazon.

Both first and second rounds were at similar difficulty level.

If the interview feedback was bad for any of these, the candidate was eliminated. If at least 1 of these went well and other \xe2\x80\x99s not sure\xe2\x80\x99s, then too candidate is called for next rounds.

### Round 3: Hiring Manager round (1 hour 40 minutes)

Discussed on my current roles and responsibilities

why do you want to join to Amazon?

What are your accomplishments in your role so far?

What are the things that you\xe2\x80\x99re not good at and need to improve?

Serialization of Binary tree. Given 1 traversal is it possible to re-construct the binary tree.

Write code to reconstruct the tree given any 2 traversals.

I took in-order and post-order traversal, discussed the approach and wrote recursive solution.

Was then asked the approach for iterative.

### Round 4: Culture Fit Round

This surprisingly had a data structure question first.

#### 1) Given a n (large number) lists of customers who visited n webpages on n (large number) days, design a data structure to get customers who have visited the website on exactly \xe2\x80\x99n\x9c\xe2\x80\x99 days and should have visited at least \xe2\x80\x99m\x9cm\xe2\x80\x99 distinct pages altogether.

Was then asked to improvise the solution as much as possible

#### 2) Details on my previous project and job profile

#### 3) Challenging situation faced

#### 4) Why should we hire you?

Then, he answered some of my questions.

#### Round 5: Coding, Algorithm and data structures (Technical round with a senior developer)

Started with questions straight away

1) [Least common ancestor of a binary tree](#) (Solution and Code)

2) [Given a 2 dimensional array sorted vertically and horizontally, search for an element and return true if the element is present.](#) (Algorithm, Code and Complexity)

Example

1	5	13	29\r\n\r\n	11	16	25
---	---	----	------------	----	----	----

3) Something on count sort.

4) [Print binary tree in zig-zag order..](#)

5) Gold box problem (Approach)

There are \xe2\x80\x98n\xe2\x80\x99 gold boxes placed in a row, each having different number of gold coins.

2 players play a game, where the motive is to collect the maximum number of gold coins. Each player can see how many coins are present in each box, but can get a box from either end only, on his turn.

Design a strategy such that Player1 wins (Assuming both players play smartly)

I got the hiring call after couple of days, after my last round of interview. They said feedback was very positive and they\xe2\x80\x99re happy to hire me.

Was so happy \xf0\x9f\x99\x82 \xf0\x9f\x99\x82 Thank you..

\xc2\xab0

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## Amazon Interview | Set 32

- Last Updated : \n14 Jun, 2019

I would like to contribute for GeeksForGeeks by sharing my experience of Amazon Interview process. This was for a SDE position in Hyderabad. I have almost 2 years of work experience in Samsung.

### 1st Round: Written

Test was on Interview Street Platform.

**Qs-1)** A function printMostFrequentWords, which takes in an array of strings, was given. It is required to print a list of all the letters that occurred with the highest frequency in each line of the array, followed by the frequency.

The list of letters should be an alphabetical list of upper case letters followed by an alphabetical list of lower case letters.

Sample Test Cases:

Input #00:

When riding your bicycle backwards down a one-way street, if the wheel falls off a canoe, how many ball bearings does it take to fill

up a water buffalo?

Hello Howard.

Output #00:

e 6

al 7

a 3

Hlo 2

**Qs-2)** <https://www.geeksforgeeks.org/construct-a-special-tree-from-given-preorder-traversal/> Variation of this one

**Qs-3)** <http://www.careercup.com/question?id=12998667>

Third case was a bit tricky.

**Qs-4)** [Rotate an M\\*N matrix by 90 degrees.](#) There was no function given in this case. Everything should be assumed by you only.

**Qs-5)** Delete the Kth Node from a linked list.

I solved 4 questions with all test cases while for another 1 only 10/15 test cases passed.

### 2nd Round: Telephonic

**Qs-1)** [Spiral level order traversal of a tree.](#) (Use two stacks)

**Qs-2)** [A person can jump 1 or 2 steps. No of ways of reaching the top of n stairs.](#) (Try for O(1) space.)

**Qs-3)** [Find the longest substring in a string with exactly 2 unique characters.](#) The substring should not contain more than two different chars.

So, aaaaabbaaa is a valid substring

Also, ccacccaccaca is a valid substring.

Need to write code for the 3rd qs.

Expected = O(n)

I answered all the 3 questions and was confident of receiving the call for onsite which I did.

### F2F ROUND 1:

**Qs-1)** The question was to [print a tree vertically](#). Please note it was not asked to get the sum at each vertical level. We have to print nodes at various vertical levels starting from the leftmost vertical level to the rightmost vertical level.

I suggested array of vector then a hashing. Finally I gave a solution based on DLL.

Code was written using DLL only.

**Qs-2 )** Only approach was asked on how will you save a binary tree in a file( Not a BST)

There are no assumptions on Binary tree.

This round went well for me.

### F2F ROUND 2:

**Qs-1)** First I was asked to design a Data structure with O(1) insertion and O(1) search. I told about hashing. Then he told me to get a random number from the current list of numbers which have been inserted into my Ds. So I maintained an array storing pointers to the hash table.(Assume no Collision, he told so).Then he said O(1) deletion also. I was stuck on this I was not able to make both deletion and getRandom in O(1).After Some Discussion he moved on.

**Qs-2)** He told there is a range, defined by a min val and a max val. In a given array I had to find all elements within the range. I told him its only possible in O(n).We have to look at each element. Then he told me to assume array as sorted. Then I used Binary search for finding indexes of ceil of min and floor of max to find the elements in the range.

This round went ok for me.2nd question i wrote proper code with all edge cases, but in first I got stuck a bit.

### F2F ROUND 3:

**Qs-1)** In a binary tree, a complete path is defined as a path from root to a leaf. The sum of all nodes on that path is defined as the sum of that path. Given a number K, we have to remove (prune the tree) nodes from the tree which lie on a path having sum less than K.

Note: A node can be part of multiple paths. So we have to delete it only in case when all paths from it have sum less than K.

I was able to solve the problem and write correct working code for this.

(Hint : Think of a bottom up approach.)

Note: Values in tree can be -ve also.

**Qs-2)** A robot problem: No. of ways to reach from 0,0 to m,n in a m\*n grid. I had to tell recursive function only. No code required.

This round went very good for me. The first question was a bit tricky but solving it raised my confidence.

### F2F Round 4 with Hiring Manager:

**Qs-1)** This was mostly a HR Based round. A lot of questions about my previous work, my initiatives, challenges I faced and many other questions.

A simple question on matrix was also there. Fill rows and cols with ones if a 1 is present in that row or a col. Code also required.

Question based on shipment and orders etc. Eg: What all things to take care in b/w of order placed and item shipped. What all factors and things you will consider.

I was being interviewed for transportation team. So questions based on it.

Overall, the round went well

I returned to Bangalore that night.

Few days later, I got a call from HR saying I am very close and I need to appear for another round in Bangalore office.

### F2f Round 5:

About half an hour Hr based discussion.

Then two Technical questions with code:

**Qs-1)** [In a binary tree, return true if all leaves are at same level and return false if all leaves are not at the same level.](#)

**Qs-2)** An array is given which is first increasing and then decreasing. Find the pivot element. Need to take care of all the edge cases.

This round went well for me. Mostly this round was on soft skills. I did well in coding questions and wrote proper code for both.

In the evening I got a call from HR that I was selected. \xf0\x9f\x99\x82

I would like to thank GeeksForGeeks Team for being a great help for me.

\xc2\xab0

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Amazon Interview | Set 31

- Last Updated : \n14 May, 2021

Recently I attended the Amazon walk-in and got selected for the position of SDE I.

## Written test:\xc2\xa0



```
original array 4 6 8 3 6      sum = 27\n    iteration1      -2 -2 5 -3      sum = -2    (a1= a2-a1)\n\niteration2:
```

## Hiring Manager:

- Find the nearest leaf node from given node in binary tree..  
Use post order traversal.. like LCA in binary tree
  - Find the first k largest numbers from large file size. Explain solution for

Tech:

1. Design N-ary tree, to make sure that lock and unlock operations can be done with minimum complexity (height of tree). A node can be locked when its ancestors or successor are not locked. We can unlock a node at any time.

2.  $a[] = \{a, b, c, d, e\}$   $b[] = \{f, g, h\}$  result should be = af+bg+ch+df+eg

Tech:

1. Find maximum product of subarray in given array of integers
  2. Design T9 dictionary

#### **Bar Riser:**



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## Amazon Interview | Set 30

- Last Updated : \n14 Jun, 2019

I have attended the interview for Software Development Engineer position and got the offer from Amazon.

I spent a lot of time in GeeksforGeeks going through the precise and simple explanations of complex problems, which helped me to sharpen my mind. Really, its a great work by the geeks and I am happy that I am a part of it.

The following were the questions.

**Round 1 :** Write a program to solve the below problems. (Time 1.30 hrs)(Written Test)

1. [Given a string in the form of a Linked List, check whether the string is palindrome or not.](#) Don't use extra memory. Give the time complexity. The node structure is

```
\r\nClass Node {\r\n    Char data;\r\n    Node next;\r\n}
```

2. [Given a Binary Search tree along with the parent pointer, find the next largest node for the given node.](#) Give the time and space complexity. The node Structure is

```
\r\n    class Node {\r\n        Int data;\r\n        Node left;\r\n        Node right;\r\n    }
```

3. [Given a sorted array which is rotated n number of times. Find out how many times the array is rotated.](#) Time complexity should be less than O(n).

**Round 2 : With Team Member**

1. Tell me about yourself.

2. Explain your project.

3. [Given a Binary tree, find the vertical sum.](#)

\x{20}a6.a. I gave a solution using hashmap. There were discussion about the problems (time and space complexity) in using hash map. Then due to its cons, he told me to use some other DS to solve the problem.

\x{20}a6.b. Then I gave a solution using Array. There were discussion about how it can be used, time and space complexity and its pros and cons.

\x{20}a6.c. Code using Array.

4. [Given a matrix mxn, where all the rows were sorted, print the elements in the matrix in a sorted order.](#)

\x{20}a6.a. I gave a solution with O(mxm) time complexity.

\x{20}a6.b. He wanted a solution in O(mnlog(m)) time complexity and gave a hint to use heap.

\x{20}a6.c. Code for the same.

**Round 3: With 3rd Level Manager (culture Fit)**

1. Tell me about yourself.

2. Explain Your accomplishments.

3. What you are proud of yourself?

4. How you will handle the conflict with the team member?

5. Lot of behavior oriented questions.

6. [Given a String, remove the duplicates in the string.](#)

\x{20}a6.a. Lot of variations from the same problem.

\x{20}a6.b. Asked for a solution in different time and space complexities and the complications involved.

\x{20}a6.c. I guess the communication skill might have been tested here.

7. Given a floating point number, write a program to convert it into a string. The number of digits after decimal point can be more than 1000.

**Round 4 : With Manager**

1. Can you tell me about yourself?

2. Explain the projects you worked on?

3. [Given a Binary tree, connect all the leaf nodes in the form of a doubly linked list. Don't use extra space.](#)

4. A scenario was given about two robots and its functionality. Write a program which will be running in both the robots which will perform the specified functionality.

5. [Given an integer, find the next largest integer using the same digits as in the given integer.](#) For example, if 12345 was given, the program should return 12354.

**Round 5 :**

1. Tell me about yourself.

2. Explain what you have done in your previous company.

3. As I have worked on a product and they told to explain the product

4. What are the developments you have done and what impact it will be having?

5. What will happen to your development, if the product is migrated?

6. Questions on threading.

7. What is a thread safe code? Explain.

8. What is a process and thread? Differences?

9. [Given a binary tree print the elements in a zig zag order.](#)

Thanks a lot for Geeks team.

\xc2\x80

This article is compiled by Muthukumar Subramaniam. Many Many congratulations to Muthukumar. If you like GeeksforGeeks and would like to contribute, you can also write an article and mail your article to contribute@geeksforgeeks.org. See your article appearing on the GeeksforGeeks main page and help other Geeks.

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## Amazon Interview | Set 29

- Last Updated : \n14 Jun, 2019

I am very much excited for sharing my experience for Amazon, I went through 6 rounds and really enjoyed a lot for facing all of them and it feels like in each round that GEEKSFORGEEKS is the one the best site which gave me lot of ideas for solving the problems, This is THE BEST site for coding for getting good questions and also for improving our skills and creating our base SOLID.

### 1st round >> ONLINE test

- 1) [Convert a BST to Double Linked List](#)
- 2) Count the number words + spaces + special chars in a given string
- 3) [Print kth Largest node of the given tree.](#)
- 4) [Write the complete code for rotating the given matrix.](#)

Solved three successfully with all cases but for one some cases was missing because of network issue i was facing time problem.

### 2nd round >> Telephonic

- 1) [Level order traversal](#) (Both approach recursion && Queue)
- 2) [In O\(1\) \xe2\x80\x93 getMin, getMax, getTop, push, pop](#)
- 3) [Find the least positive missing number in an array.](#)
- 4) [Print all permutations of the given string](#)

For all I need to write the code, and I was feeling like I was doing fast and being on expectations of the interviewer, he was so happy with me.

