

b'

Google Interview Experience for IT Support Engineer

- Last Updated : \n25 Apr, 2022

I applied to Google IT support Engineering Profile by Referral from one of my friends, Initially, I provided my Resume and Transcript of all my Semester Exams Results.

Live Interaction: It was the First Interaction with Product Managers where they shared the complete hiring process and the Number of Rounds of Interaction to be organized by google.

First Technical Round: Here it was a blend of Generic Troubleshooting Scenarios and Problem-Solving Questions. They asked me Questions about sharing from experience where I worked in a leading position and asked me if given the chance to represent again what improvement I have done. Coming to the IT troubleshooting they asked me the question How to troubleshoot the Application related to their Corporate Tool is not working for you what all you have done. They are open-ended questions. There is no right for them because there can be multiple correct answers Be generic ask as much many questions as possible so that you can better understand the Problem.\xc2\xaa0

After Completing the first round you will receive a call if you are selected and they will provide you with complete feedback they received from my Interview with Managers. The next 2 Rounds will be more related to the Googliness and OS, Software, Hardware Concepts, and also related to Computer Networks.

Second Technical Round: Here in this round the Troubleshooting questions will be a bit difficult, they will check whether you can tackle customers and how well you can handle customers who will come in a frustrated mood. They asked me two questions:

- You are the only Technical Support Engineer in the Small Company and now you are responsible to resolve their issue, the question is that you are connected with a wired network and your internet question is not working how you can resolve the problem.
- If their Laptop is not working they have a Presentation in the next 10 minutes on how will be resolving the issue. They also asked me the question if someone in your support department heard someone providing wrong information to customers what you will do if the information can harm the users.

Third Technical Round: In this, they asked me questions like why I want to work as an IT Support Engineer and about my Graduation experience. They asked me that they have to Set up a computer for me if I am your customer and they wanted to know the purpose of every component.

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

b'

Google SWE STEP Interview Experience for Internship 2022

- Last Updated : \n03 Mar, 2022

Google India had released the applications for SWE Summer STEP Intern 2022 in November. There was a resume screening round initially. Once my resume was shortlisted, I received the mail for my interviews. Those who had applied through referral had to go through another telephonic screening round. I didn't have that. I had 2 rounds of interviews and they were eliminatory. Meaning if we didn't perform well in the first interview, we wouldn't get a chance to take the second interview. Both my interviews were scheduled on the same day i.e. 11th February. We were asked to keep the questions confidential so I will not be giving out the questions. However, I will talk about the topics of my questions.

Interview 1: I had my first interview at around 10 am. I was given a shared editor similar to Google Docs. I was super nervous as this was my first interview. The interview began with a brief exchange of introductions and then I was given the question. It was a question using maps. I took a while to understand the question and then I took a moment to think of the approach. I couldn't come up with the approach immediately but I was continuously communicating with what was going on in my mind. The interviewer corrected a mistake in my thought process and then I was back on the right track. I coded a recursive approach and she was satisfied with my approach. Then she gave a follow up of the same question. I couldn't think of the optimized approach right at the first go so I coded an $O(n^3)$ approach. She said my approach was correct but it needs to be optimized. By now we were almost at the end of the 45 min time slot for the interview. I told them the optimized approach which she said was correct but I didn't have time to code it. The interview ended with a discussion on time complexities. I also asked her a few questions about Google as a company. Overall it was a pretty good interview. I would say both the questions were of medium level. The interviewer kept helping me out whenever I was stuck and she kept giving hints whenever I needed them.

Interview 2: My second interview was scheduled for the afternoon. We again started an exchange of introductions. Then the interviewer typed out the question in the shared editor. The question was on arrays and was an easy one. I made a mistake here and I started thinking immediately about the optimized approach. I started coding it as well but halfway through it, I realized that I was making a mistake. I then started coding the brute force approach. After I was done, the interviewer asked me to optimize it. I thought for a bit and with one hint from him, I optimized my code. Then the interviewer gave me a follow-up to the same question. I thought about it for quite some time but felt completely stuck. However, I kept telling the interviewer what I was thinking. He told me that I was thinking in the right direction so I tried to code what I was thinking. I reached the optimal solution eventually. We discussed a bit about the time complexity of my code and he also asked me about the range on INT_MAX and INT_MIN. After this, I asked him a few questions about Google and then I was done with my interview.

Both my interviews went well but I wasn't sure if I would get the offer or not. After a long wait of 17 days, I finally got a mail that I had received the Google SWE STEP Internship Offer.\xc2\xab0

My Personal Notes\narrow_drop_up

Add your personal notes here

Save



Google Interview Experience SDE-1 (Off-Campus) 2022

- Difficulty Level : \n [Hard](#)
- Last Updated : \n 23 Feb, 2022

Round 1 \xe2\x80\x93 Resume shortlisting

Round 2 \xe2\x80\x93 Recruiter call (15-20 mins phone conversation)

Round 3 \xe2\x80\x93 Phone interview (45 mins technical interview conducted on meet)

Question asked: <https://leetcode.com/problems/time-needed-to-inform-all-employees/>

A variation of this question was asked as the head node wasn't given that is it wasn't certain to which manager CEO will give the message and my task was to first find out which node should be the starting point and then find the total time taken to reach all employees. \xc2\xao

Also, input was not a simple integer it was a structure containing name, employee id, and an array of employees reporting to that employee. I went ahead with graphs for solving this question, first ran a DFS to find out the head node that is the employee to which if the CEO gives the message it reaches all employees and then ran a BFS to find out the total time taken for the message to reach all employees.

Round 4 \xe2\x80\x93 Onsite Interview (Conducted on meet \xe2\x80\x93 15 mins GNL round, 45 mins technical)

GNL round \xe2\x80\x93 Googliness and Leadership round where behavior-based questions are asked to check if the candidate is the right fit for Google culture.

Questions asked:

- How many binary numbers of length n are possible?

For ex. n=2, binary numbers possible are \xe2\x80\x93 00,01,10,11 similarly for any length n total number of possibilities will be 2^n

- <https://www.techiedelight.com/find-n-digit-binary-strings-without-consecutive-1s>
A variation of this question was asked that no two consecutive zeroes should be together. I approached the question with recursion then optimized it with Dynamic programming and finally, the most optimized code didn't use any extra space and had O(n) time complexity.
- <https://math.stackexchange.com/questions/1322767/find-a-recurrence-relation-for-the-number-of-ternary-strings-of-length-n-that-do>
A variation of this question was asked that no two consecutive zeroes should be together and three consecutive 1's. My approach was similar to the above question first start with recursion then dynamic programming and the final solution was O(n) time complexity with no extra space used

Round 5 (Onsite interview)\xc2\xao

Conducted on meet \xe2\x80\x93 15 mins GNL round, 45 mins technical

Question asked \xe2\x80\x93 Given input equations, output true or false

For ex. {a>b, b>c ,c>d, d>a} is this input true or false?

Here the input is contradicting so the output will be false. My approach was considering all variables as nodes of the graph and then drawing an edge from vertex u to v if $u > v$ and output will be false if a cycle is present in the graph.

Topological sort of DFS can be used to detect cycles in directed graphs.

Round 6 (Onsite interview):

Conducted on Meet |xe2|x80|x93 15 mins GNL round 45 mins technical

Questions asked

- Given an input string s of characters, return index where $s[i] < s[i-1]$

For ex. - "De-Hi&yaR2"\r\nOutput - 7

Explanation: Hyphen, ampersand and other characters which are not alphabets don|xe2|x80|x99t have to be considered for alphabetical order of string and capital or small letters don|xe2|x80|x99t matter as e>d and also e>D so my approach while solving the question was to convert all letters to smaller case and then compare them and ignore other characters if encountered.

- An array is given where $arr[i]$ holds the frequency of number present in $arr[i+1]$ and we are supposed to implement `next()` and `hasNext()` method such that until the frequency of all numbers is 0 `hasNext()` returns true and `next()` returns the first number while traversing array which has non zero frequency.

For ex. [0,5,1,2,3,0,5,2]

Output |xe2|x80|x93 If `next()` is called it will return 2 as the frequency of 2 is 1 and the value before it which was 5 has frequency 0 so that|xe2|x80|x99s not returned, now the frequency of 2 will become 0 as the `next()` pops the value out.

Now when `next()` is called again it will output 0 as the frequency of 0 is 3 and now it will become 2. The `next()` can be called multiple times so on till `hasNext()` doesn|xe2|x80|x99t return false.

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

Machine Learning Applications by Google

- Last Updated : \n02 Mar, 2022

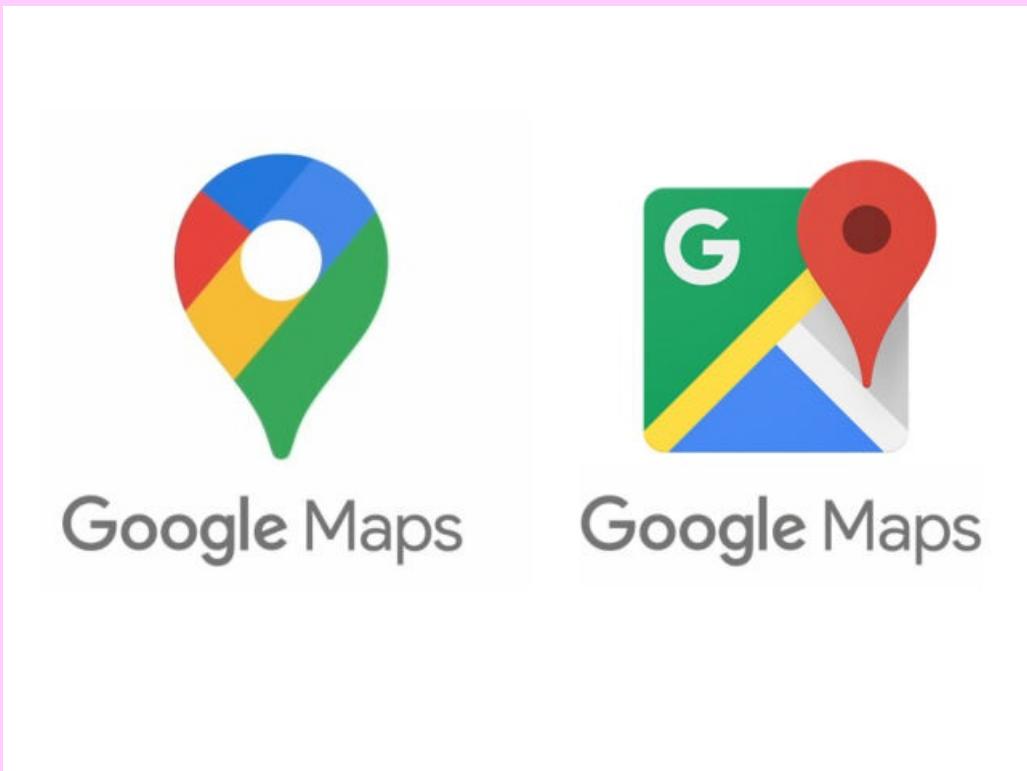
Machine learning is an area of artificial intelligence (AI) and computer science that focuses on using data and algorithms to mimic the way people learn, with the goal of steadily improving accuracy.

In the current age, everyone knows Google, uses Google and also searches for any information using Google. Yes, this article is about the most used applications of Machine Learning by Google.

Applications:

1. Google Maps:

If we require directions or traffic information, we are most likely to utilise Google Maps. Despite the Heavy Traffic, you are on the Fastest Route, Maps remarked to me while I was travelling to another city the other day. But how does it know that?



Google Maps incorporates predictive features powered by machine learning that will alert passengers well in advance if their buses will be delayed. It now offers real-time monitoring data that can predict traffic delays in hundreds of locations across the world.

Google created a model that used conventional traffic data and tweaked it to account for the unique characteristics of bus movements and routes. The researchers used real-time inputs from transit agencies to extract training data from sequences of bus locations over time and linked it to automobile traffic speeds on the bus path during the journey.

2. Google Translate:

Google Translate has been around for ten years. Google Translate was initially introduced with

Phrase-Based Machine Translation as the primary algorithm. Later, Google developed further machine learning breakthroughs that permanently transformed the way we think about foreign languages.



The release of Google Neural Machine Translation, or GNMT, was the most significant advancement in translation systems. Its model architecture is made up of an encoder network (on the left) and a decoder network (on the right).

In classic cascade systems, an intermediate representation is necessary to represent speech. Unlike cascaded systems, Google proved with Translatotron that a single sequence-to-sequence model can directly translate voice from one language into speech in another without the requirement for intermediary text representation.

3. Gmail:

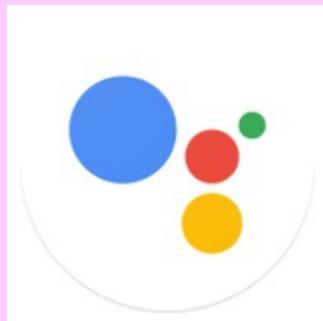
Since 2004, Gmail has been altering the way we think about email. According to Google, it has accumulated 1.5 billion users in that period. I'm one of them, and there's a good chance you are, too.



The new deep learning scanner, according to Google, has been operational since the end of 2019. During this period, it has increased the daily detection coverage of Office documents containing malicious scripts by 10%. That's a big figure when you consider the enormous volume of papers Google scans on a daily basis. A figure that is much larger when you consider what the scanner excels at, namely detecting hostile, bursty assaults.

4. Google Assistant:

Google has applied AI to the pocket-sized gadget by converting voice to text and utilising improvements in deep learning.



Google Assistant must be able to comprehend the human user in order to truly assist consumers with daily chores. This entails not just comprehending but also appreciating the significance of the words you use.

Google developers entirely rebuilt Assistant's NLU models in order to assist the tool in better grasping the context and improving its reference resolution, or ability to discern the purpose behind a given query. This new improvement is based on machine learning technology developed in 2018 and applied for Google Search, which allowed comprehension of all sought terms in context rather than one phrase at a time.

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

b''

b'

Google Interview Experience for TSS

- Last Updated : \n23 Nov, 2021

Google Online Challenge -2021 for TSS position

No. of Question: 28

Time: 30 Minutes

Subject : Web Technology, Networking, UNIX/LINUX, Database, Code Fundamentals

Networking :

1. DNS Port Number: 53
2. CDN Full form: Content Delivery Network
3. ECMP Protocol: equal-cost multipath protocol
4. TCP and UDP differences
5. Loss % MTR \xc2\xd0

Web Technologies:

1. Center a paragraph using multiple web tech: HTML,CSS, javascript, jquery
2. How a web server handle multiple request: Thread
3. Content service by CDN which is not useful
4. HTTP Status code for invalid credentials: 401
5. HTTP Method to retrieve information of resource: GET

UNIX/LINUX

1. What is Load Average: avg system load
2. Permission to open a file, modify and save: read and write
3. Analysis on output of free -m \xc2\xd0
4. How to execute command as another user: sudo
5. & operator is used for: to run command in background.

Code Fundamentals

1. Worst Case complexity of Quick Sort : o(n²)
2. Number of nodes at 3rd level of fully binary tree : \xc2\xd0
3. Which data structure to use for FIFO Tickets distribution : \xc2\xd0Queue
4. Pseudo Code \xc2\xd0Analysis
5. Pseudo Code Analysis\ xc2\xd0
6. How to save password :\xc2\xd0
7. Binary search is based on \xc2\xd0which strategy: Divide and Conquer
8. How to detect loop in a linked list in optimal way: two pointer approach

Database \xc2\xd0

1. How does Outer join works?
2. SQL query to count records
3. Transaction serial \xc2\xd0
4. Big table query optimization \xc2\xd0
5. If we \xc2\xd0insert 2 row in a table and snapshot isolation policy \xc2\xd0is applied what will

happen

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

b'

Google Internship Interview Experience

- Last Updated : \n24 Nov, 2021

I got call for interview by Kickstart, I participated in Kickstart 2019 round A and B and has secured rank 186 and 181 respectively. They told me that there would be 2 rounds, First is telephonic and another is on hangout. They shared 2 google doc links with me to write code during interview.\xc2\x00

Round 1(Telephonic Round: 45 minute): I got an system generated call which then connected me to the interviewer (Not Indian), He first introduced himself and then asked me to introduce myself, Then he moved to problems.\xc2\x00

\xc2\x00

1. Given an N-ary tree . You have to traverse the tree in preorder and at each node you need to print value of node and number of childs it has. I solved this then he started to make it harder and told me that whatever my code is giving me as output is now my input and I have to construct the tree again. I was like wooow(Pin drop silence for 5-10 minutes), I was unable to think anything now, I just told him that how can we solve this problem but I was unable to implement it. And then he moved to next problem.
2. Given array of N number and you need to return the element which repeats, If there are multiple elements which repeat, return the first one. I\xe2\x80\x99ve solved this then He changed it slightly and told me that now I\xe2\x80\x99ve to return number which repeats maximum number of times, I solved it too. After this he has changed it and now I have to return maximum number which repeats. I solved all of these.

Then at last he told me that I can ask anything to him, I asked some questions and he answered.\xc2\x00

Round 2 (Hangout Round : 45 Minute): I was having link to video call which I joined on time, Then I asked Interviewer(Not Indian) If he can see and hear me properly or not, Then we both introduced each other and he moved to the problems.\xc2\x00

\xc2\x00

1. Given two arrays and I have to find common elements between both arrays. First I\xe2\x80\x99ve solved it using Binary Search with O(nlogn) time complexity. Then he told me that I should output one element only once if it is present more than once in both arrays, I did fix this. Then he told me to optimize time complexity, Then I used Unordered Map and solved it in O(n) and then he told me that now I have both arrays already sorted and I have to find solution in O(n) time complexity and O(1) space complexity. I solved this using Two Pointers, Then he gave me 2 3 test cases and told me to run my code on these test cases virtually and I did.
2. This problem was a little bit harder version of the previous problem. This time I was given a matrix which was sorted row-wise and now I have to return numbers which are common in all rows. I solved it using N pointers in O(N*M) complexity and then he told me to run on test cases and I did.

Then at last he told me to ask anything, I again asked some questions and he answered.\xc2\x00

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

b'

Google Online Challenge for TSS 2022

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

For the position Technical Solution Specialist. Test was conducted on Cocubes.

Time : 30 Minutes

No. of Question : 28

Topics: Web Technologies (5 Questions)

- Networking (5 Questions)
- Linux/Unix (5 Questions)
- Database (5 Questions)

Code Fundamentals (8 Questions)

Networking :

1. DNS Port Number : 53
2. CDN Full form : Content Delivery Network
3. ECMP Protocol : equal cost multi path protocol
4. TCP and UDP differences
5. Loss % MTR

Web Technologies:

1. Center a paragraph using multiple web teck : html,css,javascript,jquery
2. How a web server handle multiple request :
3. Content service by CDN which is not useful
4. HTTP Status code for invalid credentials : 401
5. HTTP Method to reterive information of resource : GET

UNIX/LINUX:

1. What is Load Average : avg system load
2. Permissions to open a file,modify and save : read and write
3. Analysis on output of free -m
4. How to execute command as another user : sudo
5. & operator is used for : to run command in background

Code Fundamentals:

1. Worst Case complexity of Quick Sort :
2. Number of nodes at 3rd level of fully binary tree :
3. Data Structure for FIFO Tickets distribution : Queue
4. Code
5. Code
6. How to save password :
7. Binary search is based on : Divide and Conquer
8. How to detect loop in a linked list in optimal way : two pointer approach

Database:

1. Outer join
2. SQL query to count records
3. Transaction serial
4. big table query optimaztion
5. To insert 2 row in a table but snapshot isolation is applied what will happen

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

Google Interview Experience for STEP Intern

- Last Updated : \n09 Nov, 2021

Hii!.. I am from pursuing B.tech in field of CSE.

I applied for a Google step internship in November 2020. I was in second year (3rd sem). I filled out the basic form and uploaded my resume with it. At my campus, STEP interviews were going on-campus. I was excited as it was going to be my first on-campus company. But I was unable to make it and was rejected during the resume selection phase. I'm guessing barely a few individuals made it.

It was a fine day in January 2021. I was enjoying my tea and checking my mail around 7 pm. I received a mail from Google saying that I had been shortlisted and the next round was a technical interview. I was literally on the cloud nine at that time.

BEFORE INTERVIEW:

- So, I calculated and I got around 1 week for preparation for the technical rounds. I filled out the availability form and braced myself. I didn't know much about higher data structures, like I have knowledge of Arrays, Strings, Linked Lists, Stacks, Queues and Binary Trees (not so much about trees, just basic).
- I asked my friends who had given their interviews for Google STEP. They suggested I do dynamic programming, and I literally had no idea of DP at that time.
- From that night, I started studying the content of DP from YouTube and from my coding course. I gave 3 days to DP and practiced as many questions as I could. In the last 4 days, I revised all the data structures and questions.

DURING INTERVIEW:

ROUND 1(45-minutes):

- I joined the link and am waiting for the interviewer. Obviously, it's going to happen. When I said Good Morning at 2 pm, I felt so embarrassed. I corrected it and wished her. So, the interviewer was a lady. She's quite young. She gave her introduction and asked me to give mine. I introduced myself and it started. She shared a Google document with me and asked the first question.
- It is from trees (data structure). As far as I remember, it was something like the weight of every branch was given, and I had to return the minimum number that balanced the weight of the branches. I'm sorry to put this question like this, but I don't remember it so clearly. She asked me basic questions regarding trees. I answered them all. She said to draw a tree on a Google document. I did it. Then she gave me time to think it out. She muted herself and asked me to do so. After some time, she asked me and I gave the naive approach, but it doesn't work in all cases. Clearly, she was not happy with my solution. As time was passing, she asked me to write code on a Google document. I wrote broken code out there. As last time passed, it came to an end and I asked her a question about the work culture of Google. She replied, and it ended at 2:45pm.
- I got a 15-minute break to pack up my anxiety. I bundled up my all emotions for next interview.

ROUND 2(45-minutes):

- This time it was a male interviewer. started with an introduction, the same as previously. He shared a Google document and I was again ready for this.

- He asked me basic question about vectors and gave me an easy question. I told him an approach and coded it in one go. Then he asked me some edge cases about that. I took time but answered them correctly. I guess he was quite satisfied. But then he gave me a follow-up question which was a bit hard. I told him an approach. He was helpful. He was dropping some hints. I thought for some time and came up with a naïve approach and told him. He said okay and it was about to end now. Again, I got a chance to learn about the work culture of Google. He explained it to me and I listened intently. He talked to me about 20 minutes apart from the interview.

AFTER INTERVIEW: I got out of my chair at 4:00 p.m. and turned off my laptop. I dashed straight to my bed and pretended to be dead.

Questions they asked me in the interview:

1. I guess it was from the graph. The question is about weighing branches. I had to return the minimum number that must be added to every path from root to leaf node. I couldn't find the same question on the internet. It was a hard level, for sure.
2. In the second interview, the first question was an easy level, and the follow-up was a medium type. It was like a matrix and related to the wages question.

Well, it was a great experience for sure, getting shortlisted for giving interviews(around 35 people got shortlisted from my campus).

Things that I hated: I was facing a blank screen while giving rounds and my chair is not so comfy.

OUTCOME: I could not make it.

THINGS TO KEEP IN MIND : Rewrite your introduction, practice more questions , be ready to face any data structure, grab hints, listen carefully, speak after thinking it, use correct terms while explaining.

THINGS THAT I DID: I spoke about whatever approach was going through my mind, asked the interviewer about edge cases, and made the interviewer understand with the help of a dry run, checked test cases, grabbed pen and paper for an easy dry run.

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

b'

Google Summer SWE Internship Interview Experience 2022

- Last Updated : \n03 Nov, 2021

I applied in August 2021, In September end, I got mail for phone screening round. In October second week my phone screening was scheduled.

Phone Screening Round: He asked me about my preferred language and then move to some basics questions like \xc2\xa0

- Time complexity of heap sort
- Why merge sort is better than heap sort?
- Which data structure is used for implementation of priority queue?
- Basic questions based on your preferred language

Then I got mail for Round 1

Round 1: 45 mins round (5 min for introduction, 35 mins for questions, 5 mins for your questions about company)

- Interview started with my introduction then his introduction, then he directly jump into questions.
- Question is most appropriate mutual friend, you are given a graph and node, in which every node represents a person, neighbors represents friends. You have to find a mutual friend, which have maximum number of common node with given node.
- My approach was based on BFS. I was able to code but I have taken more than the given time for interview and code was also not clean, which were negative points.

Round 2: 45 mins round

- Question was you are given a list, you have to return a list which return list of random elements which consist of all the elements of the given list and double of them. I tell her approach with random function given in java library and she was satisfied with that approach I coded it, but I was not aware about time complexity of this library function, which was negative point.
- Second Question is to reverse first question: <https://www.geeksforgeeks.org/find-elements-of-original-array-from-doubled-array/>. I coded this question
- Tips: You should take care of time limits of interview.

VERDICT: REJECTED

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

b'

Google Internship Interview Experience 2022

- Last Updated : \n03 Nov, 2021

In the month of September 21, I have applied for Application Engineering Internship and SWE Internship for Summer 2022. In the 3rd week of October directly received the mail for an interview for AE Intern 2022.

Post which I have undergone 2 technical rounds of 45 mins each.

Round 1(Based on DSA): In my first round of interview after a small introduction, I was asked a question of binary search.\xc2\xab0

Find the index of the first 1 in a sorted array of 1 and 0, given that we didn't know the length of an array or can say the array is infinite.

I was able to explain the complete optimized approach in around 20 minutes, to which the interviewer was happy and satisfied. In the last 20 minutes, I was able to code it perfectly and then we discussed some edge cases. After around 3-4 hours, I received the mail for the next round.

Round 2(Low-Level Design): The interviewer asked me to design Splitwise (Splitwise is a free tool for friends and roommates to track bills and other shared expenses so that everyone gets paid back.)

- The interview took more than 1 hour, and in the end, I was able to somehow solve the problem statement but with not much confidence.
- After 2 days, received the expected mail of not getting selected.

Thank You

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

b'

Google Internship Interview Experience | Off-Campus 2022

- Difficulty Level :[Basic](#)
- Last Updated :19 Oct, 2021

Applications for Google Summer Internship 2022 were open and I applied. I did not expect to hear back from them as my application was off-campus, without referrals, from a tier 3 college. But I did hear back from Google with an interview offer around 3 weeks later. We also had an interviews preparation session.

I have undergone 2 rounds of technical interviews 45 min each.

Round 1: Interview 1

- Warm-up problem Given an array, create a new array that will have $\text{arr}[i]$ and $2 * \text{arr}[i]$ from i iterating from 0 to array size. Return any shuffled version of this newly created array.

For example input $[1,2,3]$ new array $\rightarrow [1,2,2,4,3,6]$ any shuffled version $\rightarrow [2,3,4,6,2,1]$

- The main problem You are given the output of the previous question as an input in this question, You have to output the array which might have created this input.

For example input $\rightarrow [2,3,4,6,2,1]$ output $[1,2,3]$

Round 2: Interview 2

- Tree problem A tree node can either be an internal node or a leaf node.
- If it is an internal node then it stores the sum of lengths of strings present in its left and right child.
- If it is a leaf node then it stores string as well as its length.

Below is the tree node structure

Case 1) Only 1 node i.e. root node present
Case 2) Multiple nodes presents

- Given input is above tree and N when You have to return the Nth character present in the tree.

`\xc2\xa0`

My Personal Notes\ [narrow_drop_up](#)

Add your personal notes here

Save

b'

Google Interview Experience for SDE

- Difficulty Level : \nEasy
- Last Updated : \n21 Sep, 2021

A google interview consists of 1 Phone screening(15 mins), 1 Technical screening(45 mins), 4/5 onsite rounds(45 mins) mine was held 4(3 technical and 1 behavioral)

Tips for technical interviews :

1. Make a time schedule(Time is restricted in most interviews from 45 mins to 1 hour, at Google really strict)
2. My time was: 10 mins(intro and understand the question), 5-10 mins (discuss approach), 10 mins (write down code) 5 mins (dry run the code with example), Other time complexity and bug fixing discussion
3. Go for brute force if you find your time is > 25 mins optimize later (always look for hints from the interviewer)
4. Do not lose until an interview is over, You have got this.
5. Write clean code, if you compromise always inform the interviewer. (Also do not waste time on this)
6. Dry run with an actual case with output side by side
7. While practicing do some competition that will help you to get the clear question because often a question comes with a story and not a very good input or output format, I used Leetcode competitions.

Round 1: Technical

- Write a shuffle for a music player with k iteration of cooldown. Given a list of songs.

Round 2: Technical

- given a string encoding: a1b2c2 (lower case alphabets followed with their count)= abbcc
- Write an iterator for the same with functions next()(should return the next character) and hasNext()(should tell if the next character exists).
- given parent-child relations. given 2 nodes find if they are genetically related(have the same parent using the data)

```
for e.g. given relation parent->child : a->b, c->b, d->a\r\nisRelated(b,d) = true, isRelated(d,c) = false
```

Round 3 : Technical

- For both, these question nodes are related horizontally and vertically
- given a matrix of water(0) and land(1). return island with the maximum area
- given matrix of water(0) and land(1). Consider Ocean(water touching surrounding edges of the matrix), lake(water surrounded by land), continent(land area): Return Area of the continent with the greatest lake. (this area should also contain the area of all inside lakes inside that continent)

This is one of the hardest questions I was able to solve. I was grateful that I practiced really well.

Round 4: Behavioral (Googlyeness)

This round is a little tricky because it seems like they assess how well did you manage your work in the past and how well you will be fit for the team. It was taken by the team manager I was going to join. They discussed quite a lot about the backend technologies I was working on and how did I contribute to my current organization.

I did quite well. I prepared for the behavior interview in advance so it was a little smooth for me. For behavior questions, I have prepared these questions beforehand that helped me greatly.

1. How did you resolve any conflicts between your team?
2. Tell me about one time you worked on a project/task and it failed?
3. What is the most challenging project you have worked on?
4. What is the project that you enjoyed most?
5. What is your greatest strength/Weakness?
6. What is the hardest bug that you solved?
7. Why should we hire you?
8. I was asked if you are tech lead and get to know that there is exactly the same project that is done in your organization how would you handle this situation?
9. I told her I will try to merge. There is no wrong or write here, but you need to justify and clear out all the steps you are doing and the basis of what you are taking the decisions along the way. If you have exact experience tell me how did you handle that.

Also prepared well your intro I was giving multiple interviews in many startups and I curate different intros according to the roles that I am interviewing for !!

Hope this helps!! All the best!

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

Final Exam | Google Kickstart 2021 Round D

- Difficulty Level : Hard
 - Last Updated : 21 Sep, 2021

It's time for the final exam in algorithms and data structures!

Edsger prepared N sets of problems. Each set consists of problems in an increasing difficulty sequence; the i -th set can be described by two integers A_i and B_i ($A_i \leq B_i$), which denotes that this set contains problems with difficulties A_i , $A_i + 1$, ..., B_i . Among all problems from all sets, it is guaranteed that no two problems have the same difficulty.

This semester Edsger has to test **M** students. He wants to test each student with exactly one problem from one of his sets. No two students can get the exact same problem, so when Edsger tests a student with some problem, he cannot use this problem anymore. Through countless lectures, exercises, and projects, Edsger has gauged student number j to have skill level S_j and wants to give that student a problem with difficulty S_j . Unfortunately, this is not always possible, as Edsger may have not prepared a problem of this difficulty, or he may have already asked this problem to some other student earlier. Therefore, Edsger will choose for the j -th student a problem of difficulty P_j , in a way that $|P_j \times e2 \times 88 \times 92S_j|$ is minimal and a question of difficulty P_j was not already given to any of the students before the j -th student. In case of ties, Edsger will always choose the easier problem. Note that the problem chosen for the j -th student may affect problems chosen for all the students tested later, so you have to process students in the same order as they appear in the input.

As keeping track of all the problems can be fairly complicated, can you help Edsger and determine which problems he should give to all of his students?

Given an array **problemRange** of $N \times 2$ pairs having starting and ending values as a range of difficulty levels, and an array **arr** of size **M** indicating the difficulty level every student can attempt. The task is to assign a unique integer **X** from **problemRange** to every integer in array **arr** such that $|arr[i] - X| \leq x80 \times 93$ is minimized. In case of a tie between two values closest to **arr[i]**, a lesser difficulty value must be chosen. **X** values must be assigned to students in their order since the same value of **X** cannot be assigned to more than one student. Print the **X** value assigned to every student.

Example:

Input: N = 5, M = 4, arr = [14, 24, 24, 4], problemRange = [[1, 2], [6, 7], [9, 12], [24, 24], [41, 50]]\xc2\xa0

Output: 12 24 11 2

Explanation: values which can be assigned to the students are {1, 2}, {6, 7}, {9, 10, 11, 12}, {24}, {41, 42, 43, 44, 45, 46, 47, 48, 49, 50} 12 is assigned to first student who can attempt questions of difficulty level 14 as it is the closest to 14. 24 is closest to 24. Next student can also attempt question of 24 difficulty but 24 from the range is already chosen and the next closest is 11. 2 and 6 is closest to last student of difficulty 4, since 2 and 6 both are similarly close to 4, easier questions of difficulty level 2 is assigned.

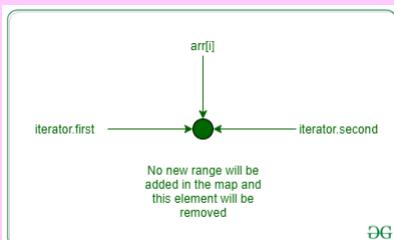
Input: N = 1, M = 1, arr = [24], problemRange = [[42, 42]]

Output: 42

\xc2\xa0

Approach: Given problem can be solved by following the steps below:

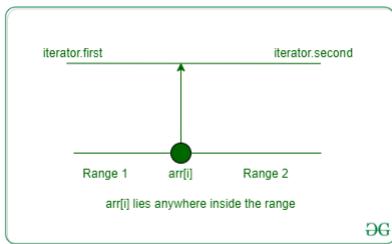
- Use a [map](#) to store the start of ranges as keys and end of ranges as values
 - [Iterate the array](#) and for every element in it find its **lower_bound** in the map
 - Two cases are possible: **Lower_bound** will return the iterator pointing to the key which will be equal to **arr[i]** or the key which is just greater than **arr[i]**
 - let x=2x80x99s say the iterator provided by **lower_bound** be **it** and **pre** be an iterator just before **it** (**pre** will be equal to **it** when **it=mp.begin()**)
 - Either **pre.first<=arr[i]<=pre.second** or **it.first<=arr[i]<=it.second** will be true. **arr[i]** will lie in either the forward section or in the backward section of this range
 - every time value is assigned to the **arr[i]** previous range is deleted from the map and a new range is added as shown in the image
 - Either two new ranges are added or one new range is added as cases shown in the images below:



Only one element is present in the range so it is removed and no new range is added.



`arr[i]` is equal to either one of the range



The previous range is removed and two new ranges are added in the map

Below is the implementation of the above approach:

C++

Output

12 24 11 2

Time complexity: MLog(N)

Auxiliary Space: O(N)

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

Rabbit House | Google Kickstart 2021 Round A

- Difficulty Level : \nExpert
 - Last Updated : \n03 Sep, 2021

Barbara got really good grades in school last year, so her parents decided to gift her with a pet rabbit. She was so excited that she built a house for the rabbit, which can be seen as a 2D grid with RR rows and CC columns.

Rabbits love to jump, so Barbara stacked several boxes on several cells of the grid. Each box is a cube with equal dimensions, which match exactly the dimensions of a cell of the grid.

However, Barbara soon realizes that it may be dangerous for the rabbit to make jumps of height greater than 11 box, so she decides to avoid that by making some adjustments to the house. For every pair of adjacent cells, Barbara would like that their absolute difference in height be at most 11 box. Two cells are considered adjacent if they share a common side.

As all the boxes are superglued, Barbara cannot remove any boxes that are there initially, however she can add boxes on top of them. She can add as many boxes as she wants, to as many cells as she wants (which may be zero). Help her determine what is the minimum total number of boxes to be added so that the rabbit's house is safe.

OR

Given a matrix of **R** rows and **M** columns. Make the absolute difference between the adjacent cells less than or equal to 1 by only increasing the cell value. The total increment done on cells should be minimized. The task is to return the minimum increment operations done.

Example:

Input: [[0 0 0],
 \backslash xc2\xa0 0 \xc2\xa0 0 \xc2\xa0 0 \xc2\xa0 0 \xc2\xa0 0 \xc2\xa0 0 [0 2 0],
 \backslash xc2\xa0 0 \xc2\xa0 0 \xc2\xa0 0 \xc2\xa0 0 \xc2\xa0 0 \xc2\xa0 0 \xc2\xa0 0 [0 0 1]]

Output: 4

Explanation: the cell in the middle of the grid has an absolute difference in height of 2, the height of all its four adjacent cells is increased by exactly 1 unit so that the absolute difference between

As we can see that the absolute difference between adjacent cells will be at most 1. Resultant matrix will be:

any pair of adjacent cells will be at most 1. Resultant matrix will be

$$\begin{bmatrix} 0 & 1 & 0 & 0 \\ 1 & 0 & 1 & 0 \\ 0 & 1 & 0 & 1 \\ 0 & 0 & 1 & 0 \end{bmatrix}$$

Input: [[1 0 5 4 2],
|xc2\|xa0 |xc2\|xa0 |xc2\|xa0 |xc2\|xa0 |xc2\|xa0 |xc2\|xa0 [1 5 6 4 8],
|xc2\|xa0 |xc2\|xa0 |xc2\|xa0 |xc2\|xa0 |xc2\|xa0 [2 3 4 2 1],
|xc2\|xa0 |xc2\|xa0 |xc2\|xa0 |xc2\|xa0 |xc2\|xa0 [2 3 4 9 8]]

Output: \xc2\xa0\xc2\xa0

Explanation: Resultant matrix will be: [[3 4 5 6 7], \xc2\xa0

Approach: Given problem can be solved using multisource [dijkstra's algorithm](#). The approach is to store the cells with the largest values in a [priority queue](#), pop out the priority queue one by one and update the adjacent cells accordingly, while updating the cell value we will also update our priority queue.

