Amazon Interview Experience

Round 1

Date: 15th July 2019, Duration: 90 minutes

There were 20 MCQ questions and 2 coding questions. MCQ questions were based on Data structures, C++ and C programming. MCQ questions were simple. Out of 2 coding questions **(platform was Mettl),** one was simple (based on simple looping and multiplication) and other was hard (dynamic programming). Sorry, I don't remember the exact questions.

I attempted all MCQs. All test cases were passed for 1st coding question, base cases were passed for 2nd coding question.

After 1st round, 15 students were shortlisted.

*There were **4 rounds** (conducted on 19th July 2019) after the online coding round. **2 coding questions** were asked in each round.*

Round 2 (Technical Interview 1)

Duration:- 45-50 minutes

Interview started with introduction of interviewer and mine. He informed me that he had only 45 minutes to judge me. Interviewer had taken interview of a MSC student before me. He asked me if I knew the MSC student. If the MSC student told me about the questions. I said "Yes". Interviewer was happy.

Question 1: Given a sorted array of positive integers. Find first missing positive integer.

Input: - 1, 2, 2, 3, 5, 6

Output:- 4

Input:- 4, 5, 6, 7

Output:- 1

I forgot that array is sorted.

Approach 1:- Using a count variable (time:- O(n*n), space:- O(1))

Approach 2:- Using a temporary array of size of given array. (time :- O(n), space:- O(n))

Initialize temporary array with 0s.

In first iteration, loop through the given array and mark the elements in temporary array which exists.

i.e if(A[i]<n) temp[A[i]]=1

In second iteration loop through the temporary array to find out first missing positive integer.

i.e if(temp[i]==0) missingInteger = i+1

Then he reminded me that array is sorted.

Approach 3:- Comparing with previous elements. (time :- O(n), space:- O(1))

He insisted me to improve the time complexity. As the array is sorted, I was trying to apply binary search, but unable to do so because I was taking duplicates in consideration. Then he told me to assume that array contains no duplicates.

Approach 4:- Binary Search. (time:- O(logn), space:-O(1))

If A[mid] == mid+1   (missing number exists on right side)

Else   (missing number exists on left side)

He asked me to code the last approach and I did the same. As I had forgotten that the array is sorted. 1st questions took around 30-35 minutes.

Question 2:- Given a binary tree, search an element and print its level in the tree.

Input:- 4

2 5

3 6

9 8

To search:- 6

Output:- 3

He asked me definition of binary tree.

Approach:- Use queue for level order traversal. He asked me time and space complexity. (time- O(n), space:- O(max depth of tree))

I explained him the approach. As we had no time left, he didn't allow me to code. Then he asked me if I had any questions and I asked few.

Round 3 (Technical Interview 2)

Duration:- 45-50 minutes

Interview begins with my introduction and projects. I was speaking very slowly about the projects. Interviewer didn't ask me any question about the projects. That's what I wanted!

Question 1:- Given n ropes of different lengths find min cost to make it a single rope where cost to connect two ropes is equal to sum of length of two ropes.

Input:- 2, 3, 4, 6

Output:- 29

I had solved this question before. Interviewer asked me whether you had solved this question before or not. I said "Yes". He asked me the approach. I explained him the same using min heap. Then we had a long talk on min heap, balanced tree, priority queue and stl priority queue functions.

Then I coded it. Interviewer allowed me to use stl functions. After coding, he said "You are just adding the numbers". What is the need of priority queue or min heap? There was a mistake in my approach that I had underlooked. Then he allowed me to correct it.

Question 2:- I don't remember the exact question. It was something like this:-

Design a data structure that implements search, insert and delete operations on stack in constant space.

I gave him 3 approaches:-

Approach 1:- Using array (time complexity was not constant)

Approach 2:- Doubly link list and hash map

Approach 3:- Singly link list and hash map

Interviewer asked me to code the last one. And I did the same. I explained him the code line by line. Then in the end, he asked me if I had any questions for him.

Round 4 (Technical Interview 3)

Duration:- (45-50 minutes)

Question 1:- Given a binary search tree with 2 elements swapped. Recover the tree.

https://www.geeksforgeeks.org/fix-two-swapped-nodes-of-bst/

I gave him 2-3 approaches and coded one of them. Then I explained him the code line by line.

Questions 2:- Given a Dictionary of words determine the order of the Letters.

Input: {"caa", "aaa", "aab"}

Output: cab

Approach:- Topological sort

https://www.geeksforgeeks.org/given-sorted-dictionary-find-precedence-characters/

I explained the approach and while I was coding, interviewer interrupted me to stop as the time was over. He asked me to explain what I was doing and what I will do next. And I explained him the same. Then he asked me if I had any questions.

Round 5 (Bar Raiser)

Duration:- (45-50 minutes)

Started with the introduction of him and mine. He asked some questions on my project. I was not confident about my project. I simply told him, that I had done it, but I didn't remember theoretical concepts. Interviewer was very cool. After that, he didn't ask any questions about my projects. He asked some questions on oops, classes, singleton class (real world examples). Then he switched to coding.

Question 1:- Given a binary tree, determine whether its binary search tree or not.

Approach:- Using inorder traversal

I explained him the approach and coded the same.

Question 2:- Given an array, find the length of maximum subarray of sum 0.

https://www.geeksforgeeks.org/find-the-largest-subarray-with-0-sum/

I gave him 2 approaches and coded the second one.

Approach 1:- Checking all possible subarrays. (time – O(n*n), space – O(n))

Approach 2:- Using hashing. (time – O(n), space – O(n))

Then in the end, interviewer asked me if I had any questions.

After 30-35 minutes, results were announced. 4 students got the offer, 2 got internship and 2 got full time.

What I have studied:-

- Must Do Geeks https://www.geeksforgeeks.org/must-do-coding-questions-for-companies-like-amazon-microsoft-adobe/

- Top interview questions of leet code https://leetcode.com/problemset/top-interview-questions/
- C++ by saurabh shukla sir https://www.youtube.com/channel/UCD-scAE4ju78dld1kpcsQfQ

Some suggestions:-

- While solving problems at home, note down the approach after solving a question otherwise you will forget about it. Before the day of interview, revise all the approaches that you have noted down.
- I was not completely prepared for my projects. Please don't do this mistake and before going for an interview, revise everything that have been written on your resume.
- If question asked by interviewer is known to you and he asks whether you have solved this question before or not. Never lie to him. But if he doesn't ask then act to solve the question in front of him.
- If you have already solved a question before and the same is asked by the interviewer, don't rush to the solution. Give some time to understand the problem again, think whether the solution that is in your mind is covering all the edge cases then give the approach to the interviewer.
- If you are unable to come to the solution, keep on discussing whatever approach is coming to your mind with the interviewer. He will definitely tell you whether you are going in correct direction or not.
- Before going for an interview, never think that you are not fully prepared or others have done so much. Because in the end, what matters is your luck and your presence of mind. Think that the questions asked by the interviewer will be already known to you or you will be able to solve them.

Feel free to ping me if you wanna ask something.

Thanks & Regards,

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