### 3rd Round >> FACE TO FACE (It was nice, it went thru 1hr)

- 1) Write a code for inverting the values of BST and return the new tree\xe2\x80\x99s root  
(In place i have to do this, first i have given solu. with O(n) space with O(n) complexity )
- 2) [Finding the element in O\(m+n\), in a sorted matrix which is sorted in row as well as in column.](#)  
(I said i know this, so i just told the approach and we skip that !!)
- 3) Project questions, infact in all rounds it was there!!
- 4) Rope Puzzle :: 2 ropes are there and u need to find the 45 mins(Very generic Google Puzzle)

### 4th Round >> FACE TO FACE (It was Amazing, it went thru 1hr 30 mins)

- 1) [Find a median in running stream of numbers.](#)
- 2) [Find a k best or max values in the running stream of numbers.](#)
- 3) Project Questions!! I Love that!!
- 4) State machine questions !! Gaming Questions (Bcoz m a game developer)

Questions on garbage Collection, Virtual machine (Bcoz i did project on it)

Anyway i love all those part.

5) One very nice question, i need to calculate the area for rain drop which will be holded for bar graph(Its basically a very real world problem, i love to do that, even i did mistakes but they guys are really awesome they helped me out to get rid of my problems)

**5th Round >> FACE TO FACE** (It was Damm Amazing, it went thru 1hr 15 mins)

1) I need to write recursion function for a robot which has to move from one location to other location in a grid.

In recursion i took time to write the base cases, but finally with some hints i was able to make it.

2) I need to code for k-heavy path approach and also need to write its recursion.

There also i was continue taking to the interviewer and clearing my doubts and using the hints given by him. Finally i was able to code it and do the recursion also.

Every time i need to write the recursion in mathematical form and calculate the Complexity also like we have to do normally for detecting the complexity.

I love the mathematical part and coding, its in my blood!!

3) Project Question !! Scalable problems !! Dealing with N dimension study and mathematical problems, even covering my whole resume.

Finally he was very happy and said to me that you need to think proper then code or design, rest is awesome !!

**6th Round >> FACE TO FACE** (It was with the Hiring Manager,i guess, it went thru 45mins)

1) He asked me about my whole projects and lots of about my resume and my challenges faced till now, it was good to explain all those.

2) He asked me to design an approach which will search all the valid combinations of a given string.

I have given some approaches like implementing TRIE, and explained the pros and cons for it and also the complexity of it.

Then i modified it and explained the Other approach which is better than the above by using HASH MAP and INDEXING with buckets if valid words.

We had lots of discussion on it. and Finally he said we are looking for guys like you.

Finally i have the offer Letter From Amazon and He asked me for Coffee Or Cold Drink. I Have taken Coffee.

**NICE EXPERIENCE !! I LOVED ALL THE INTERVIEWS AND ENJOYED A LOT !!**

Finally a Gold Medalist 2yr Exp. guy who is doing a very nominal job, got a Right place to work which is AMAZON !!

Heartly Thanks To GeeksForGeeks Community And Their Coding Stuff Which is available in Site !!

\xc2\xa0

This article is compiled by Pushpendra Mishra. Many Many congratulations to Pushpendra. If you like GeeksforGeeks and would like to contribute, you can also write an article and mail your article to contribute@geeksforgeeks.org. See your article appearing on the GeeksforGeeks main page and help other Geeks.

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## Amazon Interview | Set 28

- Difficulty Level :\n[Hard](#)
- Last Updated :\n14 Jun, 2019

Hi, I was recently interviewed for SDE1 position for Amazon, Hyderabad but was not able to make it through. Although I wasn't selected but it was a good experience and GeeksforGeeks has been very helpful.

Following were interview questions-

I had one written round and one telephonic round before 4 in-face interviews in Hyderabad.

### Round 1 (Written):

There were four questions which had to be submitted in a time span of two hours. Questions were:

1. Given a character string, display the characters that appear more than once in that string.
2. [Rotate a matrix 90 degrees to right](#)
3. [Convert a BST to DLL](#).
4. [Find kth largest element in a given BST](#).

### Round 2 (Telephonic):

1. [First question was to get two numbers from a BST whose sum was equal to k](#). I answered it using a preorder traversal to get a sorted array and then starting two index from both ends to find if two elements with sum as k exist or not. He then asked if it can be solved without using an array or extra space. I tried solving it by traversing from two ends of the tree in eoder and reverse preorder fashion and it took some time to code. Dry run of the code seemed to be right but I wasnt sure. Anyways the best way of not using extra space can be to convert tree to DLL (in space) and use the same technique as used on array.

2. For second question I was asked if I had heard the question before or not. Question was that [a matrix is given with its rows and columns sorted and an element is to be searched in that matrix](#). I had heard the question before but had not solved it and told the same to the interviewer. After thinking for a while I could get an algo by starting at the rightmost element of the first row. If element is bigger we move down or else we move right. The solution was fine but he doubted that I had solved it earlier.

3. He asked to write a program of finding the square root of a number without using library functions. I had done it before and told him the same. I used Newton-rapson method to get the solution but he wanted it through something on the lines of binary search. I almost got the solution but may be I was running out of time so he dropped the question there only and asked me to dictate the solution of 2nd problem.

Two days later I got a call that I have cleared my telephonic round and have to be present in Hyderabad for further rounds(four). Arrangements done my Amazon and I appeared for the further rounds on 27/4/2013 in their Hyderabad office.

### Onsite:

#### Round 1 (Technical):

1. [First question was to find the vertical sum of a binary tree](#). I told him the solution using and array/hash. Whenever we move left we decremented the index while moving right we increment the index. The solution looked fine to him but he wasn't very comfortable with negative indexing. So he asked for another solution using doubly linked list. Initially I wasn't getting it but when he gave some hint I was bale to solve it but it took some time to cover edge cases. With the final solution he looked convinced.

2. Next question was to have Stack operations of Push, Pop, and FindMax in O(1) time. I started doing this using only one index of max variable but than I realised I needed max index at all levels so gave him a solution using two stacks. One having the element and the other having the corresponding max index. He looked convinced with the solution.

### Round 2 (Technical):

1. In second round there were two interviewers and coincidentally one of them was the same guy who took my telephonic interview. First question was related on how to chose the related items list whenever a product is displayed on Amazon website. the problem was to find the least related product for a given product. Initially I answered using n-ary tree but told him that we would have duplicate entries. He asked for optimized solution so I suggested using adjacency-list but finally realized that it can be solved using graphs. They were convinced and asked to code. I solved it using a Queue so while traversing a matrix we pushed in the elements in the queue with their level of relation. They were convinced with the solution.
2. Second question was to [delete an element from doubly linked list](#). I solved it but missed out on and edge case where the element to be deleted is not present in the list. I added that check later.
3. Third was that for a [given BST invert the signs of the elements and finally have a new BST](#). It clicked my mind that after sign inversion it will be a mirror tree and gave the solution for the same. Till this time feedback looked fine.

### Round 3 (Technical-Managerial):

1. The next interviewer was senior guy and asked me about my work. Explained him in detail.
2. Later he asked me that for a given binary tree having three address fields i.e. left, right and bfs successor, left and right fields are filled and the successor field is to be filled. I solved it using [level order traversal](#) with a queue but he wanted solution without using extra space. I was taking time to solve it when he gave hint about keeping track of the parent. After this hint I was able to solve it with few conditions missing but with his intervention I was able to give a working code (as looked to him and me).

### Round 4 (Technical-Managerial):

1. There were two interviewers. First question was tell me about yourself and your work.
2. Given a m\*n matrix, we need to find the number of ways by which a bot can reach the (m-1,n-1) block if bot can move only right and down while starting from (0,0). I gave him a solution using DP. Build the recursion tree showing the final solution. He didn't ask to code but asked to finds the recurrence relation. I got stuck I don't know why. I guess this was the start of decline. he gave some hints and I was finally able to write it, still.
3. For a given binary tree and a key, prune the tree with all the paths (root to leaf) that have sum less than or equal to k. I was able to solve it with some hint. The solution looked convincing.

Four days later I got a mail stating that *Unfortunately, we are unable to take your candidature further, at the moment. However, your credentials are extremely impressive and we wish to retain your details on our active database. We shall get back to you as soon as another similar opportunity opens up.*

This article is compiled by Rohit. If you like GeeksforGeeks and would like to contribute, you can also write an article and mail your article to contribute@geeksforgeeks.org. See your article appearing on the GeeksforGeeks main page and help other Geeks.

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# Amazon Interview | Set 27

- Difficulty Level : \nHard
  - Last Updated : \n14 Jun, 2019

Hi, I was recently interviewed for SDE1 position for Amazon and got selected. I have 1.5 year experience in java. Geeksforgeeks helped me lot. I am very thankful to Geeksforgeeks team. Following were interview questions-

Two telephonic rounds followed by 5 F2F interviews.

## **Round 1 (Telephonic):**

1. There is a dictionary already implemented. Write a method, which takes input String without space, to prints all subsets of the input string which is present in dictionary.

2. There is a dictionary already implemented. Write a method , which takes input String without space, to replace the characters from the strings which are not present in dictionary with \xe2\x80\x93

Example: Dictionary \xe2\x80\x93 a\*  
\xe2\x80\x93a6\xe2\x80\x93a6\xe2\x80\x93a6\xe2\x80\x93a6\xe2\x80\x93a6\xe2\x80\x93a6. Input- aaabaa  
\xe2\x80\x93a6\xe2\x80\x93a6\xe2\x80\x93a6\xe2\x80\x93a6\xe2\x80\x93a6\xe2\x80\x93a6. Output- aaa\_aa

Interviewer was cool. Did not code properly (lots of bugs were in code), but gave good approach for first question. For second question solution sent in a mail.

## **Round 2 (Telephonic):**

1. Write a program to remove duplicates from array of prime numbers.
  2. Write a program to return nearest elements from a binary search tree for input element.

This round was very good. Interviewer was very happy with my approach for both questions. Code did not have big bug.

## **Round 1 (F2F- Problem Solving and coding):**

1. Tell me about yourself.
  2. [Write a program to find top 10 elements on an array of integers.](#)  
Don't remember much. Questions were easy. This round was very good. Interviewer was happy with solution.
  3. Write a program to calculate  $a^b$  and store it in floating point representation.

## **Round 2 (F2F- Computer Fundamental):**

1. Tell me about experience in past job.
  2. OOPS concepts- Polymorphism, Inheritance, Encapsulation, Abstraction.
  3. Aggregation and Composition.
  4. Design patterns which you have implemented.
  5. Write code to implement Singleton design pattern.
  6. Design a system to implement options in Pack of cards.

7. Difference between Windows and Unix.
8. Threads, Synchronization, Deadlock.
9. Other subjects which you studied in your academics.
10. Most challenging work you ever faced.
11. Discussed about current project, role.

This round was fair enough. I was not able to discuss questions on subjects which I studied in academics.

### **Round 3 (F2F- Data Structures and Algorithms):**

1. Tell me about yourself.
2. There is a 2d array. Write code to find the path with maximum sum. You can only traverse  $i+1$  or  $j+1$ . if  $i$  is row number and  $j$  is column number.  
I solved it using dynamic programming
3. In a binary tree find the least common ancestor for two nodes. (Write code)
4. Similar to 3rd question. Write a program to find least common ancestor in binary search tree.

This round was very good. Finished it only 40 mins.

### **Round 4 (F2F- Managerial round):**

1. Tell me about yourself.
2. Copy Linked list with orbit pointer.
3. Write a code to find top hundred elements in a data set which cannot be loaded in RAM.
4. Typical parenthesis checking problem.
5. Most challenging work you ever faced.
6. What will do if you get task which is ambiguous.
7. At what extend you will be frustrated if you always get ambiguous problems.
8. How many members in your team in current organization. What's your role?

Questions on current project.

Interviewer was very cool and friendly.

### **Round 5 (F2F- Bar raiser round):**

1. Tell me about yourself.
2. Discussed about current project.
3. [Write a program to find number of inversions in an array.](#)

Example- Array 2, 5, 3, 1, 10

Inversions (2,1) , (5,1), (3,1), (5,3)

Answer will be 4

Gave solution of complexity  $O(n\log n)$  . Interviewer gave me hint for that.

Hint- Divide and conquer approach.

He asked me to write code which doesn't have any bug.

This article is compiled by **Neha Gupta**. Many Many congratulations to Neha. If you like GeeksforGeeks and would like to contribute, you can also write an article and mail your article to contribute@geeksforgeeks.org. See your article appearing on the GeeksforGeeks main page and help other Geeks.

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## Amazon Interview | Set 26

- Last Updated : \n14 Jun, 2019

Hi, I am Mayur Kale, I was recently interviewed for SDE1 position for Amazon in our campus and got selected. Geeksforgeeks helped me a lot. I prepared only from Geeksforgeeks.org. I am very thankful to Geeksforgeeks team.

One online coding test followed by 4 rounds of F2F interviews.

### Online Coding Test (2 Problems, 20 MCQs, 1:30 hours) From Interviewstreet

All problems had multiple test cases for which the code was validated against.

1. [from input string we have to print character which occurs maximum number of times.](#)

#### Face to face: Round 1(Technical, 1 hour):

1. Given a boolean matrix mat[M][N] of size M X N, modify it such that if a matrix cell mat[i][j] is 1 (or true) then make all the cells of ith row and jth column as 1 (time complexity expected was O(M\*N) and space O(1))

Solution: [Boolean Matrix Problem](#)

2. [Given binary tree, if we draw a line from root then we have to print all nodes on that line.](#)

Code for both questions was required and some other discussion happened..

