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## Amazon interview Experience | Set 142 (Off-Campus for SDE-1)

- Difficulty Level : [Hard](#)
- Last Updated : 24 Jun, 2019

### Round 1: Telephonic

Q1. Implement some functionalities of Minesweeper like connected component search and game termination check etc.

Q2. Linked list random pointer question: [Clone a linked list with next and random pointer](#)

Q3. [Given a matrix of 0s and 1s find the row that contains maximum number of 1s.](#)

Q4. [Given a node in a binary tree, find all the nodes which are at distance K from it. Root node is also given.](#)

Next day, I got the call for onsite interviews.

### Round 2: Onsite round by SDE 1

Q1. Given very large number of empty crates of varying sizes, we need to find the best fit crate for the given item and allocate it. Need to design a data structure for this scenario. Operations involved:

1. Insert a crate
2. Search the best fit crate
3. Delete the crate after allocating it.

e.g. 3 crates of weight 10, 20 and 30 are there. An item of size 15 appears then we allocate crate of size 20 and delete it.

Sol. Use binary search tree (balanced using red-black criteria or any) and implement ceil function.

All operations will be  $O(\log(n))$ .

Q2. Optimize above data structure for weekends where amazon have lots of crates but very less search operations.

Q3. Given a function `bool isValidWord(string str)` you need to check whether a string is a proper string or not. E.g. `iloveicecream` is valid : I love ice cream.

### Round 3: Manager of some other Team

Deep discussion on projects.

In one project I used EC2 service so he asked me many details and why I preferred EC2 over other possible options.

[Buy and sell stock question.](#)

[Connect Nodes at Same Level](#)

General discussion on virtual memory.

### Round 4: 2 SDE-1s

Q1. [Given matrix of 1s and 0s where 0 is water and 1 is land. Find number of islands.](#)

Q2. Give the size of all islands in above question.

Q3. [Maximum of all subarrays of size k](#)

**Round 5:** Dev Manager, 6yrs exp. (May be bar raiser round still I am not sure :P)

Q1. We started our discussion for very general problem where we have a long stream of characters and we need to extract all the patterns from that stream. There can be integers, fractions, words or anything.

I explained the entire process which is used in lexical analysis phase of compiler design where we give regular expressions and finally they are converted to NFAs and finally a single DFA.

Then a discussion went on how we'll implement this system from scratch.

There are many algorithms for converting regular expressions to NFAs and finally DFAs and some general discussion over Natural Language Processing.

<http://algs4.cs.princeton.edu/54regex/>

Q2. Given M sorted linked lists of each of size N, we need to merge them to single linked list of size M x N using no extra space.

Next day I got the call that they would like to extend me the offer for SDE-1 profile.

### Important Tips:

1. Prepare data structures thoroughly.
2. Less efficient solution is much better than no solution.
3. Adopt incremental approach for problem solving.

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[All Practice Problems for Amazon !](#)

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