

INTERVIEW  
BIBLE



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# Index

1. Why Amazon?	1
2. Interview Process	2
3. Sample Questions 1	3
4. Sample Questions 2	4
5. Sample Questions 3	5
6. Sample Questions 4	6
7. Sample Resume 1	8
8. Sample Resume 2	10

# Why Amazon

<b>Headquarters:</b> Seattle, WA	<b>Size:</b> 5000+ Employees
Founded: 1994	Company - Public (AMZN)
Revenue: \$10 Billion/Year	Founder: Jeff Bezos

**“** Awesome place to work with amazing people.

**“** Work life balance is bad & very aggressive working culture.

At Amazon, everybody is pushing for the same goals centered on the customer.

Big raise on promotion happen less frequently. Average raises for the average people.

Promotions are gated by well written guidelines with focus on delivery not internal politics.

Performance reviews are less about your actual contribution than about your growth potential

Much better healthy relationships between teams and top performers are heavily compensated.

An influential department is a fantastic place to learn how to launch a product from ground up.

Amazon is a very frugal company. Hence no free lunches daily. No free Amazon Prime or Kindle Fires

A very casual work environment and a great way to gain experience through mentorships.

What began as Earth's biggest bookstore has become Earth's biggest everything store!

# Interview Process

A Typical interview process for Software Development Engineer is divided into 3 parts.

- Written Test
- Four Rounds of Technical Interview
- One Round of HR interview.

## Written Test :-

In this round, you will be tested on your basics like Data structures and Algorithms basics, your minimum coding skills.

## Technical Interview :-

Number of rounds of interview typically depends on quality of the candidate, years of experience. It may be 3 or 4 rounds of interview depending on these factors. And these rounds, the difficulty of questions increase for every round. They generally call the last round as Bar-Raiser round. This is the single most important interview. If you do well in first three interviews and not in this round, you will have a bleak chance of getting through. So, ensure that you practice well so that you can impress them in this round.

## HR interview :-

This round is mostly about whether you are culturally fit for the company. Questions like ‘Why Amazon?’, ‘What are your Expectations from Amazon?’ etc. will be asked.

# Sample Questions

## Round I Interview Questions :-

1. Traverse a binary tree in a spiral manner.
2. Reverse every k-element in a linked list (algo+code).
3. Given list of songs. How would you shuffle it? (Code)
4. Rotate a N\*M matrix 90 degrees clockwise
5. Convert Binary tree to DLL
6. Given a binary tree, find the k-th largest element
7. Find if an array has pair of elements with sum k.
8. Mirror a tree.
9. Find out given two trees are isomorphic or not

## Additional Questions :-

There is a dictionary already implemented. Write a method, which takes input String without space, to prints all subsets of the input string which is present in dictionary.

Given a number, find the just greater number than the given number containing the same digits as the given number. Write code for this.

Copy a linked list with next and random pointer. Not allowed to modify the given list at any time. Only read privilege on the given list.

Given a binary search tree. Find two numbers in the tree whose sum is k. If there are no such elements, state so. Assume that the tree is balanced. O(n) solution with O(logn) space was expected. Solve using two stacks. Code is required.

# Sample Questions

## Round II Interview Questions :-

1. Given a infinite stream of integers, find the first non-repeated number till now. Write code for this.
2. Print a binary tree in a level order traversal but in bottom to top manner.
3. A string consists of parentheses and letters. Write a program to validate all the parentheses. Ignore the letters.
4. You are given an array in which you've to find a contiguous subarray such that the sum of elements in it is equal to zero.
5. Given an MxN array, in which the rows are sorted. Need to sort the complete array
6. Swap two node pointers in a singly linked list (algo+code)
7. Connecting all nodes at the same in Binary Tree(Aproach + code)
8. Given a linked list with next and arbit pointer. Clone the list(Aproach + code)
9. Print the level order of binary tree such that each level should print in a different line
10. Push() and Pop() methods of stack are given. Write a function to get the minimum of stack in O(1) time
11. Write a program to find longest repeating substring In a given string running code were required covering all base cases.
12. Write a program to remove duplicates from array of prime numbers.
13. Given a matrix m x n containing integers. Find a k x k submatrix which has the largest sum. Solve using prefix sum matrix.