Below is the implementation of the above approach:

C++

Output:

\r\n52\r\n

Time Complexity: $O(RM * \log(RM))$

Auxiliary Space: $O(RM)$

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

Google Interview Experience For Software Engineering Internship 2022

- Difficulty Level :\n[Medium](#)
- Last Updated :\n24 Aug, 2021

A Short Overview:

Google came to our campus(IIT Roorkee) to select candidates for Summer Intern 2022 in August 2021. Only 8 students were selected finally after all the rounds. The entire process was virtual and was conducted in 1+2 (1\xe2\x86\x92 coding round + 2 \xe2\x86\x92interview rounds) rounds of 45 minutes each.

Interview/Technical Rounds(Total \xe2\x80\x93 3):

Round 1:

This round went on for nearly 55 minutes for me. The interviewer was very friendly and helpful and he first asked me to introduce myself. Then he asked me a small question which was followed by 5-6 follow-ups:

- Given an unsorted array containing duplicates and a number, find at what position that number would occur if the array is sorted. (I first told him the $O(N \log N)$ solution of sorting and then finding the element and then I proposed to him the solution of $O(n)$ of traversing the array and counting the number of elements that are smaller than the given number. He was satisfied and asked me to code the solution)
- Then he asked me what if the index of the element is given instead of the element.
- I don\xe2\x80\x99t remember other follow-ups, but they were quite similar and were based on binary search and maps.
- I was able to answer all of them and the interviewer was quite satisfied with me and told me that it ended very well.

Then I got a mail regarding my next round which was scheduled 1 hr later.

Round 2:

This round went on for nearly 45 minutes for me. The question asked was:

Given a chat history represented in the form of a vector of strings, find the top k users who spoke the maximum number of words.

Sample Input:

Rohan: hey there how you doing

Naman: I am fine you tell

Rohan: me too

- I proposed to him the solution that first of all I will traverse the vector of strings and map the number of words said by each user to their user name(i.e. `map<string, int>`) then I can either make a vector from that map and sort it and take last k elements out or will use priority _queue

of max heap instead and then pop only k elements.

- He asked me to code the first part of inserting everything in the map. My code was appending a char to string. So he asked me to avoid that since that was use $O(\text{length of the string})$ time. So I changed the solution to using indexes and not appending.
- Coding the first part with optimization and dry running took the whole of my time and wasn't able to complete the second part.

After both rounds were over, I was waiting for the results since only 2 rounds were supposed to happen. But the next day in the morning I got a call from the placement and internship cell of my college that google has demanded another interview of mine.

Round 3:

This round extended to 75 minutes for me. The question asked was of graphs:

Given is a network of cities. A crime has occurred in city C and the criminal has fled to his hometown H. Now the police want to catch the criminal and he knows that the criminal will go from city A to city B only if the shortest path distance from city B to H is less than city A to H. We are supposed to find the number of possible routes that the criminal might have taken starting from C.

- I told him I will use the adjacency list representation to represent the undirected weighted graph. Then first of all I will calculate the shortest distance from H to each of the cities using the Dijkstra algorithm and then my answer would be the sum of the number of routes from all the cities connected to city C whose shortest distance from H is less than that of C, i.e. will use recursion.
- Then he asked me the time complexity for recursion I told him $O(V+E)$. But he asked if I am sure and asked me to draw an example in my notebook and find if I am missing something. Then using one of my drawn examples he helped me in getting to the conclusion that the time complexity of my solution would be exponential because of repetitive subproblems which led me to the idea of memorization.
- Then he asked me to code it. I coded my Dijkstra, recursive, and the main function connecting both of my functions. He then asked me the time complexity of both functions and asked me to optimize the code for Dijkstra. I came up with the idea of priority queues (This priority queue optimization is a standard Dijkstra algorithm but I wasn't aware of that before so I thought of that there only).

Then the next day I got my results.

Verdict: Selected

Preparation:

- I used to practice only from interview bit as suggested by my seniors
- For the google interview, I read the interview experiences of other people and did company-specific questions of google from GFG.
- This much of practice is enough to develop your thinking skills if you are doing qualitatively and honestly

Tips:

- Most important thing is to remain calm and not mess up even the things that you know just because of nervousness.
- Be confident and believe in yourself.
- Even if you are unable to think of the whole solution just say what's on your mind

- and along with the help of the interviewer and his hints you would be able to reach the solution.
- Just don't give up and freak out. Think that the interviewer is there to help you in reaching the solution.

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

Get Placed in Google with Google Test Series By GeeksforGeeks

- Difficulty Level :[Hard](#)
- Last Updated :[06 Aug, 2021](#)

Pretty much sure, getting a job in the tech giant Google is on the bucket list of a majority of the tech individuals whether it be a fresher or an experienced working professional. And why not, as those ravishing salary packages, utmost learning exposure, better career opportunities, wonderful perks, etc. offered by Google to its employees is something that is unbeatable!

But to crack the interview of this leading tech company is a bit challenging job and you need some serious level preparation to get into your dream company.



GET PLACED IN Google



From applying to the relevant job opportunity at Google to get your resume shortlisted to cracking the multiple interview rounds $\times e2\backslash x80\backslash x93$ you will need to have the right preparation plan and strategies by your side. However, you don't need to be much afraid of this as to make things quite easier for you, GeeksforGeeks is coming up with an[online Google Test Series course](#) that will act as the one-stop solution for you to become Google-ready!

What is this Google Test Series?

We all know that every company has its own requirements from the candidates during the interview and especially when you're preparing for a giant company like Google, the company-specific interview preparation is much needed. Keeping this in mind, GeeksforGeeks has designed this online Google Test Series that will effectively prepare for cracking the Google Interview.

In this test series, you'll be provided with **advice on how to apply, prepare and crack the Google Interview** along with **dedicated tracks that cover various concepts of Data Structures and Algorithms** popularly asked during the interview process. Here, you will also learn **how to tackle design problems**, improve time management skills by participating in **mock tests and practice contests** and get a **curated list of commonly asked interview questions at Google**.

- *Some of the additional prominent features of this test series are provided below:*
- *Lifetime Access to the Course*
- *Internship Opportunities at GeeksforGeeks*
- *Access to GeeksforGeeks Job Portal*
- *Assessment Tests*

This online Google Test Series is being provided to you **at a discounted price of INR 499/-**. You can easily register yourself for this course by following the below-mentioned steps:

Step 1: Visit the [GeeksforGeeks Google Test Series Page](#).

Step 2: Click on the **Signup Button** and enter the required details in the form such as name, contact number, etc.

Step 3: Then **pay the required fee**, and you'll get successfully registered for the course.

Moreover, you can also **get the additional feature of doubt support**. All you have to do is while purchasing this course, click on 'Add to Cart' for Doubt Support and Assistance.

Course Content

The content that will be provided in this test series is mentioned below:

- **Google Interview Overview:** Learn about how to apply, prepare and crack the Google interview.
- **Data Structure and Algorithms:** Dedicated topic-wise tracks to help improve your coding skills.
- **Online Coding Assessment:** 10 assessment contests to help prepare for the online coding round for google.
- **Mock Tests:** Get Google ready through 4 mock tests based on actual Google interview experiences.

Frequently Asked Questions (FAQs)

Q-1: What are the programming languages supported in the contests?

Ans: The participants can submit their codes in C++ or Java or Python.

Q-2: Will I get any Placement Assistance along with the course?

Ans: Let us tell you that the opportunities from the different companies can be viewed on the hiring platform where you can see their current opening & once you have enrolled for this course you can apply for any of the openings.

Q-3: Does the test expire if I do not take it on time?

Ans: No, the test doesn't expire. You can take the test anytime after its start date as per your convenience.

Q-4: I have purchased DSA courses from GeeksforGeeks. Is Google Test Series still beneficial for me?

Ans: Google Test Series may contain some repeated problems from DSA courses. However, you will still get some additional problems to solve specifically asked in Google Interviews, also we will keep on adding new practice problems to tracks. Moreover, we have 10 practice contests that are completely unique and designed specifically based on Google coding interview rounds which are not available in any of the DSA courses.

Q-5: Can I pay through online mode for the test series?

Ans: Yes, the payment of the test series subscription can be made via online banking, credit/debit cards, UPI (Google Pay, PayTM, Phone pay, etc.).

So, if you don't want to miss out on the opportunity of getting recruited in the globally leading tech company, Google then [do register yourself for this online Google Test Series](#) asap!!

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

'

b''

b'

Enabling Third-party App Login using Google Account

- Difficulty Level :[Expert](#)
- Last Updated :[28 Jul, 2021](#)

Sometimes you try to log in to your Gmail account in a third-party app, but your request is denied. You may be trying to use SMTP protocol to send Emails through python IDE, or it may be an IoT device trying to log in into a Gmail account, the request might be denied by Google.

This might occur due to the following reasons:

- The app you are using to log in to your Gmail account might not meet the security standards of Google.
- It may be an app that doesn't use official ways to log in to your email account.

Solution:

There is a feature in Google account **Less secure app access**. This should be enabled in order to login into less secure apps.

To resolve this issue follow the below steps:

Step 1: Go to <https://www.google.com/account/about/>.

The screenshot shows the Google Account Overview page. At the top, there's a navigation bar with icons for back, forward, search, and other browser functions. Below the bar, the URL 'google.com/account/about/' is visible. The main content area features a large heading 'All of Google, working for you'. To the right of the heading are several icons: a blue location pin, a green Android robot, a circular profile picture of a woman, a red YouTube play button, and a multi-colored Google Photos icon. Below the heading, there's a section with text about personalizing the Google experience. At the bottom of the page, there are links for 'Google Account', 'Overview', 'Privacy tools', 'Create an account', and a prominent blue 'Go to Google Account' button.

Step 2: Click on **Go to Google Account**.

This screenshot is identical to the one above, showing the Google Account Overview page. However, the 'Go to Google Account' button at the bottom right is now highlighted with a green border, indicating it has been clicked.

This will redirect you to your google account page as shown below:

- Home
- Personal info
- Data & personalization
- Security
- People & sharing
- Payments & subscriptions
- About



Welcome, [REDACTED]

Manage your info, privacy, and security to make Google work better for you. [Learn more](#)

Privacy & personalization

See the data in your Google Account and choose what activity is saved to personalize your Google experience

[Manage your data & personalization](#)

You have security recommendations

Recommended actions found in the Security Checkup

[Protect your account](#)

Step 3: Click on the **Security** option on the left menu.

- Home
- Personal info
- Data & personalization
- Security**
- People & sharing
- Payments & subscriptions
- About

You have security recommendations

Recommended actions found in the Security Checkup

[Protect your account](#)

Step 4: Now click on the **Manage Third-party Access** option.

- Home
- Personal info
- Data & personalization
- Security**
- People & sharing
- Payments & subscriptions
- About

Your devices

You're currently signed in to your Google Account on these devices

Windows

India

 This device

Realme X2Pro

India - 12:44 PM

Galaxy S4

Jan 6

[Find a lost device](#)[Manage devices](#)

Third-party apps with account access

You gave these sites and apps access to some of your Google Account data, including info that may be sensitive. Remove access for those you no longer trust or use.

Coding Competition

Has some account access

Mail.Ru

Has access to Gmail, Google Contacts

[Manage third-party access](#)

This will redirect you to the **Apps with access to your account** page as shown below:

← Apps with access to your account

Third-party apps with account access

You gave these sites and apps access to some of your Google Account data, including info that may be sensitive. Remove access for those you no longer trust or use. [Learn about the risks](#)



Coding Competition

Has some account access



Mail.Ru

Has access to Gmail, Google Contacts

Signing in with Google

You use your Google Account to sign in to these sites and apps. They can view your name, email address, and profile picture. [Learn more](#)



4 of your apps are secured by Cross-Account Protection. [Learn more](#)

Step 5: Now enable the **Google Account sign-in prompts** as shown below:

← Apps with access to your account

Signing in with Google

You use your Google Account to sign in to these sites and apps. They can view your name, email address, and profile picture. [Learn more](#)



4 of your apps are secured by Cross-Account Protection. [Learn more](#)

Google Account sign-in prompts

Allow Google to offer a faster way to sign in with your Google Account on supported third-party sites



At this point, the issue is resolved and you can sign in to third-party apps using a google account.

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

b'

Google Foobar Interview Experience

- Difficulty Level : \n[Medium](#)
- Last Updated : \n07 Jul, 2021

Foobar is \xe2\x80\x9csaid to be\xe2\x80\x9d Google\xe2\x80\x99s secret hiring challenge, and it\xe2\x80\x99s really exciting. It is an invite-only challenge, so \xe2\x80\x9cyou have to be chosen\xe2\x80\x9d by Google.

There\xe2\x80\x99s no specific word from Google, but it\xe2\x80\x99s said that, based on your search history, i.e., your problem-solving related search keywords, their algorithm may find your searches interesting and send you the invite.\xc2\xa0

Don\xe2\x80\x99t find Foobar, let Foobar find you!

- Let\xe2\x80\x99s talk about the thing we are actually interested in. It starts with a story where the villain (Commander Lambda) is trying to take over a bunny planet and has enslaved the bunnies. The task is to save the bunnies. You have infiltrated the villain\xe2\x80\x99s ship and now have to solve a few problems to rescue the bunnies and escape. There are 5 levels in the challenge with increasing difficulty.
- In the first level, you\xe2\x80\x91ll get ONE fairly easy question. It can be completed then and there within an hour (max) or so . When I took the challenge for the first time, I was given 2 days (48 hours) to complete the problem.
- The second level had questions related to the famous algorithms Breadth first search and Depth first search with a little bit of linear algebra. You get three days for each of the two questions. You get a referral link through which you can let a friend enter foobar!
- The third level had questions of number theory, dynamic programming, and even steady-state machines. Here you get three questions, you get seven days for each. It scared me at first, but it wasn\xe2\x80\x99t that difficult if you are active in competitive programming.
- After the third level you get an option to share your contact details with google\xe2\x80\x99s recruitment team
- Currently, I am on Level 4th and I have already solved one of the three problems\xc2\xa0

Some tips:

1. Don\xe2\x80\x99t Overthink: Overthinking can make you use algorithms that might be overkill. For one question I went on to implement Edmund\xe2\x80\x99s Blossom algorithm while all I needed was a simple depth first search based bipartite matching. All the questions in foobar are mostly solvable in under 400 lines of code.
2. Don\xe2\x80\x99t feel like it is the only way into Google
3. Refer to the internet when you don\xe2\x80\x99t know
4. Try to learn the concepts and then start solving. This challenge will surely teach you a lot. You might hit a question that you have no idea about. The internet will be a friend, but don\xe2\x80\x99t let it spoil you.
5. Also try to go for the challenge when you have ample of time to work on it only and try to learn at each step.

Foobar is more about learning and implementing, instead of knowing everything before!

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

Google Interview Experience for Software Engineer 2020

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

Round-1 (Screening Technical Interview):

- Given an array and a matrix. You have to find if the array is present in the matrix. You can start from any point and go in 4 directions. Return the starting and ending pairs of indices if the array exists otherwise return false.

Round-2 (Technical Interview Round-1):

- Given a matrix of 0s and 1s, find the shortest path from start to end(both given). You can move in 4 directions and can travel only through 0s.

Round-3 (Technical Interview Round-2):

- Create a treasure hunt and find the treasure which is present in one of the n rooms. You have r keys (key to move from one room to another, but you don\xe2\x80\x99t know which key is of which pair). Start point \xe2\x80\x93 Room 1.

Round-4 (Technical Interview Round-3):

- There are n jobs, you have to schedule the jobs on a machine. Given the job start time and duration. Schedule the jobs in best optimal way.
- In continuation of the above question, there are k machines. Schedule the jobs in the most optimal way.

Round-5 (Technical Interview Round-4):

- Given a city where you have roads, buildings, parks etc which given dimensions and some portion of the city is vacant (plot of area can be used to build a building). Your task is to find in how many ways can you build a building of a given dimension(rectangle).

Round-6 (Googlyness \xe2\x80\x93 Behavioral Interview):

- Tell me something about yourself.
- What differentiates yourself from others.
- Little discussions over my extra activities written in resume.
- Team Conflict questions.
- Do you have any Location constraints?
- Other behavioral questions.

Tips:-

- Know yourself before any interview.
- Be calm & answer politely.
- Be expressive and thoughtful.
- Better communication is a must.
- Code should be simple and clean.
- Practice a lot.
- Keep the constraints in mind like naming, edge cases, datatype, size, time complexity, space complexity.

8. Don't jump to the solution. Go with the flow.

My Personal Notes

Add your personal notes here

Save

What is Google FLoC?

- Last Updated : \n30 Jun, 2021

Federated Learning of Cohorts(FLoC) is the new web tracking technology after Google decided to phase out third-party cookies which are already being implemented. Almost everyone knows a major share of Google revenue comes from its ad business and its free services like Google Analytics, Google Ads, Google Search, Blogger, YouTube, and its most popular browser Chrome all provide valuable data to Google to keep its business running. According to Google FLoC is privacy first technology then why are many researchers and technologists are opposing it. Even Chromium-based browsers like Brave, Valvidi and Google Private Search competitor DuckDuckGo disabled it. This article gives a basic understanding of What FLoC is, and it\xe2\x80\x99s up to you to decide how many Google statements about FLoC are true.

What are Third Party Cookies?

[Cookies](#) just contain some data about your interaction with some websites. Cookies may contain request-id when websites use CDN\xe2\x80\x99s, they are helpful for session management, can store user preferences, and apply them automatically when you visit the same website again. Cookies are very helpful if used correctly.

Third-Party Cookies are the cookies placed by third-party domains when we visit some website. For example when you visit a website that shows ads like geeksforgeeks.org the cookies placed by geeksforgeeks.org are called First Party Cookies while cookies placed by googleadservices.com are called Third-Party cookies. These are cookies placed by domains/websites even when we are not on their website.

For many years Ad businesses used these third-party cookies to track users across different websites to give them more personalized ads. But along with them, Privacy based browsers like Firefox and Brave started to tighten the placing of third-party cookies, even some DNS services like NextDNS effectively block the resolution of these party domains. So Google realized they have to find another way to keep its business running and one of them is the FLoC.

What are Cohorts and FLoC?

Cohort means a Group of People with similar interests. People who like movies are a cohort, people who play cricket are a cohort. Google\xe2\x80\x99s idea behind Federated Learning of Cohorts essentially means serving ads based on the cohort user belongs to. Chrome users are assigned to a Cohort according to their browsing patterns. Every Chrome browser has a unique cohort id generated while assigning to a cohort. From Google\xe2\x80\x99s words \xe2\x80\x9cWe started with the idea that groups of people with common interests could replace individual identifiers, This approach effectively hides individuals \xe2\x80\x99in the crowd\xe2\x80\x99 and uses on-device processing to keep a person\xe2\x80\x99s web history private on the browser.\xe2\x80\x9d Cohorts are updated weekly. Websites need to choose what type of ads to serve to users based on the cohort. Until now it looks better than why many aren\xe2\x80\x99t happy with it.

Why is FLoC not having a good start?

Google already started testing FLoC in March 2021, Many users are already being added to their cohorts. But apart from Chrome, almost all the major browser vendors opposed the implementation of FLoC, Digital Rights Non-Profit Electronic Frontier Foundation (EFF) also in the list of opposing it. The major reason is that FLoC is new there is no guarantee that it will be used as proposed. One of

the major drawbacks of FLoC which Google admitted resolving is Browser Fingerprinting. It refers to mapping different pieces of information to create a complete profile of a person. Suppose if you have been moving few different cohorts but similar in nature like from Baseball cohort to Cricket cohort to Football cohort, the ad business can easily conclude that you are into sports. Cohorts may also reveal more information about you which can lead to more targeted advertising.

Specific information about browsing patterns. Trackers may be able to reverse-engineer the cohort-assignment algorithm to determine that any user who belongs to a specific cohort probably or definitely visited specific sites. Google also hasn't talked much about how sensitive cohorts like representing health searches, fake information, biasing based searches will be handled.

FLoC is new and is far from being perfect but it's up to you to decide, if you want to disable FLoC, Go to Privacy and Security in your Chrome Settings and turn off Privacy Sandbox this will disable FLoC in Chrome. If you are using other browsers than Chrome you are already Good.

My Personal Notes\new_drop_up

Add your personal notes here

Save

WE Program by TalentSprint and Google

- Difficulty Level : \n[Expert](#)
- Last Updated : \n02 Jun, 2021

What is the WE Program?

The Women Engineer or WE program is a 2-year interactive program organized by Talentsprint and supported by Google. It aims at identifying young women's talent and developing them into highly competent professionals for the global tech industry. This program provides necessary guidance to women with a competitive learning environment and promotes socio-economic diversity and inclusion. The program is basically for women who wish to pursue their career in software engineering. The 1st cohort of the program was launched in the year 2019, in which the 3rd and 4th-year engineering females participated. The 2nd cohort was applicable for 1st year engineering girls. This year the 3rd cohort is held entirely online due to Covid-19. The top 500 female applicants got selected as WE scholars.

Who should apply for this program?

1. The applicant should identify as female
2. Should be studying in the first year of Engineering
3. Pursuing CS/IT/ECE/EEE or equivalent branch and should be keen to identify and unlock the full potential

When to apply for the program?

Every year, the applications are open for the WE Program around mid-February tentatively. This year, the applications opened on 1st March 2021.

What are the selection criteria?

The first two cohorts had a rigorous four-stage selection process. But this year, the 3rd cohort had only a three-stage selection process.\xc2\xab

1. Firstly, we had to submit our application with our details and required documents. Then the selected applicants were invited for the online aptitude test. It consisted of moderate to difficult level logical reasoning & analytical questions to be solved in one hour.
2. The selected candidates were invited for the English language test. This test examined our comfort and ease in using the English language as it is the medium of communication during the entire program.
3. After clearing the first two rounds, we had an online coding round. For this round, we were guided for two weeks by the WE program mentors. They conducted sessions to teach us the basics of programming and cleared our doubts in the doubts sessions. We were also provided the study material & recorded video lectures to prepare well for the coding round. We had a choice to choose the programming language in which we want to write the Coding test. The test included questions to examine our programming skills. The questions required a thorough understanding of the concepts and revolved around predicting the output of a code snippet and writing codes for the given problem statements. After these three stages, the top 500 candidates got selected as WE scholars.

What is the fee and scholarship of this program?

This year the fee for the WE Program is \xe2\x82\xaa 3 lakh. Each selected candidate in cohort-3

got a minimum scholarship of 25% of the total amount. The candidates can also bag up to 100% scholarships depending on their performance in the tests in the above-mentioned stages of selection.

How will you know if you get selected?

Once you have successfully cleared all the stages of the selection process, you will receive the final selection status on your registered email address.

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

Generation Google Scholarship (APAC) Online Challenge Experience

- Difficulty Level :\nMedium
- Last Updated :\n26 Apr, 2021

I had applied for an APAC scholarship in March 2021 through their Google Career Page and I got a mail that there will be an Online Challenge from 9th April to 10th April. In the challenge, there were two sections designed with multiple-choice questions (1) **General Cognitive Ability** and (2) **Role Related Knowledge** both have to be completed within 60 minutes.

There was a total of 14 Questions from General Cognitive Ability including Section 1 and Section 2. Section 1 comprised **Problem Solving & Analytical Reasoning** and Section 2 comprised **General Cognitive Ability.**\xc2\xab0

These are the sample questions that came in Section 1 \xe2\x80\x93 Problem Solving & Analytical Reasoning.

1. If in a certain code language all the letters of the Alphabet with their positions corresponding to prime number values are coded as 5 and the remaining values are coded as 3, then what will be the code for the word \xe2\x80\x9cRESOURCE\xe2\x80\x9d in the code language?

Options:

- a) 33553355
- b) 35533355
- c) 35353535
- d) 33553555

2. Rajesh has four red balls, nine blue balls, and six yellow balls. The price of each red ball is \$2, the price of each blue ball is \$3, and each yellow ball is \$4. Then what will be the average price of all the balls together?

Options:

- a) \$5
- b) \$4
- c) \$3
- d) \$2

3. Find out the missing term in the series.

34 , 42 , 58 , 82 , 114 , 154 , ? , 258

Options:

- a) 250
- b) 202
- c) 201
- d) 204

4. Payson is thrice as fast as Amen at completing tasks. They both pick up a task together and complete it in 5 days. How many days will Amen take to do it all alone?

Options:

- a) 20 days

- b) 25 days
- c) 10 days
- d) 15 days

These are the sample questions that came in Section 2 \xe2\x80\x93 General Cognitive Ability.

1. State whether the following is a Fact, an Interface, a Judgement, or an Opinion.
So does that mean they didn't make it to the interview?

Options:

- a) Interface
- b) Judgement
- c) Opinion
- d) Fact

2. Given below are statements followed by two conclusions. Assume the statements are true, even if they contradict commonly known facts, and determine the conclusions that logically follow.

Statements:

I. All artists are educated.

II. James is educated.

Conclusions:

I. All artists are James.

II. James may be an artist.

Options:

- a) Only Conclusion I.
- b) Neither Conclusion I nor Conclusion II.
- c) Only Conclusion II.
- d) Both Conclusion I and Conclusion II.

3. Given below are sentences, which when arranged logically, form a meaningful sentence. Arrange them sequentially.

P. and stopping them from

Q. illiteracy is a problem

R. leading a fruitful life

S. plaguing a lot of people

Options:

- a) Q, R, P, S
- b) Q, S, P, R
- c) P, S, Q, R
- d) P, R, Q, S

4. Which of the following sentences best develops or supports the argument given below?

Argument: A student in a class has three paint brushes. No one else in the class has three paint brushes.

Options:

- a) Some students have more than three paint brushes
- b) Every Student in the class has paint brushes
- c) Only one student in the class has exactly three paint brushes

- d) All the students in the class have three paint brushes

There was a total of 25 Questions from **Role Related Knowledge** there were 4 Sections. Section 1 was having **C programming**, Section 2 was **C++ programming**, Section 3, and Section 4 was **Data Structures and Algorithms, Computer Fundamentals**.

These are the few sample Question that came in Section 1 \xe2\x80\x93 C Programming.

1. Consider the following expression-

```
x = 5 * 5 / 2 + 2 + 2 - 4 + 3 / 1 + 2
```

What will be the result obtained after evaluating the above expression in C language?

Options:

- a) 17
- b) 10
- c) None of the mentioned options
- d) 3

2. Find the Odd one out.

Options:

- a) Character
- b) Integer
- c) Array
- d) Real

These are the few sample questions that came in Section 2 \xe2\x80\x93 C++ Programming.

1. Consider the C++ program given below:

C++

```
#include <iostream>
using namespace std;
int main() {
    int x = 1;
    int *p;
    p=&x
    cout << *p << endl;
}
```

What will be the output of the above program, if it is given that the address of x and p is 1024 and 2048 respectively?

Options:

- a) 1
- b) 2048
- c) Compile error
- d) 1024

Note: There were many Questions that came in both Section 1 and Section 2 where we have to guess the output of the program.

2. Sam was writing a program in C++. At many places, he used pointers to access the heap memory, but he has a habit of not deallocating space once the pointer is no longer needed. Which of the following types of pointer error is he most likely to get?

Options:

- a) Memory leak
- b) Uninitialized pointer error
- c) Invalid pointer error
- d) None of the mentioned options

These are the few sample questions that came in Section 3 \xe2\x80\x93 Data Structures and Algorithms.

1. Consider an array representation of circular queue $Q = (\underline{\quad}, 313, 1221, 121, 212, \underline{\quad}, \underline{\quad}, \underline{\quad}, \underline{\quad})$. What is the maximum number of times the enqueue operation can be performed, after which an overflow condition will occur?

Options:

- a) 9
- b) 6
- c) 7
- d) 5

2. Consider a connected planar graph, G with $V = (P, Q, R, S, T, U, V, W, X, Y, Z, L, M, N, O)$. The degree of each vertex is two. Into how many regions does graph G split the plane?

Options:

- a) 5
- b) 2
- c) 3
- d) 4

3. Consider the following pseudo code:

```
Node* root = NULL  
insert (root, 10)  
insert (root, 20)  
insert (root, 15)  
insert (root, 40)
```

It is given that Node represents the node of a binary search tree. What will be the post-order traversal of the Binary Search Tree after the above operations are performed?

Options:

- a) 40, 10, 15, 20
- b) 40, 20, 10, 15
- c) 15, 40, 20, 10
- d) None of the mentioned options

4. Consider a directed Graph G_1 with 4 nodes W, X, Y , and Z . The adjacency lists of the nodes are given below:

$W: Z$

$X: W$

$Y: W$

$Z: X, Y$

Identify the correct statements.

Options:

- a) In degree of W is 2
- b) Out degree of W is 1
- c) G_1 is strongly connected graph
- d) None of the mentioned options

These are the few sample questions that came in Section 4 \xe2\x80\x93 Computer Fundamentals.

1. In Windows 10, you have to enable the use of Windows features such as the Start Menu, Settings, and File explorer in your local language. Which of the given can be accessed for the same?

Options:

- a) Local experience packs
- b) Desktop backgrounds
- c) Windows themes
- d) None of the mentioned options.

2. If you are using a hub, then it would be on which layer of the OSI model?

Options:

- a) Application Layer
- b) Data link Layer
- c) Physical Layer
- d) Session Layer

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

b'

Google Interview Experience 2021 (Virtual)

- Difficulty Level :\n[Easy](#)
- Last Updated :\n31 Mar, 2021

Round 1:

1. The round consists of a coding test. In 1 hour we have to solve two coding questions. I have done partially the code and luckily enough got a call for the next step.
2. Before the interview, there was a webinar held to tell us the further process and making things clear to us. Then they send some materials to study and so that we can prepare for the interview. In that, there was some mock interview link also where we can take our mock interviews and practice. Meanwhile, we also got an email to provide them some available dates.

Round 2:

1. The interview lasted for 45 minutes. There was only one panelist, he is a man of age around 25, not an Indian. He wants to make me feel comfortable, so he asked some general questions that show me a problem to solve, but he was more interested in asking my approach. The question was of hard level and from graphs. I tell him my approach and there were some cross-questioning from his side and after that he wants me to solve the code practically.
2. I couldn't able to proceed with further rounds but yes the experience is worth it.

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

b'

Google Taiwan Interview Experience for Software Engineering Graduate

- Difficulty Level :\nHard
- Last Updated :\n30 Mar, 2021

I recently interviewed by Google Taiwan. It was a smooth process and thanks to Google for that.\xc2\xa0

- At the start, I was given a chance to tell them about me, and it\xe2\x80\x99s just to give you a chance to come out of nervousness from a big interview.
- \xc2\xa0Then interviewer gives me a question based on the tree and due to NDA I can not reveal that exact question but can share something related to it. So question was that you are given one tree. It can be an n-ary tree also. Every node will have some color, and it\xe2\x80\x99s fixed that a number of colors will be two only either it is black or white. And there is one condition that you can not have an adjacent black node, which means the child and parent node can not be of the same color which is black, but it\xe2\x80\x99s allowed to have both as white color. and you can change any node from white color to black and the same for black. The cost of this change is 1. And you need to minimize the cost of this operation and make the final tree that follows the above constraint. An interviewer also asks me to write code for the same and I also write it on the document which was shared at the time of your interview scheduling.\xc2\xa0
- So overall it\xe2\x80\x99s a very interesting process and also it will give you some inspiration to move ahead, so guys please prepare well because any time it can be yours and also as depicted in Mission Mangal that you can get anything from any small things like that puri(Fried Bread).\xc2\xa0

Thank you for reading! Also, GeeksforGeek is the best resource to prepare for anything, so I will suggest using this site for the same.\xc2\xa0

Thanks!

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

What is Google Sandbox in SEO ?

- Last Updated : \n31 Mar, 2021

Google is currently the biggest search engine in the world, and it's having exponential growth day by day. We can say that it became an important part of our life, we come to Google for plenty of things and for plenty of times in a day. It gives us information about many things which we really want in our life. Have you ever wondered how Google is able to show the most appropriate and authentic information from a huge bunch of websites? You have wondered and found it because you guys are from computer science. Obviously, He is doing with his algorithms and providing the best and most authentic information to the user.

Nobody can say about Google Algorithms with authenticity, we all can predict it and can optimize our website according to Google.\xc2\xao

In 2004, Many SEO Experts observed that Google is not ranking their website for the first few months even he is putting his best SEO effort, but the efforts are going worthless which they are putting for fast search index of the website.

With the same amount of effort and at the same time, He observed that this is happening only with Google. Other Search Engines like Bing and Yahoo are showing the website in SERP as per the expectations. This concept was introduced as Google Sandbox by the Experts.



The logic behind it has given that, a newborn website will be not getting indexed properly for the first few months. Experts said, that this is happening because Google Introduced a new algorithm for giving more appropriate information to the user and this is like a filter for a new website, which doesn't show properly in search results and the concept is called Google Sandbox.

We can say and assume psychologically that there is a box for new websites in Google and new websites will be in that box for the first few months and in this period it will not show in search results properly. As per the experts, the period can vary from 2 Months to 8 Months.

Identify that your website in Google Sandbox: Identification is pretty simple if the website is not indexing properly for long-tail keywords and low competition keywords also. Then, your website may be in Sandbox.

What the experts are saying for sandbox?

Rand Fishkin, owner of SEOMoz also confirmed that for the first few months their website was not ranking well even he is putting the best possible content on it. That was happening because of this sandbox concept. He told, on November 4, 2005, that now his website is ranking good after 8 months, and it has escaped the probation period or sandbox in which Google is not taking a new website as an authorized one.

Also, Matt Cutts (American Software Engineer, Formerly Head of WebSpam at Google) said that, If your website is new then it may not rank as well as old ones are ranking. But he said not to worry about it, it will surely rank after few months.

How to get rid of Google Sandbox?

Here we will share few best SEO tips for getting rid of it.\xc2\xab

1. Choose long tail and low competition keyword

Because you are running a new website, please try to rank on low competition and long-tail keywords rather than trying to rank on high-competition and short-tail keywords. You will be able to rank them quickly, and it will help your website get out of the sandbox.

2. Focus on Branding\xc2\xab

Focus on branding as much as possible, focus on making your website the best brand. To do this, you should use your brand name everywhere on the Internet whether it is social media or any other website.\xc2\xab

3. Use Social Media

By the way, social media has always been an important factor, but since you have a new website, then its importance increases even more. Make a page with your brand name on Facebook, try to add more people, and share information on it. You should also focus on social media like Pinterest, Linked In, Instagram, and more.

4. Build Authority

You can increase the authority of your website in the eyes of Google, for this regularly update and add your content to your website. Try to always be active as your brand on the Internet. You can also create your own authority and backlinks by putting guest articles on other websites that are similar to your domain.

5. Use Internal Linking

Internal linking is also an important part, you should also follow it, link your similar pages to each other. So that the search engine and the user also have the ease of navigating your website.

You can also take inspiration from internal linking from GeeksforGeeks.

6. Don\xe2\x80\x99t be too Aggressive

Don\xe2\x80\x99t be too hasty, give the search engine bot some time to analyze your website. In the meantime, keep doing your work, after some time you will surely get the expected result.

Final thoughts

Finally, patience is the solution to your all problems, just wait and keep working for the ranking of the website. You will be surely indexed in SERP after working with patience for few months.

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

b'

Google Interview Experience for Software Engineer (November 2020)

- Difficulty Level :[Medium](#)
- Last Updated :[28 Jul, 2021](#)

Note: All rounds were virtual.

Phone Screen Round:

1. Implement a doubly-linked list, with all edge cases considered.

Onsite Rounds:

Round 1:[Question](#)

1. Add (Key, value) pairs of two lists which are representing different values at different time stamps. HINT: USE Interpolation and Extrapolation, to find the values of the missing timestamp.

Round 2:[Question](#)

1. The question was about pattern matching.[Question](#)

The scenarios were:[Scenario 1](#)[Scenario 2](#)[Scenario 3](#)

If we are given a directory structure, \nthen /foo /foo are exact matches, and /foo /bar are no matches. \n/foo/* means

Round 3:

1. We have a rectangle city map, occupied with some buildings, parks, etc. We need to find if we have enough space for a building of a given size ($m \times n$).

Question link: <https://www.geeksforgeeks.org/count-possible-ways-to-construct-buildings/>

Round 4:

Code Version diff question, like git.

1. Two versions given as a string, find whether an insert/ delete or update operation has been done, at what index, and what is the change.

Behavioral Round:

1. Most Recent challenging work.
2. What qualities you want in your manager.
3. Anytime conflict faced, and how you handled it.
4. If you were designing Photos, what will be your approach to identify smiling faces.

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

b'

Google Developer Student Clubs Solution Challenge 2021

- Difficulty Level :
[Medium](#)
- Last Updated :
01 Feb, 2021

Do you also feel excited to learn the latest Google technologies? If yes, then there's an exciting opportunity by Google developers waiting for you. It's Google Developer Student Clubs Solution Challenge 2021. Google Developer Student Clubs Solution Challenge is an annual challenge hosted by Google developers, inviting college/university students from all over the world to learn & develop solutions for the given set of problems.



In this challenge, all the solutions to the problems submitted by the students must be developed using one or more Google technologies. This is a great opportunity for all students to kickstart their careers by learning through doing.

The complete timeline for the DSC Solution Challenge 2021:

Phase 1. Register for the challenge

- Registration is **open!**

Phase 2. Learn, Build & Submit your solution

- Submissions Open on March 1, 2021
- Submissions Close on March 31, 2021

Phase 3. Evaluation and Round-1 result

- The top 50 solutions will get shortlisted
- Results will be announced by the end of April 2021

Phase 4. Deep Mentorship Session with Google Developers

- Improving the solution
- Re-Submission of Improved Solution by the end of June 2021

Phase 5. Evaluation of the re-submitted solutions and Round-2 result

- The top 10 solutions will get shortlisted
- Results are announced by the end of July 2021

Phase 6. Solution Challenge Demo Day: The Final Event

- All the Top 10 teams present their solutions to the whole world live on YouTube
- During this event, these top 10 teams are interviewed by the judges
- And the Final **Top 3 Winners** of the DSC Solution Challenge are announced live!
- By the end of August 2021

What are the types of problem statements given in this challenge?