#### Face to face: Round 2(Technical, 1 hour):

1. [Given string we have insert %20 on each space and input string has enough memory to contain output string.](#)

(time complexity expected was O(n) and space was O(1)).

2. [merge point of linked list.](#)

(I told I know this question so he moved ahead..)

3. [Given binary search tree in array form and we have to check whether it is fully binary tree or not..](#)

(I gave O(n^2) solution but He was expecting O(n) solution after some discussion I managed to give answer in O(n) complexity \xe2\x80\x99a6)

4. [Given that integers are read from a data stream. We have to find k maximum elements from that stream...](#)

(I gave solution of insertion sort, then came to heap)

code for all questions required and nice discussion was there \xe2\x80\x99a6

He was very impressed with my answers \xe2\x80\x99a6

#### Face to face: Round 3(Technical, 1 hour 20 minutes):

-He asked me to choose topic on which questions should ask..

I chose OS \xe2\x80\x99a6

-some questions on paging and virtual memory.

-If we use 8 GB RAM for 32 bit machine what will happen?

It was a nice question..

He was very impressed with answer.

-Some discussion on Networking(DHCP and DNS).

-Some discussion on Linker and Loader.

-Some discussion on JAVA.

-Some discussion on DBMS.

-one puzzle

A champagne pyramid is a pyramid made of champagne glasses , each of equal capacity say , n. The pyramid begins with one glass at the top level , two glasses at the second level , then three below that and so on up to infinite levels. A level x of the pyramid thus has x no. of champagne glasses.

A steady stream of champagne is poured down from the top level,which trickles down to the lower levels. What is the distribution of champagne in the glasses at a given level i.

(I told I know this puzzle then he moved ahead..)

-Give a Building with n floor. A person can take 1 step or 2 step to climb. Find the number of ways to reach nth floor. Code was required

Interviewer was very happy after that.

#### **Face to face: Round 4(Technical, 1 hour 20 minutes):**

It was like semi HR round.

1. Why Computer science?

2. [Given an array of integers which is initially increasing and then decreasing, find the maximum value in the array.](#)

3. Modified k heavy path in binary tree problem.

In evening they told me result and I got selected in amazon. It was very nice experience for me.

\xc2\xab0

This article is compiled by **Mayur Kale**. Many Many congratulations to him. If you like GeeksforGeeks and would like to contribute, you can also write an article and mail your article to contribute@geeksforgeeks.org. See your article appearing on the GeeksforGeeks main page and help other Geeks.

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# Amazon Interview | Set 25

- Difficulty Level :\n[Expert](#)
- Last Updated :\n14 Jun, 2019

Hi, This is Pandu. About 1 month back I had attended Amazon Interview In Hyderabad, it was total of 8 rounds which includes 2 telephonic and 6 face to face and the whole process was lasted about 25 days because of unavailability of all the interviewers. The whole was very painful for me as before and after attending interviews on each interviewing day, I had to spend with some tension & anxiety. I was interviewed for SDE 2 position

The following are the questions:( For all the algorithmic questions, working code is required, they would take those papers and discuss in their internal meeting after all the rounds)

## Telephonic Round 1(with Lead developer):

Q1) Given a [snake and ladder game](#), write a function that returns the minimum number of jumps to take top or destination position.

You can assume the die you throws results in always favor of you.

## Telephonic Round 2(with SDE 1): ( after 5 days of 1st telephonic)

Q1) [Given an integer array and an integer value X, return two elements in that array such that sum of them equals to X.](#)

\xe2\x80\x93 Here he asked about different ways to solve it and pros and cons of each solution.

(For Hash map solution , He was looking for getting solution in only one pass)

Q2) discussion about my project details and challenging task

Q3) suddenly your web application has become very slow on clicking particular URL. How would you debug it and solve the problem

**Face to Face round 1(with SDE 1):** (after 4 days of 2nd telephonic. 3 faces to face rounds were taken on same day and lasted about 5 hours)

Q1) [Given a sorted array and a number write a method that returns the number of occurrences of given number](#)

Q2) [You have given a dictionary of an alien language in which letters are same as English letters but their order is different. Your task is sort the letters or give relationship b/w letters using that disctionary. note: the diction may contain 1 to n words.](#)

## Face to Face Round 2(with SDE 2):

Q1) In our project we are using Java Spring framework. He asked to implement spring container.

Q2) [Implement LRU caching.](#) After that asked me two different cases (1) required element is already in cache , 2) required element in not in cache and cache is full)

Had to explain those two cases by walking through your code.

Q3) [You are given a faulty binary search tree in which only 2 nodes are misplaced\(swapped their positions with each other\). write a method that takes root of that BST and return the root of the corrected binary tree.](#)

## Face to Face Round 3 (With Lead Developer) : (Design question)

Q1) Given an URL you need to analyze all the images( they may be in 1000\xe2\x80\x9399s of number) and return the cumulative quality of images present in that url.

lets say: you can configure image quality as very good,good, average, poor..etc, so you have to return one value among them. The given URL may contain several other URLs and they also contain lot of images . you need to consider all of them. lot of questions like how to avoid visiting same url again,

how would you determine the quality of an image if you encounter an url that contains only an

image..etc.

Q2) Design Elevator system. And then write an algorithm for that Design such that, the user request should be completed in  $\log N$  time in a  $N$  story building with  $M$  elevators,  
This round was lasted more than 2 hours.

### **Face to Face Round 4 ( With Hiring Manager): ( after 5 days of last 3 f2f rounds)**

Q1)Discussion about my project details

Q2) Design Question: Design Clustered caching system for an web site like Amazon.com.

In which millions of web servers deployed over the globe and only one inventory Database system

Q3) Design question: Design only Train search functionality of IRCTC

### **Face to Face Round 5 (With Bar Raiser): ( same day following Hiring manager interview)**

Q1) Discussion about my project and Challenging task

Q2) Design Question: In an online teaching system, there are  $n$  number of teachers and each one teaches only one subject to any number of students.

And a student can join to any number of teachers to learn those subjects.

And each student can give one preference through which he can get updates about the subject or class timings etc.

Those preferences can be through SMS or twitter/facebook or email..etc.

Design above system and draw the diagram for above.

Q3) coding and algorithm: [There is a  \$N\$ -ary tree in the 3d Space. and you are standing on right side of that tree . Print the only those nodes when you looked at that tree.](#)

( which is like printing rightmost node in each level of that tree. He would not tell this, you have to conclude this by drawing a tree like that).

After writing the code for above one, he was asked me to print them in an order in which 1st one followed by last one followed by 2nd first one followed by 3rd last one..etc.)

### **Face to Face Round 6(some one who is in very high level, guess director to a technology):**

(After 1 week of last interview)

Q1) Lots of discussion on my current project. Different behavioral questions were asked during the discussion.( about half n hour discussion)

Q2) Given a cube of size  $N$ . which was constructed by  $N^3$  number of 1 unit smaller white cubes.  
Now you dipped that cube in a black color paint and taken out.

after that how many cubes are still in white color. Prove your answer( by writing mathematical equations)

Q3) [There are  \$N\$  bolts each of which different size and  \$N\$  nuts, they are also with different sizes. and each bolt fits with exactly 1 nut.](#)

Give an algorithm that combines those  $N$  bolts and nuts into  $N$  pairs of Matched bolt and nut.

HR told me on last interview day that I would be notified by the result within two working days as already the whole process was delayed for so many days. I had waited for almost 1 week and send them mails & called them about my candidature but did not get any response. I was almost lost hope. But, Finally after 8 days of last interview, got a call that I was offered SDE1..( I guess, They were not completely satisfied by in design part but I did better in algos, problem solving and coding part and as a result I was offered SDE 1). In the end I rejected to join at Amazon as I got another competitive offer.

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# [TopTalent.in] Google, Facebook, Amazon, Walmart & PocketGems, All Fighting For Prasoon Mishra

- Difficulty Level :\n[Medium](#)
- Last Updated :\n28 Apr, 2017



Meet Prasoon, he was just your average guy who studied at IIIT-Hyderabad but today Prasoon Mishra is one of the most well known names across engineering colleges across India. Last week we got a request from one of our readers that he and his friends want us to Interview Prasoon and today here we are\xc2\x90fulfilling\xc2\x90their wish.

This really tells us how much people are waiting in anticipation for his interview. So, we went a step ahead, we not only would like to present his interview but we also have his resume for you to download.

So\xc2\x90[click here](#)\xc2\x90to download his resume by logging in. Here is the much awaited interview of Prasoon Misra as he shares his thoughts about his interview experience.

**TopTalent:** Firstly, how do you feel when so many world class companies are trying to woo you?

**Prasoon:**\xc2\x90I am greatly overwhelmed! I never imagined such a scenario, so I am delighted that so many companies considered me worthy of an offer.\xc2\x90 It feels good to know that I did things right. And, it\xe2\x80\x99s always a treat to see your hard work rewarded.

All these companies are highly reputable and they are very selective in their hiring, but a lot of engineers get hired from across the world. So, its important to keep things in perspective and not get carried away. I can join just one company, so all these offers are equivalent to just one good offer. And hence, at the end of the day, I see it as a good job opportunity.

**TopTalent:**\xc2\x90Which company are you planning to join and how did you make that decision?

**Prasoon:**\xc2\x90Yes, that was a very tough call. It was extremely confusing. They are all top tech companies, and each had a lot to offer in terms of the role, work and responsibility. Google, given their array of products \xe2\x80\x93 it\xe2\x80\x99s a crime for an engineer to decline their offer. Walmart & PocketGems have quality work and good growth opportunities. Amazon also offered a very good profile. But, I chose Facebook because I feel that it is a better cultural fit for me at this stage. Even after their IPO, they are trying to preserve their startup culture, and continues to offer a lot of opportunities . That just nicked it in the end!

**TopTalent:**\xc2\x90Can you give us a brief account of what you felt was the toughest interview?

**Prasoon:**\xc2\x90Its hard to pin-point a single tough interview. Each company had its own style.

Facebook & Pocketgems had very intense and focused rounds, revolving around coding/algo and system-design. They were looking for speed and accuracy. At Google, as can be expected, some really tough algo questions came up. I am unsure about the complete correctness of one of my solutions, even now. In another round, I was able to convince the interviewer that his solution had the same flaws as my solution. So, that was a confidence booster. Walmart though, was a bit unexpected. In a design round, my initial solution was built around a string algorithm. But, the interviewer pointed out some counter-cases. So, by relying on his hints and the counter-cases, some probabilistic techniques got incorporated into the system. At the end, the interviewer informed me that my final solution was a model in machine-learning. So, I feel that mathematical aptitude helps in more ways than just algorithm design.

### **TopTalent:\xc2\xd7What kind of skill-set companies are looking for in candidates?**

**Prasoon:**\xc2\xd7Well, a strong understanding of data structures and algorithms, along with fast-and-accurate coding skills are the primary requirement. And companies pay particular attention to the quality of code -> neat, short & easy to understand.

Moreover, a good aptitude in Computer Science is also desired. The fundamentals of OS, DBMS, distributed systems, design patterns, etc, often get applied indirectly in the design rounds. In this regard, I feel that a basic understanding of common systems like search-engines, spell checkers, trends, etc, helps one greatly.

And, companies inherently dig for creativity. The above mentioned skills are just tools to come up with smart solutions.

### **TopTalent:\xc2\xd7Whats your advice to students who are aiming for similar placement offers as yours?**

**Prasoon:**\xc2\xd7Do not get burdened by the hype surrounding these jobs. And after that, I think its extremely important to enjoy the subject and the process of preparation. In my opinion, there is an element of luck involved with interviews, and candidates must acknowledge it. Hence, they must not over-pressurize themselves.\xc2\xd7And, all wise proverbs about success strictly apply.

### **TopTalent:\xc2\xd7What should one keep in mind while preparing a resume?**

**Prasoon:**\xc2\xd7One must understand that the resume is ones first impression. So, it\xe2\x80\x99s important to be precise and accurate in terms of what one wants to convey. A lot of tips are available on the internet, and one can pay heed to them. In terms of the content, I chose to write projects that had good depth, and discard the lighter ones. I feel that this enhances the strength of the resume.

Other than these, one must prepare oneself to have a detailed discussion on everything that is mentioned in the resume.

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## Amazon Interview | Set 24

- Difficulty Level :\n[Hard](#)
- Last Updated :\n14 Jun, 2019

Hello Guys, I had 6 rounds(written + telephonic+ 4f2f interviews) in hyderabad centre of Amazon.

I was 90% sure that I would clear the interview but I got rejected. The only reason I felt I was rejected was that the interview process was immature. The interviewer interviewing was a guy with 1yr of work ex expecting solution in the manner he wanted, which was pretty unexpected from a technology giant like amazon.

Every round of Amazon would have basic question like what you do etc. But all that is just formality, it doesn't count since one interviewer stopped me in between and said we have less time lets talk about problem solving(Which was again not expected from technology giant)

Also, for those writing written this month, the written round would have the same questions as I have listed below. So please solve this, before going for written

Anyways, these were my questions:

### Written(Interview street) \xe2\x80\x93 3 Questions:

- a) [General code for coin denomination problem where the input was an array containing the coin denomination and the sum we want.](#)
- b) [Rectangle overlap problem](#)(Can be found in GeeksforGeeks)
- c) [String Matching Problem\(Wrote KMP\)](#)

### Telephonic Interview:

- a) [Convert BST in place into doubly linked list](#)
- b) [Given a Binary Tree is it a BST](#)

If you miss one edge case, you are out of the interview. This is what they check and nothing else. They don't check your logic, they only see if you write proper code. So always start with brute force and write proper code.

