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Amazon Interview | Set 54 (Off-Campus For SDE-1)

- Difficulty Level :\nHard
- Last Updated :\n31 Aug, 2021

It was a usual interview process by Amazon: 1 written test, 1 telephonic interview, and 4 f2f interviews.\xc2\xa0
Sometimes they just want efficient algorithm and sometimes just concise and efficient production level code is required. Mostly both, algorithm and code, are asked for every question.\xc2\xa0
Interviewers were very friendly. In the first f2f interview, I was extremely nervous and stumbling in answering the first question itself, the interviewer told me not to worry and to take as much time as I want. That expression by him made me calm after some time and I was able to solve the question with ease.\xc2\xa0
Solutions to some of the problems are provided at the end of the article.\xc2\xa0

Written test(same questions as Set-53 Amazon Interview Experience):\xc2\xa0
1. Given 2 string , find whether 2nd is sub-string of 1st or not. (it would be great if you solve with KMP)\xc2\xa0
2. Given 2 rectangles , find whether they are overlapping or not.\xc2\xa0
3. Given list of coins with various values (unlimited coins of each type), find how many ways you can make a given value. (DP was expected.) Since it was not guaranteed that coin of value 1 would be present, we have to return -1 if the given value is not possible.\xc2\xa0

Telephonic Interview:\xc2\xa0
1. You are given an array of integers. You have to find the index in array from where (sum of left elements)=(sum of right elements). The elements itself is excluded.\xc2\xa0
2. Delete a node from an unordered DLL. Algo is quite simple. Clear and concise code was required to be written.\xc2\xa0
3. Zigzag traversal of a tree. He asked me if I know this question. I said yes and we moved on to other question.\xc2\xa0
4. You are given an array of integers(positive and negative). You have to find if there exists any sequence of numbers in it which has the sum zero. If there is any print the start index else print -1.\xc2\xa0
For example: 1 2 3 -1 4 -3 2 is the array and the sequence is -1 4 -3 which returns sum as zero.\xc2\xa0
Code and algorithm, both were required.\xc2\xa0

F2F Interview 1:\xc2\xa0
1. Find the longest even length palindromic substring in a string.\xc2\xa0
2. The interviewer asked me what are the data structures I know. I told him many of them. He chose HashMap and asked many detailed questions about it.\xc2\xa0

F2F Interview 2:\xc2\xa0
-Tell me about yourself and the work you are doing currently.\xc2\xa0
1. Write power function. Eg. 2^3=8. Optimize it as much as you can. Simple.\xc2\xa0
2. Longest path in a Binary tree.\xc2\xa0

F2F Interview 3:\xc2\xa0
-Tell me about yourself, your work, strengths and weakness, challenges you have faced in current job, why Amazon.\xc2\xa0
1. I don\xe2\x80\x99t remember it exactly, but it was probably: Delete a node with value K from unordered Circular Link List. Algo is straight forward. Production level working code was required.\xc2\xa0
2. Make OO design for 2-players game of chess.\xc2\xa0
3. You have some packages and you have to decide the build order for them.\xc2\xa0
A package should be built before the packages that depend on it.\xc2\xa0
For example. A={B,C}, B={D}, C={}, D={E}, E={}, F={}\xc2\xa0
So one possible build order for package \xe2\x80\x9cA\xe2\x80\x9d is E, D, B, C, A.\xc2\xa0
You have to write a function which will take the package name and will return its build order. You have API which will return you the list of packages on which calling package depends on. For example, the API will return B and C in a list when you call it providing the parameter as package A.\xc2\xa0

F2F Interview 4:\xc2\xa0
-Tell me about your work and challenges you have faced.\xc2\xa0
1. You are given a binary tree in which every node has left, right and a next pointer. Next pointer is null initially. You have to modify the tree in such a way that every node\xe2\x80\x99s next pointer will point to the next node on the same level.\xc2\xa0
O(1) space complexity code was required to be written.\xc2\xa0

Eg.

```
      1                                    1\n      2       3             ======>   2----------------->3\n    4   5
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ANSWERS:\xc2\xa0
Telephonic Interview:\xc2\xa0
1. It can be a recursive procedure.\xc2\xa0
For example, for 7 3 1 4 5 6. I can write a procedure like \xe2\x80\x9cpublic int getEqualSumIndex(int index, int left_sum)\xe2\x80\x9d\xc2\xa0
I can call it recursively like this: int right_sum=getEqualSumIndex(index++, left_sum+arr[index])\xc2\xa0
Can have return sum like this: right_sum+arr[index];\xc2\xa0
I can compare the sum like this: left_sum==right_sum\xc2\xa0
The code is very easy to write.\xc2\xa0
4. I came up with this algo: Start from left and get sum_till_now by adding the current element. Store the sum_till_now and current index in a HashMap.\xc2\xa0
If a sum value is repeated, then there must be a sequence in the array which is giving the sum zero. (repeated sum value\xe2\x80\x99s corresponding index)+1 will be index of the start of the sequence summing up to zero.\xc2\xa0

F2F 1:\xc2\xa0
1. Initially I thought it was a DP problem due to its resemblance with the problem \xe2\x80\x9clongest palindromic substring\xe2\x80\x9d and tried to modify that DP solution. But since it is an O(n^2) space complexity solution, I was told to do it in O(1) space. After some time I came up with a simple iterative solution. Find two same characters in the string and then expand its left and right as much as possible. It is an O(n^2) time solution. I coded the same.\xc2\xa0

F2F 2:\xc2\xa0
2.Diameter of Binary Tree\xc2\xa0

F2F 3:\xc2\xa0
3. If you can relate it to a graph, it is actually topological sorting. Though I didn\xe2\x80\x99t remember the name of the sort at that time, I explained him the concept, and how we can modify DFS to get the build order. I coded the same. He told me the name of algo afterwards.\xc2\xa0
Topological sorting\xc2\xa0

After two days I got the call that I have been selected.\xc2\xa0

Many Many congratulations to the author. If you like GeeksforGeeks and would like to contribute, you can also write an article and mail your article to review-team@geeksforgeeks.org. See your article appearing on the GeeksforGeeks main page and help other Geeks.\xc2\xa0

All Practice Problems for Amazon !\xc2\xa0

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