Every year a different set of problems is given which can improve the lifestyle of common people & creates a positive impact on the society. The problem statements for DSC Solution Challenge 2021 are *17 United Nations Sustainable Development Goals (SDGs)*. These 17 United Nations Sustainable Development Goals are created by the United Nations in 2015 to be achieved by 2030. And all the United Nations Member States agreed upon these 17 Sustainable Development Goals with an aim to end poverty, ensure prosperity, & protect the planet. The 17 UN SDGs are listed in the table below:

1. No Poverty
2. Life on Land
3. Good Health & Wellbeing
4. Zero Hunger
5. Partnerships
6. Peace, Justice & Strong Institutions
7. Sustainable Cities
8. Clean Water & Sanitation
9. Decent Work & Economic Growth
10. Quality Education
11. Reduced Inequalities
12. Responsible Consumption & Production
13. Climate Action
14. Affordable & Clean Energy
15. Industry, Innovation, & Infrastructure
16. Life Below Water
17. Gender Equality and Women\xe2\x80\x99s Empowerment

You can read more about these 17 UN SDGs from [here](#).

Why you should register for this challenge?

- You become a part of the worldwide student community \xc2\xab\xe2\x80\x93 Developer Student Clubs (DSC).
- You get to analyze your technical skills and learn how to approach a solution to any problem.
- You get to learn about various Google technologies and learn how to work with them.
- You receive mentorship from developers at Google to improve your solution to the problem.
- If performed well, you will get global recognition, you & your solution get featured on Google Developers Blog.

How to register and participate in this challenge?

These are the steps you should follow to register and participate in this challenge:

1. If you\xe2\x80\x99re not a member of the DSC, first you have to join it virtually if it exists at your college/university, if there\xe2\x80\x99s no DSC at your college/university you can join one nearby you from this [event platform](#).
2. After this, you can officially register for this challenge by filling out this [form](#).
3. Form a team (maximum up to 4 students and ideally a team should have people with different technical & soft skills) with at least one member from the college/university of the DSC you\xe2\x80\x99re a part of.
4. Select one United Nations Sustainable Development Goal out of 17, you can take help from this [video](#).
5. Identify your solution to the problem, you can use this [tool](#) to validate your solution before you start working on your solution, you can also watch this [video](#) \xe2\x80\x9cHow to identify a solution?\xe2\x80\x9d.
6. Design the frontend interface and backend technology for your solution to the problem, you can watch this [video](#) for frontend designing and this [video](#) for designing the backend technology.
7. Now it\xe2\x80\x99s time to test your solution/product that you have built, share your working solution with all your friends, family members, and other students, and ask them for their valuable feedbacks.
8. Improve your solution/product based on the feedback you received while testing the working solution.
9. The last work before submitting your solution for the evaluation, record a 2 minutes demo video of your final working solution, you can take help from the last year\xe2\x80\x99s demo [videos](#) of the top 10 solutions of the DSC Solution Challenge.
10. You have done it! Now submit your final solution for the evaluation by filling out this [form](#).

What all is there for you in this challenge?

1. There is a huge collection of Free learning pathways and courses to improve your skills.
2. You get a Google Developer digital badge for completing every learning pathway.
3. Top 50 teams will get direct mentorship from Google as mentioned above also.
4. Top 10 finalists will get a 1-year subscription to Pluralsight, Google swag kit, additional customized mentoring from Google, and featured in the Google Developers Blog.
5. And the Top 3 winners of the DSC Solution Challenge 2021 will get a brand-new **Chromebook** and a private team meeting with one of the Google executive.

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

b'

Google Cloud Platform |x2|x80|x93 Creating Google Cloud Console Account & Projects

- Last Updated :n01 Feb, 2021

Google Cloud Platform (GCP) is a suite of cloud computing services offered by Google to the developers to implement the infrastructure used in Google products in their custom applications. GCP provides several cloud services for storage and computing and provides infrastructure as a service (IaaS), platform as a service (PaaS), and serverless computing environments.



To use any Google Services or implement any Google API in any custom application, one needs to have an account associated with GCP. GCP requires a developer to pay for the services being used or implemented in the application and furnish with billing information. Bills are sent every month, and the associated bank account or credit/debit card is auto-debited.

In general, due to less volume of requests made to the APIs or Services implemented (if the number of requests does not exceed the quota), no amount is debited. However, a bill is generated and sent to the developer.

We want you to set-up a GCP account to add Services and APIs to your applications through this article. This article shall be used as a future reference to set-up a GCP account.

Create an Account:

To create a Google Cloud Console account on GCP follow the below steps:

Step 1: Go to console.cloud.google.com and log in with your Google Account.

Step 2: If it is the first time, then the \xe2\x80\x9cWelcome\xe2\x80\x9d note appears, agree with all the terms and conditions, and finish.

Step 3: Billing is required to use the APIs and services. To update it, click on the Billing option on the menu and complete the process (Credit/Debit Card details are captured and verified).

Step 4: After completing, the Billing page looks like this. (*Sensitive information is censored*)

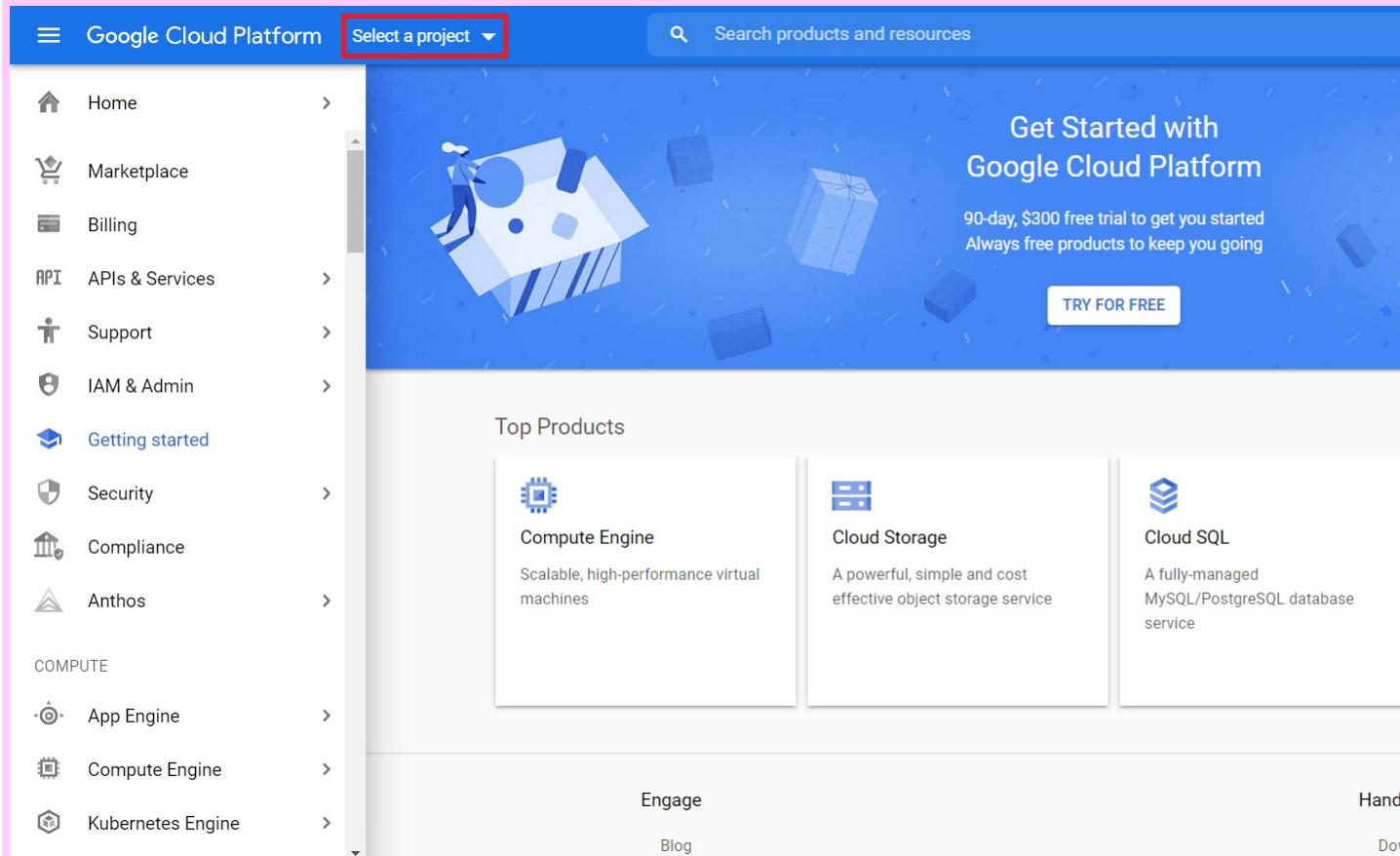
A screenshot of the Google Cloud Platform Billing Overview page. The top navigation bar shows 'Google Cloud Platform' and a search bar. The left sidebar has a 'Billing' section with links for Overview, Reports, Cost table, Cost breakdown, Commitments, Budgets & alerts, Billing export, Pricing, Documents, Transactions, Payment settings, Payment method, and Account management. The main content area shows 'Your balance' with a 'Automatic payments' button. Below that is a 'Transactions' section showing data for Jan 1 - 7, 2021, Dec 1 - 31, 2020, and Nov 1 - 30, 2020, with download icons. A 'VIEW TRANSACTIONS AND DOCUMENTS' button is at the bottom of this section. To the right is a 'How you pay' section showing a VISA logo and a redacted payment method. The bottom of the page has a 'Settings' section with two redacted items.

|xc2|xa0

Create a Project:

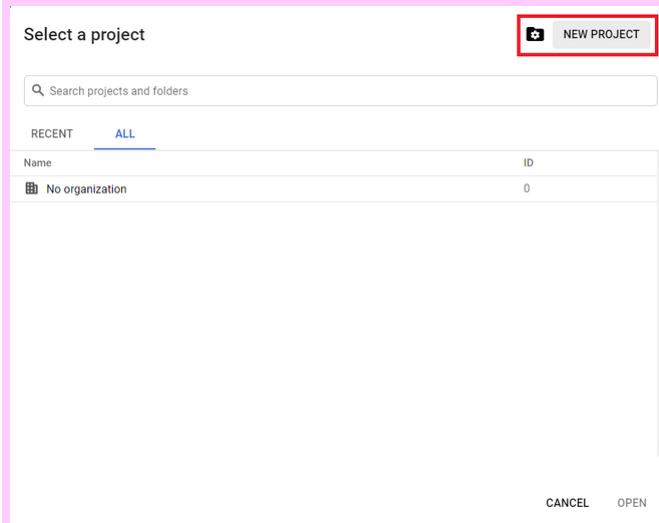
To create a project on the Google Cloud Platform, follow the below steps:

Step 1: The screen that you see is the Dashboard of your console.



The screenshot shows the Google Cloud Platform dashboard. On the left, there's a navigation sidebar with icons and text for Home, Marketplace, Billing, APIs & Services, Support, IAM & Admin, Getting started, Security, Compliance, and Anthos. Below this is a section for COMPUTE services: App Engine, Compute Engine, and Kubernetes Engine. At the top center, there's a dropdown menu labeled "Select a project" with a red box around it. To the right of the dropdown is a search bar with the placeholder "Search products and resources". A large blue banner on the right side says "Get Started with Google Cloud Platform" and "TRY FOR FREE". Below the banner, there's a section titled "Top Products" featuring three cards: "Compute Engine" (scalable, high-performance virtual machines), "Cloud Storage" (powerful, simple and cost-effective object storage service), and "Cloud SQL" (fully-managed MySQL/PostgreSQL database service). At the bottom of the dashboard, there are links for "Engage" and "Blog".

Step 2: To create a new project, or open an existing one, click on the "Select a project" option.



A modal dialog box titled "Select a project". It has a search bar at the top with the placeholder "Search projects and folders". Below the search bar are two tabs: "RECENT" and "ALL", with "ALL" being the active tab. A table lists projects under "ALL", showing one entry: "No organization" with ID 0. At the bottom of the dialog are "CANCEL" and "OPEN" buttons.

Step 3: A list of previously created projects appears under RECENT or ALL. Click on NEW PROJECT to create a new one.

New Project

You have 12 projects remaining in your quota. Request an increase or delete projects. [Learn more](#)

[MANAGE QUOTAS](#)

Project name *
GeeksforGeeks Project [?](#)

Project ID: geeksforgeeks-project. It cannot be changed later. [EDIT](#)

Location *
No organization [BROWSE](#)

Parent organization or folder

CREATE [CANCEL](#)

Step 4: Type in a Project name and click CREATE.

Google Cloud Platform

Pins appear here [?](#)

- Home
- Marketplace
- Billing
- APIs & Services
- Support
- IAM & Admin
- Getting started
- Security
- Compliance
- Anthos

Top Products

- Compute Engine
- Cloud Storage
- Cloud SQL

Engage

Blog

Get Started with Google Cloud Platform

90-day, \$300 free trial to get you started
Always free products to keep you going

TRY FOR FREE

Create Project [SELECT P](#)

Step 5: The page is directed to the Dashboard and notifies about project creation. Once created, click on the SELECT PROJECT option in the Notifications.

Google Cloud Platform

GeeksforGeeks Project

DASHBOARD ACTIVITY RECOMMENDATIONS

APIS & SERVICES

Project info

Project name: GeeksforGeeks Project

Project ID: geeksforgeeks-project

Project number: 1001234567890123

ADD PEOPLE TO THIS PROJECT

Go to project settings

APIs

Requests (requests/sec)

No data is available for the selected time frame.

Go to APIs overview

Google Cloud Platform status

All services normal

Go to Cloud status dashboard

Monitoring

Set up alerting policies

Create uptime checks

View all dashboards

Go to Monitoring

Error Reporting

No sign of any errors. Have you set up Error Reporting?

Step 6: The page is redirected to the project page displaying information about the project. To add APIs or Services, click either APIs & Services options from the menu or click on Go to APIs overview on the DASHBOARD.

API APIs & Services

APIs & Services

+ ENABLE APIs AND SERVICES

Dashboard

Library

Credentials

OAuth consent screen

Domain verification

Page usage agreements

1 hour 6 hours 12 hours

Traffic

▼

1.0/s
0.8/s
0.6/s
0.4/s
0.2/s
0

⚠ Chart definition invalid.

Dec 13

Dec 20

Dec 27

2021

Errors

⚠ No data is available

Median latency

▼

1.0
0.8
0.6
0.4
0.2

⚠ No data is available for the selected time frame.

[https://console.cloud.google.com/apis/library?organizationId=0&project=geeksforgeeks-project...](https://console.cloud.google.com/apis/library?organizationId=0&project=geeksforgeeks-project)**Step 7:** Click on ENABLE APIs AND SERVICES OPTION below the search bar.

← API Library

Welcome to the API Library

The API Library has documentation, links, and a smart search experience.



Search for APIs & Services

Filter by

Maps

VISIBILITY

Public (314)

Private (4)

CATEGORY

Advertising (14)

Analytics (3)

Big data (17)

Blog & CMS (1)

Compute (7)

CRM (1)

Databases (6)

Maps SDK for Android
GoogleMaps SDK for iOS
GoogleMaps JavaScript API
GooglePlaces API
Google

Machine learning

**Step 8:** Select the required API from the API Library displayed for implementing it into the application and follow the instructions for implementing specific API and Services for any device.

At this stage, you have a Google cloud console account and a new API or server enabled project on GCP to start up.

My Personal Notes\narrow_drop_up

Add your personal notes here

Save



b'

Google's Coding Competitions You Can Consider in 2021

- Difficulty Level :
[Easy](#)
- Last Updated :
28 Jan, 2021

Want to grow your coding skills, meet like-minded developers or join the virtual coding community? If yes, then **Google's Coding Competitions** can help you. Google's Coding Competitions are designed by the engineers at Google and these coding challenges are conducted by the organization every year to assess the coders around the world. It is a great way to showcase your programming skills and problem-solving skills at the international level. This is great news for all the programming enthusiasts that this year also Google is going to conduct these competitions.

Google Coding Competitions



The most popular among all competitions are **Hash Code**, **Code Jam**, and **Kick Start**. Let's take a look at each of the competition in detail:

1. Hash Code

Hash Code is one of the most famous coding challenges organized by Google every year, for students and professionals. Owing to the current pandemic situation, Hash Code 2021 is going to be a virtual event. This is a team event where you have to make a small team of 2-4 coders from wherever you would like, along with your virtual hub. In this challenge, the team tries to solve a real Google engineering problem through an Online Qualification round. All the teams will compete together virtually in locally coordinated Hash Code Hubs and the top teams from this round will compete for the virtual World Finals. In the qualification round, each team gets four hours to provide an optimized solution to the problem using programming language and other tools of their choice. In the virtual World Finals, all the teams will code together to solve another challenge and compete for cash prizes. You can also see and practice the previous year's problem statements from the [official page](#).

- Applications are open for Hash Code 2021; you can apply from [here](#).

2. Code Jam

Code Jam is another famous coding challenge organized by Google every year. It is Google's longest global coding competition where coders from all over the world take part and test their coding skills. There are three online-hosted rounds before the Annual Code Jam World Finals which is held at an international Google office every year. In each round, the participants have to solve challenging algorithmic puzzles within a limited timeframe. In the end, only 25 participants will compete for cash prizes and the coveted championship title at the annual Code Jam World Finals. You can also see and try the previous year's problems from their [archive page](#).

- Registration for Code Jam 2021 will start from Feb 17, 2021; you can apply from [here](#).

3. Kick Start

Kick Start, formerly known as APAC is again one of Google's famous coding competitions held every year where coders around the world take part and get a chance to enhance their coding skills. There are online-hosted rounds held regularly throughout the year. Each round is open to all and there is no pre-qualification needed. So, you can participate in one or all of them. Each round is of three-hour which has a variety of algorithmic and mathematical problems. Taking part in anyone round gives a taste of the skill set required for a career at Google. After each round, you can check your global rankings and performance analysis of that particular round.

You can also see the results and code of past Kick Start rounds and practice the problems from their [archive page](#).

- *Registration for Kick Start 2021 will start from Feb 9, 2021; you can apply from [here](#).*

If you are at the beginner level in the world of programming or coding; Google Kick Start is the best option available to you. As mentioned above Google Kick Start consists of online coding challenges hosted throughout the year to help you in getting better acquainted with coding competitions and enhance your programming/coding skills.

How to Prepare for these Google\xe2\x80\x99s Coding Challenges?

Here are some preparation tips for you:

- Get yourself familiarized with the platforms by visiting the FAQ section for each challenge.
- Choose at least one programming language like C++, Java, or Python and get familiarize with it.
- Refresh your knowledge about fundamental algorithms and data structures like Graphs, Stacks, Queues, Lists, etc.
- Must utilize the resources provided by Google to prepare for these competitions.
- Do time-bound practice with the past year\xe2\x80\x99s problems.
- The most important tip is to keep working on your testing skills like catching bugs, creating tests, building edge cases, etc.

Hence, if you really wanted to get a flavor of the kinds of problems that engineers at Google have to deal with. You must try to participate in one or all of these coding challenges. All these three competitions organized by Google are equally important for participants of all skill levels. It is going to be a lifelong experience for you and you will learn a lot. If you are aspiring to get a job at Google, these coding challenges can help you in a great way. There are chances that you may be contacted by Google for a direct interview if performed well in these coding challenges!

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

b''

b'

Google Interview Experience for SDE

- Difficulty Level :[Hard](#)
- Last Updated :[31 Dec, 2020](#)

During Covid-19 lockdown, I was contacted by a recruiter from Google for a Software Engineer role based in India. I was given tons of resources by the recruiter to prepare for the interviews. I will try to share all possible resources, questions (hint), most important topics to study, platforms for practicing (daily questions and mock interviews), some tips, good blogs, and of course the mistakes that you should never make while preparing for big techs. Undoubtedly the technical interviews at Google are heavily based on DSA and it has got its own level of difficulty but I gave my best and went up to 3rd round after the written coding round. This drive and experience are really full of learning.

Hello from Google! - Saumya Singh [Inbox](#)



Let's start the preparation

Step 1: Bookmark the [GFG Google Archives](#). It helped me a lot during my preparations. Reading other interview experiences is one of the best ways to get yourselves ready for the next job interview.

Step 2(Data structures): Most important data structures which you don't want to miss are: Lists, Maps, Stacks, Priority Queues, Binary Trees, Graphs, Bags, Sets

Step 3(Important topics): Most commonly asked topics in Google Interviews (as per the mail I received from my recruiter) :

- BFS/DFS/Flood fill
- Binary Search
- Tree traversals
- Hash tables
- Linked list, stacks, queues, two pointers/sliding window
- Binary heaps
- Dynamic programming
- Union find
- Ad hoc/string manipulations

Other topics which you should know: Trie, segment trees/Fenwick trees, bitmasks.

Step 4(Sites to practice): Highly recommended sites for practicing questions (usually practice medium and hard level questions) :

1. Leetcode (highly encouraged)
2. Geeksforgeeks (highly encouraged)
3. Topcoder
4. Codeforces

Step 5(Coding Book): It's really great if you take out some time to practice problems from the famous Book, https://books.google.co.uk/books/about/Cracking_the_Coding_Interview.html?id=anhAXwAACAAJ&hl=en

Step 6(Mock Interviews): Highly recommended is preamp (<https://www.pramp.com/#/>).

\xc2\xd0

Step 7(BigOcheatsheet) This is a great bigocheatsheet that could be of great help

<https://www.bigocheatsheet.com/\xc2\xd0>

\xc2\xd0

Step 8: Resource by Google\xe2\x80\x99s Recruiter-> How to best prepare for a technical interview:<https://www.bigocheatsheet.com/\xc2\xd0>

Step 9(Don\xe2\x80\x99t forget!): Some tips for practicing coding on Google docs<https://www.quora.com/What-are-some-tips-for-practicing-coding-on-Google-docs-for-a-phone-screen>

Step 10(Google Coding Questions): Important list of Google Coding questions.

<https://techdevguide.withgoogle.com/resources/?types=coding-interview-question#!>

Sharing my interview details (question patterns and difficulty)

Round 1(Coding): This round had 2 questions of easy/medium difficulty. Both were based on concepts of DP. The first question was quite similar to the classical DP question (minimum steps to reach 1)

<https://www.spoj.com/problems/MST1/>. The second question was quite the same as

<https://leetcode.com/problems/longest-palindromic-substring/>. In this, we are supposed to find the longest palindromic substring in a given string. The first question was fully solved and the second one was partially accepted since I used the brute force approach.\xc2\xd0

\xc2\xd0

Round 2(Telephonic Interview): This round went quite well. In this, I was asked 2 questions. The first one was a medium level pattern searching question (strings). [GFG link](#) for further details. The second question was based on heaps (priority queues), \xc2\xd0[GFG link](#). \xc2\xd0

Round 3: This round was also virtual. It has some difficult questions when compared to the previous rounds. The first question was similar to <https://leetcode.com/problems/text-justification/>, the other question was based on a similar concept like <https://leetcode.com/problems/the-skyline-problem/>, another one was <https://leetcode.com/problems/angle-between-hands-of-a-clock/>. This round went okayish and I was called for the next round.\xc2\xd0\xc2\xd0

\xc2\xd0

Round 4: This round was tougher than all previous rounds, 1 DP medium and 1 Graph Hard question was asked. I was able to solve the first one but got stuck in Graphs :(. \xc2\xd0Graph question was similar to <https://leetcode.com/problems/shortest-path-with-alternating-colors/> (little more tricky) and the DP question was also from leetcode medium. This round did not go too well for me.\xc2\xd0\xc2\xd0

\xc2\xd0

Tips:

1. Prepare a good resume (clean, clear, and precise). Don\xe2\x80\x99t put any unnecessary information.
2. Just before your next Online Interview:
 - Keep a pen and paper ready, you never know when to write

- Keep a water bottle with you
 - Put your phone on silent
 - Login 5 minutes before (it's important)
 - Speak up loud and clear
3. Make most of the "Tell me about yourself" question
4. Don't give up! Even if you've had a bad interview for a job that you truly think would be a great fit for you, don't give up!

My Personal Notes\Narrow Drop Up

Add your personal notes here

Save

Google Interview Experience for Software Engineer 2021 New Grad

- Difficulty Level : \n [Hard](#)
- Last Updated : \n 17 Dec, 2020

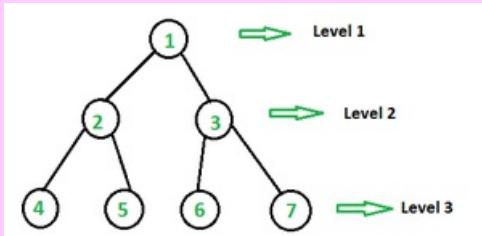
I was contacted by a Google recruiter a few months ago, that my resume has been shortlisted for the Software Engineer 2021 New Grad Role. I was provided with the next action steps of how to proceed with the next round of interviews \xe2\x80\x93 Technical Phone Interview which is generally 45 minutes.

I wasn't able to grab the offer, but I really hope that my experience and feedback about this whole process would help you as much as it helped me.

Usually, the recruiter asks about your preferable date and time for the interview, also they furnish you with some beneficial extra tips and information that you should know.

Round 1(Technical Phone Interview): I was asked about my recent project mentioned in the CV , there was a good discussion about it, for say 5 minutes. After that I was given a coding question to solve :\xc2\xd0

Given an N-ary Tree, find out the average width of each of the nodes present in that tree.



Note: A node can have \xe2\x80\x98N\xe2\x80\x99 number of children

Explanation: Consider the above tree, for node 1 , the average width would be the total no. of nodes under that node ie. 7 (including the target node) divided by the total number of levels under the parent node (7/3) .

The format of the answer should be: [node number : average width of that node] that is ,for the given tree the answer is :

```
[ 1 : 2.5 , 2 : 1.5 , 3 : 1.5 , 4 : 1 , 5 : 1 , 6 : 1 , 7 : 1 ]
```

I was able to come up with a brute-force approach ONLY within that remaining time.

The interviewer was quite polite, interactive, and helped me with my initial queries against the given problem statement. One thing to note over here is while your interviewer is helping you clear the doubts and landing on a meaningful solution, it also means that you are getting a penalty for not being selected. It's a fact !\xc2\xd0

Good luck to you, if you are appearing/preparing for interviews! Sometimes it's your day, sometimes it isn't. \xf0\x9f\x99\x82

Do not give up

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

b'

GOCC18: Google\xe2\x80\x99s Online Coding Challenge

- Difficulty Level :[Medium](#)
- Last Updated :[16 Aug, 2021](#)

The **GOCC18** was held on September 26, 2020, for **Google SWE New Grad 2021** (India). There were 2 coding questions to attempt, with a 60-minute time limit for completion. Below is the first question of the challenge:

Question1: The cost of a string

Your task is to create a string **S** considering lowercase English alphabets. You are given an array **A** of size 26 where $A[i]$ denotes the cost of using the i^{th} Alphabet (consider 1-based indexing). Find lexicographically the largest string **S** that can be created such that the cost of building the string is exactly **W**. For example, `\xe2\x80\x98abc\xe2\x80\x99` is lexicographically smaller than `\xe2\x80\x98abcd\xe2\x80\x99`.

Input format:

- The first line contains an integer **T** denoting the number of test cases.
- The first line of each test case contains 26 space-separated integers denoting the costs of characters from `\xe2\x80\x98a\xe2\x80\x99` to `\xe2\x80\x98z\xe2\x80\x99`.
- The second line of each test case contains an integer **W**.

Output format: For each test case, print the required string **S** in a new line.

Sample input

```
1\n1 2 33 4 6 9 7 36 12 58 32 28 994 22 255 47 69 558 544 21 36 48 85 48 58\n236
```

Sample output

zzze

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

b'

Google India Interview Experience for SDE Internship (Off-Campus)

- Last Updated : \n23 Nov, 2020

I applied through Google careers and got a test link after a few days. There were 2 questions in the assessment. Both of them were from Binary Trees. Getting a test link doesn't make sure that your resume is shortlisted. Also, a test is held so that your resume can get into the Recruiter's hand because there are tons of students who have applied for the same role.

So, after a week I got an email from a Google recruiter asking for the interview availability. There were 2 interview rounds of 45 minutes each on the same day with a gap of 15 minutes. In the first interview, he asked me about my projects and then coding questions related to my project. The question was based on N-Ary Trees. If you are having projects then make sure you have in and out knowledge of every concept related to it then I was left with around 15 minutes after the code, and then he asked me a follow-up question, and then he asked me to ask questions if I was having any. Then the second interview started, and he asked me to introduce myself, and then he asked me a Dynamic Programming question. It was Leetcode Hard. I wasted a lot of time doing that question and after 3 days I got a mail that they have moved with another candidate.

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

b'

Google STEP Intern Coding Challenge Experience

- Last Updated : \n25 Oct, 2020

Recently Google conducted an online coding round for its step internship in Singapore.

About step internship: STEP (Student Training in Engineering Program), formerly known as Engineering Practicum, is a 10 to a 12-week internship for first and second-year undergraduate students with a passion for computer science. The internship program focuses on providing development opportunities to students from historically underrepresented groups in tech through technical training and professional development.\xc2\xab

Experience of online coding challenge: Challenge was conducted on HackerEarth platform. The time duration was of 1 hour for solving 2 given coding questions.\xc2\xab

1. 1st question was of a higher level than the 2nd one as it also comprises of more points. 1st question was based on graph theory including the use of various algorithms.\xc2\xab
2. 2nd question was based on set and it can be solved using C++ \xc2\xabStl. I could only solve one of the two problems i.e. the 2nd one completely. Solving the 2nd question completely took more than 45 minutes and there was no time left for solving the other question.

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

GOCG13: Google's Online Challenge Experience for Business Intern | Singapore

- Last Updated :n25 Oct, 2020

Google's **Business Internship** is open to students from all academic disciplines. Many intern roles within this program don't require technical skills and could include working with advertiser or publisher accounts to develop compelling advertising solutions for brand advertisers, improving access to relevant information for millions of internet users, analyzing large sets of data, or developing scalable support solutions for rapid-growth internally or externally.

As an intern, you will be working on projects with high impact during a 10-12 week paid, full-time internship. You will be assigned an intern manager who will help to identify project goals, inspire and mentor you, and support your professional development.

Format:

- There were 12 **Multiple Choice Questions(MCQs)** type questions.
- These questions had to be solved within a duration of 30 minutes.

Topics involved: The topics revolved around **General Cognitive Ability** and **Role Related Knowledge**. Questions were given to test the problem-solving skills of a potential candidate. These questions involved Flow-Chart representations, Linear Algebra, Letter Coding, Logical Deductions, and Relationships.

Questions asked: Some of the questions asked revolved around the following scenarios:

1. **Question on a Flow-Chart representation:** The flowchart depicted the **Ticket Management System** of a customer. This question was to assess a candidate's understanding of a given flowchart and to draw deductions from the same.
2. **Question-based on simple Linear Algebra:** If $P + Q = 154$ and $P - Q = 62$. Find the corresponding value of Q .
3. **Question on Letter Coding was there:** If PENGUIN is written as PIUGNEN then what will ALBATROSS be written as?
4. **Question on work to be completed:** If **X**(name) and **Y**(name) take **N** days to complete a given task and it is also noticed that **Y** is thrice as fast as **X**. How long will **X** take to finish the task alone?
5. **Questions on Assumptions were asked:** If $x > 0$, draw conclusions from the below statements:

Statement 1: $x^5 - 32 = 0$
Statement 2: $x^4 - 16 = 0$

Options:

- Are both Statements required to prove the theory?
- Only statement 1 is enough
- Only statement 2 is enough
- Both statements are false

6. **Question on Relationships:** There are 7 people; Charlie, Robin, Alex, Taylor, Jamie, Joe, Bobby who visit parks around their area; Locust Park, Avenham Park, Grandlin Park, 32 Avenue Park, and Franklin Park not necessarily in the same order.

Charlie visits Locust Park on Thursday, Bobby visits parks except on Sundays. Alex and Joe visit parks on Saturday and Tuesday respectively. Taylor visits the Avenham Park while Franklin Park is open on Mondays and Jamie does not visit Grandlin Park on Wednesday. Who visits Franklin Park?

And many more\xe2\x80\x9a

Note: The above-mentioned questions are not exactly similar to the ones asked in the test, these questions are to provide an idea as to what kind of questions might appear in the test.

Experience: I personally found the questions fairly simple and easy to understand and can easily be solved within the stipulated time duration.

Tips:

- Prepare well for Logical Reasoning type of Questions. This includes Letter coding, Number patterns, Assumptions, Logical Deductions, and Relationships among various entities.
- Keep a track of time and do not spend too much time on a question you are unsure about.
- If you have a doubt in a particular question, visit the question once you have completed the remaining questions.

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

b'

Google Interview Experience for Internship (Coding Round)

- Last Updated : \n16 Oct, 2020

Google Internship (North America) coding round was held between 28th August to 5th September 2020 by Google(NA) for Software Engineering students of Pre-final and final year. The level of this Coding Round was easy. The coding round comprised of two questions which are as follows :

Question 1: Most Booked Hotel Room

Problem Description: Given a hotel which has 10 floors [0-9] and each floor has 26 rooms [A-Z]. You are given a sequence of rooms, where + suggests the room is booked, - the room is freed. You have to find the number of rooms that were booked.

You may assume that the list describes a correct sequence of bookings in chronological order; that is, only free rooms can be booked, and only booked rooms can be freed.

You may assume:

- N (length of input) is an integer within the range [1, 600]
- Each element of array A is a string consisting of three characters: + or -; a digit 0-9; and uppercase English letter A-Z.

Example:

Input: ["+1A", "+3E", "-1A", "+4F", "+1A", "-3E"] **Output:** 4 **Explanation:** 4 rooms are booked at this time.

Question 2: Maximum Time

Problem Description: You are given a string that represents time in the format HH: MM. Some digits are blank (represented by ?). Fill in? With the same digit such that the time represented by this string is the maximum possible.

Maximum time: 23:59, minimum time: 00:00. You can assume that the input string is always valid.

Example :

Input: "?4:5?" **Output:** "14:51" **Input:** "23:5?" **Output:** "23:59" **Input:** "0?:??" **Output:** "05:55" **Input:** "

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

b'

GOCC15: Google\xe2\x80\x99s Online Challenge for Internship (India)

- Difficulty Level : \nExpert
- Last Updated : \n22 Jul, 2021

I came to know about the opportunity through <https://careers.google.com/jobs/results/ Google\xe2\x80\x99s website>. Applied for the same with my resume. After two weeks got a mail Invite participating in the coding round. The mail had a unique ID and got the passkey(for login) on the day of the coding round1 (29th Aug 2020). The slot was open from 15:00 to 17:00 IST.\xc2\xa0

A coding round was conducted on the HackerEarth platform. The test duration was 60 minutes consisting of two coding questions, every 30 points. I partially solved 2nd one, the solution didn\xe2\x80\x99t suffice for test cases with large inputs.

A Special String: You are given a string S consisting of lowercase Latin alphabets a-z. Find the minimum number of characters that must be changed to make S special. A string S is said to be special if and only if for all (S[i], S[j]) where (1 \xe2\x89\xca4 i \xe2\x89\xca4 N/2) and (N/2 + 1 \xe2\x89\xca4 j \xe2\x89\xca4 N) one of the following conditions is true\xc2\xa0

- S[i] > S[j]
- S[i] < S[j]
- S[i] = S[j]

S[i] represents the ith character of string S (1 based Indexing).

Input Format:

- The first line contains an integer T denoting the number of test cases.
- The first line of each test case contains an integer N denoting the length of S.
- The second line of each test case contains a string S.

Output format: Print an integer denoting the minimum number of changes required for each test case in a new line.

Constraints\xc2\xa0

1 \xe2\x89\xca4 T \xe2\x89\xca4 5

1 \xe2\x89\xca4 N \xe2\x89\xca4 10³\xc2\xxa0

N is even

Example :

Input: 1\n 6\n aababc \n**Output:** 2

Explanation: Change S[4] = \xe2\x80\x99a\x98d\xe2\x80\x99 to \xe2\x80\x99b\x98d\xe2\x80\x99 (1 based indexing) Change S[5] = \xe2\x80\x99b\x98d\xe2\x80\x99 to \xe2\x80\x99c\x98d\xe2\x80\x99 New string = \xe2\x80\x99aabddc\xe2\x80\x99 Now all pair (S[i], S[j]) satisfy the second condition, S[i] < S[j]

Generating Sequence: You are given two strings A of length N and B of length M. These strings contain lowercase English alphabets. You are also given an integer K. You can change the character of x in string A to any other character y. The cost of this conversion is abs(ASCII(x)- ASCII(y)). Find the minimum cost required such that the length of the longest common subsequence (LCS) of A and B is at least K.\xc2\xxa0

Note:\xc2\xxa0

- A subsequence of A string can be obtained by deleting zero or more characters in A.
- The longest common subsequence of two strings of A and B is a subsequence of A and B and has the maximum length among all strings that are a subsequence of A and B that would be multiple subsequences for two provided strings for example an LCS of vera and eats is ea.

Input Format:

- The first line contains an integer T denoting the number of test cases for each test case.
- The first line of each test case contains three space-separated integers N, M, and K.
- The next line of each test case contains a string A.

- The next line of each test case contains a string B.

Output format: For each test case, print the minimum cost required in a new line.

Constraints

1 ≤ N, M ≤ 200

0 ≤ K ≤ min(N, M)

Example:

Input: 2
5 4 3
abcba
acyx
3 3 3
abc
abc
Output: 22
0

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

b'

GOCC18: Google Online Coding Challenge 2020 \xe2\x80\x93 New Grad(India)

- Difficulty Level :\nMedium
- Last Updated :\n01 Oct, 2020

The Google online challenge(GOCC 18) 2020 for new graduate 2021 was held on September 26, 2020.

