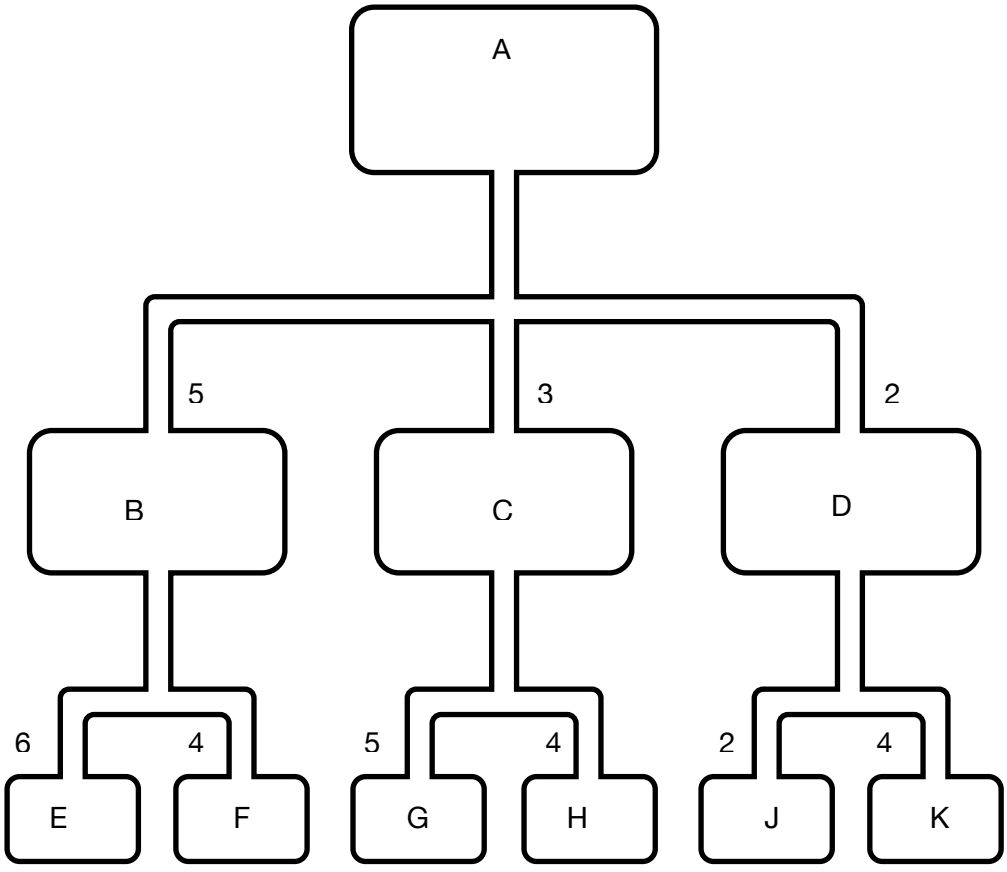
Google Interview

Telephonic one
Question

Statement

There is a galaxy with number of space station where each space station is connected to some other space stations. Space station has capability of transferring messages to each connected space station instantly(without any time gap). Space station are quite far from each other and messages took time to reach to the space station through the communication channel. The time taken by the message to reach a receiving space station is known to source space station.

Structure of Space station connection example



1. Find the minimum time taken by a message to reach each space station if the messages are always delivered from the root (A)? Define the node class too? Answer : 11.

2. Define and return an iterator over the galaxy which return the sequence of space station in order they receive the message ? Answer : A -> D -> C -> J -> B -> K -> H -> G -> F -> E

Telephonic Two
Question

Statement

Given an encoded String A decode that string to B such that if a number is followed by character ‘x’ and then any other ASCII character c then repeat that character c in the decoded string that many time other wise decoded string remains the same as the encoded string.

String A : abc5x**d**
Answer B : abc**ddddd**
Explanation : here 5 is followed by x and this is followed by d, So **d** is repeated in the decoded string five times.

Complexity : O(n). Where n is the length of the decoded String.

Onsite One
Question

Statement

Given a String A, We have to construct B with some operations.
Where operation is defined as :

Remove any number of characters from A and concatenate the resulting string to the answer.

Example.
A : abcccbde
B : abbdbbec

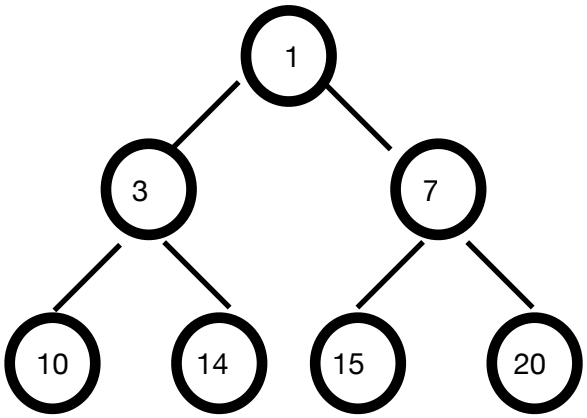
Process : abbd + bbe + c
it took 3 operations to construct B from A. We can take any subsequence of A in a single operation.

1. Yes or No, Is this possible or not, you can concatenate infinite number of times.
2. Count Minimum number of operation needed to construct B from A.

Onsite Two
Question

Statement

Given a level wise sorted perfect binary tree.