### F2f interview(1st round) \xe2\x80\x93 Very easy

- a) Given a number is it divisible by 3 and 5

\xe2\x80\x93 Only catch here were the edge cases and nothing else

- b) [angle between hour hand and minute hand](#)
- c) [Reverse bits in a binary](#)
- d) [Get the kth node from end of linked list](#)

### F2f interview(round2)

- a) It was basically on writing multi-threading code(Write multi-threaded code for Enqueue of Queue

using linked list)

b) Asked about basic complexities in Queue, hash and tree

c) Window Problem(In an array, find the minimum of the set in a given window). There are many solutions using hash, brute force. But the dequeue answer is what he was expecting.

I gave the deque answer

Any other answer to this problem was a reject

### F2F Interview(Round -3)

a) Given a doubly linked linked, delete the occurrences of duplicate element from it. ( One miss of edge case and out again)

(for eg) If you write, temp->prev->next = temp->next without actually adding the condition, if(temp->prev) then temp->prev->next = temp->next

b) Given a matrix with ordered rows and columns(Rows are sorted 0\xe2\x80\x99s followed by 1\xe2\x80\x99s). Find the row with maximum 0?s(linear time)

I answered it

c) DataStructure with Insert O(1), Deletion O(1) Search O(1) and ReturnAnyElement O(1)

Again answered this using augment of hash and doubly linked list

d) Given a tree with negative and positive numbers, return the root with maximum sum in its sub-tree

### F2f interview(round-4)

a) It was basically a design interview where I was told to some OOPS design

b) [Given a stream of 0\xe2\x80\x99s and 1\xe2\x80\x99s\(You Tube\)](#). Find the first occurrence of 1 in it. Then the question was changed to a string instead of a stream.

Finally, after giving 100% it was reject. So according to my experience, if you dont give 100% you are out or else it is ur luck that you get through amazon\xe2\x80\x99s process.

Moreover, currently they have started exploring candidates by sending two interviewers which actually means that the one is new to interviewing and other is experienced. Hence, basically they are playing with interviewers.

If you want the answers for questions, please comment I will post it.

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# Amazon Interview | Set 23

- Last Updated : \n14 Jun, 2019

I was recently interviewed for SDE1 position in Amazon Bangalore. 1 online coding test followed by 5 rounds of F2F onsite interviews.

## Online Coding Test (4 Problems, 2 hours) \xc2\xab From Interviewstreet

All below problems had multiple test cases for which the code was validated against.

**1.\xc2\xab**Code for converting floating point decimal number to binary numbers. If the number cannot be converted, state so.

**2.\xc2\xab**Given an integer array A of size n. Given an integer k < n. Construct an array B, such that  $B[i] = \min\{A[i], A[i+1], A[i+2], A[i+3], \dots, A[i+k]\}$

Solve in time complexity better than  $O(nk)$ .

Hint: use min Heaps

**3.\xc2\xab**[A singly liked list. Can have a loop. Detect it and find the size of list.](#)

**4.\xc2\xab**[A singly link list and a number \xe2\x80\x99K\xe2\x80\x99, swap the Kth node from the start with the Kth node from the last. Check all the edge cases.](#)

Sample Input: 1->2->3->4->5->6->7->8 and K = 3

Sample Output : 1->2->6->4->5->3->7->8

Sample Input: 1->2->3->4->5->6->7->8 and K = 10

Sample Output: print error \xe2\x80\x9cLIST IS OF LESSER SIZE\xe2\x80\x9d.

## Face to face: Round 1(Technical, 1 hour):

**1.\xc2\xab**[Given a K sorted array. Sort it with minimum time complexity.](#)

$O(nlogk)$  solution was expected. Code was required.

**2.\xc2\xab**Given a file with many product name of an company. You have to find out unique name in the file.\xc2\xab Suppose\xc2\xabmobile,laptop,notepad,desktop,pen,mobile,pen .. etc is given we have to print laptop,notepad,desktop. Pen and mobile should be remove due to\xc2\xabduplicity.\xc2\xab

Code was required.I gave  $O(n)$  time complexity solution for it using 1 hash table and Doubly Link List.\xc2\xab

## Face to face: Round 2(Technical, 1 hour):

**1.\xc2\xab**Given a Sorted array with one\xc2\xabmissing\xc2\xabnumber. I have to find first\xc2\xabmissing\xc2\xabnumber.Code was required.\xc2\xabI gave solution with  $O(logn)$  time complexity.

**2.\xc2\xab**[Give a Building with n floor. A person can take 1 step or 2 step to climb. Find the number of ways to reach nth floor.](#)\xc2\xabCode was required

## Face to face: Round 3(Technical, 1 hour 20 minutes):

**1.\xc2\xab**Given an Sorted Array with duplicates I have to find first index of any duplicates. Suppose 12222333355578999 first Index of 2 in 1. Code was required.I gave  $O(logn)$  Solution.

**2.** [Given an binary tree. Traverse it in zig-zag manner.](#) Code was required.Solved using a 2 stack.

**3.** In a snake ladder game without snake and ladder :). If some one is playing then we have to find\xc2\xabprobability to win the game of any player. Condition of winning is if you are on 96 and 5

comes in dice then you loose the game and If you are at 96 and 4 comes then only you will win the game. But you cant use dice more than Y time.

I gave o(XY) Solution through DP. Where X is sum.

Interviewer was very happy after that.

#### **Face to face: Round 4(Manager, 1 hour 20 minutes):**

1.\xc2\x0Tell me about yourself.

2.\xc2\x0Why do you wish to move out of current job?

3.\xc2\x0Explain in detail the current project. Intention was to understand whether I had good depth of knowledge of the project and team I was working in.

4.\xc2\x0How big is the team & what is your role?

5.\xc2\x0Proudest project that I have worked in my current company. Details.

6.\xc2\x0Any instances where you are not satisfied with what you did?

7.\xc2\x0Any instances that you felt the need for improvement in some areas, which could have helped you technically and professionally. Any negative feedbacks.

9.\xc2\x0Write the code to store Binary Search Tree in Doubly Link list. Code was required.

10.\xc2\x0Petrol and distance problem given in Geeks for Geeks.\xc2\x0

#### **Face to face: Round 5(Manager, 1 hour 10 minutes):**

1.\xc2\x0Tell me about yourself. It starts with a basic intro round, where your communication skills are judged.

2.\xc2\x0Why changing the job?

3.\xc2\x0Explain in detail the current project. In depth information.

4.\xc2\x0What will you do if your module is dependent on some one else and you are stuck due to him. I told him to that I will create stub ( Template of desire data using edge case conditions)\xc2\x0

5.\xc2\x0Write the full code of finding a Name and phone in simple phone(In which abc all come on 1 using pressing speed and time duration) using sub string of name. I gave 2 solution 1 using suffix tree and 2 using hash table and KMP Algorithm. He told me to write full code of \xc2\x0this problem using hash table and KMP Algorithm. I wrote the full and Manager was\x00satisfied with my answer.\xc2\x0

Three days later I was informed that I was not selected. With below mail :-

Thanks for your interest in Amazon. We appreciate you sparing time towards discussions with us.\xc2\x0After the detailed discussions with you and internal discussions thereafter, we regret that we do not have a suitable opening at present that does justice to your aspirations and capabilities. Hence we would not be able to take it forward at this juncture.

With your permission, we will retain your details in our database and would get in touch with you, should there be a suitable opening in future.

Wish you all the best in your endeavors.

I am still not able to find the correct reason behind it. And Now I am frustrated.

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#### Following materials I used for preparation.

1. GeeksforGeeks
2. Careercup
3. Introduction to Algorithms(Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, and Clifford Stein)
4. Algorithm Design [Jon Kleinberg, \xc3\x89va Tardos]

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## Amazon Interview | Set 21

- Difficulty Level :\n[Medium](#)
- Last Updated :\n14 Jun, 2019

Recently I have gone through 10 rounds of interviews of my dream company Amazon for SDE1 and I got selected. My only resource and library for preparation was GeeksforGeeks, which is the best website for tech preparation, if you aim for big shots like Amazon, Microsoft, etc. I was not too confident to attend interviews. The interview experiences blog gave me courage and coding experience to crack all rounds. Please do follow this site for every update, and suggest your friends to follow if they try for job change and if they aim for big companies.

I am sharing my interview experience, which will help others.

Total rounds : 10

1 online written test + 4 telephonic + 5 F2F screening rounds.

In F2F rounds, for every problem complete executable code + algorithm will be expected.

In all rounds , best solution will be expected (with less complexity)

### Online Written Test:

1. Find maximum frequent numbers in an array. If there are more numbers with maximum frequency, they display all numbers in ascending order. Ascending order is important.

2. Two numbers represented as linked lists. (Bigger than integers). [Return a linked list which is the product of the given two linked lists.](#)

1->2->3->Null (123)

2->3-Null (23)

O/P: 2->8->2->9->Null

### 1st Phone Screening (45min):

1. [Find a linked list has circle in it, If it has loop, find origin of the loop.](#)

2. [In Linked list, Node has two pointers, one points to next node, other points to arbitrary node in the linked list. Write a function to return a new list which is clone of the given linked list.](#)

3. [An array is sorted and rotated by k times. Find an element in an array. \(efficient and logarithmic time solution is expected\)](#)

### 2nd Phone Screening(45min):

1. [Two strings s1,s2 are given as input. Remove characters present in s1 which are there in s2.](#)

2. How to find number of subsets in a set.

3. [Searching an element in 2D matrix which is sorted in row wise and column wise.](#)

1 2 3 4

2 3 4 5

3 4 5 6

4 5 6 7

5 6 7 8 Find an element in it.

4. Difference between [merge sort](#) and [quick sort](#). How do you improve quicksort (think about in selecting pivot element).

5. Give a scenario for quick sort in worst case.

6. How to store a set in memory, what ADTs do we use and what are tradeoffs for each ADT.

### 3rd Phone Screening(35min):

1. [N-Petrol bunk problem](#): There are n petrol bunks located in a circle. We have a truck which runs 1 km per 1 liter (mileage 1kmpl). Two arrays are given. The distances between petrol bunks are given in one array. Other array contains the no of liters available at each petrol bunk. We have to find the starting point such that if we start at that point , you we would able to visit entire circle without running out of fuel. Initially truck has no fuel.

2. [Reverse linked list in groups of size k](#).

I/P: 1->2->3->4->5->6->7->8->Null k = 3

O/P: 3->2->1->6->5->4->8->7->Null

### 4th Round(35min):

1. Algorithm to construct a tree given [Pre](#) and [In order](#) traversals.

2. [Inorder successor of a tree](#).

3. Threaded binary tree(inorder without recursion)

### F2F Round 1 (with Hiring manager 60+ min):

1. Tell me about yourself and Projects you worked.

2. About the most critical situation in the project you went through. How you did it. ( he needs complete explanation of the scenario)

3. If he gives the same scenario as an interview question, how will you improve code quality and its complexity.

4. About SDLC you followed. Which one do you like and why.

5. Do you have any questions to ask ( very important one- ask something about projects they work, etc. Good sign )

### F2F Round 2 (with Developer 60 min):

1. Tell me about yourself.

2. [Zigzag traversal of binary tree](#). (more optimal solution is expected from you). Complete code should be written and they will check later.

3. A robot is there in 2D space, which can move to its left direction. You are given with an array which are moves of robot, which starts from origin(0,0). Find the rectangle covered by it.

I/P: { 2,3,4,5,6,1,3,5,5} starts at (0,0)

O/P: rectangle points: ( -4,4 ) to (4,-2)

4. Casual discussion about hiring process.

### F2F Round 3 (with Developer 50min):

1. Data structure which does insertion, deleting latest item, find min, find max in O(1) time. (Gave hash, 2-D, linked list, many .. He impressed lot here)

2. [Vertical sum of a tree.](#) (Column wise sum \xe2\x80\x93 can find same one in geeksforgeeks)

3. Find n-th digit in the continues sorted stream of data.

I/P: {1,2,3,4,5,6,7,8,9,1,0,1,1,1,2,1,3,1,4,1,5,1,6,1,7,1,8} n=28 infinite} n =28

O/P: 28th digit

Complexity analysis of all the above.

### F2F Round 4 (with Developer 45 min):

1. [Print matrix spirally.](#)

1 2 3 4 5  
6 7 8 9 10  
11 12 13 14 15  
16 17 18 19 20  
21 22 23 24 25

O/P: 1 2 3 4 5 10 15 20 25 24 23 22 21 16 11 6 6 8 9 14 19 18 17 12 13 18

2. [Write a function to check syntax of opening and closing braces whether they are proper or not.](#)

3. Same question if you have k types of braces( \xe2\x80\x98(\xe2\x80\x98 \xe2\x80\x98 \xe2\x80\x98[\xe2\x80\x98 \xe2\x80\x98 \xe2\x80\x98{ \xe2\x80\x98 ,\xe2\x80\x98 K types) All are of same priority.

4. Same question if you have k types of braces( \xe2\x80\x98(\xe2\x80\x98 \xe2\x80\x98 \xe2\x80\x98[\xe2\x80\x98 \xe2\x80\x98 \xe2\x80\x98{ \xe2\x80\x98 ,\xe2\x80\x98 K types) All are of diff priority.