It was a 60-mins online test and 2 coding questions to solve. The exam was conducted on HackerEarth platform.

The process is that first your resume should be shortlisted for the exam.

Duration of the exam \xe2\x80\x93 1hr

First question: RANGE OF QUERIES

You are given an array A with N integers. You are required to answer Q queries of the following type:

L R

Determine the count of distinct prime numbers that divides all the array values from index L to R.

NOTE: Consider 1-based indexing

Input format:\xc2\xa0

- The first line contains an integer T denoting the number of test cases.
- The first line of each test case contains an integer N.
- The second line of each test case contains N space-separated integers denoting A.
- The third line contains integer Q.
- Next, Q lines contain two space-separated integers denoting the queries.

Output Format;

Print the count of distinct prime numbers that divides all the array values from index L to R.

Experience: I have solved this using segment trees <https://www.geeksforgeeks.org/segment-tree-set-1-range-minimum-query/> see this article on range minimum query, it is similar to this problem.

Second Question \xe2\x80\x93 THE VALUE OF A WEIGHTED TREE

You are given a weighted undirected tree with N nodes. Every edge has a weight associated with it.

You are required to find the value of \xe2\x88\x91(i=1 to N-1) \xe2\x88\x91(j=i+1 to N) F(i,j) function where F(i,j) denotes the sum of weights of edges on a simple path between node i and j.

Input format:

- The first line contains an integer T denoting the number of test cases.
- The first line of each test case contains an integer N denoting the number of nodes in the tree.
- Next N-1 lines contain three space-separated integers u v w denoting an edge between u and v

with weight w.

Output format:

For each test case, print the value of function modulo $10^9 + 7$ in a new line.

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

b'

Google Online Challenge for Summer Internship 2021

- Difficulty Level :[Medium](#)
- Last Updated :[01 Oct, 2020](#)

The Google online challenge 2020 for summer internships 2021 was held on Sept 26. It was a 60-minute online test having 2 questions to code.

First Question: You are given an array A with N integers. you are required to answer Q queries of the following types.

Determine the count of distinct prime numbers which divides all the numbers in a given range L to R. NOTE:1 based Indexing.

1 <= N,Q <= 10^5;

1 <= A[i] <= 10^5;

1 <= L <= R <= N

Input: \xc2\xab0

No of test cases\r\nArray size i.e N\r\nN array elements\r\nNo of Queries i.e Q\r\nQ queries

Output: Return count of distinct prime numbers which divides all the numbers in a given range for each query

Sample Input: \xc2\xab0

1\r\n6\r\n4 6 3 18 36 54\r\n3\r\n1 2\r\n3 6\r\n4 6

Sample output:

1\r\n1\r\n2

I do not remember the second question exactly. But It was also based on arrays. Prepare for query-based array questions, MO\xe2\x80\x99s algorithm, Segment tree(if possible) standard questions like range sum queries, update range queries, etc.

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

b''

b'

Google Kick Start \xe2\x80\x93 Important Dates, Eligibility, Contest Details

- Difficulty Level :n[Expert](#)
- Last Updated :n11 Sep, 2020

Google Kick Start is a Global online coding competition organized by Google for those who are interested in solving fun and challenging algorithmic problems. Here, participants will have the opportunity to develop and grow their programming skills. Meanwhile, the top participants may get the chance to be invited to [Google](#) for the interview. \xc2\x90



* The schedule for Google Kick Start can be checked from [Here!!](#)*

Format

Let's take a look at the Google Kick Start Contest format:\xa0

- It consists of several three-hours rounds of algorithmic challenges designed by Google Engineers and held throughout the year at separate times.
- Each Kick Start Round will be open to all participants and there is no pre-qualification needed as well.
- You only need to register once on the website and you'll be set up to compete in any round you'd like.
- The problem format is similar to most of the coding competitions. You'll be given the Problem, Input, Output, Constraints, Some Sample test cases, and Explanation.
- For every problem, there are two Test sets: One with smaller constraints and another with larger constraints.
- You have to select the programming language, write your code in the code editor, and submit the code.

Preparation

Google Kick Start mainly focuses on proficiency in Data Structures and Algorithms. So, to prepare for it, you have to practice hard and command over the DS & Algorithms concepts. Just remember that practice makes a man perfect!! You can do your practice with [Past Kick Start problems](#) as it will help you to understand the nature of the contest and boost your confidence. Some of the most recommended topics of Data Structures and Algorithms for Google Kick Start are listed below:

- [Data structures](#)
- [Dynamic Programming](#)
- [Greedy Algorithms](#)
- [Divide and conquer](#)
- [Graphs Algorithms](#)
- [Bit manipulation](#)

Furthermore, try to solve Easy-Medium problems on the above topics in a short amount of time. There are a lot of online coding platforms (such as [GeeksforGeeks](#), Codechef, [Leetcode](#), etc.) where you can practice and grow your programming abilities.\xa0

More about Kick Start

Eligibility

- Each Contest is void in **Crimea, Iran, North Korea, Quebec, Syria**, and where prohibited by law.
- You cannot participate in a contest if you are under sixteen (16) years old. You may participate in a Contest if you are at least

sixteen (16) years of age at the time you register for such Contest.

- You must be eighteen (18) years of age or older at the time of registration to be eligible to be contacted by a Google recruiter.
- In order to enter a Contest, you must have access to the Internet, and a valid email address.
- Google reserves the right to verify your eligibility and to adjudicate on any dispute at any time.
- All communications between Google and you, including a Contest website and email communications, must be in English.

Rules

- You have to register for the contest once for being able to participate in a Round of the Kick Start Contest.
- You can participate in any and all Rounds of your choice regardless of performance or participation in any prior Rounds.
- You may use any editor or development environment, including those made available online, as long as your code is not accessible to others.
- For Kick Start problems, you must submit the source code for your solution through the KS Contest website. You must indicate the programming language of your file by using the provided dropdown menu.
- You may be disqualified from the KS Contest if Google reasonably believes that you have attempted to undermine the legitimate operation of the KS Contest according to the Terms.
- For more information related to Rules and Terms, and to check if you are eligible for the contest, visit [Rules and terms](#).

Prizes

Google offers you the prize based on your performance in the contest. The prize may be in monetary or a non-monetary form. Money prizes will be awarded in U.S. dollars and may be delivered in the form of cash, check, gift card, or other cash equivalents. Google may either ship your non-monetary prize to you or request that you come to a Google office or a designated location to collect your prize. Google may provide a substitute prize of equal or greater value at Google's sole discretion, or where required by law, or in the event all or part of a prize becomes unavailable.

For more details, you can visit the following links:

- [Schedule of contest](#)
- [Frequently Asked Questions \(FAQs\)](#)
- [Archive Page](#) You can see Results, Problems, and Code from past Kick Start rounds here.
- For each round you participate in, you will receive a Certificate of Participation. You will also receive a summary certificate.

All the best for your first Kick Start round!

My Personal Notes\drop_up

Add your personal notes here

Save

b'

Google Internship 2020 | Google Online Challenge(1st Coding Round)

- Difficulty Level :[Medium](#)
- Last Updated :09 Sep, 2020

Recently I Got An E-mail From Google That I've been selected from the Resume review round To Google's Online Challenge round. On the 29th Of August, I've given That Challenge and face these two problems, which I want to share with all

1. A Special String: You Are given a string S consisting of the lowercase Latin alphabet, a-z. Find the minimum number of characters that must be changed to make S special.

A string S is said to be special if and only if for all ($S[i]$, $S[j]$) where ($1 \leq i < j \leq N$) and ($N/2 + 1 \leq j \leq N$) one of the following condition is true:

$S[i] > S[j]$ or $S[i] < S[j]$ or $S[i] = S[j]$: Represents the ith character of string S(1-based indexing)

Input format:

- The first line contains an integer T denoting the number of test cases
- The first line of each case contains an integer N denoting the length of S
- The second line of each test case contains a string S

Output format: Print an integer denoting the minimum number of changes required for each test case in a new line.

Constraints:

1 $\leq N \leq 10^3$ is Even

Sample input:

1
6
naababc

Sample output:

2

Explanation:

Change $S[4] = b$ (1-based indexing)
Change $S[5] = c$

2. A Special Matrix: You are given an $N \times N$ matrix A. The matrix consists of positive integers. In one move, you can apply the following single transformation to the matrix:

Select an arbitrary element of the matrix and increase or decrease it by 1. Each element can be increased or decreased for any arbitrary number of times.

A special number P is a non-negative integer for which the following quadratic equation has at least one negative integer root:

$x^2 - 2Px + x = 0$

A matrix is called special if at least one of the following conditions is true:

1. The matrix has a row with special numbers only.
2. The matrix has a column with special numbers only.

Your task is to count the minimum number of moves required to get special matrix A

Input format

- The first line contains T denoting the number of test cases.
- The first line of each test case contains an integer N denoting the number of rows and columns.
- Next N lines of each test case contain N integers denoting the initial matrix A.

Output format

For each test case, print a single integer in a new line denoting the minimum number of moves required to get a special matrix from the provided matrix. If you have already obtained a special matrix, then print 0.

Constraints:

1 $\leq N \leq 500$
1 $\leq A[i][j] \leq 10^{11}$

Sample input:

1
3
1 2 3
4 5 6
7 8 9

Sample output:

1

Explanation: Either the first row or third column can be modified to convert the matrix into a special matrix with a minimum number of moves. The first row can be transformed into [1,3,3] by increasing one time the second element of the first row.

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

b'

GOCC15: Google SWE Online Coding Challenge Internship 2021

- Difficulty Level :[Medium](#)
- Last Updated :[02 Sep, 2020](#)

I applied for the job, at Google's Career Portal. There was a resume shortlisting round first. I received the link for the test 4 days prior to the test date. The test was conducted on the HackerEarth platform, there were 2 coding questions to be completed within 60min.

1. **The maximum XOR value:** Given an array of **N** Integers. You are given **q** queries. Each query has 2 integers **x** and **m**. For each query, you are required to determine the array value that provides the maximum bitwise XOR value with x where the array value is not more than m.

If there is no such value that satisfies then condition, then print **-1**.

- **Input Format:** A first line is a number of test cases T. Each test case contain an integer N denoting the number of elements in the array. The second line of each test case contains array elements. The third line denoted the number of queries q. Next q lines contain two integers x and m.
- **Example:**

- **Input:**

```
1\r\n7\r\n3 7 19 18 7 12 17\r\n7\r\n3 8\r\n21 20\r\n24 17\r\n1 7\r\n23 17\r\n12 9\r\n
```

- **Output:**

```
7\r\n12\r\n7\r\n12\r\n3\r\n-1\r\n
```

2. **Divisibility Count:** Find the number of **N** digit integers divisible by both **X** and **Y**, print answer modulo 10^{9+7}

- **Input Format:** The first line contains T denoting the number of test cases. The first line of each test case contains 3 integers N, X, Y.
- **Output Format:** Print an integer denoting the output.
- **Example:**

- **Input:**

```
2\r\n2 5 7\r\n1 2 3\r\n
```

- **Output:**

```
2\r\n1\r\n
```

I could only clear a few test cases of both the questions. Hope this information helps.

My Personal Notes\allowbreak narrow_drop_up

Add your personal notes here

Save

b'

GOCC14: Google Online Coding Challenge 2020 \xe2\x80\x93 New Grad (India)

- Difficulty Level : \n [Hard](#)
- Last Updated : \n 01 Sep, 2020

The **Google online challenge 2020 for university undergraduates 2021** batch was held on **August 22, 2020**. Before this round, some shortlisting was done based on your resume.

The test was conducted on HackerEarth platform. The test consisted of two coding questions and the time allotted was 60 minutes. My set of questions are mentioned below.

- **First Question:** You are given a string S (having lowercase English letters only). In one operation, you can remove the substring \xe2\x80\x93cpr\xe2\x80\x9d from the string S and get amount X or you can remove the substring \xe2\x80\x93crp\xe2\x80\x9d and get the amount Y.\xc2\xa0

Find the maximum amount you can get if you perform zero or more such operations optimally.\xc2\xa0

Note :\xc2\xa0

- Substring of a string S is defined as a continuous sequence of characters in S.
- After removing \xe2\x80\x93cpr\xe2\x80\x9d or \xe2\x80\x93crp\xe2\x80\x9d, the order of remaining letters should remain the same.

Example:\xc2\xa0

```
abpprrr (string S) \r\n5 4 (value of X and Y )\r\n
```

Output:

```
15\r\n
```

Explanation :\xc2\xa0

Here, S=\xe2\x80\x93dabpprrr\xe2\x80\x9d\xc2\xa0

X= 5, Y=4.

Remove substrings are mentioned :

Remove \xe2\x80\x93cpr\xe2\x80\x9d, new string S=\xe2\x80\x93dabppr\xe2\x80\x9d.

Remove \xe2\x80\x93crp\xe2\x80\x9d, new string S=\xe2\x80\x93dabpr\xe2\x80\x9d.

Remove \xe2\x80\x93cpr\xe2\x80\x9d, new string S=\xe2\x80\x93d \xe2\x80\x93pr\xe2\x80\x9d.

In total, we removed pr 3 times, so total score is $3*X + 0*Y = 3*5 = 15$.

- **Second Question:** Given an array A of N integers and another array B of M integers (not necessarily distinct). The task is to find the minimum number of elements to be added in B so that A becomes subsequence of B. Note that you can add elements at any position in B.\xc2\xa0

A subsequence is a sequence that can be derived by deleting some or no elements from the sequence without changing the order of remaining elements.\xc2\xa0

Example:\xc2\xa0

```
5 6 ( size of A array and B array)\r\n1 2 3 4 5 ( A array )\r\n2 5 6 4 9 12 ( B array )\r\n
```

Output:\xc2\xa0

```
3\r\n
```

Explanation: We need to add 3 numbers in B such that A will become subsequence of B.\xc2\xa0

We added 1 at the start of B and elements 3, 4 between 2 and 5. Now array B becomes [1, 2, 3, 4, 5, 6, 4, 9, 12] and A is a subsequence of B.

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

,

Google's Online Challenge for 2021 Intern (India) Experience

- Difficulty Level : [Medium](#)
 - Last Updated : [20 Jul, 2021](#)

I saw a job posting on Google's career page so I applied for the **Google internship** but without any hope, as I am from a tier 3 colleges. But after some days I got an email regarding the test link and other credentials.

So, let's talk about the coding test.

The coding test was held on **HackerEarth**, it consists of **2 questions** one was easy and the other one was a little tricky. We had **60 minutes** to solve these questions. I solved both questions. So, the questions were like this:

Question 1: Unspecified Words

Problem Statement: There are N words in a dictionary such that each word is of fixed length M and consists only of lowercase English letters, that is (a , aa , aaa , ..., a^{M-1} , ab , abc , ..., a^{M-1}b , ..., $\text{a}^{M-1}\text{b}^{M-1}$, ..., $\text{a}^{M-1}\text{b}^{M-2}\text{c}$, ..., $\text{a}^{M-1}\text{b}^{M-3}\text{d}$, ..., $\text{a}^{M-1}\text{b}^{M-4}\text{e}$, ..., $\text{a}^{M-1}\text{b}^{M-5}\text{f}$, ..., $\text{a}^{M-1}\text{b}^{M-6}\text{g}$, ..., $\text{a}^{M-1}\text{b}^{M-7}\text{h}$, ..., $\text{a}^{M-1}\text{b}^{M-8}\text{i}$, ..., $\text{a}^{M-1}\text{b}^{M-9}\text{j}$, ..., $\text{a}^{M-1}\text{b}^{M-10}\text{k}$, ..., $\text{a}^{M-1}\text{b}^{M-11}\text{l}$, ..., $\text{a}^{M-1}\text{b}^{M-12}\text{m}$, ..., $\text{a}^{M-1}\text{b}^{M-13}\text{n}$, ..., $\text{a}^{M-1}\text{b}^{M-14}\text{o}$, ..., $\text{a}^{M-1}\text{b}^{M-15}\text{p}$, ..., $\text{a}^{M-1}\text{b}^{M-16}\text{q}$, ..., $\text{a}^{M-1}\text{b}^{M-17}\text{r}$, ..., $\text{a}^{M-1}\text{b}^{M-18}\text{s}$, ..., $\text{a}^{M-1}\text{b}^{M-19}\text{t}$, ..., $\text{a}^{M-1}\text{b}^{M-20}\text{u}$, ..., $\text{a}^{M-1}\text{b}^{M-21}\text{v}$, ..., $\text{a}^{M-1}\text{b}^{M-22}\text{w}$, ..., $\text{a}^{M-1}\text{b}^{M-23}\text{x}$, ..., $\text{a}^{M-1}\text{b}^{M-24}\text{y}$, ..., $\text{a}^{M-1}\text{b}^{M-25}\text{z}$).
The total number of words in the dictionary is $N = 26^M$.

A query word is denoted by **Q**. The length of a query word is **M**. These words contain lowercase English letters but at some places instead of a letter between `\xe2\x80\x98a\xe2\x80\x99`, `\xe2\x80\x98b\xe2\x80\x99`, `\xe2\x80\x98c\xe2\x80\x99`, `\xe2\x80\x98d\xe2\x80\x99`, `\xe2\x80\x98e\xe2\x80\x99`, `\xe2\x80\x98f\xe2\x80\x99`, `\xe2\x80\x98g\xe2\x80\x99`, `\xe2\x80\x98h\xe2\x80\x99`, `\xe2\x80\x98i\xe2\x80\x99`, `\xe2\x80\x98j\xe2\x80\x99`, `\xe2\x80\x98k\xe2\x80\x99`, `\xe2\x80\x98l\xe2\x80\x99`, `\xe2\x80\x98m\xe2\x80\x99`, `\xe2\x80\x98n\xe2\x80\x99`, `\xe2\x80\x98o\xe2\x80\x99`, `\xe2\x80\x98p\xe2\x80\x99`, `\xe2\x80\x98q\xe2\x80\x99`, `\xe2\x80\x98r\xe2\x80\x99`, `\xe2\x80\x98s\xe2\x80\x99`, `\xe2\x80\x98t\xe2\x80\x99`, `\xe2\x80\x98u\xe2\x80\x99`, `\xe2\x80\x98v\xe2\x80\x99`, `\xe2\x80\x98w\xe2\x80\x99`, `\xe2\x80\x98x\xe2\x80\x99`, `\xe2\x80\x98y\xe2\x80\x99` there is `\xe2\x80\x98?\xe2\x80\x99`. Refer to the **Sample Input** section to understand this case.

A match count of **Q**, denoted by **match_count(Q)**, is the count of words that are in the dictionary and contain the same English letters(excluding a letter that can be in the position of \xe2\x80\x98? \xe2\x80\x99) in the same position as the letters are there in the query word\xc2\xa0 **Q**. In other words, a word in the dictionary can contain any letters at the position of \xe2\x80\x98? \xe2\x80\x99 but the remaining alphabets must match with the query word.

You are given a query word **Q** and you have required to compute **match count**.

Input format:

- The first line contains two space-separated integers **N** and **M** denoting the number of words in the dictionary and length of each word respectively
 - The next **N** lines contain one word each from the dictionary.
 - The next line contains an integer **Q** denoting the number of query words for which you have to compute **match_count**,
 - The next **Q** lines contain one query word each.

Output format: For each query word print `\n` **match_count** `\n` for a specific word in a new line.

Constraints:

$1 \leq N \leq 5 \times 10^4$ $\backslash n 1 \leq M \leq 7 \backslash n 1 \leq q \leq 10^5$

\xc2\xa0Sample Input:

```
5 3 \ncat \nmap \nbstat\man\open\n4\n?at\nma?\n?a?\n??n
```

Sample Output:

```
2\n2\n4\n2
```

Question 2: XOR query

Problem Statement: I didn't remember the actual statement but it was something like we are given an array with a single element i.e 0 and after that, we have some queries which are of 2 types :

1. **Type 1:** Insert the given element into the array
2. **\xc2\x0Type 2:** XOR all the elements present in the array with the given element.

Input format:

- An integer **Q** which represent the count of queries that are going to be asked
- **Q** lines having two integers **n** and **m**
- **n** represents the type of operation i.e **1** or **2**
- **m** represents the element that will be used to do operation according to the given type of operation.

Output format: Print the final array after all the given queries in sorted order.

Constraints

$1 \leq Q \leq 10^7$ $1 \leq n \leq 10^9$

Sample Input:

```
6\n1 3\n1 5\n2 5\n1 6\n1 7\n2 6
```

Sample Output:

```
0 0 1 6
```

It was such an amazing experience, now I am waiting for some good news.

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

'

b'

Google Kick Round-D Question (2020)

- Difficulty Level :[Easy](#)
- Last Updated :[05 Dec, 2021](#)

Isyana is given the number of visitors at her local theme park on N consecutive days. The number of visitors on the i-th day is Vi. A day is record-breaking if it satisfies both of the following conditions:

1. The number of visitors on the day is strictly larger than the number of visitors on each of the previous days.
2. Either it is the last day, or the number of visitors on the day is strictly larger than the number of visitors on the following day.

Note that the very first day could be a record-breaking day. Please help **Isyana** find out the number of record-breaking days.

Input: The first line of the input gives the number of test cases, T. T test cases follow. Each test case begins with a line containing the integer N. The second line contains N integers. The i-th integer is Vi.

Output: For each test case, output one line containing Case #x: y, where x is the test case number (starting from 1) and y is the number of record-breaking days.

Limits

Time limit: 20 seconds per test set.

Memory limit: 1GB.

```
1 \xe2\x89\x4 T \xe2\x89\x4 100.\n0 \xe2\x89\x4 Vi \xe2\x89\x4 2 \xc3\x97 105.\nTest set 1\n1 \xe2\x89\x4 N \xe2\x89\x4
```

Sample

Input\n**Output**\n4\n1 2 0 7 2 0 2 0\n6\n4 8 15 16 23 42\n9\n3 1 4 1 5 9 2 6 5\n6\n9 9 9 9 9

Case #1: 2\nCase #2: 1\nCase #3: 3\nCase #4: 0

In Sample Case #1: The bold and underlined numbers in the following represent the record-breaking days: **1 2 0 7 2 0 2 0**.

In Sample Case #2: only the last day is a record-breaking day.

In Sample Case #3: The first, the third, and the sixth days are record-breaking days.

In Sample Case #4: there is no record-breaking day.

C++

```
#include<iostream>
using namespace std;
int main()
{
    int n;
    cin >> n;
    int a[n];
    for(int i=0;i<n;i++)
        cin >> a[i];
    int count=0;
    for(int i=1;i<n;i++)
        if(a[i]>a[i-1] && a[i]>a[i+1])
            count++;
    cout << count;
}
```

C#

Javascript

Output

3

My Personal Notes\narrow drop up

Add your personal notes here

Save

b'

Google SWE Internship 2021 Interview Experience

- Difficulty Level :[Medium](#)
- Last Updated :[25 Aug, 2020](#)

Hi Geeks, I have applied for Google SWE Internship 2021 (India) and I have been selected and invited for Google Online Challenge Round

Application: I have applied through LinkedIn, it is really a great platform for opportunities and I received mail from Google on 12 Aug 2020 and it was a great experience for me.

I am here to share questions that have been asked in coding challenges. I hope I will help you.

Round 1:

Question 1: Array queries: You are given an array of integers whose length is N, you must perform the following five types of query on the given array :

1. **Left:** Perform one cyclic left rotation.
2. **Right:** Perform one cyclic right rotation.
3. **Update Pos Value:** Update the value at index **Pos** of the array by **Val**.
4. **Increment Pos:** Increment value at index **Pos** of the array by 1.
5. **Pos:** Print the current value at index **Pos**.

All the queries are performed considering 1-based indexing.

Note:

- One cyclic left rotation changes $(arr_1, arr_2, arr_3, \dots, arr_{N-1}, arr_N)$ to $(arr_2, arr_3, \dots, arr_{N-1}, arr_N, arr_1)$.
- One cyclic right rotation changes $(arr_1, arr_2, arr_3, \dots, arr_{N-1}, arr_N)$ to $(arr_N, arr_1, arr_2, arr_3, \dots, arr_{N-1})$.

Input format

- The first line contains an integer **N** denoting the length of the array.
- The second line contains **N** space-separated integers denoting the elements of the array.
- The third line contains an integer **Q** denoting the number of queries.
- Next, **Q** lines contain the described type of query.

Output format: For each query of type 5, print the output in a new line.

Constraints

2 $\leq N \leq 10^5$
1 $\leq arr_i \leq 10^5$
 $1 \leq Q \leq 10^5$
 $1 \leq Pos \leq N$

It is guaranteed that at least one query is of type 5.

Sample Input 1

```
10\n0 3 3 8 0 6 9 3 2 8\n10\nIncrement 3\nIncrement 1\nLeft\nIncrement 5\nLeft\n? 9\nRight\n?
```

Sample Output 1

```
1\n9\n9\n9\n9\n9\n9\n9\n9\n9
```

Question 2: There are N-words in a dictionary such that each word is of fixed length M and consists of only lowercase English letters that are $(xe2x80x98a|xe2x80x99, xe2x80x98b|xe2x80x99, xe2x80xa6|xe2x80xa6, xe2x80x98z|xe2x80x99)$.

A query word denoted by Q. The length of query word in M. These words contain lowercase English letters but at some places instead of a letter between $(xe2x80x98a|xe2x80x99, xe2x80x98b|xe2x80x99, xe2x80xa6|xe2x80xa6, xe2x80x98z|xe2x80x99)$ there is $(xe2x80x98?|xe2x80x99)$. Refer to the **Sample input** section to understand this case.

A match count of Q, denoted by **match_count(Q)**, is the count of words that are in the dictionary and contain the same English letters (excluding a letter that can be in the position of ?) in the same position as the letters are there in the query word Q.

In other words, a word in the dictionary can contain any letters at the position $(xe2x80x98?|xe2x80x99)$ but the remaining alphabets must match with the query word.

You are given a query word Q and you are required to compute **match_count(Q)**.

Input format

- First-line contains two space-separated integers **M** and **N** denoting the number of words in the dictionary and length of each word respectively.
- The next **N** lines contain one word each from the dictionary.
- The next line contains an integer **Q** denoting the number of query words for which u have to compute **match_count()**
- The next **Q** lines contain one query word each.

Output format

For each query word, print **match_count** for specific words in a new line.

Constraints

1 $\leq N \leq 10^4$
1 $\leq M \leq 10^4$
1 $\leq Q \leq 10^5$

Sample Input

```
5 3\nncat\nmap\nbat\nman\npen\n?\nma?\n?
```

Sample Output

2\r\n2\r\n4\r\n2

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

b'

GOCC14: Google's Online Coding Challenge New Grad (India)

- Difficulty Level : [Medium](#)
- Last Updated : 25 Aug, 2020

The Google online challenge 2020 for new graduate 2021 was held on August 22. It was a 60-minute online test having 2 questions to code.

The exam was conducted on HackerEarth. But first, your resume should be shortlisted for the exam then they will send you link & passkey with the time span of 5 hr

i.e(mine scheduled between 3 p.m to 8 p.m) but the duration of the exam was 1 Hour only

First Question: Size of the smallest subset with maximum Bitwise XOR in a 2-D matrix & return the smallest subset

```
a[1,1]^a[1,2]\r\na[2,1]^a[2,2]\r\na[1,1]^a[1,2] a[2,1]^a[2,2];
```

In Case of multi answer return the smallest subset

Time complexity O(n^2);

Second Question: Given an unsorted array, you have to delete an element such that after deletion every subset of the array having min & max element in increasing order(a similar approach like window sliding)

Time complexity O(n^2)

Eg:

```
arr[]={2,3,4,5,1,6,7};\r\nnDelete(1)\r\nnAfter deletion \r\nn(2,3) \r\nn(2,3,4)\r\nn(2,3,4,5)\r\nnand so on..
```

In this, Some corner case must be kept in mind while solving the question\xc2\xa0

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

b'

Google Online Challenge 2020(MCQ)

- Last Updated : \n23 Aug, 2020

13th August I attempted the Google online challenge(GOGC(cloud))India. I attempted this challenge under the Google cloud-ready campaign in India. There were 30 MCQs in the test, the time limit was 30 minutes Questions were divided into 5 sections\nc2\xA0

1. Web Tech\nc2\xA0
2. Linux/Unix\nc2\xA0
3. Database\nc2\xA0
4. Troubleshooting\nc2\xA0
5. Data Structures, Algorithm & Coding.

The difficulty was from easy to moderate and some problems were very easy.

Below are certain examples you can expect questions with round about this level.

Web Tech Round:

1. How to align a text in a larger web page context?

Linux/Unix Round: If you are using Linux for a long time this can be the best section for you.

1. The cmd to check load average on the Linux system?
2. What is the load average?

Database Round:

1. A certain transaction caused the deadlock . To change the system to stable you could?
2. How to handle very large queries?

Troubleshooting Round:

1. You try to login to a website, you observe the site loads very slow how can you look for latency?

Data structures Round: A simple question like time complexity, recursion

1. Best case time complexity of merge sort?
2. Which is the preferred iterative or recursive approach?

Note: This test is just one part of the application Google will consider many factors before giving you a callback.\nc2\xA0

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

b'

Google Online Challenge 2020

- Difficulty Level :[Medium](#)
- Last Updated :[21 Aug, 2020](#)

The **Google online challenge 2020** for summer internships 2021 was held on August 16. It was a 60-minute online test having 2 questions to code.

First Question: [Size of the smallest subset with maximum Bitwise OR](#)

Second Question: Given a list which initially contains 0, the following queries can be performed:

- **0 X:** add X to the list
- **1 X:** replace each element $\text{\xe2\x80\x9cA\xe2\x80\x9d}$ of the list by $A \wedge X$, where \wedge is the xor operator.

Return a list with the result elements in increasing order.

Example:

```
5 (no of queries)\r\n0 4\r\n0 2\r\n1 4\r\n0 5\r\n1 8
```

Answer:

```
8 12 13 14
```

[My Personal Notes\Narrow Drop Up](#)

Add your personal notes here

Save

Google Interview Experience | On-campus 2020

- Difficulty Level : \n [Medium](#)
- Last Updated : \n 20 Aug, 2020

The first thing, that there is no online coding round in Google for an internship. So the first shortlisting is done on the basis of the resume so make sure that your resume is good. In India Google is commonly coming for software engineering so make sure that in your resume there is a project in development.

You can take help for making a resume from the given link:

<https://careers.google.com/stories/applying-to-google/\xc2\xd0\ xc2\xd0>

In my college 22 people shortlisted for interviews after resume shortlisting. Luckily I am one of them. After this, there are two interviews round are done which is completely based on data structures and algorithms and also there is no HR round. (I don't think that they ask about projects but prepare for them also).

Round 1: The interviewer directly asks me a question by just saying hello. He was asking me a question and extend it in the whole interview.

Question: You have a character matrix and in the cell L(left), R(right), U(upper), or D(down) had written, and as the character says you can go from current cell to written direction but you can't go outside the matrix then he asked me the following questions.

- 1) You are at (0, 0) can you reach (r-1, c-1) (r and c are numbers of rows and columns).
- 2) The minimum number of changes required to reach (n-1, m-1) from (0, 0), and in one change you can change any character to any other character in any cell.

Round 2: The interviewer asks about the introduction and then start the question.

Question: As you go to college you have to do some courses but before doing some courses you need to complete some prerequisite courses (Ex- before doing MA202 you need to complete MA201). so the question is you have N courses you have to tell the minimum number of semesters required to complete the whole courses and in one semester you can do any number of courses but before doing a course you have to do all prerequisites of that course.\xc2\xd0

And input is given as a 2D vector and in a particular row of the 2D vector, the current course is a prerequisite of the next course.

Ex: {{a, b, c}, {b, e, d}, {e, f}}.

Suppose I'm taking the first-row {a, b, c} so before doing course b you need to complete a and before doing e you need to complete b. And before doing e you need to complete a and b.

Note: They also ask about time-space and memory space and in last you also need to write the code (No need to focus on syntax error more and taking input) so be a little fast from starting because they don't give extra time and also be always confident.\xc2\xd0

If you are able to answer both questions correctly then 80% chance that you are going to be selected because they don't want the only answer but also how you approach

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

Google Online Challenge(MCQ\xe2\x80\x99s) Experience

- Last Updated : \n17 Aug, 2020

Last week I took the Google Online Challenge. I got this opportunity by enrolling with the Google Cloud Career Readiness track! and successfully completing Coursera Specialization on Google cloud platform along with 5 quests on Qwiklabs. I came to know about this Cloud Career Readiness track from college faculty. \xc2\xab0

Test Pattern : \xc2\xa0

Total Time: 30 Minutes

Questions: 30 Multiple Choice Type \xc2\xa0

Sections: These 30 Questions are divided into 5 sections as follows

\xc2\x00 \xc2\x00 \xc2\x00 \xc2\x02.Data Structures and Algorithms \xc2\x00 \xe2\x80\x93 \xc2\x00
\xc2\x00 Questions

Platform: xc2\xa0Co Cubes

Question depths vary in each section. Challenge results will not be posted online. A recruiter/programs team will be in touch if you are selected to proceed to the next step. I can't remember every question I will try to give one question from every section in the following examples.

Example Questions :

Databases :

Transactions T1 caused a deadlock. To change the system to a stable state you would:

- A. Deadlock
 - B. Undo
 - C. Savepoint

D. Rollback

Data Structures and Algorithms :

What Data Structure is more suitable for Arithmetic Expression Evaluation? \xc2\xa0

- A. Queue
- B. Stack
- C. Graph
- D. Tree

Trouble Shooting : \xc2\xa0

You log in to a Linux system and you see that disk utilization is at 99%, what are the next steps? (more than one correct answer)

- A. Use free command to check the usage
- B. \xc2\xa0Use df and du commands to check the usage
- C. \xc2\xa0Check load Average on the system
- D. \xc2\xa0Use find command to find and clear space
- E. \xc2\xa0Use lsof to see if any services are creating a lot of files and confirm if you can clear the same.
- F. All the above.

Linux/Unix : \xc2\xa0

What is the size of the files under /proc directory?

- A. 100 Bytes
- B. 0 Bytes
- C. Depends on the Content
- D. 100 MB

Web Technologies :

Which HTTP status code is usually returned when the resource is cached?

- A. 401
- B. 503
- C. 304
- D. 200

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

Difference between Google and Microsoft

- Difficulty Level :\nBasic
- Last Updated :\n22 Oct, 2020

In 2020, **Google** and **Microsoft** are very well established and are known worldwide. Google and Microsoft, both are American multinational technology companies. They are known by all but what they actually do and are, may not be clear. Both companies have their own different products and services which may be developed by them or are acquired from other companies.

1. Microsoft :

Microsoft was developed before Google. It was founded in 1975. The founders of Microsoft are Bill Gates and Paul Allen. Initially they had developed an interpreter and simulator. They came to fame with the MS-DOS operating system that was launched in 1981. They have launched several famous products such as Microsoft Windows, MS-Office, MS-Servers, MS-Visual Studio, Windows live movie maker, Windows Media Center, Microsoft Edge, Skype, MSN, Windows Defender, Windows Mobile etc.

2. Google :

Google was founded in 1995, by Larry Page and Sergey Brin. This was made as part of their project while pursuing Ph. D. in Stanford University. They brought a new system called PageRank that ranked the pages according to the pages and their importance in a website and by analyzing sites that linked back to the site. This system made their Search Engine stand out from the others. Some of Google's products are Google Search, Google Chrome, Google Alerts, Google Groups, Google Finance, Google News, Google Adwords, YouTube, Android etc.

Both these companies are leading in the Technology sector. The major Difference between them is that Google's focus is more on Internet services and Microsoft focuses more on developing computer software and personal computers.

Difference between Google and Microsoft :

S.No.	Google	MICROSOFT
1.	It is an American Multinational technology based company that focusses on Internet-based services and products.	It is an American multinational technology company that develops, and sells personal computers and computer based software, products and services.
2.	Founded in 1995.	Founded in 1975.
3.		

Founders: Larry Page, Sergey Brin. Founders: Bill Gates, Paul Allen.

Headquartered in California. Headquartered in Washington.5. It is a publicly traded company. It is a publicly traded company.6. Mission: To organize the world's information and make it universally accessible and useful. Mission: Empower every person and organization on the planet to achieve more.7. Sectors: Internet, Computer software, telecommunications equipment. Sectors: Computer Hardware and software, Computer electronics.8. Products: Google Search, Google Chrome, Google Alerts, Google Groups, Google Finance, Google News, Google Adwords, YouTube, Android etc. Products: Microsoft Windows, MS-Office, MS-Servers, MS-Visual Studio, Windows live movie maker, Windows Media Center, Microsoft Edge, Skype, MSN, Windows Defender, Windows Mobile etc.

Add your personal notes here

Save

Google STEP Intern Interview Experience

- Difficulty Level :[Hard](#)
- Last Updated :[03 Dec, 2020](#)

The shortlisting was done through our university based on our resume and academic performance. I was shortlisted and had two interviews of 45 minutes, each with a break of fifteen minutes in between. Both of them were technical rounds involving hands-on coding in a shared google doc while I was on a video call through Hangouts with the interviewer from Google.

Round 1:[Problem Statement](#)

Question: A boolean expression is given in the form of a string. It contains one variable x ; logical operators and , or , not and relational operators $<$, $>$, \leq , \geq . Find if the expression always evaluates to False. If yes, output False, otherwise if there exists at least one x such that the given expression can be true, output true.

Example:

1. $x < 0 \text{ and } x > 5$

Output $x < 0$ False

Explanation $x < 0$ This can never be true as there is no $x < 0$ such as $x < 0$ and $x > 5$. So, the given boolean expression always evaluates to false.

2. $x > 0 \text{ or } x < -1$

Output $x > 0$ True

Explanation $x > 0$ We have at least one $x > 0$ for which given boolean expression evaluates to true. For example, put $x=2$ in the given expression, and it evaluates to true.