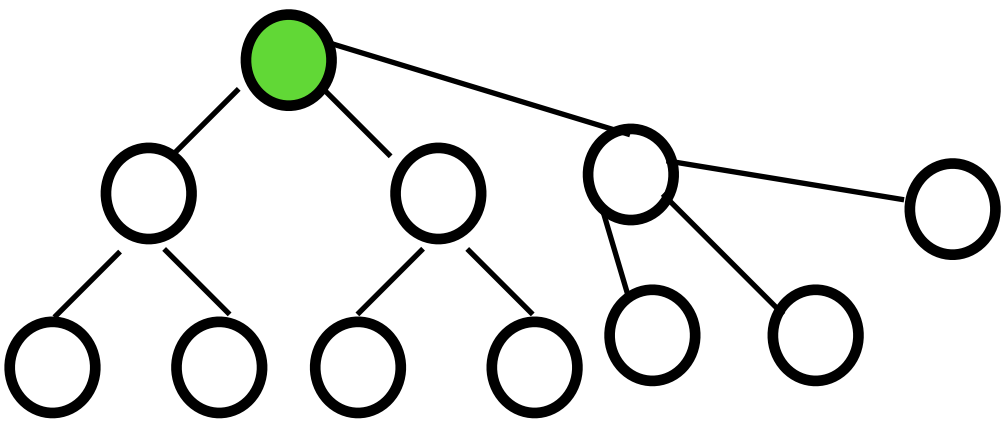
1. Find a given number n, return true or false if n exists in tree or not respectively. Complexity at max O(log n).

Onsite Three
Question

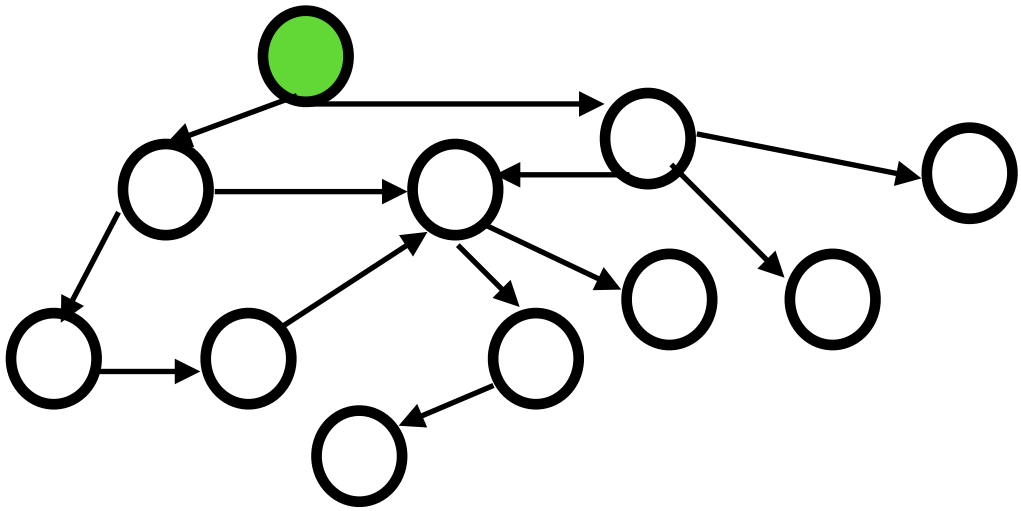
Statement

Consider a structure of nodes containing a grasshopper constantly moving from one node to another if they are directly connected. Grasshopper can not return back to a visited node.
We need to find the probability of the grasshoppers existence at any time t on any node n.

1. Consider the Structure of nodes as rooted tree.



2. Consider the structure of nodes as Directed Acyclic Graph.



Where green node defines the initial position of the grasshopper.

Onsite Four
Question

Statement

Given a N * M matrix of 0's and 1's

Find there exists a rectangle in matrix which has 1's at its vertices.

0	0	0	0	0	0	0	0	0	0
1	0	1	0	1	0	1	0	1	0
0	1	0	**1**	0	1	0	**1**	0	1
0	0	0	0	0	0	0	0	0	0
0	0	0	0	1	1	0	0	0	0
0	0	0	0	0	0	1	0	0	0
0	0	0	**1**	0	0	0	**1**	0	0

Hiring Process

A preview of the recruitment process

Phone/Google hangout Interview (1~2 sessions) → Onsite Interview (5 sessions) → Hiring Committee Review → Project Fit Talk → Offer Review → Offer Delivery (Yippee!)*

** Google will work together with you to decide project allocation based on your background, interest and hiring needs after the interview stage.*

Interview Tips

Google Docs is used during the 45-minute (means 45 neither 44 nor 46) phone/ onsite interviews to test your whiteboard coding. You will be able to try Google Docs in our recruiting coordinator's email before the phone interview. Also, having a headset with your laptop during the phone interview will enable you to code and talk over the phone at the same time.

The best advice I can give is to ask any questions you need to clarify the question and talk through your solution, explain any trade offs you are making between time and memory. It is worthwhile to talk about your initial thoughts to a question, though a brute force solution will be received less well than taking time to compose a more efficient or optimal solution.

And also, remember to handle corner cases and boundary values well during the interview!

Do not assume anything own your own, always ask for the same.

Google interviews focus on problem solving, algorithms, data structures, coding, and system design. In Data Structures & Algorithms interviews, you will usually be given 1-2 problems to solve and you'll need to talk about your approach and discuss the complexity of the solutions you are proposing. You will then need to code up your solution. I strongly suggest you brush up on algorithms and data structures and practice coding without an IDE or on Google Docs at all.