5. Print all valid combinations of k number of pairs of braces.

6. Return count of above combinations without using algorithm for printing them.

7. Memoization \xe2\x80\x93 do you know about it. Explain me.

### F2F Round5 (Bar Raiser round) 60min:

1. Leader ship principles followed by Amazon

2. About project.

3. Why you are leaving prev company, What will stop you there.

4. Set of strings are given in a dictionary order. The problem here is order is not as our alphabetical. It may be different. C may come before a,b, x may come before d,c. etc. You will have to find the order of characters by using given input. ([topological sort](#) \xe2\x80\x93 complete code is required to write)

5. [Binary search tree into Sorted doubly linked list](#) (Expected Inplace algorithm)

### Things to keep in mind:

1. For every problem, give one simple solution first (may have more time complexity) and think for optimal solution.

2. Write a code in clear manner. It should be understandable without your explanation.

3. In a position to tell complexity for code you are going to write.

4. First tell the algorithm or approach and proceed with writing code.

5. Do not hesitate to ask for clarification. They will impress.

That's all from my side. Best of luck.

Thanks again for GeeksforGeeks, a lovable website for techies.

This article is compiled by **Ranganath**. Many Many congratulations to Ranganath for his selection. If you like GeeksforGeeks and would like to contribute, you can also write an article and mail your article to contribute@geeksforgeeks.org. See your article appearing on the GeeksforGeeks main page and help other Geeks.

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Each interview is not like a level in amazon, they won't share feedback neither with you nor with other interviewers.

After the interview process is done all those who took your interview will sit and judge (That's what HR told me )

All the interviewers were friendly, finally I got a call from HR saying that I was selected

Thanks to Geek4Geeks

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## Amazon Interview | Set 19

- Difficulty Level :\n[Hard](#)
- Last Updated :\n14 Jun, 2019

I recently had a set of interviews with Amazon.com and listing below the questions. The day had around 15-20 of us at their office and the whole process took close to 12 hrs.

Hope, people can reap benefit from it. \xf0\x9f\x99\x82

### 1st Round:\xc2\xd0Online Written round.

a. Determine if a matrix is a cross-matrix.

\xc2\xd0 A cross-matrix is a one in which all the\ xc2\xd0diagonal\ xc2\xd0elements are same and not repeated anywhere else.

b. [Print the level-order in reverse order, i.e. from Bottom to top.](#)

c. One more easy question, which I\xc2\xd0don\xe2\x80\x99t\xc2\xd0remember now.

### 2nd Round:\xc2\xd0F2F- Developer

a. [Kadane\xe2\x80\x99s Algo.](#)

However, it was hidden behind a good problem set.

Interviewer wanted to identify whether I can recognize the same.

I did not remember it instantly but was able to prove it by solving.

b. [Linked-list intersection point.](#)

Again, had to decipher the above from a different problem set.

[A tree with only parent pointer, how to find LCA?]

Was able to easily identify the same and we quickly moved onto other things.

### 3rd Round :\xc2\xd0Hiring Manager

a. Design a stack which can perform findMax in O(1).

Had read the answer once in some book and duly told him have heard it.

He verified and we moved on.

b. [Set of stocks for each day have been given. Need to find the days on which I buy and sell share to earn max profit, alongwith finding the max profit.](#)

Had to write the code, which I was able to do well.

He was impressed and I felt I had a good chance.

### 4th Round\xc2\xd0: Developer

a. [Find top k searched elements from a\xc2\xd0continuous\xc2\xd0stream of data.](#)

I remember we needed to use Min Heap but his constraint was using a continuous\xc2\xd0stream.

Finally was able to do it with his help.

b. Some design question based upon his team\xe2\x80\x99s problems.

Had to use a queue and a hashmap to solve it.

He was very much\xc2\xd0interested\xc2\xd0in whether I could identify the complexities correctly.

### 5th Round\xc2\xd0: Manager \xe2\x80\x99s Different Team

a. Given a linked-list and 2 integers k & m. Reverse the linked-list till k elements and then traverse till m elements and repeat.

Write production quality code.

I am not sure what happened and why I fell off on such an easy question, but you just can do something like that in the last round.

b. An array of elements have been given. [Find for each element, first max element to its right.](#)

Was able to do it well, however lost it on complexity analysis.

c. [Boundary traversal of a tree.](#) Write the code.

Wrote the code, however he was not able to check the same as took a lot of time.

\xc2\x0

Before this round, I had good hope of getting selected, but\xc2\x0no one\xc2\x0can give such a bad last interview and get selected and hence after 2 weeks got a rejection mail.

\xc2\x0

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## Amazon Interview | Set 18

- Difficulty Level : [Medium](#)
  - Last Updated : [14 Jun, 2019](#)

Amazon visited our campus on 16,17 and 18 Dec.

## **WRITTEN ROUND(1.5 hrs)**

## 20 MCQ + 2 CODE

MCQ- mainly Aptitude, C-output questions, OS- unix related and DBMS

CODE-

\xe2\x80\xa6) Binary complement of a number.

\xe2\x80\xa6) Easy question related to bets

42 out of around 200 students were shortlisted after this round.

## **ROUND 1:**

Around 15 min discussion on my image processing project

## Finding an element in rotated sorted array.

12 students were shortlisted after this round

## **ROUND 2:**

1) Convert postfix to infix in which the result must be having minimum number of braces i.e apply braces whenever necessary.

2) Given a binary tree print the sum of elements on same axis (for all axis).

Elements on same axis are for e.g.: root, root->right->left, root->left->right

3) Design hash table with following operations you are given with a good hashing function.:.

insert() \xe2\x80\x93O(1)

find() - O(1)

`delete()`-O(1)

traverse()-O(n)..(where n is the number of elements in hash not the size of hash)

4) Given an array find a sub-array with sum=0

5)

```
for(i=0;i<n;i++)
\xc2\xa0for(j=0;j<n;j++)
\xc2\xa0\xc2\xa0\xc2\xa0cout<<a[i][j];
\xc2\xa0\xc2\xa0
for(i=0;i<n;i++)
\xc2\xa0\xc2\xa0for(j=0;j<n;j++)
\xc2\xa0\xc2\xa0\xc2\xa0cout<<a[i][j];
```

out of these 2 which one will be better

I was asked to write the complete code for all the questions.

6 students were shortlisted after this round

### ROUND 3:

1) Given memory in the form of chunks if one process is reading any chunk, then any other process is not allowed to write but it can read, if write lock is on, then any other process is not allowed to read or write, now process can have lock on any number of chunks (continues) and other process requesting read or write can even request for memory that does not have the same starting address as the process who has locked the continues chunk memory.

Now we have to design a DS for representing memory and then design isRead() and isWrite() which will return Boolean values true-if read/write can be performed vice versa.

2) Permutation of a string with and without repetition of characters.

3) Given an array of numbers if we start deleting numbers from end of array, then we have to tell the maximum element of the array after deletion in O(1).

I was asked to code all the questions.

4 students were shortlisted after this round.

### ROUND 4:

1) Around half hour discussion on my intern project which was with an e-commerce company.

2) [Given a linked list with one extra arbit pointer we I was asked to make copy of linked list.](#)

He asked me to write the full code for method 1 in the above link.

In the end 3 students were hired and I was one of them.. \xf0\x9f\x99\x82

I am very thankful to geeksforgeeks It really helped me a lot for my preparation. Keep up the good work guys

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# Amazon Interview | Set 17

- Last Updated : \n14 Jun, 2019

## Online Written round :

5 programming questions. You have to answer within 2 hours.

1. Swap two nodes in a linked list
2. [Find kth smallest element in a binary search tree](#)
3. [Longest increasing subsequence in an array](#)
4. One DP program

## Face to face interviews:

### 1st round :

1. [Find whether given tree is BST or not](#)
2. [Boundary traversal of a tree](#)
3. Print the border nodes of the tree

### 2nd round:

1. There are n number of points in a two-dimensional plane. Find two nearest points
2. There are n number of points in a two-dimensional plane. Given a point find k nearest points to it.

### 3rd round:

1. [Given a matrix with random numbers in it, If a location has 1, make all the elements of that row and column as 1](#)
2. [Given a matrix, find whether you can form the given number in](#)

### 4th round:

1. Write a program to list all the possible words from the given set of data in the same order. (eg: given word: nokiamobile O/P: nokia mobile: given word: samsung O/P: 1. SAMSUNG 2.SAM SUNG(considering sam as a word) )
2. Given two trees, find whether they are from same set of dataset or not.
3. Thread pool implementation.

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## Amazon Interview | Set 16

- Last Updated : \n13 Jun, 2019

I recently appeared for amazon which came to our campus. Here is my experience.

### Shortlisting Round.

There were 20 MCQ and 2 programming questions. Each correct answer carried 1 mark and -0.25 for a wrong answer. Programming questions were:

- a. [Given a number with the number of digits in the range of 10-50, find the next higher permutation of the number. If such a number doesn't exist, return -1.](#)
- b. Given an array of strings, you need to find the longest running sequence of a character among all possible permutations of the strings in the array.

INPUT:

ab

ba

aac

OUTPUT:

a,3

Then there were 4 rounds of interview.

### T1

- a. [Given link list segregate odd elements first and even elements afterwards.](#)
- b. Given a BST of memory sizes. Find best fit for a memory block of size M.

### T2.

- a. [Given 2 sorted arrays of size m and n+m\(with n elements\) , mergethem into the latter..](#)
- b. [Given a character array find the first element that repeats itself.](#)

### T3.

- a. [Given a binary tree connect all nodes in a level through link list.](#)
- b. [Some question related to share market which boiled down to find maximum difference between two elements such that second element appears after the first one.](#)
- c. What is thrashing ?
- d. Real world application of heaps?
- e. Minimum spanning tree and topological sort .

### T4.

Around half an hour HR then

Given a function node\* inplacemergesort(node\* n1, node\* n2) which takes 2 linked lists as input and [performs in-place merge sort and returns the final list](#). How will you test it and make sure it does what it claims.

I was hired \xf0\x9f\x99\x82 .

The interviewers were very friendly, patient and looked for optimal solution to each question .

I am very thankful to geeksforgeeks for such a great site and the way its maintained. It really helped me a lot for my preparation. Keep up the good work guys !

Thanks.

“

This article is compiled by **Ayush**. Many Many congratulations to Ayush for his selection in Amazon. If you like GeeksforGeeks and would like to contribute, you can also write an article and mail your article to contribute@geeksforgeeks.org. See your article appearing on the GeeksforGeeks main page and help other Geeks.

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## Amazon Interview | Set 15

- Last Updated : 19 Aug, 2019

For the position SDE I.

I had an online test through interviewstreet and following were the questions:

- [Inorder Successor in BST](#)
- [K distance from root](#)
- [Clone a linked list with next and random pointer](#)

### F2F Interview :

1. Generate all valid permutations using  $\{80, 98, \{80, 98\}, 80, 99\}$ . Valid permutation is the general definition of valid sequence of the opening and closing brackets.

I told him a solution where we would generate a combination using a recursive solution and prune the cases where a valid combination is no longer possible. The solution was fine and not that difficult. But the interviewer was very interested in knowing if I can calculate the complexity of the solution. He gave me some hints but it was just not striking me. I told him my approximate answer. We moved on.

2. Create an ancestor matrix for a tree.

The solution would seem simple. But since the matrix is  $N \times N$ , the interviewer wanted some tricks to reduce the complexity of the write operation on the matrix.

I told him a solution where you can initialize the matrix with all zeros and only write 1 for the ancestor cell using a modified recursive solution and linkedlist. He was fine with the solution

### F2F 2:

- Find the maximum weight node in a tree if each node is the sum of the weights of all the nodes under it. Obviously tree nodes can have negative weights.
- [Kadane's algo](#)

### F2F 3:

- [Find the diameter of a tree.](#)
- [Link every node of a level to the next node at the same level](#)
- [Find the first subarray which has a zero sum in an array](#)

### F2F 4:

Detailed discussion on projects I did in college and about my interests.

\xa0

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## Amazon Interview | Set 14

- Difficulty Level : \n[Expert](#)
- Last Updated : \n13 Jun, 2019

Team\xc2\xa0: Transportation  
Location\xc2\xa0: Hyderabad

### Round 1 (Online Test)

Q1. [Find the kth largest value in a BST](#)

Q2. Swap the alternate nodes in a singly linked list( not the data);

Q3. [Minimum no of coins required to get the given sum. Coins are given in a sorted array.](#)

Q4. A file contains data as follows( Student name, marks in 3 subjects)

Shrikanth 20 50 60

Kiran 30 80 90

Find the student who has\maximum\average score

Q5. [Find out given two trees are isomorphic or not](#)

### Round 2 (Telephonic Round)

Q1.\xc2\xa0\xc2\xa0Print the level order of binary tree such that each level should print in a different line

Q2. [Push\(\) and Pop\(\) methods of stack are given. Write a function to get the minimum of stack in O\(1\) time](#)

Project related questions

### Round 3 (F2F with Dev Manager)

Q1. [Connect nodes at same level in a binary tree\( may not be a complete binary tree\) without using recursion](#)

Q2. Sort the linked list which contains only 1,2,3 numbers in a single pass

### Round 4 (F2F with developers)

Q1.\xc2\xa0Design a [snake and ladder game](#)

Q2. [Given a linked list contains even and odd numbers.\xc2\xa0separate\xc2\xa0the list into two lists contains odd/even numbers.](#)

Q3. [Given a 2D matrix which contains 0\xe2\x80\x99s and 1\xe2\x80\x99s. Given two points of matrix whose value is 1. Find the path\(with only 1\xe2\x80\x99s\) between the given points](#)

### Round 5 (F2F with Senior Manager)

Project related questions

## Challenging tasks done so far

Q1. Given a large file which contains m rows and n columns. Given a column no, sort the column in such a way that corresponding rows also sorted

## Round 6 (F2F with Developers)

Q1. Print all pairs(sets) of prime numbers (p,q) such that  $p \cdot q \leq n$ , where n is given number

Q2. Given a binary tree, if parent is 0, then left child is 0 and right child is 1. if parent is 1, then left child is 1 and right child is 0. Root of the tree is 0. Find the kth node value which is present at Nth level

Q3. Longest monotonically increasing sequence in  $O(N \log N)$

I couldn't make it. Hope it helps someone else.