Hint: Whenever there is only $x > 0$ or $x < 0$ in the boolean expression, the result is always true. (Eg: $x > 0$ or $x < 0$) There exists some x such that this is true and whatever be the latter part of the expression, it evaluates to true as only $x > 0$ or $x < 0$ is present. If there is no $x > 0$ or $x < 0$ present (only $x > 0$ and $x < 0$ is there), then we check for the expressions $x > 0$ and $x < 0$ if you find at least two contradicting expressions as in example 1 (that is their solution sets are disjoint), then the output is False (as we have only $x > 0$ and $x < 0$ logical operation which evaluates to False unless all the expressions are True), otherwise it is True.

I have no idea how to approach the problem when both $x > 0$ and $x < 0$ are present in the expression, and I could not find such a problem anywhere on the internet.

I request someone who read this article to contribute the code to this problem kindly. (preferably in C++)

Output:
false
true
false
true
false
false

Round 2:\xc2\xa0

Question: Given a string, find the minimum number of cuts to split the string so that all the resulting substrings are palindromes.

Example: \xe2\x80\x9cgoogle\xe2\x80\x9d

Output: 2

Explanation: Minimum number of cuts to partition `\xe2\x80\x9cgoogle` into palindromes = 2 that is `\xe2\x80\x99`

Therefore, the minimum number of cuts required = 2.

Hint: Refer to [this article](#).

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

b'

Google Interview Onsite (University Grad \xe2\x80\x93 2020)

- Difficulty Level :\n[Medium](#)
- Last Updated :\n21 Apr, 2020

Question : Given an array having $2n$ elements you can choose n elements from either end of the array such that the values obtained result in maximum sum.

Examples:

Input : 1 3 100 25 20 4 **Output :** 103

Approach: Initially, I tried recursive approach by showing both possibilities of an element that it can either be included or excluded, but he told to optimize it and I came up with prefix sum approach.

Idea: The main idea behind the prefix sum approach was if we select

\xe2\x80\x98x\xe2\x80\x99 elements from left we can select \xe2\x80\x98n-x\xe2\x80\x99 elements from the right.

```
int function(int arr[])
{
    int n = arr.size();
    int lpref[n], rpref[n]; // for left and right prefix sum
    lpref[0] = arr[0], rpref[n - 1] = arr[n - 1];
    for(int i = 1; i < n; i++)
        lpref[i] = lpref[i - 1] + arr[i];
    for(int i = n - 2; i >= 0; i--)
        rpref[i] = rpref[i + 1] + arr[i];
    int maxm = INT_MIN, m = n / 2;
    for(int i = 0; i < m - 1; i++)
        maxm = max(maxm, lpref[i]+rpref[n-1-i]);
    maxm = max(maxm, lpref[m-1]);
    maxm = max(maxm, rpref[m]);
    return maxm;
}
```

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

Google Off-campus Interview Experience

- Difficulty Level :\n[Hard](#)
- Last Updated :\n13 Apr, 2020

I was contacted by a Google recruiter in Singapore on LinkedIn. They were hiring new grads (2020) for offices in Bangalore and Hyderabad. I confirmed with my recruiter for the interview. She mailed me about the hiring process and gave me her google calendar for me to book an interview slot as per my convenience and also asked for my resume. The best thing about interviewing for Google is that they give their candidates a good interview experience. They make sure that we are comfortable.

Round 1:\xc2\xd0

Since I was given to book a slot as per my convenience, I booked a slot after 2 weeks. She told me that the first round would be a phone screening round and that I had to be very thorough with my data structures and algorithms concepts.

I was sent a google hangouts meeting invite before this round. On the day of the interview, I was a little nervous. The recruiter called and she seemed very amiable. She started with questions about myself and then went to the projects mentioned on my resume. As a machine learning enthusiast, most of my projects were ML-based and she asked about my interest in machine learning. Then she proceeded with DSA questions. It was like a rapid-fire round. She asked questions from time complexities, sorting, linked lists, heaps, Red-Black trees, AVL trees, and binary search trees. I was able to answer almost all the questions correctly but I wasn't very prepared with AVL trees and red-black trees and faced problems in those questions.

After the questions, the recruiter gave me my feedback and told me that even though I answered most questions correctly, I answered the last questions on AVL trees and red-black trees wrong, so I need to be more thorough next time and that I will be moving forward to the next round. She advised me to brush up my DSA knowledge more. And after the call, she sent me another google calendar link for booking the slot for the next round.

Round 2:\xc2\xd0

This time she started with DSA questions. She started with time complexity questions and then moved to data structures. She asked questions from almost every data structure. This time I answered more questions correctly than last time. She then asked me what language I prefer for coding. I replied C++. Then she started asking me questions from C++. She wanted me to give answers quickly and then focused more on STL. I was able to ace this round and she took my candidature to the next round.

Round 3:\xc2\xd0

My recruiter conveyed to me that an engineer from Google USA is going to take this round. She asked me for 5 slots preferably weekdays. This time, they chose a slot from my given slots. The format of this interview was that I would be given 2 questions and I have to code both of them in 45 minutes. I was able to solve one question but I ran out of time for the other question. So, I couldn't make it to the next round. But, I'll try again after 6 months.

Overall, the entire interview process was a long journey of 3 months. I will say that **geekforgeeks** helped me a lot in my interview preparation. I will suggest everyone do any of their online or classroom DSA courses and placement courses. This really helped me during my college placement.

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

b'

Google-Bangalore Interview Experience

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

Disclaimer:\xc2\x0I could not mention the exact questions asked to me due to an agreement, however I tried to describe the topics as best as I can.\xc2\x0

Phone Test:\xc2\x0

On late December I was contacted by a Google Recruiter from Singapore in LinkedIn. She shared her calendar and asked me to mark a 30 minute window for a quick chat over my professional experience and interests. The call started with me describing the same and then pivoted to some rapid fire questions regarding basic concepts \xe2\x80\x93 heaps, trees, their algorithmic complexities in various cases, how one outperforms the other and so on. It concluded by her giving me a math question and solving it as quickly as possible, but at every step I was expected to explain my approach. Finally she said I passed the phone test and soon scheduled a 45-min video interview on Google Hangouts.\xc2\x0

\xc2\x0\xc2\x0

Google Hangouts Test:\xc2\x0

The interviewer was from Google US. It started with a friendly introduction and then the real problem followed. It was a DP problem on 1-D array, not very hard once you see the solution. But at the heat of the moment (with less time) I explained a seemingly obvious greedy approach, which he refuted soon with a test case. Fortunately I got the DP algorithm in time and could code it (with few implementation flaws that I later realized). He asked about the space and time complexity, and then asked me to reduce the space complexity. I did it. It ended with some discussion over Project LCZero, and then about AlphaZero (by Google Deepmind) that recently won against one of the strongest computer chess engine Stockfish.\xc2\x0

\xc2\x0\xc2\x0

A few days later got to know from the recruiter that I have been selected for the onsite interviews at Google Bangalore.\xc2\x0

Onsite:\xc2\x0

Round 1:\xc2\x0\xc2\x0

It was the worst round for me among all of them. The question was basically DP on trees, and although generally such questions belong to the hard category but coincidentally I solved a similar problem few years back during college (I even mentioned about this to the recruiter after he asked if I had seen this before). So I solved the basic version very quickly. But then he added a simple constraint, and it suddenly was a black out for me, as I scratched my head for long but could not find any possible way to include this constraint in my existing solution. I proposed to him that this edge case can be handled explicitly, but that really destroys the beauty of the solution. So he insisted me to find a concrete way of solving all cases, and I took up the challenge, and soon enough ran out of time and also could not find the concrete solution. Only 4-5 minutes were remaining for the interview to end, I hurried to code my existing solution (and handled the corner case explicitly), but even while I was coding I understood it went very wrong. Discussed the complexity of the solution and it ended.\xc2\x0

Round 2(postponed):\xc2\x0\ xc2\x0

Interviewer was at a tour, so this round was postponed. A sigh of relief from me, after having such a disastrous beginning I needed a break.\xc2\x0

Round 3:\xc2\x0

It was a behavioral round \xe2\x80\x93 a.k.a the Googleness round. It had nothing to do about tech but it is about how do we react to different situations in the professional world. I actually enjoyed this round very much, because most of the questions were such that I had already faced such a situation in my previous company, so I responded quickly with what exactly I did in that situation, and in some cases what things I could have done better that I realized lately. I completely forgot about the mishap in the first round after this round. I was quite happy with the way I dealt with the questions and also, the lunch interview was to follow \xf0\x9f\x98\x80\xc2\x0

Round 4:\xc2\x0

It is not really an interview. A googler came and took me with him to have lunch, and wow, so many dishes, chicken items (my favourite) all around. I ate quite a lot, and in the process had a good chat with him regarding what he worked on, where is he from, and some basic stuff about the culture at Google. We all know the culture is definitely good, but hearing some details from an actual googler in person was handy.\xc2\x0

Round 5:\xc2\x0

It began right after lunch. This round I believe went the best for me. The question started with multiple string matching (with some secret constraints, ofcourse), and then a lot of discussions happened regarding topics like KMP algorithm, Z algorithm, Rabin Karp hashing mechanism, and finally concluded to a modified Trie operation. Regarding coding, I did not have to build the trie myself, I was asked to assume I have the trie from a library, but need to write custom operations on top of the functions available from the Trie. Then we discussed about the space and time complexities and how can we further optimize them.\xc2\x0

Round 6:\xc2\x0

It involved building a game. It felt very simple, I was quite surprised initially. But as I kept on asking questions and the interviewer stopped me at several points and revealed more constraints about the game which kept on increasing the complexity. I proposed a solution with a BST first, later changed it to an algorithm that does not require the ordering and hence could be solved just by hash maps. The final code logic was quite simple, and so after my coding finished we had quite some time to spend on other topics. He then gave me a design problem which basically boils down to computing shortest path between well-defined vertices, gave some approaches, hopefully he was satisfied.\xc2\x0

A few days later my recruiter informed me\x0that I have done good at the previous on-site rounds and she would forward the packet to the Hiring Committee regardless of how the upcoming round would be. I was overjoyed and started preparing for the upcoming round anyway.\xc2\x0

Round 2(postponed earlier):\xc2\x0

I actually wanted a face-to-face interview, comeon a F2F conversation can beat a video chat any day. However due to some reasons it happened through video call. I got the question completely wrong and kept on suggesting approaches for 10 minutes until I realized (my recruiter helped me to understand it quickly, or else the whole interview would have been over by a miscommunication), then quickly I jumped back to the original problem and gave a quadratic solution. He gave me some time to think if this can be optimized, and suddenly I remembered Kadane\x80\x99s algorithm,

using which I could overcome the bottleneck (which was a small part) of the whole solution and it became a linear solution. Very little time was left by then so I hurried to code, and like it happens, missed some implementation details in the coding part.

A few days later I was informed by my recruiter that I have an upcoming meeting with a team manager from Google Ads. I was super excited as things really seemed to go well. I had a small 15 min meeting over Google Hangouts with him, described him my interests and experience at the previous company, he described me about the role, the tech stack and it seemed interesting. A match happened and I received a statement of support from him soon for being at that team.

\xa0

All well that ends well. Well it did not in my case, I could not make the cut in the final step the Hiring Committee.

I asked for the reviews and my recruiter explained to me that at few instances my coding was not upto the mark and I could have simplified the logic in some situations.

Result Rejected.

\xa0

All the coding rounds were done either at Google Docs (during hangouts) or at their personal interviewing application (at onsites, quite similar to docs).

Overall, although the whole process took around 3 months, it was quite interesting. Preparing over the stuff that you once did at college, and then giving those interviews, meeting the Googlers along the way, getting to the onsite Google India office for the interviews (twice!, in case of me) had been a wonderful journey.

My advice to fellow Google enthusiasts is that, balance the time well between the thinking part and the coding part during interviews, your coding really makes a very important impact later, you might have explained the algorithm nicely during interview but later (say at HC stage) all that is left is your code. And that should talk well.

\xa0

\xa0

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

'

b''

b'

How I got selected for the TalentSprint Women Engineers (WE) Program powered by Google?

- Last Updated : \n20 Mar, 2020

How I got selected for the TalentSprint Women Engineers (WE) Program powered by Google?

TalentSprint Women Engineers Program is a program which mainly aims at nurturing the technical skills of women from all across the country. TalentSprint believes that the key to India's success lies in its diversity and that goal can only be achieved by providing necessary guidance to the women and providing them with a competitive platform. The program is basically for women who wish to pursue a career in software engineering. It was first launched in 2019 and the students who were in the 3rd and 4th year of their engineering batch could take part in it.

TalentSprint organized a 1-year program for 100 talented women engineers of the country. It would train the women through boot camps and online learning sessions and also provide them with placement opportunities at the end of the year. The candidates would also receive Rs 1, 00, 000 cash scholarship. The news regarding this program came up in various reputed newspapers and we were also informed about it in school.

For the selection process, we had an online proctored examination which had a number of sections. The first three sections had a number of aptitude-based questions. The fourth section had questions related to programming skills where we had to spot the error and predict the output of a code snippet. The difficulty level was moderate and being a Computer Science student, it was not much difficult for me to solve the questions.

The students who qualified for the test were called for an online interview. In the interview, I was asked a number of questions related to data structures and algorithms. My coding skills were also tested. In the HR round, I was asked questions related to my hobbies and career goals. After 2 weeks, I received a mail saying that I was qualified for the program. I was absolutely elated and reached Hyderabad for the cohort on 31st May 2019.

This year also, TalentSprint is going to organize the WE Program and the interested candidates must not miss this opportunity as it is a great platform to boost your career and get the job of your dreams.

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

b'

Google Munich Software Developer Interview Experience

- Last Updated : \n05 Mar, 2020

Google Recruiter contacted me on Gmail, and asked me whether i am interested to apply for Software Developer Level 3 Role at Munich, Germany on the basis of my competitive programming as well as Github Profile.

Who, says no to Google, so i thought that lets give it a try \xf0\x9f\x98\x89

Note:\xc2\xa0No matter whether it is Munich, Zurich, or Hyd or Bangl, or Gurugram, the interview process is same for all.

Note: I cannot share the questions because it was clearly mentioned not to share interview questions \xf0\x9f\x99\x81

Round 1: First there is a brief call of about 20-25 minutes approx with Google Recruiter which asks me about my skills and about graduation degree and what i am doing right now. After

After that he jump into DS and Algo, and asked me Time Complexities of Some most famous Data Structures and Algorithms, and he also asks a question on trees as well.

Later he asks whether i know something about how to test the code and regarding the corner cases of a program.

So, it is general round in which theoretical aspects of Data Structures and Algorithms are tested.

Then later he scheduled the next interview date.

After interview ends, he give me some preparation materials links on my gmail itself.

Round 2:\xc2\xa0It was telephonic coding round, in which the interviewer give me a question and then first i have to provide the approach of it and then later i have to write its code in google doc. Again i cannot share the question, but that question was on arrays and it was kind of Easy to Medium question. First i told him brute force, then he told me to optimize it. Later i provide the optimized approach and then he allowed me to write the code.

So, this round lasts for about 45 minutes and lastly i asked the interviewer that in which team he is working.

Now, depending on your performance in telephonic interview, if they are satisfied then they may cal you onsite, and if they are not then they may take 1 more telephonic interview.

Now, after this the next 5 rounds are going to be Onsite Round.

Onsite Round 1 & 2: First 2 are technical Programming interviews based on DS and Algo taken by Software Engineers or mid level software engineers also some mathematics part also asked which involved some Permutation or Combination in solving your solving and yes you will be questioned on your projects also, not so deep but an overview and little bit insight of it.

Onsite Round 3:\xc2\xa03rd interview is Lunch interview which is nothing but a behavioural talk, in which the interviewer will take you to the lunch and you can ask anything to him, and this round score is not counted in the overall interview score.

Onsite Round 4 & 5: Then after lunch there are 2 more interviews, those too are related to DS, Algo taken by senior engineers or product managers.

Note: Always use sensible variables as well as function names, which usually makes some sense, like if you have to find out the Nth fibonacci number then use **Nth_fibonacci** as the name of your function, similarly if you want to find out the second largest element, then use **secondLargest** or something related to it, which makes some sense, and always debug your code on corner cases as well as base case(if recursion is used) and see properly that whether your function signature is correct, whether you are returning correct value from that function or not, because the code you write goes to higher authorities also.

So, all in all, all the interviews are related to DS Algo, and Mathematical Logic also.

Overall it was a smooth and very interesting process and interviewers are also very friendly and give you detailed reason at every point of time.

In the end if you rejected then you will get detailed report about your weak areas where you needs improvement.

Note: Always think loud in interviews and tell your approach to interviewer also, because in the end interview is nothing but a formal discussion/communication between 2 persons, which can't be done just by 1 side, so involvement of both the persons require in order to make it a good communication.

I am providing some useful resources to practice data structures and Algorithms as well as Company questions and mock interviews.

Getting an interview call from any of the FAANG(Facebook, Apple, Amazon, Netflix, Google) companies, is not an easy task, until or unless you are from a tier 1 college.

But, if you are from a Tire 3 college then you have to showcase your skills publicly, that's the only way you can highlight yourself.

For Software Engineer Role, these companies require those candidates who have excellent Data structures and algorithmic skills, and can solve problems in an efficient space and time constraint.

So, in order to showcase your skills publicly you should practice on online judges like Codechef, Codeforces, Leetcode, Hackerrank, Topcoder, Uva OJ. There are many online judges, but mostly stick with Codechef, Codeforces and Leetcode and if you are beginner then start with Hackerrank and then move on those other platforms. Apart from these, you should also put your code or projects on Github.

Github and Online Judges are the only ways in which you can showcase your talent publicly. Apart from these you can also apply for job on the companies website or approach for referrals via LinkedIn.

Also, google doesn't discriminate on the basis of graduation degree or college because, google is not a college centric company, anyone can join google, no matter whether he/she is from tier1 or tier 3, or even graduated or not. Google has their own competitions like Kickstart and Codejam, if you perform well in those then you might get chance to get interviewed at Google.

So, just keep practicing Data Structures and Algorithms and do regular practice on Online Judges like Codechef, Codeforces, etc., and keep applying or approach for referrals.

\xa0

[GeeksforGeeks](#) \xe2\x80\x93 No doubt, one stop Portal for every geek, having tons of questions.

At the end only skill matters that how well you are in DS/Algo and nothing else, not even your college or your degree.

All the best \xf0\x9f\x99\x82

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

b'

Google Interview Experience | On-Site for SDE

- Difficulty Level :\n[Hard](#)
- Last Updated :\n02 Mar, 2020

So the on-site interview comprised of five rounds in total. 4 technical rounds and 1 googliness round.

Round 1: There are several equations given in terms of two variables with a \leq or \geq sign between them. Ex $a > b$, $b > c$ etc. You have to answer whether there is a sequence which of the variables which will satisfy all the equations given.

My approach : I solved it as a graph problem. All the variables were converted into the nodes of a graph. An edge between them signified the relation between them. If the directed graph did not contain a cycle, then it was possible to have an answer.

Round 2: <https://www.geeksforgeeks.org/optimal-strategy-for-a-game-dp-31/> It was something like this with a little variation that the total number of moves were limited to a number t.

My approach : I gave a recursive approach and then a dynamic programming solution. The interviewer helped me to get to the final solution which was possible in $O(n)$ time complexity and $O(1)$ space complexity.

Round 3: Suppose you have an array consisting of 0 and 1. Find the total number of subarrays of o.

Ex array : 00101

Ans : { 0, 00, 01, 001, 0010, 00101 } 6

My Approach : First I found the number of subarrays (of 0) in the main array. Ex 2 in the above example. Then I applied the formula $(n+1)(n)/2$ on each size of subarray.

Round 4 : This was a classical dynamic programming problem of palindrome partitioning.

My Approach : <https://www.geeksforgeeks.org/palindrome-partitioning-dp-17/>

Round 5 : This was a pretty easy round compared to others. General questions were asked like what are the skills that you want in your manager, how should a company play a role in social and environmental development, what are the basic qualities that you look in an employee, how do you work in a team etc.

All in all it was a good experience. Remember to be quick and very precise about your answers. The questions may seem easy but they are actually grading you on your accuracy, efficacy and quickness to respond.

My Personal Notes\narrow_drop_up

Add your personal notes here

Save



b'

Google Interview Experience

- Difficulty Level :\n[Easy](#)
- Last Updated :\n26 Feb, 2020

I got interview mail that I have been shortlisted as software engineer role for interview .My recruiter asked me for date preferences.

Round 1:- It was a telephonic call which started with introduction and further expanded to basics of data structures and basics of algorithms, time and space complexities implementation of heap sort and heapify function.

Round 2:- It was hangout call after 2 weeks which consisted of two questions

One was postfix expression evaluation and implementation of queue using two stacks without built in function. After that I got another mail for next interview.

Round 3- It was again a hangout call after 2 weeks and it started with introduction interviewer was polite.He asked me various questions time and space then jumped straight into question

One was rat in maze problem and another was generation of possible palindrome form string but should constraint other constraints.I believed in my own dreams and followed.

I can see change in my problem solving gain confidence, self belief played role.
Thanks to GeeksforGeeks for helping me at each stage best site for learning.

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

b'

Google Bangalore Interview Experience

- Difficulty Level : \n[Medium](#)
- Last Updated : \n26 Feb, 2020

Initial HR Discussion:

Some recruiter from Singapore contacts through my google mail.

She asked basic questions related to sorting algorithms.

1. Which is better heap sort or merge sort ? Why ?.
2. In which data structures log n time search is guaranteed [Binary tree, Hash Map, BST, Arrays]
3. What is the lower bound for number of comparisons while sorting ?
4. What is worst case of quicksort ?
5. What is space complexity for heap sort ?
6. If there are 1000 computers and 99% are not connected to internet and 5% have defective CPU. Find number of computers defective as well as disconnected.

Telephonic Phone Screen

1. How to check if a number is a fibonacci ?

bool function(int n) {}

<https://www.geeksforgeeks.org/check-number-fibonacci-number/>

2. Find minimum number of fibonacci number whose sum is equal to given sum K;

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

b'

Google Interview Experience | Telephonic (SDE)

- Last Updated : \n25 Feb, 2020

I received a referral from an employee of Google and then submitted my resume to Google for the role of software developer.

Initially, I was told there will be 2 rounds of phone interviews followed by on-site interviews if I get selected.

Round 1:\xc2\xd0

The interviewer was friendly.

Question : Basically, the question was that you are given a phone screen with height H and certain width W. You have to fit some text into the screen. Give the maximum size of letters that one can have such that the text fits into the screen.

My Approach : I gave a brute force approach where we run a loop from smallest font possible to largest font possible and fit as many letters as possible in one line of the phone screen and give the best result.

When asked to further improve my approach, I suggested a binary search based solution where I took a mid value for font and see if the text fits or not. If it does then I iterate for a higher half and if it doesn't then I iterate for the lower half.

At last I was asked the time complexity of each solution.

Since my first round of phone interview \xc2\xd0went well, I was directly selected for on-site interviews.

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

Google Bangalore Interview Experience

- Difficulty Level : \n[Medium](#)
- Last Updated : \n18 Feb, 2020

Initial Phone Screen:

The recruiter asked me about my background and discussed the interview procedure. She also asked me some fundamental one-word answer DS/Algo questions like time complexity of quick-sort.

Technical Phone Interview 1:

It didn't go very well as I had trouble explaining my approach to the interviewer. It was a computational geometry question and I had never done questions of this type before. I had a hard time coming up with the naive solution because all the time I kept assuming the solution I was thinking would not work (again lack of confidence). My nervousness was getting bigger as the time kept passing. About 20 minutes later he asked me to code whatever I had yet told him. After I coded, he pointed out cases in which my algo would fail. Since I coded in a very structured and modular way, so I was able to quickly fix it but still, it was not completely correct.

I got my recruiter's call after a week saying it was a mixed response she told me that I didn't think out loud but did very well on all the other parts like data structure and code structuring and they'd like to conduct another phone interview. Well after the call, I just tried compiling the code and discovered to my astonishment that it ran successfully and the answer was correct. I felt so stupid for not believing in myself all the time, that despite having the ability and enough practice, I was under-confident. Anyway, I was glad that I still had another chance.

Technical Phone Interview 2:

It was an expression evaluation sort of question with some conditions. I did it using stack and finished coding it in 20 minutes. I checked my code twice but missed a syntactical error and he had to point it out. He then asked me a follow-up and I did it in a couple of minutes as I made a function for core logic, so I had to adjust only that. It went superb and in the end, we were left with enough time for chit chat.

As my onsites approached, my LC problem count got 177 | 59 easy, 102 medium, 16 hard

(I started doing hard problems alongside medium ones after I got the onsite invitation as I had to level up my prep. Hard problems are exhausting and are usually a combination of 2-3 medium ones. So I focussed more on medium ones).

Onsite Interview:

Date: January, 2020

As I reached the office, I was very nervous. But I'm happy that my recruiter calmed me and boosted me for the interview.?

Round 1:

The interviewer asked me a warm-up question first and I instantly told her the solution and time/space complexities. That made me feel extremely relaxed. The next question she asked was a

graph problem. It could be solved by both dfs/bfs, I discussed why bfs would be a little better over dfs. I wrote down the algorithmic steps before coding and then coding in itself took very little time. (I've written this approach in detail in the interview tips below)

Round 2:

The second interviewer asked me to segregate numbers within a range(0 to N) that meet some criteria. I told him the naive iterative approach to check all numbers and then discussed ways to optimize it. I solved it by backtracking to generate only the valid numbers.

Round 3 (Googlyness / Behavioural):

This round felt important in ways that it shows your determination and optimism in different situations. I liked that the questions were scenario-based and open-ended.

Round 4:

It didn't go as well as my other interview rounds. It was a tree question for which I came up with a recursive solution but wasn't sure of how to properly make use of the returning values. Time was running out, so he asked me to code whatever I had yet told him. I could not plan my code prior, so had little difficulty implementing it and was re-writing my code. By the use of some hints, I could barely finish my code on time. He wasn't able to ask any follow-ups.

Round 5:

It was an array question for which I came up with a dfs solution but got stuck. The interviewer nudged me towards bfs. I coded the bfs solution and in the follow up he asked me how I would test it.

Result: My onsites went fantastic, so they fast-forwarded my application. The HC approval came next week.

Conclusion:

I started my journey by canceling my interview due to my fear of rejection, but now I realise it was me rejecting myself that day! I highly advise everyone *Have faith in yourself and put yourself out there, you may be disappointed if you fail, but you are doomed if you don't try!*

Learning is an uphill journey and it requires a lot of consistent practice. I'm on a full-time job and I saved my break-times to do Geeksforgeeks and leetcode problems. Some days were hectic but I still at least did one problem. I never studied much on my weekends (I wanted to but was too lazy to get out of bed ever). So just stay consistent and soon you'll start enjoying the process, in fact, you will start finding excuses to do leetcode.

Resources:

- **Clear data structures** I used Geeksforgeeks and HackerEarth tutorials to understand the implementation of various data structures. It was quite explanatory yet brief.
- **Clear algos** Spare some time to read CLRS if you wish to be a real programmer. Since it's very vast, I used it when I needed in-depth knowledge of sorting and dynamic programming.
- **Cracking The Coding Interview (by Gayle Laakmann McDowell)** Very helpful!! Once you have your data structures and algos clear, use this book to learn how to apply the knowledge practically while coding. Start with the first question and keep moving one at a time because difficulty level increases with each question (I felt so).

- **Dynamic Programming** For top-down solutions, dfs/backtracking with memorization works well.
- For bottom-up:<https://www.byte-by-byte.com/dpbook/> though it's very tough to implement a bottom-up DP in interviews, and no one expects you to do it also)
- **Leetcode premium** It is absolutely worth it.
- **Mocks** I found both company-wise mocks and random mocks to be helpful in measuring prep. Mocks are good because the problems don't have the difficulty level tag, so sometimes I could solve hard problems by breaking it down which I would have otherwise ignored knowing it is hard.

Interview Tips:

1. Structure your code better make functions and reuse.
2. Always use a whiteboard if given a choice between whiteboard and pen-paper!! It becomes very easy to explain your solution to the interviewer and it also opens your mind to think in many directions (due to its vastness).
3. If you have difficulty coming up with the naive solution, take a general case example and solve for it. Never take special cases for building solutions, rather keep them as condition covering for later. At this stage, don't think about the time and space complexities, just solve it because some candidates fail to do even that, so something is better than nothing.
4. Discuss time and space trade-offs after each solution you tell, even if the interviewer doesn't ask you it is expected to tell yourself.
5. Once the solution is discussed and finalised, coding should be as quick as possible. Since it's not that simple, we can break down the coding steps. (I write algorithmic steps in plain English each time before attempting to code) like, make a hashmap of the given data use queue data structure what arguments to pass to a function what to return how to use the return value. This helps in two ways:
 - You can easily cover the special cases and edge cases because, at this time, you're neither thinking about the solution nor coding it, you are just planning how to code it.
 - If something is not right, the interviewer can immediately point it out. So it gets fixed before you start coding the wrong solution.

Lastly, big thanks to the GeeksforGeeks for all the inspiring posts and amazing solutions!! All the best to everyone trying out there !

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

b'

Google Interview Experience

- Last Updated : \n31 Dec, 2019

I was contacted by Google in the beginning of December through LinkedIn. The Google recruiter might have looked into it maybe due to my prior Amazon work stuff.

The meeting was on Google hangouts.

I was asked to first describe my projects and internships.

I was then asked a series of questions entirely based on data structures-mostly heaps and hash-maps

- 1.The lower bound for comparison based sorting algorithms
- 2.How heap sort is better than merge sort?
- 3.How much time it takes to sort a heap in reverse?
- 4.Which data structures do not have an O(logn) lookup time-
 - a.Linked List
 - b.HashMaps
 - c.Heaps
 - d.Binary Trees

And then we had a discussion about the lookup times for all the data structures

5.We then had a brief discussion about function over-riding.

Unfortunately I was very nervous and pretty much tanked my interview.Leetcode and Pramp very well help to build the skills but not only solving problems but also knowing the data structures(in depth) along with Object Oriented Programming Concepts are very much needed to get into Google.

The below blog might be way more helpful than mine:

<https://leetcode.com/discuss/interview-experience/456432/nda-google-l3-bangalore-dec-2019-offer>

All the best \xf0\x9f\x98\x80

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

b'

Google Interview Experience for Software Engineering Intern

- Last Updated : \n09 Dec, 2019

I am a second-year BCA student currently studying in 3rd semester in Acharya Institute of Graduate studies. I applied through Google career page, The recruiter directly contacted me, I had applied the position for software engineering intern in Zurich Switzerland

Round 1: In this coding Sample, I was given 45 minutes to solve the question. In this round, there were two Questions one question was based on trees which were a bit mixed question of trees and graph. it was also a little bit mixed with dynamic programming. I did the first question easily. and the second question was of string, it was of recursion types. i did both the question within 45 minutes and had also passed the test cases. After few days that i got mailed that i had been selected for the interview process.

Round 2: In the second interview, i joined the hangouts before the time, the interviewer was from Dublin, it was his first interview, so the interview begins, he asked me about favorite data structure, i told my favorite data structure was array, he asked me a question on dynamic programming, so i begin my code with optimal search, and discussed my code with interviewer, so he liked my code and was smiling at me, so he gave me some test cases and i passed the test cases, a google doc was shared between me and him, so i wrote the bug free code, and he said cool, after that he told me to ask some question about google, i asked the cultures about the google. and the very next day i received the mail that i am selected for the next round of interviews.

Round 3: I joined the interview on the hangout before the interview, the interview started he asked me some of the questions about the algorithms, i just explained properly the algorithms, he asked me some question on binary tree, i solved the question before the time, passed also the test cases, the interview went cool. after that interview, i got mail from my recruiter that i has been selected for host matching. so she gave me the google docs in which i have to write about my previous projects and experiences. after that i has been selected for site reliability engineering, the last call was from the manager about my works and previous experiences. after all that my recruiter has sent me the offer letter.

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

b'

Google Interview Preparation For Software Engineer \xe2\x80\x93 A Complete Guide

- Difficulty Level :[Expert](#)
- Last Updated :[17 Jun, 2021](#)

Google The top attractive employer and one of the highest paying companies in the world. Google opens a door for exceptional programmers who are not limited to solve problems they already know but also they should have skills to solve problems they haven't encountered before. If you are one of them who has this skill and if you have a dream to land up a software engineer job role in Google then you need to follow a strategy and you need to understand the complete process that this company is looking for the hiring of top-notch programmers.\xc2\xa0

\xc2\xa0



Hiring procedures in Google for the software engineering role is similar to other companies so we will discuss the programming skill that you must have and we will also discuss some other tips and details that you should keep in mind while applying at Google.\xc2\xa0

\xc2\xa0

Important Points

\xc2\xa0

- Google hires only exceptional programmers so there is no doubt that problem-solving and coding skill (Focus area data Structures and Algorithms) is a must-have skill in Google for software engineering role but you need to keep in mind that Google also care a lot about [Googlyness](#) that covers passion for technology, curiosity, ethics, friendliness, good citizenship, and more.

- Difficulty level of the interview depends on the level of software engineering role you are applying in Google. Software Engineer or SWE-II (Level 3) is an entry-level full-time software engineer. At this level, there are 4 or 5 onsite rounds and people on the cusp of L3 and L4 (below), they may throw in a design question, but usually not. SWE-III (Level 4) is for candidates with BS + 8 years, MS + 5 years, Ph.D. + 2 years. Approximately. At this level, expect 4 or 5 onsite rounds also at least one Systems Design question.
- Check [List of skills](#) that *Google in Education Team* has released which they expect from a potential engineer.
- All engineers (at every level) collaborate throughout the Google codebase, with an efficient code review process and that's the reason Google is keen to see really high quality, efficient, clear code without typing mistakes.
- Interviewers are trained to not react to your answers so don't expect yes or no answer 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.

Before we discuss all the details we highly recommend you to take a look on [How we hire](#) on Google career page and get familiar with interview process. For Google software engineering interview you can prefer any programming language you are comfortable with but you should know your programming language very well, It would be great if the choice is [C++](#) or [Java](#). Let's discuss all the rounds one by one from getting the call for the interviews to cracking the interview in detail.

\xa0

Getting Noticed by Google

Google receives more than two million resumes but hires only around 4000 employees every year so it's not easy to get noticed by recruiters for interview calls. Take the referrals through some connections working in these companies or you can take the help of LinkedIn and online coding platforms to increase your chances for interview calls. Below are some points that will help you in getting the call for interviews.

\xa0

- Try to make a single-page resume and include only relevant things. 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. If you are mentioning your project then mention the complexity of your project as well. Check the link [Resume Building Resources and Tips](#) for the guidelines to prepare your CV.
- You can participate in [Google Kickstart](#) or [Google Code Jam](#) which is a coding competition hosted by Google. If you reach Round 2 (around 3000 contestants) in Google Code Jam, you might be contacted by Google.
- Keep your LinkedIn, Github and other profiles updated, hiring managers use these tools like LinkedIn, alumni databases, and professional associations to find out suitable candidate.
- Check the link [Create Your Resume for Google: Tips and Advice](#)
- Go to conferences and start networking. Google employees often speak at conferences and they are very approachable.

\xa0

Telephonic Interview

Once your resume will be shortlisted you will be invited for the technical phone interviews (Average 2 phone interviews) which are slightly different than onsite interviews but there you need to write code on some sharing tools like Google Doc and that will be visible to the interviewer. It will be for around 45 minutes covering [Data Structures](#) and [Algorithms](#). You may encounter two questions and you are expected to write code for at least one of them. Below are some points to guide you for phone interviews.

\xa0

- You need to write the code for the coding question which interviewer will ask, throw out a brute force solution in the beginning, but you should try to improve your solution as well. Think about the time and space complexity and see if you can improve those.
- Practice writing code on Google Doc. It is different than a text editor. There's no indentation,

syntax highlight and auto-completion so it's good to practice on Google doc and get familiar with it.

- **Think out loud** and speak clearly (people face trouble here) in phone interviews and tell your strategy to the interviewer to solve the problem.
- The document will update in real-time. It's going to be obvious if you are typing your answer or if you are copying and pasting it.
- The interviewer may ask to do second phone interview if in the first one they won't be able to assess you properly.

\xa0

Onsite Interview

After the phone interviews, Google conducts 4-6 onsite interviews including lunch interviews where lunch interview isn't a real interview and it's just the interaction with Googler. Each round roughly takes 45 minutes to one hour and this will be a whiteboard round and the majority of the Google interview consists of coding. Now here comes the role of DSA and Core CS subjects to check your coding, problem-solving skill and command over computer science fundamentals. Firstly you will go through the coding interview round and then system design (based on experience) round. The difficulty level of the question is based on the level you are applying for in Google.\xa0

1. Technical Coding Round and General Analysis Questions\xc2\xa0

\xa0

- 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 must.
- In general analysis question interviewer will give you a mathematical, design, or opinion-based question where they will investigate your thought process and how you would proceed as an employee.
- We highly recommend you to go through CTCI ([Cracking the Coding Interview](#)) book, practice questions specially on [GeeksforGeeks](#), [Leetcode](#) and [Programming Interview Questions | CareerCup](#) for Google interview preparation. You can also practice for the same on [Google Preparation](#).
- Below is the distribution of the types of problems that were generally encountered in Google interview. This data is based on the interview experiences from Glassdoor for Google.\xa0

\xa0

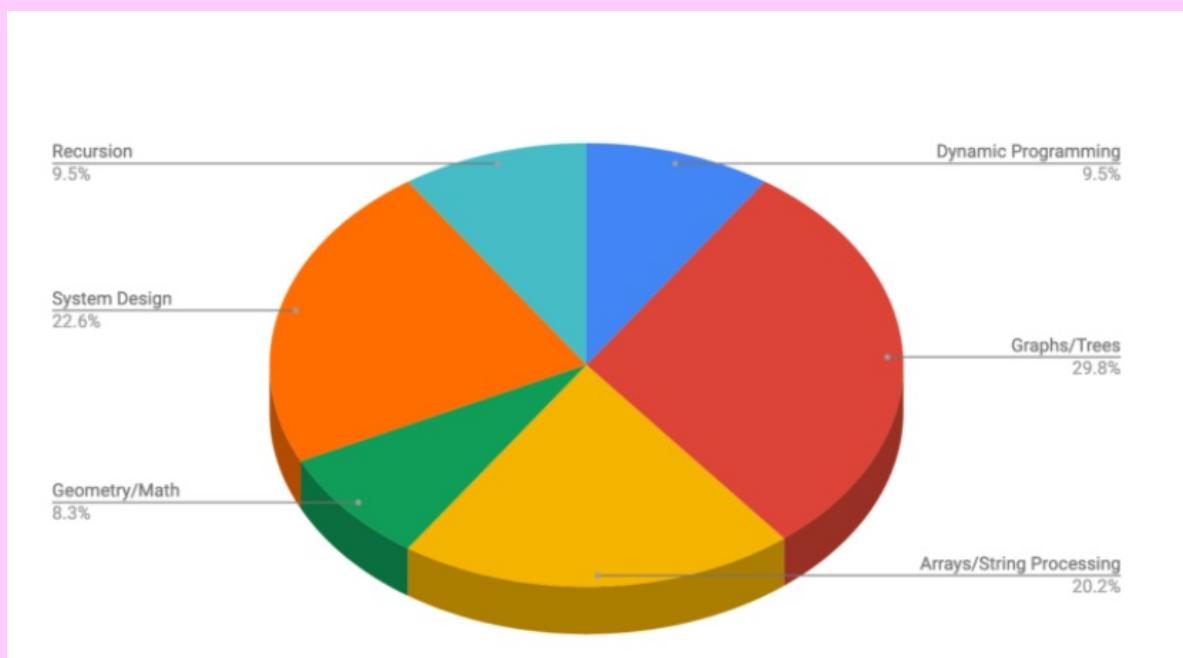


Image Source: byte-by-byte.com

- Check the link [How to Get a Job in Product Based Companies?](#) to deal with in-depth technical coding question, what approach and tips you should follow during the interview.

