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Amazon Interview | Set 33

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I recently attended a walk-in for Software development Engineer (SDE- 1) at Amazon, Bangalore.

Here is my experience of Amazon interview.

As I was from the same city, there was no phone interview. I have listed down all questions that I remember.

Round 1: Data Structures, Algorithms and coding (1 hour)

Interviewer just started off with questions without introduction and stuff.

1) Given a singly linked list, swap every 2 nodes, for odd number of input; retain the last node as it is.
Eg: Input: 5 13 15 18 20 11 6 7
Output: 13 5 18 15 11 20 7 6
I was asked to write the code straight-away.
Wrote the same, verified boundary cases and discussed.

2) Given a binary tree, find the number of pairs where sum of 2 nodes\xe2\x80\x99 values equal to k
Eg:

```
\r\n 1\r\n2 3\r\n4 5 7
```

Say k=7, output =2 (2+5, 3+4)
Suggested an approach where I\xe2\x80\x99d use inorder traversal of this,
Then interviewer asked me to solve the simplified problem, find k in sorted array instead of tree.
Got solution for this one, to have 2 pointers at each end, and traverse accordingly.
I was asked the approach for extending same to BST.
Then, I implemented the same for BST using stack.

Round 2: Data Structures, Algorithms and coding (1 hour)

1) Given input as k sorted arrays, generate a single sorted list as output.
Eg:
Array1: 1 5 8 9 11 \xe2\x80\xa6.
Array2: 2 12 24 44 \xe2\x80\xa6..
.
.
Arrayk: 3 15 79 115 \xe2\x80\xa6.
Output: Array1: 1 2 3 5 8 9 11 12 15 \xe2\x80\xa6.
Discussed the approach, and complexity, then wrote the code for the same.

2) Given a function isGreater, compare user defined objects and then return the object that is greater than all other objects.
Twist: obj1 > obj2 and obj2 > obj3 does not mean obj1>obj3
I asked for the use case for the same, as I was not convinced with the problem.
He gave an example of games/ 1 team winning another.
Discussed the approach and then wrote the code.

3) Given an input sentence, output the non repeated words in the sentence.

4) How are maps implemented?

Interviewer then clarified my questions about Amazon.

Both first and second rounds were at similar difficulty level.

If the interview feedback was bad for any of these, the candidate was eliminated. If at least 1 of these went well and other \xe2\x80\x9cnot sure\xe2\x80\x9d, then too candidate is called for next rounds.

Round 3: Hiring Manager round (1 hour 40 minutes)
Discussed on my current roles and responsibilities

why do you want to join to Amazon?

What are your accomplishments in your role so far?

What are the things that you\xe2\x80\x99re not good at and need to improve?

Serialization of Binary tree. Given 1 traversal is it possible to re-construct the binary tree.

Write code to reconstruct the tree given any 2 traversals.
I took in-order and post-order traversal, discussed the approach and wrote recursive solution.
Was then asked the approach for iterative.

Round 4: Culture Fit Round
This surprisingly had a data structure question first.

1) Given a n (large number) lists of customers who visited n webpages on n (large number) days, design a data structure to get customers who have visited the website on exactly \xe2\x80\x9ck\xe2\x80\x9d days and should have visited at least \xe2\x80\x9cm\xe2\x80\x9d distinct pages altogether.
Was then asked to improvise the solution as much as possible

2) Details on my previous project and job profile

3) Challenging situation faced

4) Why should we hire you?

Then, he answered some of my questions.

Round 5: Coding, Algorithm and data structures (Technical round with a senior developer)

Started with questions straight away

1) Least common ancestor of a binary tree (Solution and Code)

2) Given a 2 dimensional array sorted vertically and horizontally, search for an element and return true if the element is present. (Algorithm, Code and Complexity)

Example

```
1            5           13          29\r\n\r\n              11          16          25
```

3) Something on count sort.

4) Print binary tree in zig-zag order..

5) Gold box problem (Approach)

There are \xe2\x80\x98n\xe2\x80\x99 gold boxes placed in a row, each having different number of gold coins.

2 players play a game, where the motive is to collect the maximum number of gold coins. Each player can see how many coins are present in each box, but can get a box from either end only, on his turn.

Design a strategy such that Player1 wins (Assuming both players play smartly)

I got the hiring call after couple of days, after my last round of interview. They said feedback was very positive and they\xe2\x80\x99re happy to hire me.

Was so happy \xf0\x9f\x99\x82 \xf0\x9f\x99\x82 Thank you..

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