\xc2\x80\x99t

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## Related Practice Problems

[Pairs of prime number](#)  
[Student record](#)

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# Amazon Interview | Set 13

- Last Updated : \n13 Jun, 2019

## Round 1 (Telephonic)

Q1. [For a given number, find the next greatest number which is just greater than previous one and made up of same digits.](#)

Q2. [Find immediate ancestor of a given Node](#)

Q3. Clone the linked list having an extra random pointer in nodes which is pointing random node in the list.

## Round 2 (F2F)

Q1 [In a binary tree, a random pointer is given in each node. If this pointer pointing other than any successor of the node then set it as NULL. Otherwise let it remain untouched. Write code.](#)

Q2. You will be given the number of pairs of parenthesis. Find out the total possible valid unique combinations and there should not be any duplicity. Write code

## Round 3 (F2F)

Project and some questions related to it.

Q1 [Given an in-order traversal of a special binary tree having property that the node is always greater than its left and right child. Construct the tree and write code.](#)

Q2 Find top 10 trending words inserted by users in sites like twitter. Only algorithm.

Q3 [write an efficient code to find the first occurrence of 1 in a sorted binary array. \(2 minutes only\)](#)

## Round 4 (Telephonic)

Q1. Remove duplicated from a string in O(n) without using hash.

Q2. Find the first occurrence of 1 in a sorted infinite binary tree.

## Round 5 (F2F)

Amazon has many visitors to its site. And it tracks what pages the customers visited, etc and other stuff.

Make an efficient data structure for storing 3 days of information of all those customers who have visited site exactly two different days and searched more than 3 unique pages of the site in those 2 days.

So whoever visited site exactly two days out of these three days and visited more than 3 unique pages should be in the contact list.

After final round got a regret mail after 3 days that I was Not selected.

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## Amazon Interview | Set 12

- Difficulty Level :[Expert](#)
- Last Updated :[13 Jun, 2019](#)

I am very thankful to geeksforgeeks team for such a great site. I got offer from Amazon.

### Written Test

It was online test on interviewstreet.

20 MCQs- basics of C & C++, OS and some aptitude question

There were 4 technical rounds each for 40-60 minutes, no HR round.

#### 1st Round

[Given two numbers and a binary tree, all elements in binary tree are distinct, write code to determine the shortest distance between the two nodes.](#) (unit distance between two adjacent nodes). Nodes don't have parent pointer.

\xc2\x0

#### 2nd Round

1. [Level order traversal in spiral form](#)

2. There are some glasses with equal volume 1 litre. The glasses kept as follows

\r\n 1\r\n 2 3\r\n 4 5 6\r\n 7 8 9 10

You can put water to only top glass. If you put more than 1 litre water to 1st glass, water overflow and fill equally both 2nd and 3rd glass. Glass 5 will get water from both 2nd glass and 3rd glass and so on..

If you have X litre of water and you put that water in top glass, so tell me how much water contained by jth glass in ith row.

Example. If you will put 2 litre on top.

1st \xe2\x80\x93 1 litre

2nd \xe2\x80\x93 1/2 litre

3rd \xe2\x80\x93 1/2 litre

#### 3rd Round

1. [Check for BST](#)

2. Liked list is given as below (with elements as 1, 2 and 3), sort this in one pass.

3->2->2->1->2->3->1

#### 4th Round

1. An expression is given.

[] can enclosed [], {} and ()

{ } can enclosed {}, ()

() can enclosed only ()

Check that brackets in the expression are valid or not according to enclosing condition and opening closing condition.

Follow UP:

Two arrays are given.

One array contains symbols and second one contains expressions. Symbol array contains opening symbol at even index and closing symbols at odd index just after opening symbol. Index is starting from 0. Opening symbol at index i can only contain symbols from i to 2n-1, If there n pairs of symbols. Now check that expression in the expression array is valid or not.

2. [There are m sorted arrays of each size n. You have another array B of size m\\*n. Fill the array B from the m arrays in sorted order.](#) Give the optimal solution.

I liked the way interviewers were interacting. They were very supportive and friendly as well.

This article is compiled by **Viswas**. Many Many congratulations to Viswas. If you like GeeksforGeeks and would like to contribute, you can also write an article and mail your article to contribute@geeksforgeeks.org. See your article appearing on the GeeksforGeeks main page and help other Geeks.

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# Amazon Interview | Set 11

- Last Updated : \n13 Jun, 2019

I would like to thank geeksforgeeks team for the excellent website. I got placed in amazon because of your website. I would like to share my experience and the interview questions.

## **1 round was online written technical test**

There were 20 MCQ and 2 programming questions. Each correct answer carried 1 mark and -0.25 for a wrong answer. Programming questions were:

\xe2\x80\x94[Write a program to find the difference between the sum of nodes at odd height and the sum of nodes at even height](#)

\xe2\x80\x94[Given an array of integers representing coin values and the sum required. find the number of coins required to get the sum](#)

## **4 technical rounds**

Various programming questions related to data structures were asked. Each round was an elimination round. Questions asked were

\xe2\x80\x94[Write a program to traverse the tree in spiral form](#) in O(n) time.(Hint:use two stacks)

\xe2\x80\x94[Program to implement atoi function](#)

\xe2\x80\x94[Program to swap the kth node from end and kth node from front](#)

\xe2\x80\x94[Program to find loops in linked list](#)

\xe2\x80\x94[Find the maximum length palindrome in a string](#)

\xe2\x80\x94Difference between process and thread

\xe2\x80\x94Advantages and disadvantages of thread and process

\xe2\x80\x94Test cases for checking binary tree

\xe2\x80\x94Test case for atoi function

\xe2\x80\x94Test cases for finding loops in the single linked list

Each technical round was for 60-90 minute duration. There was no HR round \xf0\x9f\x99\x82

\xc2\xab

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## Amazon Interview | Set 10

- Difficulty Level : [Hard](#)
  - Last Updated : [13 Jun, 2019](#)

Recently I got interviewed at Amazon Hyderabad. I just wanted to share my experience. Hope someone gets little help from this.

## **1. Telephonic**

- a. In Binary Tree node, extra pointer  $\rightarrow$ next is given in the structure of node. Make linked list at each level.

I did it with using Queue made of doubly linked list. Time complexity O(n), space O(n). I was asked to write code as well on collabedit site.

- b. [Equilibrium point in array](#), equiPoint = ith index where Sum(Left array) = Sum(right Array). Did it O(n) time complexity and O(1) space. I was asked to code it as well.

## 2. Telephoinc

- a. Find each pair in BST, which adds up to given number k.

|xc2|xa0 |xc2|xa0 Explained different methods for it and he asked me to code for one.

\xc2\xa0 \xc2\xa0 I did it as follow.

```
\xc2\xa0 \xc2\xa0 void findPairs(node *start, int k)
```

\xc2\xa0 \xc2\xa0 {

\xc2\x0 \xc2\x0 \xc2\x0 \xc2\x0 \xc2\x0 \xc2\x0if(start == NULL)

```
\xc2\x0 \xc2\x0 \xc2\x0 \xc2\x0 \xc2\x0 \xc2\x0findPair(start->left, k);
```

|xc2\xa0 |xc2\xa0 |xc2\xa0 |xc2\xa0 |xc2\xa0 |xc2\xa0 |xc2\xa0if(k |xe2\x80\x93 start->data > start->data)

|xc2\xa0 |xc2\xa0 |xc2\xa0 |xc2\xa0 |xc2\xa0 |xc2\xa0 |xc2\xa0 if(search(start->right, k

\xe2\x80\x93 start->data)) // this search is normal BST search.

```
printf(\xe2\x80\x9c(%d, %d), \xe2\x80\x9c, start->data
```

\xc2\xa0 \xc2\xa0 \xc2\xa0 \xc2\xa0

- a. About Project, cross questioning, etc.
  - b. Two files containing large number, one in each. You have only fopen(), int read(fp), fclose(), fwrite(). Add these two numbers and write in third file with the help of given functions only.  
\xc2\x9a \xc2\x9a Explained him the logic and he was okay with it.
  - c. Write sql query for getting direct and indirect reportees of a given employee. Lets say Employee

table(emplId, ManagerId).

- \xc2\xd0 \xc2\xd0 wrote it and he verified it and it was okay. Recursive query, I can't think of anything else.

d. Oops concepts, asked to explain Static keyword with all possible example.

### 2. Quality with Requirements

- ## 2. Onsite: with Developer.

BST and to reach x, If you go right print 1, if left then 0.  
Now you are given an index i in the array A (so x = A[i]) and print the encoding without constructing BST to reach x  
and without space with least time complexity.  
I was not able to do it on the spot but after this interview, I got some free time and solved it and handed over papers to the interviewers. I liked this problem. It was little interesting.

b. [Find triplets in array so that a+b+c = k](#), k is given number along with array.

c. Then moved to finding all possible pair set in an array. Mind the term SET. Take care of duplicates as well.  
Reduce time complexity as much as you can.

### 3. Onsite: with Developer.

a. [Given array, find all possible sets of elements which add up to a given integer K](#).  
I coded it with just 4-5 lines in just couple of secs. It took little time to make him understand the solution.  
I was given an input of 6 numbers in an array and asked to run my solution till the end. It was recursive and he asked me to keep on writing, writing, writing, till he got that okay, it will work fine.

b. I was asked couple of questions which I already knew and I told him and we moved on to next questions. I don't remember what he asked.

c. [If tree is BST or not. Coded it.](#)

### 4. Onsite: with One Manager and Senior SE.

a. Discussion on my current Project. Quite a good discussion. It took quite a good time.  
They asked me what more enhancements I can think of for features, I made in my project.  
I explained few different things that I could think on the spot and they liked it.

b. [Linked list with a head pointer along with next pointer in it, head can point anywhere\(can be null as well\). Return clone of given such linked list.](#)  
I already knew the best approach for this. Then he asked me to think something else. I mentioned Hash. He was okay with it and we moved on.

c. [Replace the elements in an array with the next following greater number of it from right side of the element.](#)

I told him I already know this and I asked if he wants me to explain the algo. He said so and I explained. Then we moved on.

d. [Reverse each K nodes in linked list.](#)  
e.g. 1->2->3->4->5->6->7- given  
output 3->2->1->6->5->4->7-  
e. [Two strings S and S1. Remove all chars from S which are present in S1.](#)  
Explained them all possible methods for this what I could think of(with space, without space). Finally, they were looking for BitMap solution. I explained that as well before one mentioned it.

f. Design a Chess game.  
Gave different classes and their relations, some procedures, then cross questioning and I was able to give all answers which he mentioned quite reasonable.  
They were okay with the design.

In the whole interview process I was asked like 8-10 questions which I already knew and I mentioned the interviewers same. I was told why you read so much.

Overall, it was quite a good experience for me. I liked the way interviewers were interacting. They were very supportive and friendly as well.  
Unfortunately, I was not selected. I have no idea what they were looking for.

\xc2\xd0

Thanks to **Vinay** for sharing Amazon Interview experience. If you like GeeksforGeeks and would like to contribute, you can also write an article and mail your article to contribute@geeksforgeeks.org. See your article appearing on the GeeksforGeeks main page and help other Geeks.

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# Amazon Interview | Set 9 (Answers)

- Last Updated : \n13 Jun, 2019

This post is about answers to the questions asked in [Amazon Interview | Set 9](#). It contains links to some of the solutions available on the geeksforgeeks. I have also written my answers which I replied in the interview. I hope it would help the readers.

## Online Programming Round: (5 methods, 2 hours)

3) [k-th smallest element in BST](#)

5) [Longest Increasing Subsequence](#)

\xc2\xd0

## Telephonic Interview 1:

1) [Row with max 1s](#)

2) [Anagram](#)

3) [Rotate and delete](#)

\xc2\xd0

## Telephonic Interview 2:

3) [Find the distance of every other point from P. Then use of max-heap of size K.](#)

\xc2\xd0

## Face-to-face Interview 1: (Hyderabad, Date: November 08, 2012)

2) I gave the following solution (with the help of the interviewer):

1. For every set, find out the number of sets it has intersection with. Also maintain those set indices.
2. Remove the set which has maximum number of intersection. And update the remaining numbers.
3. Repeat step 2 till we have any set which has intersection with any other set. At the end, we will have the solution. (Still not sure about optimality).

We can relate the solution with graphs: Remove some nodes so that remaining all the nodes are isolated nodes.

Searching: To make searching efficient, we can build trie data structure using bits for every set. So that we can find the intersections faster.

## Face-to-face Interview 2 (with a manager):

1) I tried for some time. Then the interviewer gave me the formula. The number is  $1 + \lceil (N-W)/S \rceil$  in all the cases.

For second part of question, simple solution is to find min in every window. But we can optimize so that we can utilize previous results/previous min.