- Don't do bubble-sort. You should know the details of at least one $n \log(n)$ sorting algorithm, preferably two (say, quicksort and merge sort). Merge sort can be highly useful in situations where quicksort is impractical, so prepare yourself with that.
- Go through the basic tree construction, traversal, and manipulation algorithms. Get familiar with the topic binary trees, n-ary trees, and trie-trees, at least one type of balanced binary tree, for example, red/black tree, a splay tree or an AVL tree along with the implementation. Understand tree traversal algorithms: BFS and DFS, inorder, postorder and preorder traversal.
- Get familiar with how to represent a graph in memory, basic graph traversal algorithms. Do not focus too many fancy algorithms like Dijkstra. Study this topic if you have enough time.
- You should know about the most famous classes of NP-complete problems, such as traveling salesman and the knapsack problem, and be able to recognize them when an interviewer asks you them in disguise.
- The interviewer may ask some basic discrete math questions so spend some time there as well and take a look on combinatorics and probability also get familiar with n-choose-k problems.
- Don't forget about one of the most important CS subject Operating System. Threads, concurrency, processes, deadlock, livelock and read about the other topics in OS.
- Interviewer will definitely check that how you decide which data structure is suitable for the problem you have given by your interviewer.
- Do not forget to test your code with all the cases. After writing the solution you have to test your code, even if minimally because if you don't do that, points will be deducted.
- One of the mock interview video featuring real Google engineers [Example Coding/Engineering Interview](#) will definitely help you in solving coding related question .

2. System Design Round:

\xa0

- **System design questions** is 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 like design *Gmail, youtube, uber etc.*
- Check the link [System Design Interview Question](#), [System Design Primer](#).
- L4 and below can get OO design and maybe some systems design-related question. Here you're expected to know the high-level details. If you are applying for L5 and up you're going to be asked systems design questions, with the expectation that you can define the goals/requirements of the system, define the high-level architecture, deep-dive into some components, and identify the bottlenecks.
- In Google, scalability is always important. So expect design questions that will be an ambiguous real-world problem for large size systems. They are looking for the process of thought and how you break things down to ultimately get too creative and scalable solutions.

\xa0

What Interviewers Are Looking For?

We are not simply looking for engineers to solve the problems they already know the answers to; we are interested in engineers who can work out the answers to questions they had not come across before.\xa0

The above thing is the most important thing the interviewer will be looking for also read the below points\xe2\x80\x9c

\xa0

- Interviewer 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 do not show signs of arrogance or ego while giving the interviews.
- Interviewers will check whether you've used the suitable data structures and algorithms while implementing the code or not.
- Interviewers will notice the approach that how you optimized the solution, your knowledge about the choice of programming language, your coding speed, any corner cases that you missed and how you analyzed time and space complexity.
- They will check how you communicated your thought process to solve a specific problem in a logical way. They will also check if you were able to catch the hint and was able to proceed with the solution or not.

- If the candidate was open to new ideas? if the candidate was flexible in his/her solutions?

Interview Evaluation Criteria: All the feedback is collected from different interviewer after the interview and then you are rated on a scale of 1-4 in a bunch of different categories that include your coding experience and analytical skill. This feedback is then sent to a hiring committee for the final decision.\xc2\x90

Tips:\xc2\x90

\xc2\x90

- Learn to **think out loud** during your whole interview otherwise interviewer will have no clue what you are thinking. Show your interviewer your thought process about the problem and what approach you are going to follow to solve the problem.
- Practice by writing code on paper or whiteboard. It will really help you during your interview.
- 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 it, 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.
- Always ask relevant questions before jumping to the solution to make it more clear. Always check your assumption with the interviewer and clear all your doubts before heading to the solution.
- We highly recommend you to not write pseudo-code to design your code. You don't have time for that in a 45-minute interview.

Helpful Links:\xc2\x90

\xc2\x90

- [Google Interview Preparation Questions](#)
- [Google Interview Experience](#)
- [Practice for Cracking Any Coding Interview](#)
- [Glassdoor Google Software Engineer Interview Questions](#)

\xc2\x90

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

b'

How Does Google Use Machine Learning?

- Difficulty Level :[Easy](#)
- Last Updated :[09 Oct, 2019](#)

In modern times, Google is everywhere!!! So much so that you are most probably reading this article using Google Search. And while Machine Learning has long been a part of Google, now it seems that ML is everywhere! From **Google Search** to **Google Photos** to even **Google Translate**, everything uses [Machine Learning](#).

And these are only the more common items! In fact, Google and its parent company Alphabet are heavily invested in [Machine Learning Research](#) in almost all imaginable fields like **Ethical Principles, Quantum Computing, Healthcare, Robotics, Perception**, etc. Sundar Pichai, the CEO of Google commented that Machine learning is a core, transformative way by which we're rethinking how we're doing everything. We are thoughtfully applying it across all our products, be it search, ads, YouTube, or Play. And we're in early days, but you will see us apply machine learning in all these areas.



So it is obvious that Google eventually plans on fully integrating Machine Learning in all its operations. But that futuristic world is still a little far away! For now, let's see some of the ways in which **Google currently uses Machine Learning** so that we can understand the full scope of its applications in the future.

1. Google Translate

Want to translate a text from English to Hindi but don't know Hindi? Well, [Google Translate](#) is the tool for you! While it's not exactly 100% accurate, it is still a great tool to convert text, images, or even real-time video from one language to another. And in case you wonder how it translates more or less accurately, well Google Translate uses Machine Learning of course!

It uses **Statistical machine translation (SMT)** which is a fancy way of saying that it analyses millions of documents that are already translated from one language to another (English to Hindi in this case) and then looks for the common patterns and basic vocabulary of the language. After that, it picks the most accurate translation possible based on educated guesses that mostly turn out to be correct. For Example: Let's see how Google Translate translates Machine Learning is cool into Hindi!!!

Image Source: Google

2. Google Photos

In case you are a millennial, I am sure you are a selfie addict! And of course, you use [Google Photos](#) a lot if you are an Android user as well. And it's no shock that you do! Google Photos allows you to back up all your photos in a single location even if they were shot from multiple devices and it also offers lots of other cool effects using Machine Learning.

For Example, Google Photos also automatically creates albums of photos taken during a specific period without any input from you. And that's not all, it can also select the best photos and sort them. And in case you haven't sorted all your pictures into albums, you can also search for them by typing in names. Suppose you want to find a picture with your dog, type in 'Dog' and you will get all the dog pictures! This is done using **Image Recognition**, wherein Deep Learning is used to sort

millions of images on the internet in order to classify them more accurately. So using Deep Learning, the images that are classified as CEO of google wife in your Google Photos are displayed.

3. RankBrain

Suppose you want to know who is the CEO of Google? And then you want to know who is his wife? But how do you search this on Google? You cannot exactly write the name of Sundar Pichai or his wife since you don't know it! In this case, you can simply search CEO of google wife on Google and you will get the required results. This is achieved using **RankBrain** in Google Search.



Image Source: Google

RankBrain is basically a **deep neural network** that is helpful in providing the required search results. It is one of the factors in the Google Search algorithm that determines which search pages are displayed. In case there are any unique words or phrases on Google Search (like CEO of google wife in our case!) then RankBrain makes intelligent guesses to find which search results fit the situation and filter them accordingly. In fact, RankBrain is currently so important that Google says it is its third most important page ranking factor for the results of a search query.

4. Google Assistant

Want a little help in organizing your calendar? Want to know the best Italian restaurants near your home? Want to book movie tickets on the go? Well, never fear!!! [Google Assistant](#) is here to make your life easier! It is basically a personal assistant that is enabled using a combination of **Google Knowledge Graph, Image Recognition, and Natural Language Processing**.

The Google Assistant is envisioned as a chatbot by Google which can be connected to your phones, TVs, speakers, etc. with the ability to actually have a conversation with you. Here the **Google Knowledge Graph** provides information gathered from various sources while **Natural Language Processing** allows the Google Assistant to interact with you and formulate its answers according to your questions.

5. DeepDream

We all know that humans dream? Well, what if computers dream as well?!! This is the premise of Google [DeepDream](#) that used convolutional neural networks to find random patterns in various images and amplifies them in different ways. These images can be tweaked in any possible manner using the input data and various parameters so that the results obtained can be funny, weird or even trippy!!!



Image Source: Google

There are **multiple layers in the neural networks** in DeepDream wherein each layer extracts more and more high-level features from the input image until the final output is produced by the end layer. To demonstrate this, we have an image from Google DeepDream that is a weird hybrid of a woman and lots of gears. All in all, it's very difficult to just explain the complicated effects of DeepDream so it's best that you just try it yourself by uploading any image you want and then just watching the show!

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

b'

Google Interview experience For SDE-1

- Difficulty Level :\n[Hard](#)
- Last Updated :\n13 Jul, 2019

\xc2\x90

Round 1: Hangout Video call (DS & Algo) (1 hr)

1. Tell me something about yourself.
2. There is one marathon is happening. Each runner has unique no which is printed on his t-shirt. Cameraman is trying to capture that number from top so no is visible in 180 degree rotation. X\xc2\x90 is a good number if after rotating each digit individually by 180 degrees, we get a valid number that is different from X.\xc2\x90 Each digit must be rotated \xe2\x80\x93 we cannot choose to leave it alone. 0, 1, and 8 rotate to themselves; 6 and 9 rotate to each other, and the rest of the digits\xc2\x90 do not rotate to any other valid digit. Range is given and you need to find out good numbers lie within that range.

Cases:

- 10 will be converted into 01 but not valid as our range start with 1. Prefix 0\xe2\x80\x99s are not allowed.
- If range is 1 to 7 and no 6 become\xc2\x90 9 so it won\xe2\x80\x99t allowed.
- 11 won\xe2\x80\x99t allow as 11 will become same after change.
- If no has digits like 2, 3, 4, 5, 7 then that no won\xe2\x80\x99t allow.
- Input: range: 1 to 10 (1 and 10 both are included)
- Output: list of valid numbers: 6, 9

You can consider this\xc2\x90 link for reference:\xc2\x90<https://www.geeksforgeeks.org/check-if-a-given-number-is-fancy/>

Round 2: On-site (Behavioural Round) (1 hr)

1. Tell me about yourself
2. Why Google?
3. Which product of Google you like most? Why? Any competing product in the market?
4. If I asked your current organization for feedback then what will they say? Focusing on negative point.
5. If you have to improve one technical and one behavioural point then which one will you improve?
6. In your last organization or before that any leadership work have you done? Mentorship / organizer type.
7. What will you do when your work\xe2\x80\x99s credit will be given to other person?
8. Any situation when your manager didn\xe2\x80\x99t agree with your idea and how did you convince him?
9. Why you are leaving before 1 year?
10. What is your plan for 2 years in technical and non-technical aspects?
11. Do you have any questions for me?

Round 3: On site (DS & Algo) (1 hr)

She asked for binary search functionality which tells no exists in array or not. Generally we find mid element through (low+high)/ 2 so she asked to change that and use random function to decide mid. Binary search is performed on sorted array but here unsorted array is given.

Two modifications are performed on binary search logic.

- 1) instead of sorted array, unsorted array has been given
- 2) Mid element is decided based on random function. Now we have to find out numbers from given array for which this function gives true result.

Hint: Function will return true for value x, if all numbers on left side of x are small and all numbers on the right side of x are greater.

Example: [4, 3, 1, 5, 7, 6, 10]

Ans: 5, 10

Time Complexity: O(n)

Space Complexity: O(n)

Round 4: On site (DS & Algo) (1 hr)

One chocolate bar is given. There are n number of pieces in that bar. Each piece has its own sweetness level. You have to divide chocolate bar in k pieces and give those pieces to k-1 persons and you will get remaining last piece. You have to tell how much sweetness you will get. You will get least sweetness piece out of all k pieces. So you have to divide slab in such a way that you will get maximum sweetness.

Input: 1, 2, 4, 7, 3, 6, 9 | N = 7, K = 4

Output: 7 (Divide it into 4 parts like [1, 2, 4] [7] [3, 6] [9] with sweetness level 7, 7, 9, 9 respectively)

Links for reference:

<https://www.geeksforgeeks.org/painters-partition-problem/>

<https://www.geeksforgeeks.org/allocate-minimum-number-pages/>

Round 5: On site (DS & Algo) (1 hr)

Similar to Round 4. There were n people each having some weight. You have to divide them in k continuous group such that total weight difference between groups will be minimised. You have to return difference between max and min weighted group.

Input: 1, 2, 4, 7, 3, 6, 9 | N = 7, K = 4

Output: 2 (Divide it into 4 parts like [1, 2, 4] [7] [3, 6] [9] with weight 7, 7, 9, 9 respectively So answer will be 9 - 7 = 2)

Round 6: On site (DS & Algo) (1 hr)

One grid is given. It contains characters in each cell. You have to find out the smallest hamilton distance between x to y. Hamilton Distance: | row_index_x - row_index_y | + | column_index_x - column_index_y |

[x, 0, 0, 0]

[0, y, 0, y]

[x, x, 0, 0]

[0, y, 0, 0]\xc2\xa0 Ans: 1

Time Complexity: O(n x m)

Space Complexity: O(n x m)

Google mainly focuses on logic and how you are coming with solution. It notes down each and every small mistake. Interviewers are really very helpful. They expects clear code with optimal approach.

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

b'

Google Software Engineering Intern, Fall 2019 \xe2\x80\x93 North America

- Difficulty Level :\nEasy
- Last Updated :\n03 Jul, 2019

1. Consider a binary tree of N vertices such that children of node k are 2^k and 2^k+1 . Vertex 1 is the root of the tree and each node has an integer value associated with it.

Such a tree may be represented as an array of N integers by writing down values from consecutive nodes.

The tree can be represented as an array [-1, 7, 0, 7, -8].

A node is said to be at level x if the length of the shortest path between that node and root x-1. So, the root is at level 1, the children of root are at level 2, and so on.

Your task is to find the smallest level number x such that sum of all nodes at level x is maximal.

Examples: Given array A such that: A[0]=-1, A[1]=7, A[2]=0, A[3]=7, A[4]=-8. The function should return 2.

Input : [-1, 7, 0, 7, -8] \r\n**Output :** 2\r\n

```
#include <iostream>
using namespace std;
int solution(int a[], int n)
{
    int max = -1;
    int temp = 0;
    for (int i = 0; i < n; i = i + 2) {
        if (i == 0)
            temp = a[i];
        else
            temp = a[i] + a[i - 1];
        if (temp > max)
            max = i;
    }
    return max;
}
int main()
{
    int a[4];
    a[0] = -1, a[1] = 7, a[2] = 0, a[3] = 7, a[4] = -8;
    cout << solution(a, 4);
}
```

2. Imagine you have a special keyboard with all keys in a single row. The layout of characters on a keyboard is denoted by a string S1 of length 26. S1 is indexed from 0 to 25. Initially, your finger is at index 0. To type a character, you have to move your finger to the index of the desired character. The time taken to move your finger from index i to index j is $|j-i|$, where || denotes absolute value.

Write a function solution(), that given a string S1 that describes the keyboard layout and a string S2,

returns an integer denoting the time taken to type string S2.

Examples:

S1 = abcdefghijklmnopqrstuvwxyz

S2 = cba

Input : S1 = abcdefghijklmnopqrstuvwxyz, S2 = cba \r\n**Output : 4\r\n**

```
#include <bits/stdc++.h>
using namespace std;
int solution(string& s1, string& s2)
{
    int dict[26];
    for (int i = 0; i < 26; i++) {
        dict[i] = i;
    }
    int ans = 0;
    int prev = 0;
    for (int i = 0; i < s2.length(); i++) {
        ans += abs(dict[s2[i]] - prev);
        prev = dict[s2[i]];
    }
    return ans;
}
int main()
{
    string s1 = "abcdefghijklmnopqrstuvwxyz";
    string s2 = "cba";
    cout << solution(s1, s2);
}
```

My Personal Notes\narrow_drop_up

Add your personal notes here

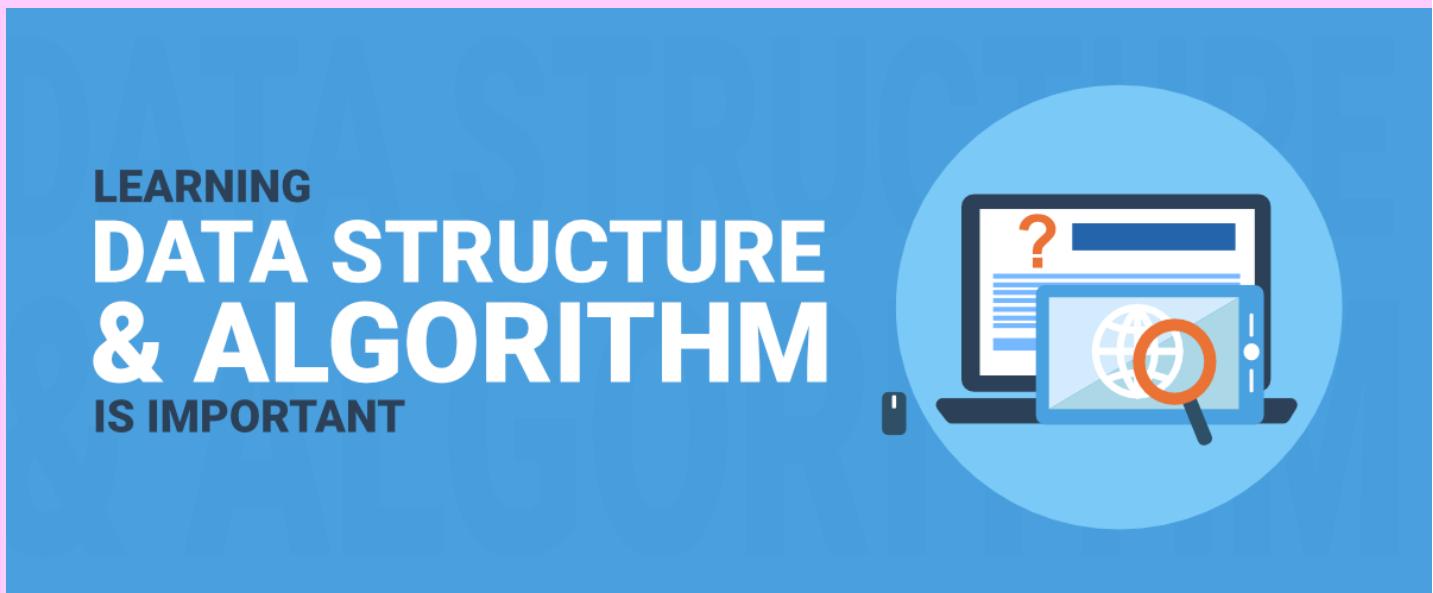
Save

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).

↳

Software Development Engineer Salaries

5,121 Salaries Updated 22 Jun 2021

Average Base Pay

₹12L / yr

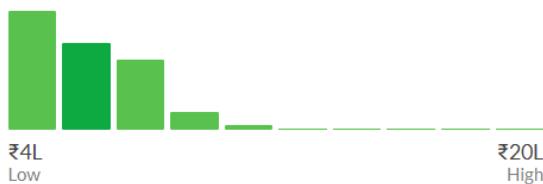


Image Courtesy: Glassdoor

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/-.**

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

b'

Google Off-Campus [SDE-1]

- Difficulty Level : \n[Medium](#)
- Last Updated : \n17 Jun, 2019

I interviewed for Google recently and here is my experience in detail. The interview process took around 5 months for completion as they provide you ample amount of time to prepare for your interviews so when you appear for the interview you are in your best form.

HR Round: Google was first company where HR herself took a small rapid-fire round to test if the candidate is even worthy for scheduling a telephonic screening with one of the Google engineer. Few questions:

1. Worst time complexity for Heap sort?
2. Merge sort is better or Heap sort? And why?
3. Does Quicksort complexity depends on what pivot element we choose like middle one, rightmost one or leftmost one?
4. What is the value of 2^{24} ? (Here HR wanted to check how would I approach this calculation provided I don't have any calculator with me.)

The round was easy for someone who is preparing for Google but it might come as a surprise for some who are not expecting this and might end up giving wrong answers.

Telephonic Round: This round went for exactly 45 mins. The interviewer went straight for the question. In this round it is crucial that you manage the time, code readability & obviously the correctness of the solution that you provide. Moreover you have to code on Google Docs so indenting the code is important for maintaining clean code.

Question: You are given 2 strings which are exactly same but 1 string has an extra character. Find that character.

Approach: Sort the strings and keep matching until you find that extra character because it won't be present in other string. Time Complexity $O(n\log n)$.

He asked me to code the solution. After this he asked me to further optimise it without sorting the strings.

\n

My Personal Notes\n*narrow_drop_up*

Add your personal notes here

Save

b'

How to run Python code on Google Colaboratory

- Last Updated : 06 May, 2019

Prerequisite: [How to use Google Colab](#)

Google provides Jupyter Notebook like interface to run Python code on online Virtual Machines. In this article, we will see how to run simple Python code on Google Colab.

Step #1: Open <https://colab.research.google.com/>

The screenshot shows the Google Colaboratory landing page. At the top, there's a navigation bar with links for EXAMPLES, RECENT, GOOGLE DRIVE, GITHUB, and UPLOAD. Below the navigation bar, a section titled "Welcome To Colaboratory!" displays two recent notebooks: "Welcome To Colaboratory" (8 days ago) and "deepspeech_trial.ipynb" (8 days ago). A modal dialog box is open at the bottom right, containing buttons for "NEW PYTHON 3 NOTEBOOK" and "CANCEL".

Step #2: Select New Python3 Notebook

The screenshot shows a modal dialog box titled "New Notebook" with two options: "NEW PYTHON 3 NOTEBOOK" (highlighted in orange) and "NEW PYTHON 2 NOTEBOOK".

Step #3: Start Typing code into the code cells.

Import all necessary libraries.

CODE TEXT ↑ CELL ↓ CELL

```
import numpy as np
```

Step #4: To add new cell, click on Insert->Code Cell



Step #5: To run a particular cell, select the cell and press **Ctrl+r** + **ENTER** keys.

CODE TEXT ↑ CELL ↓ CELL

```
import numpy as np
```

```
a = np.array([1, 2, 3, 4, 5, 6])
print(type(a))
```

Code cells under process

CODE TEXT ↑ CELL ↓ CELL

```
[1] import numpy as np
```

```
[2] a = np.array([1, 2, 3, 4, 5, 6])
print(type(a))
<class 'numpy.ndarray'>
```

Output after successful run

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

Google Interview Questions

- Difficulty Level : \n[Medium](#)
- Last Updated : \n23 Apr, 2019

As per [Google's official career page](#), there are two types of interviews, Phone/Hangout interviews and Onsite Interviews. Below is an excerpt for their official page.

For software engineering candidates, we want to understand your coding skills and technical areas of expertise, including tools or programming languages and general knowledge on topics like data structures and algorithms. There's generally some back and forth in these discussions, just like there is on the job, because we like to push each other thinking and learn about different approaches. So be prepared to talk through your solutions in depth. Push your own boundaries and find the best answer that's probably how you work anyway.



Important Resources :

1. [Recent Google Interview Experiences](#)
2. [All Google Practice Questions](#)
3. [How to prepare for Google KickStart](#)

Practice Questions:

- [Find all triplets with zero sum](#)
- [Generate all binary strings from given pattern](#)
- [Count of strings that can be formed using a, b and c under given constraints](#)
- [Find largest word in dictionary by deleting some characters of given string](#)
- [Find subarray with given sum | Set 1 \(Nonnegative Numbers\)](#)
- [Find the longest substring with k unique characters in a given string](#)
- [Find the two non-repeating elements in an array of repeating elements](#)
- [Flood fill Algorithm \xe2\x80\x93 how to implement fill\(\) in paint?](#)
- [Meta Strings \(Check if two strings can become same after a swap in one string\)](#)

- [Print all Jumping Numbers smaller than or equal to a given value](#)
- [Sum of all the numbers that are formed from root to leaf paths](#)
- [The Celebrity Problem](#)
- [Unbounded Knapsack \(Repetition of items allowed\)](#)

Medium Level

- [Backtracking | Set 7 \(Sudoku\)](#)
- [Boggle | Set 2 \(Using Trie\)](#)
- [Check if a Binary Tree contains duplicate subtrees of size 2 or more](#)
- [Dynamic Programming | Set 33 \(Find if a string is interleaved of two other strings\)](#)
- [Connect nodes at same level](#)
- [Count BST nodes that lie in a given range](#)
- [Dynamic Programming | Set 11 \(Egg Dropping Puzzle\)](#)
- [Dynamic Programming | Set 28 \(Minimum insertions to form a palindrome\)](#)
- [Dynamic Programming | Set 31 \(Optimal Strategy for a Game\)](#)
- [Dynamic Programming | Set 32 \(Word Break Problem\)](#)
- [Find four elements that sum to a given value | Set 2 \(O\(n^2Logn\) Solution\)](#)
- [Given a matrix of \$\text{X} \text{X} \text{X}\$ and \$\text{X} \text{X} \text{X}\$, replace \$\text{X} \text{X} \text{X}\$ with \$\text{X} \text{X} \text{X} \text{X}\$ if surrounded by \$\text{X} \text{X} \text{X}\$](#)
- [How to print maximum number of A's using given four keys](#)
- [Inplace rotate square matrix by 90 degrees | Set 1](#)
- [Maximum absolute difference between sum of two contiguous sub-arrays](#)
- [Merge two BSTs with limited extra space](#)
- [Merge Overlapping Intervals](#)
- [Modular Exponentiation \(Power in Modular Arithmetic\)](#)
- [Paper Cut into Minimum Number of Squares | Set 2](#)
- [Sum of bit differences among all pairs](#)

Hard Level

- [Allocate minimum number of pages](#)
- [Given an array arr\[\], find the maximum j such that arr\[j\] > arr\[i\]](#)
- [Given a sorted dictionary of an alien language, find order of characters](#)

- [Hungarian Algorithm for Assignment Problem | Set 1 \(Introduction\)](#)
- [Implement LRU Cache](#)
- [Length of the longest valid substring](#)
- [Median in a stream of integers \(running integers\)](#)
- [Sum of bit differences among all pairs](#)
- [Travelling Salesman Problem | Set 1 \(Naive and Dynamic Programming\)](#)
- [Word Break Problem using Backtracking](#)

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

b'

Google Interview Experience (Off-Campus)

- Difficulty Level : \n [Hard](#)
- Last Updated : \n 04 Jun, 2019

LinkedIn resume filtering: I received a mail from the recruiter of Google asking about my resume. After a few days, he called me to ask for some details. He started asking about my profile, my language of preference for coding, etc. He also asked me whether I held any job offers at that moment. Later on, he started asking me general technical question such as:

1. Runtime complexity of sort/search algorithms
2. Hashing and tree conditional complexities
3. Balanced tree examples
4. Estimate 2^{24} without a calculator

Telephonic Rounds at Hangouts:

The interviewer greeted me and asked me a stereotypical question, **Tell me about yourself.**

The main question was: Given candidates standing for an election, you have to create an interface which contains the following function:

1. `voteCandidate (candidateID);`
2. `getTopK (k);`

The first function is used to cast a vote to the candidate represented by the candidateID.

The second function is used to find the top K candidates at any moment during the course of an election.

Solution: Use maps to store the count of votes of each candidate and max heap to retrieve top k elements. Time complexity $O(n + k \log n)$.

[Refer to this link for the second function:](#)

After the telephonic interview, I was invited for onsite interview. I had 4 rounds.

Round 1:

Q: A graph has N vertices numbered from 1 to N. We have two lists. One list M consisted of edges between vertices. The other list K consists of restricted paths. We have to add edges one by one from M and check whether the addition of the particular edge leads to a path between the restricted edges given in K. If it creates a path, we have to discard the edge.

Example: $N = 4$; $K = \{(1, 4)\}$; $M = \{(1, 2), (2, 3), (3, 4)\}$. Here, addition of edge $(3, 4)$ will create a path between 1 and 4. Hence we discard edge $(3, 4)$

A: Use connected components.

Round 2:

Q1. We have an interface named Logger which contains two functions:

```
startReq( req Id, start time )
```

```
finishReq( req Id, end time )
```

Logger gets a large number of requests with the start time. These requests are sent to startReq function. After the request finishes, we invoke the function finishReq. We should be able to print the output containing the finished requests sorted by start time.

\xc2\x0

Request ID Start Time End Time

A	0	25
B	4	18
C	2	20
D	7	10

We need output as:

A 0 25

C 2 20

B 4 18

D 7 10

A: Use map to store the request end time. Use the queue for keeping the requests sorted.

Q2. Given various subsequences of an array, print the overall array:

Example: [1, 3, 5], [1, 3, 9], [9, 5]

Array : [1, 3, 9, 5]

A: Use DAG to represent the subsequences. Perform topological sort to get the array.

Round 3:

Q1: Implement the version control map system which takes the snapshot of the versions of data. Implement the following functions:

put(key, value) -> puts the value again the key in the latest version of the map

get(key) -> get the value of the key for the latest version of the data

snapshot() -> take a snapshot and increment the version

getValVersion(version id, key) -> return value of the key of the particular version

A: I made use of maps of vectors like this `map<int, vector<pair<int, int>>` `versionMap`;

Q2: Given a stream of integers, a value k and a value w, consider the integers in the window w and chop off greater k and smaller k elements from the window w. From the remaining elements, compute the average.

A: make use of Min and Max heaps.

Round 4:

Q1: Whether a string A can be transformed to a string B

Echo {1, 2, 3}{a, b} convert into

1a, 1b, 2a, 2b, 3a, 3b

PS: there can be any number of curly braces.

A: Make Use of queue to get the resultant strings.

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

Software Engineer Interview at Google, Hyderabad

- Difficulty Level : \n [Hard](#)
- Last Updated : \n 04 Jun, 2019

Resume filter: I got an email from a recruiter who asked about my details such as work experience, interests, technical abilities. A few days later, she scheduled a telephone call where she asked some basic questions on complexity, worst case and best case for certain sorting algorithms, some short tricky math problems. You need to answer 8/10 correct to get shortlisted.

After this, I got around 20 days for 1st round of telephonic interview.

Telephonic interview: It was a 45 min hangout call with a Google doc shared. She directly jumped onto the question.

Q1. Given two strings, A and B, of equal length, find whether it is possible to cut both strings at a common point such that the first part of A and the second part of B form a palindrome.

Extension1. How would you change your solution if the strings could be cut at any point (not just a common point)?

Extension2. Multiple cuts in the strings (substrings to form a palindrome)? Form a palindrome using a substring from both strings. What is its time complexity?

Q2. Come up with some edge test-cases for calculator function performing these operations : (+, -, *, /)

I was called for onsite interviews 25 days after this round.

Round 1: Given an input stream of boolean values, design a data structure that can support following modules in optimal time-

- i) setTrue(index)
- ii) setFalse(index)
- iii) setAllTrue()
- iv) setAllFalse()
- v) getIndex(index)

Round 2: Given a list of player names and their scores {Carl, 70; Alex, 55; Isla, 40}, design a data structure that can support following modules in optimal time-

- i) updateEntry(string name)
- ii) getEntryFromRank(int rank)

Round 3:

Q1. Given an array of n integers, find the lexicographically smallest subsequence of length k.

Q2. Given a matrix of people(denoted by small alphabets) and bikes(denoted by capital alphabets), find the nearest bike for a given person.

How will you change your solution if you have to find bikes for a set of people? (assuming multiple bikes can be at the same distance from 1 person)

Round 4:

Q1. Given an infinite chessboard, find minimum no. of steps for a knight to reach from the origin to (x, y).

Extension A list of forbidden coordinates are introduced where knight can't reach. Handle this in your code. Make sure the infinite loop is handled since the board is infinite.

Add your personal notes here

Save

Cracking Google Summer of Code 101

- Difficulty Level : \n[Medium](#)
- Last Updated : \n26 Oct, 2018

[Google Summer of Code](#) or famously known as \xe2\x80\x9cGSoC\xe2\x80\x9d is an initiative by Google to enhance the Open Source culture and projects. Open source softwares are at the core of every thing related to computer science. If you are a computer science student and are not using any open source tool/application/software/framework/platform/library and language then there\xe2\x80\x99s something really wrong with you.

Even though the importance of open source projects being gigantic, most of this projects are made out of hobby or fun by their respective project leads, and as there is no direct incentive of monetization of this projects and they lack the pace of development like proprietary or enterprise softwares. To eradicate this, every year Google organizes the GSoC under-which the potential(which have better impact and use-case) open source projects and students work for enhancing the projects.

As you can see, its a great initiative where you being a student contribute to some great project which actually enhances people\xe2\x80\x99s lives, productivity, pace of invention and makes this world a better place. LOL !

Note : Do yourself a favor and watch Silicon Valley and Mr.Robot if you haven\xe2\x80\x99t already.

Every year thousands of student apply for GSoC from around the world and only nearly a thousand student(1, 264 in 2018) get accepted. Lots of Competition. There wasn\xe2\x80\x99t any proper guide when last time I checked which elaborates on how to properly apply and maximize the chance of acceptance. As I have completed GSoC 2018 successfully, I have some insights to share.

If you are planning to apply for GSoC or don\xe2\x80\x99t have anything productive to do right now, Read along \xf0\x9f\x99\x82

Prerequisites

1. Proper knowledge of any [VCS\(Version Control System\)](#).

Mostly projects use git as their primary VCS and Github or Bitbucket as their VCS hosting service, so I would recommend learning Git and collaboration on Github.

2. Any one of the following language :

[C](#), [C++](#), [Python](#), [Java](#) and [Javascript](#).

Projects which use other languages are also present but for a fresher this are the easy and mandatory ones to know. Also if you know more languages you will have more options to choose from.

3. Couple of relevant personal open sourced projects (not mandatory, but why not ?)

4. Hunger for knowledge

Preparation

- Before even thinking about applying to GSoC you should be using atleast some open source software and must have interest in some sub-field (Machine/Deep learning, Artificial Intelligence, [Algorithms](#)\xe2\x80\x93[DS](#), [Operating Systems](#), [Database Systems](#), [Networking](#), Security, Development etc.) of computer science. The below preparation must start **before 2-3 months of official GSoC start date**.
- Head over to previous year\xe2\x80\x99s GSoC Archives (These projects are most likely to come again) and search for the project/organization you would like to contribute to according to

your interest.

- Use the software as normal user is supposed to and enumerate each and every way of using it.
- Align your learning of tech stack and knowledge as required for that project or preferably choose the one that aligns with yours.
- Head over to that project's source code repository, setup the Dev-environment, read the docs and other relevant material extensively.
- Get totally familiar with source code (will be intimidating at first but can get really easy if you do second step thoroughly).
- Contact the project lead/Community on given communication channel, ask them doubts, bugs to fix, feature enhancements etc.
- Ask them to assign any task to you and Start Contributing.

Application

After selected organizations get announced (mostly in month of February) and if your selected projects and organizations are there then no worries as at this point of time you would have contributed much to the project. If they aren't then start the preparation for the selected ones again.

Applying to GSoC consists of writing a detailed proposal of your project which highlights the purpose of project, each and every enhancement you will add during coding phase of GSoC and reasons that make you fit for the project. This needs not to be in some formal format but also should not be very informal. Proposal writing can be daunting and hard if you have not done the proper preparation as mentioned above and will not reflect the experience. This will lead to project rejection very easily. In my case the application phase of GSoC was just a formality because I had contributed and had bonded with the community of my project in a very good way. Also there are many successful proposal templates shared openly. If you are not able to decide the structure of your proposal, you can have a look at mine [here](#).

Learnings

Learnings during GSoC can vary person to person depending on their prior experience. But for me the learning and experience gain curve was very steep. The software development concepts like Test writing, Collaborated development, working with large code-bases, Maintainable coding etc. are not just concepts for me anymore as I had thorough hands-on. Also the computer science/technology concepts on which your project is based on will become your expertise.
\\xf0\\x9f\\x98\\x89

Perks

Mention of successful completion of Google Summer of Code on your resume depicts that you know how to work on code-bases of softwares which have actual user bases unlike the personal projects. GSoC is much more prestigious than internship in any low tier startup/company. So I would recommend to students of freshmen and sophomore year to apply for GSoC. Its a win-win situation for everybody involved. Students get valuable experience and hefty stipend. Open Source projects get enhanced. Google's incentive of making this world a better place LOL X) gets completed.