# Sample Questions

## Round III Interview Questions :-

1. Given a infinite stream of integers, find the first non-repeated number till now. Write code for this.
2. Given 2 BSTs, validate their equality. Both are equal if they consist of the same set of values irrespective of their structures.
3. Reverse every k-element in a linked list
4. Check if two trees are mirror trees
5. You are given a generic tree. Design a structure for it.  
Now for every node of the tree make the leftmost child of the node as a duplicate of the node itself and return the root of the tree.
6. Spiral Level order traversal of Binary tree
7. Given sorted & rotated array find the index of given integer
8. A singly linked list, find the kth element from the last.  
The question was further modified to not to process a node more than once. (algo)
9. How to find if nodes in LL are odd or even(Approach )
10. Sort the linked list which contains only 1,2,3 numbers in a single pass
11. Connect nodes at same level in a binary tree( may not be a complete binary tree) without using recursion
12. Given a 2D matrix which contains 0's and 1's. Given two points of matrix whose value is 1. Find the path(with only 1's) between the given points
13. In a binary tree find the least common ancestor for two nodes. (Write code)

# Sample Questions

## Round IV Interview Questions :-

1. Write a java program to evaluate given arithmetic expression to get maximum possible answer. ( Expression will contain only 3 type of operations +,-,\* ). it will not contain any brackets. so the order of operator precedence will not be there. any part of the expression can be executed in any order to get the maximum possible ans.
2. Given a binary search tree of n nodes, find all the pair of nodes whose sum is equal to a given number k in  $O(n)$  time and constant space.(algo+code).
3. There is a file which contains N words. There may be M anagrams in that file, K words on each anagrams.  $K \geq 1$ ,  $M \geq 1$ ,  $N \geq 1$ . You need to write an algorithm which will create one list for each anagram with k words and group all M lists with one data structure (This is the main area.we need to think a data structure which will minimize the space and time complexity of word Finding appropriate List and Inserting word).
4. Convert a Binary tree into another binary tree whose in-order traversal gives a sorted list.
5. Given a road network of a city. Each road represents an edge and need atleast one guard at any end of the road to put it in observation. Derive a algorithm to deploy minimum guard s.t that each road have atleast one guard.
6. There is a dictionary of billion words and there is one method provided
7. String getWord(int index); We can give it index and it will return the String on that index .
8. Now word is given to us we have to find out its index.  $O(\log n)$  solution was required.

# Sample Questions

9. Given a parentheses string, determine if it is a valid / legitimate parentheses string. For strings consisting of single parentheses type and those consisting of multiple types.
10. Write a program to print a tree in vertical order asked more than one approach to do this problem and modified problem many times.
11. Given a binary tree, convert it into doubly linked list and after the conversion, the linked list should look like the post order traversal of the binary tree. The conversion should be in-place. What is the time and space complexity of the program.
12. Given a matrix, find the maximum sum subarray in it.(algo+code)
13. Given a function “f” in which 0 occurs with probability 0.4 and 1 occurs with probability 0.6. Using function “f” deduce a new function “f1” such that both 0 and 1 occurs with probability 0.5

## Sample Resume I – Page 1

### CAREER OBJECTIVE

To accept work in a challenging environment so as to learn and improve continuously and enrich my skill set, to be able to contribute to the growth of the organization. To earn recognition from the work I do under any environment.

### SKILLS AND STRENGTHS

- Adaptability to the circumstances and new trends.
- Ability to learn and apply things quickly.
- Ability to work well in a team as well as an individual.

### EXPERIENCE

<b>Employment</b> AUG. 2012 - PRESENT 5 Months	SOFTWARE DEVELOPMENT ENGINEER at <b>Amazon India</b> <b>Technologies Used:</b> J2EE, JSP, HTML, Java Script. I work for Webstore internationalization project. My role is to enhance new features and customize the product for new Launches
<b>Teaching Assistant</b> 1 year	Dept of Computer Science Engineering, Indian Institute of Technology, Kharagpur.

### EDUCATION

JULY 2010 - MAY 2012 2 years	MASTERS in Computer Science Indian Institute of Technology, Kharagpur, West Bengal IITKGP
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## Sample Resume I – Page 2

### TECHNICAL SKILLS

<b>Programming Languages</b>	C, C++, CORE JAVA, PHP, PYTHON
<b>Databases</b>	MySQL, SQL
<b>Operating Systems</b>	WINDOWS, UNIX, LINUX (UBUNTU)
<b>Web Development</b>	HTML, CSS, JAVASCRIPT
<b>Tools</b>	MATLAB (SIMULINK), ECLIPSE, NETBEANS