*Bit optimal:* I created a min-heap of W elements. But the heap contained indices of the array elements, not the values inside the array itself. The indices were stored in heap as per their values in the array. Then for a new window, search the heap linearly (heap was in form of array), replace the old indices (which are no longer in the new window) with the new indices, and adjust that index in the heap. After adjusting all the new indices, we will have new min for the new window at the root. (Not sure whether the complexity brought in to the solution is worth!)

\xc2\xd0

### Face-to-face Interview 3:

2)\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0 I gave a solution based on trie data structure using characters of the string. But he suggested to build trie based on the string itself. However, I was not able to think in that way.

3)\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0 Linear search. Binary search.

\xc2\xd0

### Face-to-face Interview 4 (with the manager of the unit of opening):

2)\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0\xc2\xd0 I said, we can organize an online coding competition. People would register and we will have the details. He replied, it\xe2\x80\x99s too expensive. Then I said, we can postpone the competition!

### All the Best!

Thanks to **Hitesh** for sharing his answers. If you like GeeksforGeeks and would like to contribute, you can also write an article and mail your article to contribute@geeksforgeeks.org. See your article appearing on the GeeksforGeeks main page and help other Geeks.

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## Amazon Interview | Set 9

- Difficulty Level :[Expert](#)
- Last Updated :[28 Apr, 2017](#)

### How did it start?

I completed and submitted the 4 programs at the link: <https://amazon.interviewstreet.com/challenges/dashboard/#problems>

Later on I came to know that the recruitment through this link is over. So I contacted a few of HR persons at Amazon, and I got a new link for online programming test.

### Online Programming Round: (5 methods, 2 hours)

1) A sentence is given which contains lowercase English letters and spaces. It may contain multiple spaces. Get first letter of every word and return the result as a string. The result should not contain any space. Complete the following method:

```
static String getFirstLetterWord(String text) {
```

2) Given an array. Iterate it for the given number of times. And then return the summation of the resultant elements.

Ex: Array is { 1,2,5,6}, N=2

After 1st iteration: {2-1, 5-2, 6-5}={1,3,1}

After 2nd : {3-1, 1-3}={2,-2}

Sum is 2+(-2) = 0

If only one element remains in the array, the element remains the same after applying the iteration. Complete the method.

```
static int iterateSequence(Vector<Integer> a, int N) { }
```

3) Find Nth largest element in the BST. Complete the method.

```
static int nLargeBST(Node root, int N) { }
```

Given that

```
\r\nclass Node{\r\n    Node left, right;\r\n    int data;\r\n    Node(int newData){\r\n        data = newData;\r\n        left = right = null;\r\n    }\r\n}
```

4) Swap adjacent nodes in the linked list. Change the links, not the data. Complete the method.

Ex: 1, 2, 3, 4

O/P: 2, 1, 4, 3

ex: 1,2,3,4,5

op: 2, 1, 4, 3, 5

```
\r\nclass Node {\r\n    Node next;\r\n    int val;\r\n}\r\nstatic Node swapAdjacentNodes(Node head) { }
```

5) Find length of the Longest-Increasing-Subsequence.

e.g.1.

i/p: 1, 2, 3

o/p: 3

Explanation: the sequence is increasing

e.g.2

i/p: 4,5,6,7,8,1,2,1,2,3,5,4,6,7,8,9,0,6,7

o/p: 8

xp: 1,2,3,4,6,7,8,9

e.g.3

i/p: 1,2,9,4,5,10,7,8

o/p: 6

xp: 1,2,4,5,7,8

e.g.4

i/p: 20, 3,22, 5,50, 34, 49, 91,110

o/p:6

xp: 20,22,34,49,91,110

OR

3,5,34,49,91,110

Complete the method.

```
static int lengthLIS(Vector<Integer> sequence) { }
```

### Telephonic Interview 1:

1) A M x N matrix, filled with 0s and followed by 1s. Find the row which contains minimum number of 0s. E.g.

0 0 0 0 0 1

0 0 1 1 1 1



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# Amazon Interview | Set 8

- Difficulty Level : [Medium](#)
  - Last Updated : [13 Jun, 2019](#)

I recently interviewed with amazon for the position of SDE1 in their TRMS team. The interview procedure was unimaginable rigorous.

## Here are the details

## **Round 0: Written Round**

## Interviewstreet Test \xe2\x80\x93 2 questions to be done in 2 hours

**Q1:** Calculate the expression  $(2+3)*5$  .. The question just said this .. I guess we had to make our own assumptions to solve the problem

**Q2:** Two trees can be called isomorphic if they have similar structure and the only difference amongst them can be is, that their child nodes may or may not be swapped..

for example

\xe2\x80\x94\xe2\x80\x94

\xe2\x80\x94-2\xe2\x80\x946

\xe2\x80\x93 \xe2\x80\x93 \xe2\x80\x93 \xe2\x80\x93 \xe2\x80\x93

and

\xe2\x80\x94\xe2\x80\x94

\xe2\x80\x94-6\xe2\x80\x942

\xe2\x80\x93 \xe2\x80\x93 \xe2\x80\x93 \xe2\x80\x93 \xe2\x80\x93 \xe2\x80\x93 \xe2\x80\x93 \xe2\x80\x93

are isomorphic .. the trees are similar and a few nodes have their left and right child swapped

Given two trees determine if they are isomorphic

The interviewstreet people marked the solution to my first question wrong even when it worked fine.. When I told the HR about the situation, she got it checked with some of the amazon guys and they were ok with it.

I cleared the written test.

## **Telephonic Interview 1**

**Q1:** [Find the Kth largest integer in a Binary Search Tree](#). When I told her the solution like the one given on geeks for geeks, she asked me to do it using recursion.

**Q2:** Given an array of positive integers, find the max no that can be formed by any permutation of the arrangement. I told her a logic. She then asked me to write just the comparison function to choose one number to put before the other.

When I gave the interviewer straight answers, she twisted the question more.. Probably they wanted to see how i think and approach a problem.

## Telephonic Interview 2

**Q1:** [A binary search tree is given with its two nodes interchanged. I had to find both the nodes.](#)

**Q2:** [Identify all the pythagorian triplets in the given array.](#)

I cleared this round. The HR told me I had to come over to Bangalore for in-person interviews. (all the travel arrangements were made by amazon itself)

## Personal Interview 1

**Q1:** Find the sum of continuous subarray within a one-dimensional array of numbers which has the largest sum .. I didnt know a solution ([kadane's algorithm](#)), but somehow I was able to work it out in the interviews ..the interviewer liked my way of approaching and did help a little

**Q2:** [How can you best implement queues using stacks.](#) What would be the time complexity?

was able to do this one quickly.

## Personal Interview 2

**Q1:** [Find non-unique characters in a given string.](#) I told her one  $O(n^2)$  [brute force], one  $O(n \log n)$  [sort and then compare adjacent elements], and one  $O(n)$  [store the character count in an array] approach. She then asked me to do it in  $O(n)$  without using array.

Clueless, she finally told me she wanted me to use BIT Vector. I wasnt well converse with Bit Vectors and I told her so.. She still asked me think more. Finally she told me a solution using the same which was impossible to think in the interview alone, especially when one didnt know what BIT Vectors were. She agreed when I stated the point and accepted my previous  $O(n)$  solution and we proceeded to the next question.

**Q2:** [Given an array of integers, populate another array with the product of the  \$n-1\$  elements of the first array except for the current index element.](#)

Here when I gave her a  $O(n)$  solution [find product and divide it with current element to get the number for this index position], she asked me to do it without the divide operator. Gave her a  $O(n^2)$  solution. But I couldn't think better. Finally just when she began to tell me an  $O(n)$  approach, I remembered the geeksforgeeks solution to the problem and gave it to her. Probably she didn't consider it. (don't know for sure)

## Personal Interview 3

This interview was with the hiring manager at Amazon. He first asked me a couple of HR questions like Why Amazon? Why should we hire you? Projects, internships etc ..? How would you handle a disagreement with your team mates? Etcetc

Then he asked me a programming question.

**Q:** He drew a circle on the board and marked a few points on it. Named them X1, X2, X3 ..

Then he said these are gas stations, and you have to find the correct gas station from where a car should begin to loop in the circle such that it never runs out of gas before completing a round. He then sat on the table.

(Sorry, but I will have to describe it in detail to tell you how it was put out to me.. and off-course to bring in more clarity to the question itself.. )

Unclear about what I had to do exactly and what information was available, I asked him back a few questions.

Why will car run out of gas after fuelling from lets say the first gas station?

He said each gas station has limited amount of gas (lets say X1) and after fueling from this station it can run out of gas even before reaching the next station (anything could happen, it may be able to cross the next gas station but run out later before completing the round..). So I have to find a gas station the car should start the loop from such that it never runs out of gas before completing the loop.

So can the car refuel at the next available gas station, if its able to make up to it?

Yes

Do we have the information about the amount of gas required to reach from one petrol pump to another?

Yes

I made an assumption that the car tank was huge enough to fill as much gas as possible.

And then I drew two arrays, one holding the amount of gas each station had, and other the amount of gas needed to go from this station to the next station..

Fuel Available: X1, X2, X3, X4, X5

Fuel Required to reach next station: Y1, Y2, Y3, Y4, Y5

He said ok, and asked me to go ahead.

I then took the difference (Y1-X1), (Y2-X2) ..and stored it in an array.. and then suddenly it hit me that this became a simple problem of finding the maximum sum of a continuous subarray within an array (circular). He liked my approach and asked me to program it. Did it and showed him a dry run of the code I had written. He was ok with it.

(I felt good after the interview because in there I didn't stumble at all ..)

## Personal Interview 4

**Q1:** We have a huge file with braces {} [just one type..] Find if they are balanced .. (stacks wouldn't work here because you will probably run out of memory storing the stack ..) When I gave him another solution, he asked me to do it using parallel processes. I told him to elaborate more.. (to be honest I wasn't familiar with parallel processes) .. Finally I told him so ..and he asked me to think about it still ..

We discussed it for about 20 minutes. Not reaching anywhere he moved on to ask me the next question.

**Q2:** [Find the smallest substring which contains all the characters of the main string.](#) Again I dint have a solution to this. I gave him a  $O(n^2)$  approach. He asked me to think further because the way I was approaching it was the way to go about it and I can make use of the last sub-solution obtained to improve my complexity. Couldn't think of anything, we finally moved on to the third question.

**Q3:** given the numerator and denominator of a fraction, find the quotient and the remainder without using divide and mod ( $\backslashxe2\backslashx80\backslashx98/\backslashxe2\backslashx80\backslashx99$ ,  $\backslashxe2\backslashx80\backslashx99\%\backslashxe2\backslashx80\backslashx99$ ) operators. This was simple. I did it. He then asked to write the invariant of my solution which was  $\text{denominator} * \text{quotient} + \text{remainder} = \text{numerator}$ .

He then asked me to think about the cases when either or both of numerator and denominator were negative. We were almost out of time so he didn't give me time to think and concluded the interview. He wanted me write an invariant that was true regardless of the input. Now that I think of it, I should have said  $|\text{denominator}| * \text{quotient} + \text{remainder} = |\text{numerator}|$

Flew back home in the night.

2 Days later the HR informed me that I didn't make it in. \xf0\x9f\x99\x81

This was probably the most difficult of all the interviews I have ever had.

Hope it helps some of you ..

Thanks to **ganglu** for sharing Amazon Interview experience. If you like GeeksforGeeks and would like to contribute, you can also write an article and mail your article to contribute@geeksforgeeks.org. See your article appearing on the GeeksforGeeks main page and help other Geeks.

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# Amazon Interview | Set 6

- Difficulty Level :\nHard
- Last Updated :\n13 Jun, 2019

Following are my interview details for senior software engineer in 2010. Thought of sharing it, if it helps anybody

## Telephonic Interview 1

- 1) Write your own power function in C/C++. Time complexity of your code, optimizations.
- 2) Given two strings, write a function to remove all characters in one string which are present in other string

## Telephonic Interview 2

- 1) Construct a tree from ancestor matrix. The main thing he wanted to check was use of binary search.
- 2) Find the k maximum selling items at amazon site at the end of day. Given a file which has count all sold items. Use of min heap was expected.

## Face to Face 1

- 1) Given a Binary Search Tree, in-place convert it to DLL.
- 2) Find the next greater element for every element in array.

## Face to Face 2

- 1) Median of two sorted arrays.
- 2) Given an XML file, how will you store it in memory. Use of tree was expected.  
There were some more questions that I don't remember.

## Face to Face 3

- 1) Given a Binary Tree, check if every node is sum of all of its children.
- 2) Given any Binary Tree, convert it to a tree where every node is sum of all of its children.
- 3) Given an array, find three numbers a, b and c such that  $a^2 + b^2 = c^2$

That is all I remember now.

\xc2\x80

Thanks to **Vivek** for sharing Amazon Interview Questions. If you like GeeksforGeeks and would like to contribute, you can also write an article and mail your article to contribute@geeksforgeeks.org. See your article appearing on the GeeksforGeeks main page and help other Geeks

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# Amazon Interview | Set 5

- Last Updated : \n13 Jun, 2019

I attended the Amazon interview in Hyderabad, This was kindle team, I got rejected but I like to share the experience, thought of giving back something to geeksforgeeks, which was a great reference for me.