If you haven't already read my GSoC project report, read it [here](#).

Hope you picked up some tips.. Keep Contributing, Keep Hacking !!!
Signing off..Shoeb Patel a.k.a. CaptainFreak

My Personal Notes\\narrow_drop_up

Add your personal notes here

Save

'

b'

Software Engineer Interview at Google, Bangalore

- Difficulty Level : \n [Hard](#)
- Last Updated : \n 04 Jun, 2019

Resume filter: I got a call from a recruiter who asked about my work experience. She also asked some basic questions on complexity, worst case and best case for certain sorting algorithms.

After this, I got around 20 days for 1st round of telephonic interview.

\xc2\xd0

Telephonic interview: It was a 45 min hangout call with a Google doc shared. He directly jumped onto the question.

Q: [Given a pattern containing only 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.](#)

After a short discussion on algo, I wrote the code on shared doc. He was comfortable with the code and we finished 5 min early.

\xc2\xd0

I was called for onsite interviews 20 days after this round.

Round 1: Given (x, y) coordinates, create a function such that each coordinate is uniquely mapped to an integer. Also make sure that given an integer, you should be able to find (x, y) coordinates. So $F(x, y) = z$ and also that inverse $F(z) = (x, y)$.

Round 2: You are given an array of million numbers and provided a range of index (say left, right). For multiple queries, each with input left and right indexes, output the maximum in that range.

Round 3:

Q1) Given a room with thief on left side of the room with finite number of sensors. He has to reach on right side missing the sensors. Each sensor is placed at any random point in the room and has its coverage in the radius r. Find out if the thief can reach to the right side without touching the range of any sensor.

Q2) 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.

Lunch break: I was accompanied by a Googler where we had an informal discussion about projects he is working on, work culture and other stuff.

Round 4: [Given a string of 0 and 1, if possible, tell that how many splits would be required such that each split part is a number which can be represented as power of 5 in binary and tell the least number of splits.](#)

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

Google Summer of Code Preparation

- Difficulty Level :\n[Medium](#)
- Last Updated :\n06 Sep, 2018

Hi, Past year i was involved actively in open source contribution. One thing lead too another, in the end i was inclined to try for GSOC which overall gave me an experience worth sharing, so here i am doing it.

GSOC timeline constitute of the following (January-April):

- Organizations apply to be part of GSOC.
- After a month\xe2\x80\x99s period selected organizations are announced by google.
- Interested students join the mailing list of their desired organization out of the selected ones followed by formal introduction of themselves to the mailing list.
- Students start contributing to the repositories present and interacting with the maintainers of the repos.
- After a period of almost two months of interaction and contribution, interested people have to make a project proposal out of the given ideas and submit it via google docs after review of one of the maintainers.
- After a month\xe2\x80\x99s time the results are announced of the selected students based on their contribution and learning.

Four stages for GSOC preparation:

- Start off with contributing towards different organizations of your liking (languages and domains you prefer), based on the past data of the selected organizations.

Note: since you are starting early(like November or December)make sure to choose organizations which have been consistent part of GSOC for a long time.

- Make sure to put good number of pull requests, like improving the source code, optimizations, functional additions, improving documentations etc.
- Join gitter and interact regularly with the maintainers and other participants in order to know what they are looking for.

Note:I would strongly suggest to select your project idea(This can be out of the lot provided by the maintainers or one of your own) from the beginning and start working on it.

- Make sure to interact with the previous participants and inorder to get a clear template idea of the proposal to be drafted. The reviewers look for clarity in the project idea proposed along with your capability to do it. In their reviews they will only help you in formatting, so you are solely responsible for your content and presentation.

At the end of process only one or maximum two students are selected by any organization to be a part of GSOC. But the journey of your preparation is what matters the most.

Unfortunately, last year I was not able to make it. But in the process of doing it, i gained a lot.

I was the top contributor to my repository for 5 straight months (Weecology Retriever) with a total of 33 commits to my name,

I became a technical contributor and part of the technical review team of google\xe2\x80\x99s tensor flow project and became organizational member to opengenus.

Moreover, I won a free T-shirt by being part of the hacktoberfest hosted by github.
(That\xe2\x80\x99s where it all started)

In the end, i would say keep trying and contributing, as your hardwork would make you land somewhere good.

All The Best!!

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

b'

Google's method for preventing Phishing attacks

- Difficulty Level :
[Easy](#)
- Last Updated :
13 Aug, 2018

Technology giant Google has recently revealed the method it uses to prevent phishing attacks on its employees. Google has told that its employees have been using physical U.S.B security keys instead of the traditional passwords method for authentication.

What is phishing.?

Phishing is a type of attack where the intruders disguising as trustworthy agents attempt to gain your personal information such as passwords, credit card numbers or any other information.

For example: You may receive a mail from some attackers who disguise as bank officials asking you to reset your password for your net banking account as there has been a data breach, as you go to the site and login, the attackers get your login id and passwords, thus they can now access your account.

Physical Security Keys: Physical security keys are replacements for passwords. Whenever you have to login to some account or get access you insert the usb (which acts as the key) into your system and press a button on it, that's it, no need to remember crazy and long passwords, no OTP worries. These physical keys resemble the vehicle keys that we use.

Google revealed that the use of physical keys has made its employees safer to phishing attacks. It was revealed that there had been no phishing attacks for almost 2 years now. Physical security keys look like a promising alternative to the age-old methods of passwords. With recent attacks revealing that even your fingerprints can be cloned, these physical keys could be the future of authentication systems.

My Personal Notes\new_drop_up

Add your personal notes here

Save

Google Summer Trainee Engineering Program(STEP) Interview Experience

- Difficulty Level : [Medium](#)
 - Last Updated : [04 Jun, 2019](#)

Telephonic Interview 1. (Telephonic + Google Docs Shared)

Q1. Given an array of integers, you need to find the local maxima.

Example : [1 3 5 4 7 10 6]\r\n\r\nOutput: 5 or 10\r\n\r\nExplanation: Any of the local maxima can be the output. \r\n\r\nHe

Hint : Refer [this](#) article.

Q2. Given a sequence of brackets, how will you identify if its valid or not.

Example : ((([])))\r\n\r\nOutput: Valid\r\n\r\nExplanation: Every opening bracket has a closing bracket.\r\n\r\n\r\nExample

Hint : Refer this article.

Telephonic Interview 2. (Telephonic + Google Docs Shared)

Q1. There are 2 arrays. Smaller is of size m and has m elements in sorted order. The bigger array is of size m+n, where there are only n elements in initial n positions in sorted order. So, last m positions are empty in the bigger array. Insert smaller array into the first m positions of the bigger array such that the resulting array has all numbers in sorted order.

Example : `\r\nInput Array N[]={5, 9, 15, 20,.....} n=4\r\n` `M[]={1, 3, 6, 8, 19, 35} m=6\r\nOutput a`

Hint : Refer this article.

Q2. Given a binary tree with integer values, find the sub-path with the maximum value in it.

Hint : Refer [this](#) article.

All Practice Problems for Google !

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

b''

b'

Google Interview Experience | Set 7 (For Software Engineering Intern)

- Difficulty Level :[Medium](#)
- Last Updated :[03 Dec, 2017](#)

Round 1: Coding Sample

In this coding sample, I was given 90 minutes to answer 2 coding questions.

Question 1: Given a string A consisting of n characters and a string B consisting of m characters, write a function that will return the number of times A must be stated such that B is a substring of the repeated A. If B can never be a substring, return -1.

Example:

A = \xe2\x80\x98abcd\xe2\x80\x99
B = \xe2\x80\x98cdabcd\xe2\x80\x99

The function should return 3 because after stating A 3 times, getting \xe2\x80\x98abcdabcd\xe2\x80\x99, B is now a substring of A.

You can assume that n and m are integers in the range [1, 1000].

\xc2\xd0

Question 2: Consider an undirected tree with N nodes, numbered from 1 to N. Each node has a label associated with it, which is an integer value. Different nodes can have the same label. Write a function that, given a zero indexed array A of length N, where A[j] is the label value of the (j + 1)-th node in the tree and a zero-indexed array E of length K = (N \xe2\x80\x93 1) * 2 in which the edges of the tree are described, returns the length of the longest path such that all the nodes on that path have the same label. The length is the number of edges in that path.

Example:

A = [1, 1, 1, 2, 2]
E = [1, 2, 1, 3, 2, 4, 2, 5]

This tree is shown below. A node follows the form label, value.

-----1, 1\r\n\r\n-----1, 2 \xc2\xd0 \xc2\xd0 \xc2\xd0 \xc2\xd0 \xc2\xd0, 3\r\n\r\n-----2, 4 \xc2\xd0 \xc2\xd0 \xc2\xd0 \xc2\xd0, 5

The function should return 2, because the longest path is 2->1->3, and there are 2 edges in this path.

Assume that 1 <= N <= 1000 and each element of the array A is an integer in the range [1, 1000000000].

\xc2\xd0

Round 2: Phone Interview

In this phone interview I was given one question.

Question: Write a function that takes a list L and returns a random sublist of size N of that list. Assume that the indexes must be in increasing order. That is, you cannot go backwards.

Example:

L = [1, 2, 3, 4, 5]
N = 3

The function should return one of these lists:

\r\n[1, 2, 3]\r\n[1, 2, 4]\r\n[1, 2, 5]\r\n[1, 3, 4]\r\n[1, 3, 5]\r\n[1, 4, 5]\r\n[2, 3, 4]\r\n[2, 3, 5]\r\n[2, 4, 5]\r\n\xd0

Round 3: Phone Interview

I was again asked only one question.

Question: Given a list L of video names and their watch rates, write a function that will return the videos with the top 10 watch rates. Video names may appear more than once.

Example:

L = [(\'\xe2\x80\x98abc\xe2\x80\x99, 10), (\'\xe2\x80\x98def\xe2\x80\x99, 15), (\'\xe2\x80\x98ghi\xe2\x80\x99, 10), (\'\xe2\x80\x98abc\xe2\x80\x99, 12), \xe2\x80\x98abc\xe2\x80\x99, (\'\xe2\x80\x98xyz\xe2\x80\x99, 100)]

The function should return [\xe2\x80\x98abc\xe2\x80\x99, \xe2\x80\x98def\xe2\x80\x99, \xe2\x80\x98ghi\xe2\x80\x99, \xe2\x80\x98xyz\xe2\x80\x99]

Experience:

I solved all the questions but, unfortunately, I was not selected. Though I was not selected, I had a very positive experience. My interviewers and recruiters were all pleasant to work with. I will definitely try again next year and hopefully, I will clear it and get selected for a full time job.

\xc2\xd0

Tips\xd0for Interview:

Ask questions. The interviewer will purposely give you a vague question in hopes of you asking the necessary questions to clarify it for yourself.

Don\x9t panic. I know it can be nerve racking to go on an interview, especially if it\x99s your first. But, nerves are only going to make it worse. Collect yourself, and if you don\x9t know the answer, it\x99s okay. Think through it for a few minutes and \xe2\x80\x93m sure anyone can come up with a solution. These questions are designed for you to be able to solve in the allocated time for an interview.

THINK OUT LOUD! I can\x99t stress this one enough. You are also being judged on your thought process. If your interviewer doesn\x99t know what you are thinking, they can\x99t throw you hints or correct you in any way. And believe me, they want to see you succeed. They are there to help you and guide you through the problem.

Other than that, study, study, study. Do as many algorithmically challenging problems as you can. Cracking the Coding Interview and Geeks for Geeks will be your best friends through the study process. Take advantage of these resources.

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

b'

Google Interview Experience | Set 6

- Difficulty Level :\n[Medium](#)
- Last Updated :\n14 Sep, 2017

It was a nice experience to be part of google placement programme. There were 4 Rounds
The online test consists of 4 modules.

For each module, a timer is set (at the right-hand side bottom of the screen).

Total time given is 40 minutes.

Module 1: English (duration 5 min):

It consists of a single passage followed by 5 questions.

Module 2: General aptitude (duration 10 min):

Module 3: Technical questions (duration 15 min):

It consists of 15 questions where some are web based, HTML, protocols Etc. For this section going through COMPUTER NETWORKS subject will be helpful to a great extent.

Module 4: Test on Analysis (duration 10 min):

This section is the most time consuming one. Here we are asked to Rate certain sites along with an explanation. The images of these sites are also provided to us for a clear view and better understanding.

This article is contributed by **Akash Kandpal(harrypotter0)**. 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.

Please write comments if you find anything incorrect, or you want to share more information about the topic discussed above.

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

b'

The Google Foo Bar Challenge

- Difficulty Level :\n[Medium](#)
 - Last Updated :\n29 May, 2018

The Google Foo bar challenge has been known for the last 5 years or more as a secret process of hiring developers and programmers all over the world. It is a secret process and the challenge consists of coding challenges of increasing difficulty as you go along.

My Experience with the Google Foo Bar Challenge

The Google foo bar page is not accessible to everyone. Google has a list of what the user goes searching for and if it finds it relevant to programming, it gives the user an opportunity to participate in the foo bar challenge.

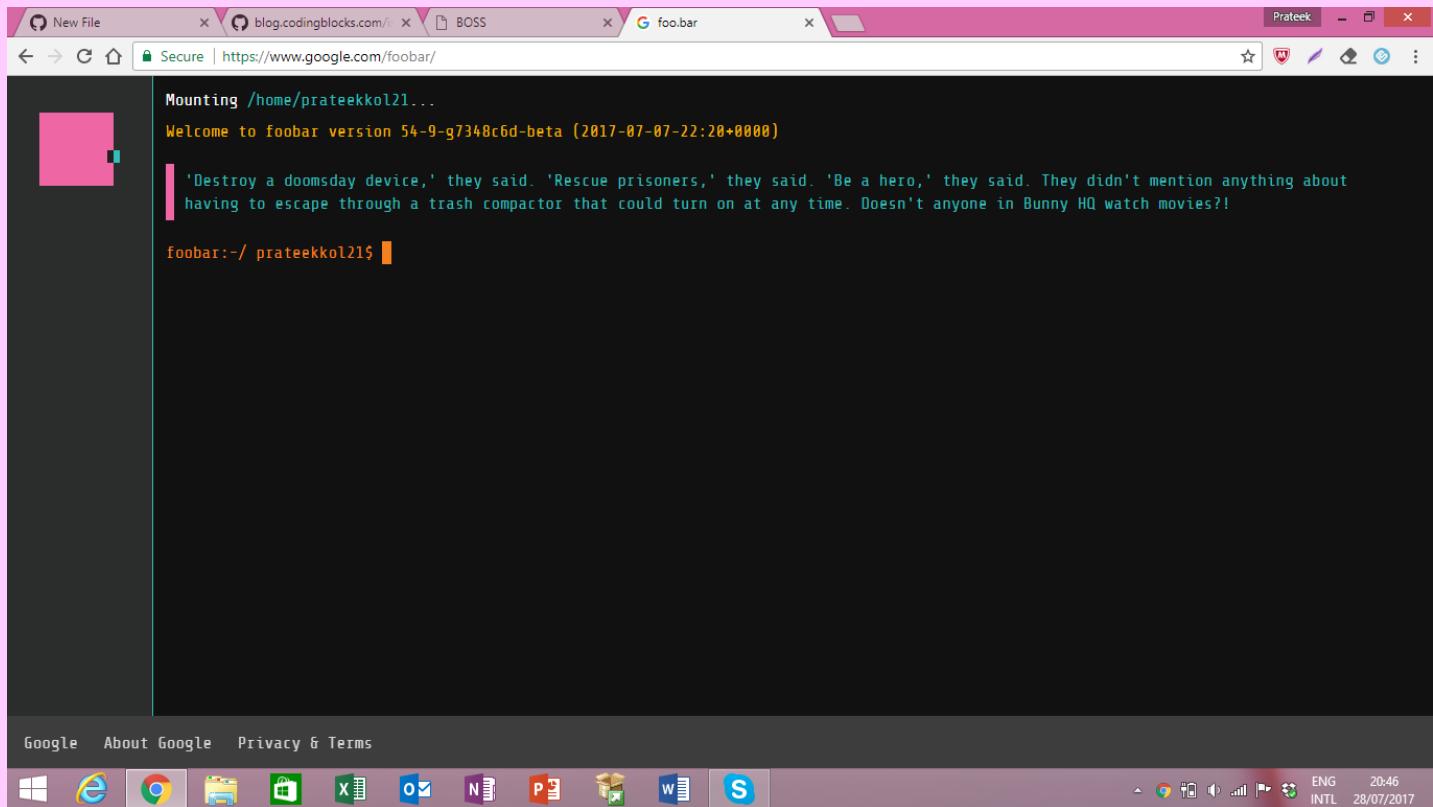
The message reads like this.

**You are speaking our language.
Up for a challenge!**

In my case, it didn't go the traditional way. During the ICC matches a few months ago, Google had updated their doodle with a small cricket game with players as ants.

Just out of curiosity, I went on for inspecting the page, when suddenly there was a comment under a `\xe2\x80\x99`i`\xe2\x80\x99` tag.

\xe2\x80\x9cUp for a challenge. You are invited\xe2\x80\x9d. And there was a link and I opened it and it redirected me to a new page \xe2\x80\x98Foo.bar\xe2\x80\x99



Its kind of like a linux console where you get to solve the problems one by one upon opening a new problem directory.

The Challenge

The challenge consists of 5 levels consisting of algorithm problems. I won't share the problems, neither the solutions as it would be unfair. But it was really a great experience so far.

The first few levels were relatively easy, but as the levels peaked up, the difficulty gained heights.

Currently I am on level 4 and just have one more label to go.

The screenshot shows a browser window with several tabs open. The active tab is 'Secure | https://www.google.com/foobar/'. The page content displays a terminal-like interface for the Google Foobar challenge. It includes a welcome message, a story snippet, and a status command output showing progress for five levels (Level 1: 100%, Level 2: 100%, Level 3: 100%, Level 4: 50%, Level 5: 0%). A 'Refer a friend' link is also present.

```
Mounting /home/prateekkol21...
Welcome to foobar version 54-9-g7348c6d-beta (2017-07-07-22:20+0000)

'Destroy a doomsday device,' they said. 'Rescue prisoners,' they said. 'Be a hero,' they said. They didn't mention anything about having to escape through a trash compactor that could turn on at any time. Doesn't anyone in Bunny HQ watch movies?!

foobar:-/ prateekkol21$ status
Current level: 4. Challenges to complete level: 1.

Level 1 100% [=====
Level 2 100% [=====
Level 3 100% [=====
Level 4 50% [=====
Level 5 0% [=====

Refer a friend: https://goo.gl/553J0n [used]
foobar:-/ prateekkol21$
```

Google About Google Privacy & Terms



ENG 20:46
INTL 28/07/2017

Upon completing level 3 , I had to submit my personal details with a potential recruiter for a future interview.

The Google Foobar is presumably still hiring and its needed to submit solution either in Python or Java.

I don't know about the future upcomings for this, but to be honest I really enjoyed the challenges.

Looking forward to solve more.

This article is contributed by **Prateek Chanda**. 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.

Disclaimer : The information provided in this article is not found on any of the Google sites. However there is a [quora threads](#) about this.

Please write comments if you find anything incorrect, or you want to share more information about the topic discussed above.

My Personal Notes\new_drop_up

Add your personal notes here

Save

b''

b'

Google Interview Experience | Set 5 (for Java Position)

- Difficulty Level :[Expert](#)
- Last Updated :[02 Jan, 2016](#)

The solution will be evaluated on following parameters.

Object Oriented Design aspects of the solution.

Overall coding practices.

Working test cases of the solution.

You can use Ant/Maven as build tools for the solution, Junit, Mockito or other testing frameworks. You may also include a brief explanation of your design and assumptions along with your code.

Problem Statement: In a Formula-1 challenge, there are n teams numbered 1 to n. Each team has a car and a driver. Car's specification are as follows:

Top speed: $(150 + 10 * i)$ km per hour

Acceleration: $(2 * i)$ meter per second square.

Handling factor (hf) = 0.8

Nitro : Increases the speed to double or top speed, whichever is less. Can be used only once.

Here i is the team number.

The cars line up for the race. The start line for $(i + 1)$ th car is $200 * i$ meters behind the i th car.

All of them start at the same time and try to attain their top speed. A re-assessment of the positions is done every 2 seconds (So even if the car has crossed the finish line in between, you'll get to know after 2 seconds). During this assessment, each driver checks if there is any car within 10 meters of his car, his speed reduces to: $hf * (\text{speed at that moment})$. Also, if the driver notices that he is the last one on the race, he uses Nitro.

Taking the number of teams and length of track as the input, Calculate the final speeds and the corresponding completion times.

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 Google !](#)

My Personal Notes\Narrow_Drop_up

Add your personal notes here

Save

b'

[TopTalent.in] Interview With Divanshu Who Got Into Google, Mountain View

- Difficulty Level :\n[Hard](#)
- Last Updated :\n15 Nov, 2014

Even if we were to search around the world, it would be a truly difficult job to find someone like



Divanshu. As a Computer Science Graduate of IIIT Allahabad, he successfully bagged job offers from an astounding three companies all being some of the best and most admired companies Google, DE Shaw and CodeNation. We at [TopTalent.in](#) spoke to Divanshu from IIIT Allahabad about the Google Interview Process, how he managed to crack it and what are his suggestions for aspirants looking to achieve something similar.

You can [download](#) his resume by logging in to your account on TopTalent.in.

TopTalent: How do you feel on achieving this rare feat?

I feel elated and happy on cracking the Google, Mountain View offer. It is a dream come true to work for one of the most prestigious IT organization. I am really looking forward to be a part of the organization next year. It was possible only due to constant support of my parents and my elder brother who were more than happy to know that I have achieved this wonderful feat.

TopTalent: What other offers did you get apart from Google?

I had interned at D. E. Shaw during the summer of 2014 and got a PPO afterwards. I also got an offer from CodeNation which is a startup under the Trilogy group.

TopTalent: Can you brief us the interview process?

I participated in the Google APAC Code Jam. I stood first in India and seventh globally by solving three out of four problems. All the problems in this round required good knowledge of Algorithms. Based on the performance, Google called me for on-site interviews at their Bangalore office. There were a total of four interviews and involved questions from Programming, Algorithms, Data Structures and Operating System.

TopTalent: Can you give us a brief account of what you felt was the toughest interview?

According to me, all the four interviews had a similar difficulty level. During all the interviews, the difficulty bar was raised slowly as we approached the end of the interview. The interviewers presented a tougher question than what you have already answered.

TopTalent: What was your preparation strategy?

I was preparing for the ACM ICPC contest which played a very big role in improving my knowledge of algorithms, data structures and mathematical reasoning. It helped me to code my logic faster and accurately. Apart from that, I revised my Operating System and Database Management System

courses. I also went through my past projects to gain an insight into each one of them.

TopTalent: What kind of skills do you think helped you getting this job?

My major skill is Programming and Algorithms. I have a good rank on Topcoder and other websites which was an advantage. Along with that, I have explored many different fields which helped me a lot. I have good knowledge of web development and mobile application development. I have also worked on projects involving Machine Learning, Information Retrieval and Image Processing.

TopTalent: What resources did you consult? Where did you practice problems from?

For algorithms, I practiced on Topcoder, Codeforces and Codechef participating actively in their regular contests. Introduction to Algorithms by [CLRS](#) is a nice book on algorithms. You can also learn from Topcoder Tutorials and various online blogs written by active programmers. For Operating System and DBMS, the course books are enough if you read them thoroughly.

TopTalent: Were grades a factor in you getting selected?

I was required to send all my grade cards after one week of the interview process. Then they reviewed everything and the offer was given. So, I believe that grades were also a factor involved in the selection process.

TopTalent: What\xe2\x80\x99s your advice to students who are aiming for similar placement offers as yours?

Everyone has interests in different domains. One must ensure that they learn more and more about their area of interests. One should be very comfortable in expressing a thought process in any programming language of their choice since most of the companies look for your accurate implementation of the given problem. Also, Codeforces and Topcoder are nice websites to regularly practice your algorithmic skills and improve your problem solving as well. Students should also keep a focus on developing good projects to explore a variety of technologies.

In case you missed, you can also [download](#) his resume by logging in to your account on TopTalent.in

This article is powered by [TopTalent.in](#) \xe2\x80\x93 A high end Job portal for students and alumni of Premier Colleges in India. Sign up now for free exclusive access to top notch jobs in India and abroad. Get in touch with them via [facebook](#), [twitter](#) or [linkedin](#). 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 Google !](#)

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

b'

Google Interview Experience | Set 4

- Difficulty Level :\nHard
- Last Updated :\n04 Jun, 2019

Though I didn't clear google but I want to share my Google interview experience , so it can help other\xe2\x80\x99s . Please find my interview experience below:

My Google Interview Experience for Software Developer Position [Android Core Team], London, United Kingdom

Like many other enthusiastic engineers, I too applied for a job at Google. I know that its very difficult that a resume gets noticed by google.

Suddenly, one fine day I received a Mail(\xe2\x80\x9cHello from Google !\xe2\x80\x9d) from Google\xe2\x80\x99s HR saying that they are interested in my profile and asked me if I was ready to go ahead with the interview process[Come on! you cant say no to Google].

Round1(Phone interview) :

By:Talent Scout @Google:

* Questions from Project :

Spell Corrector:

How it works , Bigram and ngram model approach, etc.

* Why should one use merge sort over quick sort and vice-versa.

* You have a very large array of \xe2\x80\x98Person\xe2\x80\x99 objects .Sort the people in increasing order of age .

General :

Then came the exciting part when he asked me to choose location b/w **Google Paris**(Text-Speech Team) or **Google London**(Android Core Team).

He explained how Google work\xe2\x80\x99s on their projects !

About Google interview process (2-3 phone interview + 4-5 onsite interview in London).

Round2:(Phone interview + coding on shared google doc)

By:Software Developer @Google :

* Questions from Project:

Bi-directional Sync b/w mysql and sqlite db.

* Given a number , check if it can be represented in 5^n form , where n is positive integer .

* Given a string of words with lots of spaces between the words , remove all the unnecessary spaces like

\r\n input: I live on earth \r\n output: I live on earth

Round3:(Phone interview + coding on shared google doc)

By:Software developer @Google :

- * Optimize a^b
- * How would you split a search query across multiple machines?
- * You need to develop the game Snake. What data structures will you use? Code your solution.

Some additional hints for the interview:

Clarify the question \xe2\x80\x93 make sure you understand everything.

Try to find the most efficient solution.

Come up with solutions quickly: even if its a brute force solution. Always iterate away from the original solution.

Before you start coding explain why you\xe2\x80\x99re approaching it that way ,its ok to start off with a naive solution and try to make it more efficient.

Explain the rationale behind the steps you are doing.

Think out loud, keep things technical. The engineers will give you hints: take a hint! They are there to help you!

Always write \xe2\x80\x9ccompilable\xe2\x80\x9d code.

Mind edge cases. Find bugs in your code.

\xc2\xab

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 Google !**](#)

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

b'

[TopTalent.in] \xe2\x80\x9ct\xe2\x80\x99s the best feeling of my life\xe2\x80\x9d says Krunal after cracking Google, Mountain View

- Last Updated :n24 Sep, 2014

\xe2\x80\x9cI will never forget the day I received my offer letter. Its a dream come true.\xe2\x80\x9d



Landing a job in Arista Networks would ideally be a dream opportunity for many but for Krunal Patel from BITS Pilani \xe2\x80\x93 Goa it was just the beginning. We at [TopTalent.in](#) spoke to Krunal about the Google Interview Process, how he managed to crack it and what are his suggestions for aspirants looking to achieve something similar.

You can also [download](#) his resume by logging in to your account.

TopTalent: Can you tell us about the interview process?

Google conducted APAC test for 2015 graduating students in Asia pacific regions. I was 8th overall and 2nd in India after Divanshu. I was called for interviews at Google Bangalore office after that. I had 4 interviews in total and all of them were based on data structures and algorithms. A few basic questions were also asked from OS.

TopTalent: Can you give us a brief account of what you felt was the toughest interview?

According to me all the interviews were of similar difficulty level. They were testing different domains in Algorithms and Data structures. The last interview was relatively at a bit higher difficulty level.

TopTalent: What was your preparation strategy?

I revised all my computer science CDCs before the placement season started. Lecture slides were good enough for that. I prepared for the GATE exam in the beginning of the year and it saved a lot of time for me during placement season. In my last 4 years my goal was to learn as many new technologies as possible. I gained introductory knowledge in web designing, Machine learning, Network Science, Application development etc. Apart from that I regularly practiced on codechef and topcoder to improve my programming and problem solving skills. I also thoroughly revised my projects which were mentioned in my resume before the interviews.

TopTalent: What kind of skills do you think helped you getting this job?

Mainly programming skills. I like participating in various programming contest and it improved my knowledge in algorithms as well as my programming skills. For eg. I learned to spend more time in designing the solution than in coding. Special thanks to my friend N Hari Prasad (Google Hyd) who guided me all the time.

TopTalent: What resources did you consult? Where did you practice problems from?

For my computer science subjects I mainly used my textbooks and lecture slides. For Algorithms I used Cormen and various tutorials on internet.

TopTalent: How was Competitive Programming in the interview?

By participating in such competitions and practicing in topcoder, I improved in terms of speed , Accuracy , Efficiency , and problem solving approaches. All of them plays crucial role in interviews where we are asked to design and code the solution for an unseen problem

TopTalent: Were grades a factor in you getting selected?

Google asked for my grade sheet after all the interviews were over. Hence it was part of their review process. Good grades always make a better impression.

TopTalent: What\xe2\x80\x99s your advice to students who are aiming for similar placement offers as yours?

- 1) Writing code after you solve a question or learn a new data structure or algorithm is equally important. Make a habit to write neat and readable code as that helps your entire team. Make sure you get your code reviewed. In case of programming puzzles, see the setter\xe2\x80\x99s solution.
- 2) Attend your classes regularly.
- 3) Find your passion and never give up on it. Rest all follows.
- 4) Keep yourself updated with new technologies.

In case you missed, you can also [download](#) his resume by logging in to your account.

This article is powered by [TopTalent.in](#) A high end Job portal for students and alumni of Premier Colleges in India. Sign up now for free exclusive access to top notch jobs in India and abroad. Get in touch with them via [facebook](#), [twitter](#) or [linkedin](#). 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 Google !**](#)

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

Top College: No, Top Talent: Yes ; Anudeep cracks Google

- Difficulty Level :\nHard
- Last Updated :\n06 Dec, 2019



Anudeep Nekkanti embodies the old adage \xe2\x80\x93 there is no substitute for talent. The 21-year-old coder from Samalkot (a small town near Vishakhapatnam) has landed an offer from Google, Zurich.

What makes Anudeep\xe2\x80\x99s feat commendable is that he was not placed out of the cream colleges of the country. No he is not an IITian, NITian or BITSian! A B.Tech student in computer science from Anil Neerukonda Institute of Technological Science, Vishakapatnam, he considers his preparation and performance in programming competitions the reason for his success at cracking the google interview process.

We at toptalent.in had the opportunity to interact and pick Anudeep\xe2\x80\x99s brain to gain valuable insights into developing the right skills to be successful at getting recruited at Google.

Toptalent: How do you feel on achieving this rare feat?

Anudeep: It always feels great to achieve something rare. I was happy after knowing about it, but the real joy was after knowing how much my parents and well-wishers enjoyed the news. There is a lot of hype about being Googler, excited to see what it is really. Also excited about Zurich and Swiss chocolates

Toptalent: What made you chose your particular college and course?

Anudeep: I did not know about IIT-JEE or AIEEE. I did not dream about joining particular college. I almost never took decisions back then. My dad is cool, he does not believe that education is everything and he did not want me to only concentrate on studies. So, when joining 11th standard, he asked me if I want to opt for JEE training.\xc2\xabNot knowing what it is, my initial answer was yes but then he realised that I had no knowledge of what I was getting into and made me change my mind, and I am grateful to him for that.

My EAMCET (State board common entrance test) rank was in the seven thousands. I had never lived outside of my town. So I wanted to stay away in a city and study, at the same time I did not want it to be too far from my home. Visakhapatnam was the best choice.

Initially I was supposed to take Electronics. My sister, who had finished B.Tech in computer science by then told me \xe2\x80\x9cCS is easy, you can start preparation one day before exams and clear them\xe2\x80\x9d. Well, I was looking to enjoy a lot in engineering and this line was perfect! It had so much impact. I just decided to take Computer science. It turned out to be one of the best decisions I have taken. CS is not easy, it is fun!

TopTalent: How many interviews were held in all?

Anudeep: Telephonic Interview initially. Then six onsite interviews at Google Hyderabad, then manager interviews.

Toptalent: Can you give us a brief account of what you felt was the toughest interview?

Anudeep: Hard to pick a single interview. Of the eight rounds I had with Google, couple of them were tough, one of those rounds lasted two hours on a single question.

Toptalent: What was your preparation strategy?

Anudeep: I did not prepare on anything specific for Google interview, I knew that my strength is algorithms and data structures. I did not want to read about other topics only for the purpose of job. I was hoping that only algo related stuff was asked. I was lucky with Google, all my interviews, all the questions were related to algorithms, data structures and programming.

Toptalent: What kind of skills do you think helped you getting this job?

Anudeep: It is competitive programming. I should say I was lucky about it. It is true that majority of hiring is biased towards competitive programming. One can clear these interviews by having good knowledge only about algorithms and data structures. Open source contributions, projects and machine learning are 3 other skills I would list.

Toptalent: Tell us a bit about competitive programming and how you became good at it.

Anudeep: It is similar to any other sport. One need to have a lot of interest to perform. One need to put a lot of effort to top. We say someone is \xe2\x80\x98out of form\xe2\x80\x99 or \xe2\x80\x98in form\xe2\x80\x99 in sports, true for competitive programming too, you need to keep doing them to be in good touch. And most importantly, at some point of time you realize that \xe2\x80\x98This sport is not correct for me\xe2\x80\x99, it can be true with programming too, and when this happens do not hang on to it, move on there are lot more things to do. How did I become good at it? I played it a lot. Concentrated practice is all that matters.

Toptalent: What resources did you consult? Where did you practice problems from?

Anudeep: Firstly, I solved about 300 problems on SPOJ (Sphere Online Judge). I came to know about online judge for the first time in 2012 Jan. That was because of IOPC (programming contest by IIT Kanpur).

Practice was my mantra. I used to try a problem for 2-3 hours. If I didn\x9t get it, I looked for solutions on forums. I read few tutorials on TopCoder, but I did not know that TopCoder also has algorithm problems. I participated in following August\xe2\x80\x99s long contest, I was lot better this time, I could solve 7 problems.\xc2\x96 Ended\xc2\x96 35th in Global ranking.

With this limited exposure to programming I went to participate in ACM ICPC Regionals. I could solve 4 problems there at onsite. I then understood that knowing how to solve is not enough, it is the ability to think and code fast is more important.

By August end I solved about a hundred and eighty\xc2\x96 500 pointers. I slowly started to think dynamically. By then I was able to solve four out of five problems. Now I am quite comfortable with 500 pointers. So, to conclude\xc2\x96 all that matters is sheer practice.

Programming is fun, programming is easy. My failure at IOPC 2012 made me start it. I thought, I will do well in IOPC 2013 and stop programming. That is how I started it. Very soon I started to like it, then I got addicted to it. I enjoy the feel that I get when I see \xe2\x80\x98Accepted\xe2\x80\x99. That awesome green color. My heart beat raises whenever I submit a solution. I get goosebumps. It was that fun that kept me going. Don\x9t do it, Play it. Enjoy it, it is a fun game. After 21 months, I am still deeply in love with it. Right now I am preparing for world finals. I am doing problems from various on-line judges like Topcoder, Codechef, Codeforces.

Toptalent: Were grades a factor in you getting selected?

Anudeep: No. I did not mention much about my grades in my CV. My CV only says B.Tech 4th year, 8 CGPA till date.

Toptalent: Tell us more about your final location choice, Zurich?

Anudeep: I had to risk my job for Zurich. I was initially offered London, Bangalore and then Hyderabad. I told I do not want to take those position, and was in a situation of being completely rejected by Google. But I was okay with that too so I told no to those 3 positions. 70 days after my onsite interview I was finally given Zurich.

Toptalent: Whats your advice to students who are aiming for similar placement offers as yours?

Anudeep: I see that a lot of Indians are putting a lot of effort into competitive programming (mainly for placement offers) with not so good results. Trust me, do it with complete concentration for a month, by then you will exactly know if you have to continue in this field or not. If you feel you should not continue, stop it, do not hang on to it hoping for offers. Use your time on other stuff.

This article is powered by \xc2\xabTopTalent.in\xc2\xd0\xe2\x80\x93 A high end Job portal for students and alumni of Premier Colleges in India. Sign up now for free exclusive access to top notch jobs in India and abroad. Get in touch with \xc2\xabthem\xc2\xd0\xvia\xc2\xabfacebook\xc2\xd0\xc2\xabtwitter\xc2\xd0\xor\xc2\xablinkedin\xc2\xd0\x. 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 Google !**](#)

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

b'

Google Interview Experience | Set 3 (Mountain View)

- Difficulty Level : \n[Expert](#)
- Last Updated : \n04 Jun, 2019

About myself: I was contacted on Linkedin by a Google recruiter. I have 4 years of experience.

Phone screen

Warm-ups

- 1) Manually calculate bits in 146
- 2) Tell difference between big-endian and little-endian

Actual questions

- 1) [kth largest element in array](#)
- 2) [Find minimum number of steps to reach the end of array from start](#) (array value shows how much you can move). DP question

Next day recruiter called me for onsite interview.

I scheduled my onsite interview after 30 days to give myself sufficient time to prepare.

Onsite interview

Round 1

- 1) Design question based on storing images. Stress on performance and scale.
- 2) Divide number and return result in form of a string. e.g 100/3 result should be 33.(3) Here 3 is in brackets because it gets repeated continuously and 5/10 should be 0.5.

Round 2

- 1) [Median of stream of numbers](#)
- 2) Question like pancake sorting where you can only swap to sort an array of characters.