### PROJECTS UNDERTAKEN

#### M. TECH

AUG 2011 - MAY 2012	<b>Master's Thesis on Development of tool for regression testcase Selection on Simulink/StateFlow (SL/SF) Models</b> <b>Description:</b> Currently I am doing my master's thesis and current project is Sponsored project of General Motors Research Labs, India. My thesis work includes analyzing the SL/SF models and developing the intermediate representation for the given model, what we call as "Simulink StateFlow Dependence Graph (SSDG)". This intermediate representation will be basis for the effective regression testcase selection by finding out the dependencies between the model elements and extracting only those testcases that traverse these effected parts.
JANUARY 2011	<b>Web crawler Simulation and implementation of Search Results</b> <b>Description:</b> The aim of the project is to simulate the web crawler and to crawl on the web pages. As the files are obtained, indexing takes place. When a keyword is searched, the relevant results are obtained as per the page rank algorithm, similar to a search engine but with few assumptions.
SEPTEMBER 2011	<b>A web Based project Virtual Stock Buzz</b> <b>Description:</b> The aim of the project is to simulate the Real time stock market system and to gain experience of trading shares with the virtual money. The project is coded in PHP. This is web based application and is hosted on ( <a href="http://STOCKBUZZ.FREEHOSTIA.COM">HTTP://STOCKBUZZ.FREEHOSTIA.COM</a> )

## Sample Resume II – Page 1

### TECHNICAL SKILLS

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- C, OOPS basics, Service Oriented Architectures, Understanding of working of GUI creating libraries like PyGtk.
- Relevant Coursework: Data Structures, Design of Algorithms, Operating Systems.

### WORK EXPERIENCE

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#### Amazon Development Center (July 2012 – till date)

Team: Flexible Payments Service (FPS)

**Description:** Amazon Flexible Payments Service is a reliable and scalable web service that enables developers to accept payments on their websites for selling goods or services, raising donations, executing recurring payments, and sending payments. Amazon FPS offers developers unmatched flexibility in how they can structure payment instructions, including standing instructions that can remain in place for multiple transactions, thereby allowing the development of highly customized payment solutions for a variety of businesses.

#### Roles and Responsibilities: Software Development Engineer (SDE)

- **Designing and Development of FPS Fees Collection Module.**
  - Developed a generic charge assessment solution that can cater fees collection for a wide range of FPS applications, with an unmatched flexibility in the terms of separate fee tiers for different operations, payment methods, etc. that is both scalable and reliable for current and future FPS requirements.
- **Development work in FPS Payment Operations.**
  - Gathered a good understanding on the working of Service Oriented Applications.
  - Developed an understanding of Payment Applications design and development.
- **Worked on the Generation of a wide range of Metrics in FPS Services.**
  - Generated metrics for real time downstream dependencies' performance analysis, all possible exception and error codes leading to payment failures in the form of a Sum Tree.
  - These metrics provide statistics and deep insights into real time FPS systems' performance and are pivotal in API performance analysis.
- **Throttling Set up on newly created FPS Services.**

## Sample Resume II – Page 2

### B.E. PROJECTS

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- Developed a Pedometer Application for Android based Mobile Phones.
  - The application detects user's steps from Accelerometer data and hence, estimates the calories burnt in running/walking.
  - The application has already obtained around 1250 downloads at [Androidfreeware.net](http://Androidfreeware.net)
- Developed Speaking Tool Application for PCs using QT Development Framework.
  - The application speaks the text (English Dictionary Words and Numbers) written by the user in a TextBox, acting as a speaking tool for Dumb people.
  - Included all possible test cases for handling of text written by the user in best possible manner.
- Developed an Audio Player for PCs using QT Development Framework.
- Developed Snake Game in C++.
  - Game includes multiple mazes, with varying speeds and has score maintenance feature incorporated in it.

### COLLEGE INTERNSHIP

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Fixed Income Currencies and Commodities, RBS India Development Centre(P) Ltd.

- Study of Market Impact of Limit Orders
  - Learnt about the short-run and long-run Impact of Limit Orders and Market Orders on Ask and Bid Quotes.
- Designed and Developed a GUI application in Matlab aiding FX Exposure Analysis and hence, hedging for risk neutralization.
  - Provided multiple tabs for plotting curves and histograms of company's exposures in different currencies, which would aid in intraday analysis.

### FIELDS OF INTEREST

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- Design and development of Web Applications, Mobile Applications, Multimedia Applications.
- Exploring architectures of scalable applications.
- Developing Games.

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