## Written test

Very straight forward

1. [Given a linked list, sort without extra space.](#)

I wrote merge sort

2. [Methods to serialize & deserialize a tree](#), must complete the below 2 methods. File serialize(node \*root) & node \* deserialize(File f)

Cleared the written test, I was told this after 1:30 Hrs.

## First round

1. [Find diameter of a tree.](#) I seen the question here, But i didn't recollect.. So solved my self..in some primitive way which made me write code with difficulty.

2. [Find a lowest common Ancestor](#), The variation was the tree was just a Binary Tree, Not BST, It was interesting to solve as i know only BST variation.

## Second round

1. Given an array randomize it,

2. Write all possible permutations of a array of size z.

3. [Given a 2-D array of 0s and 1s, find islands in it.](#) An Island is 1s together. E.g (below there is U shaped island)

0100001

0100001

0100001

0100001

0111111

4. [Write a method to check if a tree is BST or not.](#) I wrote some stupid mistake in this code, probably that gave away my interview.

## Third round

1. So many HR like questions. Why Amazon, Why u want to leave, Why u dont want to stay, what did you do to stay back, biggest challenge, worst mistake, etc etc.. blabbered something.

2. [Write a method that will test a function which merges 2 sorted linked lists.](#)

3. Design a system, which can convert books from one format to another

## Fourth Round

Only one design question: Design a email client.

After 4 days and lot of anticipation, I got a mail saying I got rejected, Was wondering what they exactly look for.

Thanks to muzicisgod for sharing Amazon Interview Questions. If you like GeeksforGeeks and would like to contribute, you can also write an article and mail your article to contribute@geeksforgeeks.org. See your article appearing on the GeeksforGeeks main page and help other Geeks.

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## Amazon Interview | Set 4

- Difficulty Level : \n[Medium](#)
- Last Updated : \n13 Jun, 2019

Please find the details of my Amazon interviews below.

**Date of Interviews:** 1 Sept 2012

**No of Rounds:** 4

**Type of Interviews:** Walk-in for 1 yr experienced

### Round 1:

**Question 1:-** [Given a 2D array containing only 0/1\xe2\x80\x99s and each row is in sorted order. Find the row which contains maximum number of 1s.](#)

I was asked to code. Algo which I told was I will search position of first 1 in 1st row using binary search. And mark it. Now note that position check in 2nd row. If there is 1 for that position already found in 1st row, then binary search from 0 to that position else move to row number 3. Similarly continue further.

### Round 2:-

**Question 1:-** [Given a Binary tree and two nodes. Need to find the minimum ancestor, no parent nodes given.](#)

Each time when I told answer, they modified question little bit or removed some extra storage which I was taking.

**Question 2:-** [Given a Binary tree and two nodes. Need to find smallest path between them](#)

### Round 3:-

**Question 1:-** Given an array of infinite size containing 0/1 only and in sorted order, find position of first one.

My answer: first check whether 1 is present at 100th position or not if there, do binary search between 0 and 100 else check 1 is there at 200th position, and similarly continue further.

**Question 2:-** Given life time of different elephants find period when maximum number of elephants lived. ex [5, 10], [6, 15], [2, 7] etc. year in which max no elephants exists.

Other questions were regarding Operating system like virtual memory etc.

### Round 4:-

It was HR round. Questions related to project. Questions like why I should Hire you etc were asked.

Result is still on wait.

This article is compiled by **Naveen Kumar Singh**. If you like GeeksforGeeks and would like to

contribute, you can also write an article and mail your article to contribute@geeksforgeeks.org. See your article appearing on the GeeksforGeeks main page and help other Geeks.

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## Amazon Interview | Set 3

- Difficulty Level : \n[Medium](#)
- Last Updated : \n13 Jun, 2019

Please find the details of my Amazon interviews below.

**Date of Interviews:** 26th July 2012

**No of Rounds:** 1 online exam + 4 PI

**Type of Interviews:** Campus Interview for freshers

**Online test(Time): 90 Minutes**

20 Objective Questions: Aptitude and basic C objective problems.

2 Subjective Questions:

- I. \xc2\xab0 \xc2\xab0 \xc2\xab0 \xc2\xab0 \xc2\xab0 [Given a linked list containing character in each node, segregate its nodes in such a way that all nodes containing a vowel are moved to the end of the linked list. We will have to maintain the order.](#)
- II. \xc2\xab0 \xc2\xab0 \xc2\xab0 [Parenthesis checker.](#)

**Interview Round 1(50 mins)**

**Question 1:** [You are given two linked lists whose nodes contain a digit as data member. Both lists represent a number. You have to add them and return the resultant list.](#)

Input: 9->9->3->4->5 and 8->9->1 (represent 99345 and 891)

Output: 1->0->0->2->3->6

*My Solution:* Reverse the linked lists. Create the new sum list which is reversed. Finally reverse the resultant list.

**Question 2:** Interviewer asked to solve the above question without changing the original lists.

*My Solution:* Count number of nodes in both lists. If equal then simply add two lists recursively. If not then advance a temp ptr which is a pointer to head of larger list by diff of nodes and then add the list pointed by temp and list 2. Make sure to keep track of carry. Add recursively. Propagate the carry in remaining elements of larger list. Was asked to code. Coded it.

**Interview Round 2(60 mins)**

**Question 1:** Delete nth node from end of a linked list in a single scan.

**Question 2:** In a linked list, in addition to the next ptr, a random ptr is also present. [Clone the linked list.](#)

Did it in O(n) but by modifying the linked list and then restoring it. Was asked to do it without making any modifications in the original list. Did that in O(n^2)

**Question 3:** [Two nodes of a BST are given. Print the path from 1st node to the 2nd node. You are also provided the parent pointers in addition to normal left and right pointers.](#)

## Interview Round 3(1 hour)

**Question 1:** An array of n integers is there in which the range of elements is n, i.e., the difference between maximum and minimum number is n. Find the repeating numbers.

**Question 2:** An extension of Question 1. Was asked to find number of times each number is repeated.

**Question 3:** There are n frames of m data element each. The data element in each frame is arranged in increasing order. You are provided  $m \times n$  space in which you have to arrange all data in increasing order.

My 1st solution was to use merge sort. He modified the question as only  $O(n)$  space is there and you need to send data in increasing order as fast as you can.

My 2nd solution was to use min heap and construct it with the 1st element of all n frames. Min heap also contains extra field which signifies the frame number of data elements. This data structure can do the needful.

## Interview Round 4(1 hour)

**Question 1:** Replace each element of an array with its greatest next integer in  $O(n)$ .

I couldn't do it. I tried but it didn't click. Not expected when you are in your last round.

**Question 2:** Reverse every k nodes of a linked list.

Well did that but was not finally selected.

This article is compiled by **Vinay Khetan**. We will be soon publishing Vinay's Yahoo and Microsoft interviews as separate posts. Vinay was selected in Microsoft. Many Many congratulations to Vinay for his selection.

If you like GeeksforGeeks and would like to contribute, you can also write an article and mail your article to contribute@geeksforgeeks.org. See your article appearing on the GeeksforGeeks main page and help other Geeks.

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## Amazon Interview | Set 2

- Difficulty Level : \n[Hard](#)
- Last Updated : \n13 Jun, 2019

Please find the details of my amazon interviews below.

**Date of Interviews:** \xc2\x026th July 2012

**No of Rounds:** \xc2\x01 online exam + 4 PI

**Type of Interviews:** \xc2\x0Campus Interview for freshers

**Online test(Time): 90 Minutes**

20 Objective Questions: Aptitude and basic C objective problems.

2 Subjective Questions:

I. \xc2\x0 \xc2\x0 \xc2\x0 \xc2\x0 \xc2\x0 \xc2\x0 \xc2\x0 \xc2\x0 \xc2\x0 Given a linked list containing character in each node, segregate its nodes in such a way that all nodes containing a vowel are moved to the end of the linked list. We will have to maintain\ xc2\x a0the order.

II. \xc2\x0 \xc2\x0 \xc2\x0 \xc2\x0 \xc2\x0 \xc2\x0 \xc2\x0 Parenthesis checker.

**Interview Round 1(30-40 Minutes):**

Technical Interview

**Question 1:** \xc2\x0 You are given a linked list and a parameter k. You will have to swap values in a certain fashion, swap value of node 1 with node k, then node (k+1) with node 2k and go on doing this in the similar fashion

**Question 2:** \xc2\x0 For the above question, do it without swapping the values. If you want a swap to occur between two nodes, then you will have to move the nodes itself.

**Interview Round 2(50-60 Minutes):**

Technical Interview

**Question 1:** \xc2\x0 You are given many slabs each with a length and a breadth. A slab i can be put on slab j if both dimensions of i are less than that of j. In this similar manner, you can keep on putting slabs on each other. Find the maximum stack possible which you can create out of the given slabs.

**Question 2:** \xc2\x0 The above question was raised to 3 dimensions.

**Question 3:** \xc2\x0 The above question was then raised to k dimensions.

**Questions :** \xc2\x0 \xc2\x0 Then there were many questions asked on compilers and dynamic memory allocation.

## Interview Round 3(50-60 Minutes):

Technical Interview

**Question 1:** You are given pairs of numbers. In a pair the first number is smaller with respect to the second number. Suppose you have two sets (a, b) and (c, d), the second set can follow the first set if  $b < c$ . So you can form a long chain in the similar fashion. Find the longest chain which can be formed.

**Question 2:** Find the longest increasing subsequence in  $O(n \log n)$ . Proof and full code was required.

**Question 3:** You are given a linked list and an integer k. Reverse every consecutive k nodes of the given linked list.

**Question 4:** You are given an array. For every element you have to replace it with the closest number on the right side which is greater than the element itself.

## Interview Round 4:

The team was highly impressed so they cancelled my 4th round for others who appeared for the 4th round, it was atleast an hour long.

**HIREDD!!**

This article is compiled by **Jinendra Baid**. Many Many congratulations to Jinendra for his selection in Amazon. If you like GeeksforGeeks and would like to contribute, you can also write an article and mail your article to contribute@geeksforgeeks.org. See your article appearing on the GeeksforGeeks main page and help other Geeks.

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## Amazon Interview | Set 1

- Difficulty Level :[Hard](#)
- Last Updated :[13 Jun, 2019](#)

Please find the details of my amazon interviews below.

**Date of Interviews:** 22nd August 2012

**No of Rounds:** 1 Written + 4 PI

**Type of Interviews:** Campus Interview for freshers

**Written Test (Time): 90 Minutes**

20 Objective Questions: Aptitude and basic C objective problems.

2 Subjective Questions:

I.[To find if there is any root to leaf path with specified sum in a binary tree.](#)

II.[Some question based on sorting.](#)

**Interview Round 1(60-70 Minutes):**

Technical Interview

**Question 1:** [Check if a character link list is palindrome or not.](#)

**Question 2:** [A sorted array has been rotated r times to the left. Find r in least possible time.](#)

**Question 3:** [Clone a singly link list whose nodes contain, apart from next pointers, an extra pointer to any random node. The random pointer of a node N could be after N, before N or the node N itself.](#)

[↳](#)

**Interview Round 2(50-60 Minutes):**

Technical Interview

**Question 1:** [There is a big file of words which is dynamically changing. We are continuously adding some words into it. How would you keep track of top 10 trending words at each moment?](#)

**Question 2:** [Write code for minHeapify\(\) operation.](#)

**Question 3:** [Design a data structure for the following operations:](#)

I.[Enqueue](#)

II.[Dequeue](#)

III.[Delete a given number\(if it is present in the queue, else do nothing\)](#)

IV.[isNumberPresent](#)

All these operations should take O(1) time.

**Question 4:** [Write a function that returns the length of the longest leaf-to-leaf path in a binary tree.](#)

**Interview Round 3(60-70 Minutes):**

Technical Interview

**Question 1:** [There is a binary tree of size N. All nodes are numbered between 1-N\(inclusive\). There is a N\\*N integer matrix Arr\[N\]\[N\], all elements are initialized to zero. So for all the nodes A and B, put Arr\[A\]\[B\] = 1 if A is an ancestor of B \(\*\*NOT\*\* just the immediate ancestor\).](#)

**Question 2:** [Find an element in a sorted rotated integer array.](#)

**Question 3:** [There is a N\\*N integer matrix Arr\[N\]\[N\]. From the row r and column c, we can go to any of the following three indices:](#)

I.[Arr\[ r+1 \]\[ c-1 \] \(valid only if c-1>=0 \)](#)

II.[Arr\[ r+1 \]\[ c \]](#)

III.[Arr\[ r+1 \]\[ c+1 \] \(valid only if c+1<=N-1 \)](#)

So if we start at any column index on row 0, what is the largest sum of any of the paths till row N-1.

#### **Interview Round 4(40-50 Minutes):**

## Bar Raiser Round

Interviewer asked HR Questions Initially, then a sort of puzzle.

Two robots land with their parachutes on an infinite one-dimensional number line. They both release their parachutes as soon as they land and start moving. They are allowed only to make use of the following functions.

III.\xc2\xa0\xc2\xa0\xc2\x0dnoOperation() // robot does not move and takes 1 unit time

Write a function in order to make the robots meet each other. Robots will be executing the same copy of this function.

HIREDU \xf0\x0f\x00\x82

## Tips / Advice:

This article is compiled by **Akash Nawani**. Many Many congratulations to Akash for his selection in Amazon. If you like GeeksforGeeks and would like to contribute, you can also write an article and mail your article to contribute@geeksforgeeks.org. See your article appearing on the GeeksforGeeks main page and help other Geeks.

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