Round 3

- 1) [Find count of a number in sorted array.](#)
- 2) Design two player battleship game to be played over internet

Round 4

- 1) Design question based on wearable devices.
- 2) Draw a line on 2D array of boolean. You will be given start point and end point co-ordinates.

Round 5

- 1) Compare two documents(string array) based on n grams.
e.g doc1 \xe2\x80\x93 Today is Sunday.
doc2 \xe2\x80\x93 Today is Saturday
if n = 2 then number of duplicates is 1 (Today is)
if n = 1 then number of duplicates is (Today, is)
if n = 3 duplicates is 0

Final comments \xe2\x80\x93 You must do graphs, DP, string, array, bits and Link list questions from geeksforgeeks.

Design questions are much harder to answer than it seems. Prepare hard for them.

I appeal geeksforgeeks team to post more questions on design.

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 Google !](#)

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

b'

[TopTalent.in] What it takes to be a Googler? An Interview with Google's recent hire Romal Thoppilan

- Difficulty Level : [Basic](#)
- Last Updated : [28 Apr, 2017](#)



There is a myth that only grads with high CGPA land in high paying dream companies. Despite his average grades, Romal with his extraordinary coding talent and determination succeeded in getting a job offer from Google. I would like to create something disruptive in the fields of Data Science and Mining, and I believe Google is the right place to start my career, says the myth buster. We at TopTalent.in got a chance to interact with him about what made this possible and what others can learn from this.

In case you are wondering how the resume of a Google recruit looks like, you can download the resume by logging in.

TopTalent : Could you briefly describe your student days at BITS Pilani ?

Romal always considered myself fortunate to be pursuing my degree at BITS Pilani. The curriculum here is quite flexible giving enough scope to nurture your interests apart from academics. I tried to make the most of it by being able to complete few higher degree courses in undergrad itself. The faculty here is pretty knowledgeable, I spent some great time working along with them in projects. Also the students here share great enthusiasm towards their career and play a big role in your development.

TopTalent : What makes Google special?

Romal Google certainly ranks among the top companies to work at and the quality of the products and services they offer is well known. Also working in Google allows one to pursue his own interest along, since Google has such wide ranges of projects to offer. The work environment and the culture there adds every bit of fun to it.

TopTalent : How much preparation did you put in to bag this opportunity?

Romal Unlike most others, I took my time off. My primary objective was to complete and furnish off some of my incomplete projects, so that I could be confident about them during placements. For programming, I used to practice codeforces problems. The contests it organizes contains a real good mix of mathematical, logical and algorithmic problems, and poses an environment much similar to coding rounds during placements. Besides, I had completed most of the algorithms from Cormen and then shifted to GeekForGeeks to refer to past years interview experiences.

TopTalent : Can you describe the complete hiring process of Google?

Romal The whole hiring process was pretty smooth actually. It had one written round based on your overall knowledge of the field which basically had a few aptitude and coding

questions. The shortlist was announced after two weeks and we were called for an on-site interview at its Bangalore office. Then followed four back-to-back interviews, mostly algorithmic. We were allowed to write the code through whichever medium we were comfortable with. I toggled through all \xe2\x80\x93 pen, board and online editor. There was very little delay and the accommodation and food were pretty good. Finally within a week, I got the CALL!

TopTalent : \xc2\xd0What topics do you think students should prepare for similar jobs like that of yours?

Romal : Firstly, they should have regular coding practice as most companies now prefer using coding rounds for shortlisting. The problems asked normally don't require any deep knowledge of algorithms. They are to test your speed and logical thinking. Then comes personal interviews. Most of the companies prefer asking algorithmic problems. However, these questions could indirectly test your basics around other topics like operating systems and database management system as well. Mostly if your basics are clear, they look at the way you think and reach the solution.

TopTalent : \xc2\xd0From your experience, what are some of the important factors that the interviewers will be looking out for?

Romal : Many believe that interview questions keep on repeating every year so they could just mug up everything to clear such interviews. This brute force way doesn't even work out for regular jobs let alone Dream Companies. In one of my interviews, the interviewer asked me a question which I had never seen before. When I finished reading the problem, he asked me to speak out everything that came to my mind and to not stop speaking till I reach some solution. Luckily for me, I did arrive at some solution. It was a mind boggling experience. These kind of interviews end up testing your thinking abilities more than anything. For Jobs like the one I am going to join, strong basics in algorithms and critical reasoning skills are essential. These are the two most important qualities that interviewers will be looking in you. *The answer impresses nobody, the way you reach there is what matters.*

TopTalent : \xc2\xd0What role does resume and CGPA play for applying to such jobs?

Romal : Resume serves two purposes. Firstly, getting you shortlisted for the interviews and secondly, to give a brief idea of the things you have been working around and are comfortable with. This generally guides the interviewer to choose what to ask and what not to ask from. I personally referred to \xc2\xd0\xe2\x80\x98Cracking the coding Interview\xe2\x80\x99 for building my own resume. It contains a number of Do's and Dont's for resume building.

CGPA was never a thing to boast about in my resume. For most of the companies it just plays a role in the initial shortlisting. However for research based companies your CG does play a significant role. Though a high CG is a good thing to have, its just an indicative of how disciplined you are rather than a measure of your talent.

TopTalent : \xc2\xd0Would you like to share something exclusively for job seekers from elite colleges ?

Romal : Do not restrict yourself to some specific domain or subject, at least not at the undergrad level, but always have an overall sight of things and how they interrelate. Follow your interests and be good at it. Make most of the opportunities you get to learn as a part of your curriculum or through other online sources. And do possess a go-code mindset.

This article is powered by \xc2\xd0[TopTalent.in](#)\xc2\xd0\xe2\x80\x93 A high end Job portal for students and alumni of Premier Colleges in India. Sign up now for free exclusive access to top notch jobs in India and abroad. Get in touch with \xc2\xd0them\xc2\xd0via\xc2\xd0[facebook](#), \xc2\xd0[twitter](#)\xc2\xd0or\xc2\xd0[linkedin](#). 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 Google !](#)

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

b'

Google Interview Experience | Set 2 (Placement Questions)

- Difficulty Level :[Medium](#)
- Last Updated :[28 Apr, 2017](#)

MCQ Questions: 20 (+4, -1)

Subjective Question: 1

1) Given four matrices

$$P = 20 \times 3 \times 9710$$

$$Q = 10 \times 3 \times 975$$

$$R = 5 \times 3 \times 9710$$

$$S = 10 \times 3 \times 9710$$

Find minimum no. of multiplication required for $P \times Q \times R \times S$?

- a) 4000
- b) 2500
- c) 3000
- d) None Of These

2) Two n-size arrays are given . n1 in decreasing order and n2 in increasing order. If c1 is time complexity for n1 using quicksort and c2 is time complexity for n2 using quicksort. Then

- a) $c_1 > c_2$
 - b) $c_1 < c_2$
 - c) $c_1 = c_2$
 - d) None of these
- 3) If there is a N sorted array then what is time complexity of finding 2 no.s having sum less than 1000.**
- a) $O(1)$
 - b) $O(n^2)$
 - c) $O(n)$
 - d) $O(\log n)$

4) There are some process . In which of the scheduling algo CPU utilization is minimum. If I/O burst time is 90ms and CPU burst time is 10ms.(question is very long to remember)

5)

```
\r\nint func(int x, int *y, int **z)\r\n{\r\n    int p, q;\r\n    x += 2;\r\n    p = *y++;\r\n    q = **z++;\r\n    q = **z++;\r\n    //
```

6) Find the least significant digit of $2^{33} \times \text{google}$ where google=10^100.

- a) 2
- b) 4
- c) 6
- d) 8

7) Let w(n) and A(n) denote respectively, the worst case and average case running time of an algorithm executed on an input of size n. which of the following is ALWAYS TRUE?

- a) $A(n) = \Omega(w(n))$
- b) $A(n) = \Theta(w(n))$
- c) $A(n) = O(w(n))$
- d) $A(n) = o(w(n))$

8) Consider a complete undirected graph with vertex set {0, 1, 2, 3, 4}. Entry W_{ij} in the matrix W below is the weight of the edge {i, j}.

```
\r\n0 1 8 1 4\r\n1 0 12 4 9\r\nW = 8 12 0 7 3\r\n      1 4 7 0 2\r\n      4 9 3 2 0
```

What is the minimum possible weight of a spanning tree T in this graph such that vertex 0 is a leaf node in the tree T?

- a) 7
- b) 8
- c) 9
- d) 10

9) In the graph given in question 8, what is the minimum possible weight of a path P from vertex 1 to vertex 2 in this graph such that P contains at most 3 edges?

- a) 7
- b) 8
- c) 9
- d) 10

10) A hash table of length 10 uses open addressing with hash function $h(k) = k \bmod 10$, and linear probing. After inserting 6 values into an empty hash table, the table is as shown below.

```
\r\n0| 1| 2| 3| 4| 5| 6| 7| 8| 9|
```

Which one of the following choices gives a possible order in which the key values could have been inserted in the table?

- a) 46, 42, 34, 52, 23, 33
- b) 34, 42, 23, 52, 33, 46
- c) 46, 34, 42, 23, 52, 33
- d) 42, 46, 33, 23, 34, 52

11) How many different insertion sequences of the key values using the same hash function of question 10 and linear probing will result in the hash table shown above?

- a) 10
- b) 20
- c) 30
- d) 40

12) The recurrence relation capturing the optimal time of the Tower of Hanoi problem with n discs is

- a) $T(n) = 2T(n/2) + 2$
- b) $T(n) = 2T(n/2) + n$
- c) $T(n) = 2T(n/2) + 1$
- d) $T(n) = 2T(n/2) + 1$

13) Given three semaphores, S0, S1 and S2 initialized as S0=1, S1=0, S2=0 and processes P0, P1 and P2.

```
\r\nP0 : while(true)\r\nP0, P1 and P2.\r\nP0 : while(true)\r\n{\r\n    wait(S0);\r\n    printf(\xe2\x80\x9c 0 \xe2\x80\x9c);\r\n}
```

Find out how many times the process P0 executes printf statement.

- a) At least twice
- b) Exactly once
- c) Exactly twice
- d) Exactly thrice

14) Given the following program construct

```
\r\nif ( a == b ) { S1; exit(); } \r\nelse if ( c==d ) { S2; } \r\nelse { S3; exit(); } \r\nS4;\r\n
```

Given 4 test cases, find out which one among the following covers all the 4 statements

- T1: a, b, c and d are same.
 - T2: a, b, c and d are all distinct.
 - T3: a == b and c != d.
 - T4: a != b and c==d.
- a) T1, T2 & T3;
 - b) T1, T4.
 - c) T2, T4.
 - d) T1, T2 & T4.

15) Which of the following statements are true?

- I. Shortest remaining time first scheduling may cause starvation
 - II. Preemptive scheduling may cause starvation
 - III. Round robin is better than FCFS in terms of response time
- a) I only
 - b) I and III only
 - c) II and III only
 - d) I, II and III

16) Sequences of logical pages access :

1 2 3 2 4 1 3 2 4 1

Implemented Optimal,LRU,FIFO Page replacement techniques.

Then no. of page faults in :

- a) Optimal < LRU < FIFO
nb) Optimal < FIFO < LRU
nc) Optimal = FIFO
nd) None
- 17) Find the no. of page faults for Optimal Page replacement technique in the given sequence of question no. 16.**

- a) 5
- b) 6
- c) 7
- d) 8

18) Given a simple graph of 6 nodes (note- it\x80\x99s a simple graph) then tell which of the following is a set of valid graph degrees.

- a) 4,4,1,1,1,1
- b) 4,4,2,1,1,1
- c) 4,4,2,2,1,1
- d) None

19)

```
\r\nngcd(n,m)\r\n{\r\n    if (n%m == 0)\r\n        return n;\r\n    n = n%m;\r\n    return gcd ( m, n );\r\n}
```

What is the complexity of calculating gcd(n, m) in worst case?

- a) O(lgn)
- b) O(lgm)
- c) O(lg(lgn))
- d) O(lg(lgm))

20)

```
\r\nvoid f(char * x)\r\n{\r\n    x++; \r\n    *x = '\a';\r\n}\r\nint main()\r\n{
    char * str = "hello";
    f(str);
}
```

- a) hello
- b) hallo
- c) allo
- d) empty string

SECTION B \xe2\x80\x93 Subjective Question

A knight's tour is a sequence of moves of a knight on a chessboard such that the knight visits every square exactly once. Find all the distinct tours of a knight placed on (x,y) of a NxN chessboard.

X,Y Knight can go to 8 positions.(default rule). Write a running code.

These questions are contributed by **Harshit Gupta**. 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 Google !](#)

My Personal Notes\narrow_drop_up

Save

b'

Google Interview Experience | Set 1 (for Technical Operations Specialist [Tools Team] Adwords, Hyderabad, India)

- Difficulty Level : \n[Medium](#)
- Last Updated :\n17 Oct, 2019

My Google Interview Experience, [Hope this is helpful]

I am AnandhaKumar .P \xe2\x80\x93 2012 IT pass out from College Of Engineering Guindy, Anna University.

As many of the enthusiastic 2012 engineering passed outs, i too applied for a job in Google jobs page. I know that its very difficult that a resume gets noticed by google.

Suddenly one fine day i got a call from Google HR saying that they are interested in my profile and asked me if, i was ready to go with the interview process[Come on! who will say no for Google]. I was surprised.

I was asked to take a initial screen test [Online test].

Online Screen Test [2 hours]

I was asked to take the test at 8.30 pm. They fixed this test, a week back. Nobody will call you to remind you to take test. Nor the interviewer will call you. It is your responsibility to check ur mail without fail. On that day I was expecting a call from google from evening till 8.25 pm. None called me. I thought that they would have forgot that. I planned to do go out and have food. But suddenly my ipad gave a alert message and it was from gmail app [thanks for ipad, or else i would not have checked my mail in lap top]. It was from google recruiter. The mail stated that he has shared a doc with me and i must answer the questions in it. a google drive link was given. he mentioned that the test was for 2 hours. I was asked to type answers just below each of these questions.

Questions

1. [Given a source array of integers with possible duplicates and a target integer, write algorithm to find out 2 numbers in source array whose sum is equal to target integer.](#)

2. Say you have three tables WORK, USERS, MANAGERS

WORK

\xe2\x80\x93 work_id

\xe2\x80\x93 user_id

\xe2\x80\x93 how_much

USERS

\xe2\x80\x93 user_id

\xe2\x80\x93 team

MANAGERS

\xe2\x80\x93 manager_id

\xe2\x80\x93 team

If I am a manager, write a select statement to retrieve the work of all users who belong to my team. The mapping of user to team and team to manager are defined in the USERS and MANAGERS table.

3. In a Chrome extension, which file contains the most important information of the extension like

version, pattern matches, etc.

4. There are three rooms, and there are Princess, Flowers and Snake in those rooms. The doors of all the rooms have incorrect nameplates. i.e., the nameplate for the princess\xe2\x80\x99 room is not Princess. Similarly, the nameplate for the Flowers\xe2\x80\x99 room is not Flowers. You need to find the room of the Princess without going to the room of Snake. How do you find?

5. Which is faster: finding an item in a hashtable or in a sorted list? And Why?

6. What are some of the most popular Data interchange formats when using APIs

7. Name some popular APIs for each of these

Social

Commerce

Service(like a photo service etc)

8. How would you change the format of all the phone numbers in 1000 static html pages?

9. If you had an opportunity to design the Google Suggest system, please let us know how you would approach it and how you would execute the plan in terms of settings up systems like(data stores or databases, indexing services etc)

10. [How do you find out if a number is a power of 2?](#) And how do you know if it is an odd number?
Write code in the language of your choice.

Since i have prepared for tech interviews like amazon, i was able to do it good.

My sincere thanks to geeksforgeeks[You r doing a great Help]. My entire preparations are only from this site.

After a week i got a call from HR and informed that i cleared the first round .

Then after two days i was told that i will have a telephonic interview with one of the google developers from adwords team .

They scheduled a telephonic interview the next week

Telephonic interview[I screwed up here][Design Thinking Interview] [1 Hour]

There were two interviewers on phone. First they asked me to run through my resume.

Then the first question came

1) how will improve the **revenue** of the cafeteria of the office.

Lots of discussions went and i think, i really did that well.

2)[Actual question which i screwed up. Bad Time for me]

Number of users in 2010 for adwords, chrome, gmail, android and picassa are in the ratio of 6:9:14:13:8, and in 2011 we add 3 lakh more users. New ratio is 8:12:13:11:6. Number of picassa users in 2011= 1,44,000. Calculate number of adwords users in 2010.

A basic math question that, even a school student can solve. But in that tension i was not able to do it. I took some time and finally gave him a answer. I myself knew that it would be wrong. But interviewer said great lets move on to next question[just to boost up me \xe2\x80\x99good person\x93].

My actual job role revolves around developing tools for the ad review team which will review

the ad and reject illegal ones. So third question was related to that .

He told me that as i am from a tech background, i need to explain him technically wat will i do. He also said that he did not need the actual solution. They will just see the way i approach the problem. That an existing problem and they are open to suggestions.

3) In google adwords there are about 30 million ads from 42 lanuages . Wat will i do review the ads and reject ads that do not comply with specific rules .

Regarding the criteria under which google bans a ad as illegal \xe2\x80\x93 i discussed about different criteria .

Out of the criteria\xe2\x80\x99s i told , he asked me to consider only three criteria .

- a) Link not working
- b) Drug related ads
- c) trademarks[trademark used by the companies]

I gave lot of approaches like for link not working

a) designing a autobot which will automatically click ads link and check whether it is redirecting to correct page or not . Autobots are used by hackers to get money for the ads they posted . I suggested that by designing similar autobot we can validate the link.

b) to check drug related ads \xe2\x80\x93

To detect the language we can first check the geographic location from which the ad is getting posted and can narrow down to some less choices from which we can detect the language i suggested him that we can create a trie which some specific keywords (like cocaine) and do pattern matching with that and reject the add it contains any of the works in trie .

The interviewer gave me another constraint wat if there comes a ad \xe2\x80\x9ccocaine rehabilitation center\xe2\x80\x9d we should reject those kind of ads na . thats for a good cause . So i suggested him that i can maintain another set of trie which can contain those set of keywords.

Fist check trie1 if drug related keywords exist .

Next check trie 2 if other types of keyword exist.

\xe2\x80\x93 if keyword only present in trie1 [reject ad]

\xe2\x80\x93 if both tire return true [can reject . but its better that those ad\xe2\x80\x99s alone can be subjected to manual evaluation for rejection].

I used trie as it can do the pattern matches faster .

For trademarks also i discussed using similar datastructures and the interviewer was ok with my answer[i thought].

He said that \xe2\x80\x9cWe are done with here . The HR will contact u later \xe2\x80\x9d and asked any questions \xe2\x80\x9ci asked few questions about the work they do in google\xe2\x80\x9d . and finally i finisehd with \xe2\x80\x9cHope u r enjoying in GOOGLE ! \xe2\x80\x9d He said \xe2\x80\x9cOf course yeah !\xe2\x80\x9d

I thought that i did the first and third questions well but screwed the easy second question . i am sure that i will not get selected for the onsite interviews because of that . I told to myself \xe2\x80\x9d dont worry yar ! u r not lucky enough to join google !\xe2\x80\x9d

a week after i got this mail as expected

Thank you for your interest in Google. We carefully reviewed your background and

experience, and though we do not have a position that is a strong match with your qualifications at this time, we will be keeping your resume active in our system. We will continue to use our database to match your profile with new opportunities and will reach out to you if we find an opening for which you may be qualified.

Thanks again for your interest in Google\xe2\x80\x99s careers and unique culture; we hope you will remain enthusiastic about our company.\xe2\x80\x9d

I write here because when i got fixed for interview with google for the tech ops specialist role. I searched in net about the interview experience for that post. But i couldn\xe2\x80\x99t get it. all i got was the interview experiences for software engineer, adwords posts. SO i think that it will be helpful for someone in future.

This article is compiled by **AnandhaKumar**. 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 Google !](#)

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

b'

[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.

This article is powered by\xc2\xd7[TopTalent.in](https://www.TopTalent.in)\xc2\xd7 A high end Job portal for students and alumni of Premier Colleges in India. Sign up now for free exclusive access to top notch jobs in India and abroad. Get in touch with\xc2\xd7them\xc2\xd7via\xc2\xd7facebook,\xc2\xd7twitter\xc2\xd7or\xc2\xd7linkedin. 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 Google !](#)

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

[TopTalent.in] Interview with Sujeet Gholap, placed in Microsoft, Google, Samsung, Goldman Sachs & Tower Research

- Difficulty Level : \n[Medium](#)
- Last Updated :\n28 Apr, 2017



It's not every day that you come across a person who has achieved so much in life at a very young age which others can only dream of achieving in their entire lifetime. His simplicity and positive attitude speak volumes for his recent success after facing some tough times. This is the story of Sujeet Gholap, a IIT Madras grad who received record breaking 6 offers from some of the best companies in the world namely Google, Microsoft, Samsung (US), Samsung (IN), Goldman Sachs and Tower Research. We at [TopTalent.in](#) had a chance to interact with Sujeet about his success, preparation, interviews and some hardships. This interview is an excellent example of how a small town boy can achieve greatness and how you can do it too.

Also, Sujeet has agreed to share his stellar resume with our users which can help you with your resume and preparation. So, don't forget to download his resume by logging in.

Team TopTalent: Can you tell us a bit about your background before joining IIT Madras?

Sujeet: Sure. I hail from a small town called Kallam from Osmanabad district of Maharashtra. I studied in a local school in Marathi medium till 10th standard. I always thought people from cities would do much better than me as I studied every subject in Marathi. My mom and dad teach at a local college there. I am currently pursuing my B.Tech in Computer Science and Engineering at IIT Madras. In IITJEE 2009, I secured an all India rank of 184

Team TopTalent: Can you give us a brief account of your interview experience for these companies?

Sujeet: All my interviews (except a couple) were technical interviews. Almost in each one, I had to tell what I did during my internships at Yahoo! and Facebook, what projects I have worked on. Many questions followed a similar monotone : arrays of integers, do something with them, biased coins and their tosses, trees and recursive algorithms, writing code on paper and explaining it to the interviewer, solving mathematical and logical puzzles etc. Interviews varied from very easy to very challenging. Some interviewers were impressed by JEE rank and CGPA while some did not give it even a second glance. Some interviewers were interested in the projects I did and asked detailed questions about it, while some were just interested in whether I can solve the problem they have given me.

Team TopTalent: So, how did it feel when you landed six massive offers on that day?

Sujeet: It felt nice and gave an ego boost when people referred to me as the guy with six offers. People I barely knew, smiling at me and congratulating me! I was on an all-time-high. Jumping around and laughing all the time. It was such a kick that the next day, although it was a normal and fine day, as it was down compared to previous day high,

I was actually a bit gloomy!

Team TopTalent: What was going through your mind when you had to choose one out of those 6 offers?

Sujeet: I was supposed to finalize on a company by afternoon and I was in the state of utter confusion. Whether to take Google, which is the dream job of most of the programmers or to take Samsung, whose software division is nascent and where my contribution and impact would be much larger, visible and maybe even play a key part in company's direction or to take Goldman Sachs, the challenging job which I always wanted to get a taste of or to go with Tower Research, the highest paying Indian job (twice as high as the second highest) which also involves inviting challenges and lots of programming. I was realizing that it wasn't really a good idea after all to go for so many options. I was wondering whether I would have been better off without a choice, as all these companies were such that I would have accepted the offer without giving it any thought at all had it been the only offer. I finally decided to go with Google.

(Wasn't really a surprise for us. Google seems to be the first choice for most Indian programmers)

Team TopTalent: How did you prepare for these interviews? What suggestions can you give to our users who might have similar interviews lined up?

Sujeet: I was lucky that I had discussed about similar questions before, and hence was able to make it through the interviews. I was quite attentive in class which really helped me a lot. Any questions which were not algorithm intensive questions and were more or less straight knowledge based, I could just recall the answer straight from the class when the professor taught that particular topic! Being friends with the right people and forming a peer group with a common interest is something which was critical to my success. I used to solve coding challenges with Arjit who had a very good Topcoder Rank. I would think about how I would solve those problem, if I get it, I would call him up and discuss the answer and ask for more.

In terms of suggestions, I would say be an active member of topcoder, keep solving programming problems in other places too if you want like spoj, usaco. I wish I had taken these things seriously and honed my algorithmic programming skills. Be thorough with Introduction to Algorithms by CLRS and do problems on one of the above mentioned sites.

This article is powered by [TopTalent.in](#). A high end Job portal for students and alumni of Premier Colleges in India. Sign up now for free exclusive access to top notch jobs in India and abroad. Get in touch with them via [facebook](#), [twitter](#) or [linkedin](#). 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 Samsung !](#)

My Personal Notes

Add your personal notes here

Save

b'

[TopTalent.in] Exclusive Interview with Ravi Kiran from BITS, Pilani who got placed in Google, Microsoft and Facebook

- Difficulty Level : \n[Medium](#)
- Last Updated :\n28 Apr, 2017



Even if we were to search around the world, it would be a truly difficult job to find someone like Ravi Kiran. As a Computer Science Graduate of BITS Pilani \xe2\x80\x93 Pilani Campus, he successfully bagged\nc2\x0job offers from an astounding three companies \xe2\x80\x93 all being some of the best and most admired\nc2\x0companies in the world \xe2\x80\x93 Google, Facebook and Microsoft.\nc2\x0We, at\nc2\x0[TopTalent.in](#), managed to talk\nc2\x0to this amazingly humble genius, who hails from Hyderabad.

And before we forget, Ravi has also agreed to share his resume with our users so as to help them with their\nc2\x0preparation. So don\xe2\x80\x99t forget to\nc2\x0[grab a copy](#)\nc2\x0by logging in. Here is the exclusive interview in its\nc2\x0original form.

Team TopTalent.in:\nc2\x0What were the similarities and differences between Google, Microsoft and Facebook\nc2\x0Interviews?

Ravi:\nc2\x0All three of them share the prestige of being some of the best tech companies in the world. As\nc2\x0you would expect, their interviews are designed to ensure the recruitment of top talent. An\nc2\x0obvious similarity amongst their interview processes (for undergraduates, at least) is them being\nc2\x0vastly algorithmic in nature.

There are multiple interview rounds in each recruitment process. For Microsoft there were 4\nc2\x0while Facebook conducted 3. For Google, I was a previous intern and, hence, faced just 2 rounds.\nc2\x0Another noticeable thing was the presence of design questions in one of the rounds by both\nc2\x0Microsoft & Google. However, by no means, can this be a generalization to the interview process\nc2\x0of any of the companies. At the end of the day, this only reflects how each of them is aiming to\nc2\x0assess a candidate\xe2\x80\x99s potential to the greatest amount in the shortest period of time.

Team TopTalent.in:\nc2\x0How did you choose between Google, Facebook and Microsoft?

Ravi:\nc2\x0The more thought I put in the decision making process, the more confused I got. One of the major things I believed was that none of them was going to be a bad decision, so it was always safe to pick any one of them and not go wrong. Ultimately I chose Google, since I liked it as a company. I must confess that it was mostly a gut-feeling based decision.

Team TopTalent.in: What is the kind of skill-set that companies like these, are looking for in candidates?

Ravi:\nc2\x0Even though I\xe2\x80\x99ll keep one of the companies in mind, that is Google, to

answer the questions further on, I can safely say that this answer of mine applies vastly to the three of them. The skill-set sought out is that a candidate must be creative, so as to come up with smarter and newer solutions to problems, which are algorithmically very strong and don't waste time solving already solved ones. The candidates are supposed to be, obviously, good at programming so that they can give shape to their ideas in the form of real code.

Team TopTalent.in: What should one keep in mind while creating a resume for these tech companies?

Ravi: There are a lot of good references on What makes a very good resume? I had searched the same, and stuck to whatever made the most sense. I highly recommend a 1-page crisp resume, so that it's easier to make an impression when someone glances at it for about 3 seconds (I'm guessing that the time spent by a higher-up person on a single resume is nearly that)

In addition, it's very important to make the resume highlight qualities and projects that provide enough reason to believe why you would make the perfect candidate for the job. Prior programming experience and other achievements would be useful to mention, to further your chances of making a good impression.

Team TopTalent.in: Your advice to all the students out there who are aspiring for job offers similar to yours?

Ravi: I think it's important to enjoy the field of work, and apply to only the companies that align with one's interests. In the long run, it would be hard to work in case the work doesn't go with your interests, even if the company is as nice as three mentioned above. I had never aimed to get into any of these companies, and it has only been a consequence of the activities that I was actively interested in (like competition programming, random problem/puzzle solving, etc) and thoroughly enjoyed.

Team TopTalent.in: What's the difference between the work allotted in the Indian Office and the US Office?

Ravi: I will speak about this question with respect to Google, since I have an experience in both the offices. The work isn't really any different across the offices. If you have a good project idea, you're always welcome to begin on it, and take it forward irrespective of which office you are from. I myself have had the chance to intern with a very good team back in Bangalore. Work in MTV is going really great too. That being said, the US office has more diverse project choices to offer, merely owing to its larger size.

Team TopTalent.in: How can freshers/pass outs apply to these tech giants off campus? What's the process involved?

Ravi: Applying off campus is usually a simple process in these days. Most of the companies have websites for application process, wherein one can just submit his/her resume, and expect to be shortlisted. It is important to highlight the efforts of other companies that are providing interview opportunities, through performance in online programming contests.

HR personnel of almost all companies are on a constant lookout for talented programmers, and students performing well in the online programming contests have great potential. A good chunk of people also get an interview call through the employee referral route.

Team TopTalent.in: And lastly, what are you working on at Google and how has the experience been so far?

Ravi:\xc2\xa0I work in the Search Infrastructure team at Google, and the journey has been great so far. Google\xe2\x80\x99s a fun place to work for, and they ensure to provide one of the best work conditions possible for an employee. It is very surprising how they provide so many amenities \xe2\x80\x99s for having fun and indulging in non-work related activities and interests \xe2\x80\x99s but at the same time manage to provide some really challenging work.

This article is powered by\xc2\xxa0[TopTalent.in](#)\xc2\xxa0\xe2\x80\x99s A high end Job portal for students and alumni of Premier Colleges in India. Sign up now for free exclusive access to top notch jobs in India and abroad. Get in touch with\xc2\xxa0them\xc2\xxa0via\xc2\xxa0[facebook](#),\xc2\xxa0or\xc2\xxa0[linkedin](#). 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 Microsoft !](#)

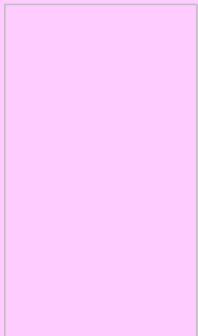
My Personal Notes\narrow_drop_up

Add your personal notes here

Save

[TopTalent.in] Rushabh Agrawal from BITS Pilani talks about his Google interview experience

- Difficulty Level : \n[Hard](#)
- Last Updated :\n01 May, 2017



Google is consistently chosen as the best workplace in the world and engineers all around the world would simply love to be a part of this amazing and innovative organization. Rushabh Agrawal, a Computer Science graduate from BITS Pilani, recently got recruited by this dream organization in Mountain View, California Office and we, at \xc2\x90[TopTalent.in](#)\xc2\x91got an opportunity to talk to him. He speaks about his personal reactions (read jubilation), the recruitment process and gives out useful tips & suggestions for all aspirants.

First question that anybody would ask \xe2\x80\x93 How did it all happen?

The campus placement season at BITS Pilani kicked off with the Google written test on 10th August. He had almost forgotten about it because nobody heard from them for quite some time. But on August 28th, five of the numerous applicants got calls for interviews at the Bengaluru office of Google. And by 6th September they were in India\xe2\x80\x99s silicon city for their interviews. I\xe2\x80\x99m sure he would agree with me when I say it was all worth it. After all, 2 of the 5 lucky candidates (Rushabh Agrawal and Kunal Lad) actually got selected for Google\xe2\x80\x99s Mountain View office.

When asked about his reaction to the good news, he clearly demonstrated the fact that it will remain an unforgettable day for him. \xe2\x80\x9cIt was in the afternoon and I had just come back from lunch in the hostel mess; still hungry, given the food that day.\xe2\x80\x9d And that was when he saw an email informing him of his selection. He remembers the moment clearly, \xe2\x80\x9cI spent the next 10 minutes going through the email trying to come to terms with what was written in the email.\xe2\x80\x9d Within 10 minutes he received a call from the Google HR person to personally inform him about his selection and that was when the joyous feeling finally seeped in. While she went on to describe the package details and terms of joining, Rushabh was too jubilant to care about all that she was saying! His friends and \xe2\x80\x98wingies\xe2\x80\x99 were already shouting and cheering around him within minutes \xe2\x80\x93 all this while the HR lady was speaking to him. He declares that the feeling still remains like a too-good-to-be-true thing.

On whether the selection process is different from the usual campus placement processes.

We\xe2\x80\x99ve heard of those brain teasers and super-tough questions from Google\xe2\x80\x99s interview. Rushabh disagrees and says the process is more or less similar to companies like Microsoft, Amazon etc. Only difference was in length of the placement process. Usually, when companies come for campus placement, the process gets over within a day, on the campus itself. But Google almost took a month.

There was an initial screening test followed by a series of interviews. All interviews they had at Google were technical and each interviewer tested a different domain of knowledge and thinking. There was an open ended discussion as well, in one of the rounds. Rushabh also had a couple of publications in his kitty and a couple of interviewers discussed about them as well. A very interesting point is that during the complete interview process, there were no eliminations after each interview. All of them went through the same number of interviews. During the interview, the interviewers constantly took down observations/opinions. In his opinion, at the end of the entire process, all the points are tallied to select the candidates. He cheerfully tells us that apart from the interview they got to enjoy the lunch at Google and were put up in a really awesome place for the night.

On the kind of skill-set companies like Google, are looking for in candidates.

He informs us an in a matter-of-fact way that knowledge of Data Structures and Algorithms are a must, along with decent coding skills. In addition, knowledge of Computer Networks and Object Oriented Programming (OOP) can come in handy as well. Knowing anything else is a bonus. Like in anything else, practice (solving problems in this case) helps a lot. Interviewers generally evaluate a candidate based on his/her response (thinking process, approach) to unknown problems. So they look for problem solving skills as well, in addition to experience. It is a fact that companies like Google look for highly intelligent people. And the resume, along with the interview process, gives them ample opportunities to evaluate a candidate's intelligence.

On how to create a perfect technical resume which would stand out.

Companies like Google don't care about the candidates' non-technical achievements. So don't clutter your resume by mentioning those. Keep your resume short and crisp. No point explaining everything as they do not study your resume (His was a 1 page document). During the interview, the interviewer may glance through it and on finding something interesting, would like to talk about it. This will start a discussion and the conversation, which is now in your hands, offers a good chance to impress the interviewer. Write your resume accordingly (such that it evokes enough curiosity in the mind of the interviewer). Also, you'll obviously want to talk about some of your projects/publications more than the rest. So highlight your work accordingly. Now there's some really specific and useful advice, right?

Interested people would obviously want to know how much preparation goes into winning such great offers. He gives an honest response and says

'prepare for Google specifically apart from going through some of the Google interview questions available online, a couple of days before the interview.' According to him, the questions in general are similar to what one would encounter in interviews for Microsoft, Amazon or any other similar company.

'Preparing for placements in general over the summers, worked out good enough for me,' he says (practice is the key, evidently) This type of preparation is only to channelize one's thought process for the problems posed during interviews, which are different in nature to what one would otherwise encounter. An important point to note is that the range of questions asked in interviews is not very broad. So the preparation basically familiarizes you with common tricks and stuff that would come into use frequently. Knowing them won't necessarily impress the interviewer but not knowing them would take you a notch below the rest of your competitors. Beyond that, whatever you have done so far like publications, projects, coding experience, etc will come into play. You basically use all the knowledge gained and skills acquired in the past few years.

To conclude we asked Rushabh to give some advice to all the students out there who are aspiring for similar job offers. To start with, he clarifies that the interviews at Google are not very different from those at Microsoft or Amazon, contrary to popular opinion. He, personally, did not

find them \xe2\x80\x9cextra difficult\xe2\x80\x9d (and he says this on behalf of all 5 who gave the interviews from BPPC)

Also, during the interview, you are not judged by simply your success in reaching the most optimal solution. You are judged on your thought process and failure to reach the final solution is not the end of it, which is important.

For the 1st and 2nd year students, (and many of them have asked him \xe2\x80\x9cthe recipe\xe2\x80\x9d to get a job at Google), a lot coding practice and a very good knowledge of Data-structures and Algorithms to get a job like this is a good way to go forward but not the only way. He, himself,\xc2\x0didn\xe2\x80\x99t\xc2\x0possess a great coding profile but his profile was based more on projects and publications, in things like Machine Learning, rather than algorithms. \xe2\x80\x9cWhat I feel is that you must try to gain as much knowledge and skills as you can. You never know what will come handy.\xe2\x80\x9d The candidate\xe2\x80\x99s intelligence and problem solving ability would take care of the rest. You basically pursue whatever interests you or excites you. There is no long term preparation for getting a particular job and thinking in terms of that would not only restrict you but, also, is too short-sighted an aim to have.

Of course, every aspirant has to spend small amounts of time preparing explicitly for interviews. It\xe2\x80\x99s just a great exercise to streamline the thought process. Like any other interview process, a lot depends on factors beyond one\xe2\x80\x99s control. As they say, the rest depends on the day.

This article is powered by\xc2\xxa0[TopTalent.in](#)\xc2\xxa0\xe2\x80\x93 A high end Job portal for students and alumni of Premier Colleges in India. Sign up now for free exclusive access to top notch jobs in India and abroad. Get in touch with\xc2\xxa0them\xc2\xxa0via\xc2\xxa0[facebook](#),\xc2\xxa0[twitter](#)\xc2\xxa0or\xc2\xxa0[linkedin](#). 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 Google !](#)

My Personal Notes\narrow_drop_up

Add your personal notes here

Save

b''