Write a code to find out if a tree is a binary search tree

What is the difference between an abstract class and an interface?

Given a singly linked list of characters. Determine of they form a palindrome.

Interview 1

Compute number and print all possible paths from (0,0) to (7,7) in a chess board. you can either move down or right . basically in first interview they either ask about red black, avl , trees or some question based on design and analysis of algorithms. mine was based on dynamic programming

Interview 2

what is os, paging, segmentation, virtual memory, i/o mgmt, deadlocks, synchronization - basically all chapters of galvin

what happens when you type a url in address bar, how are address resolved, domain name space, some database questions etc

1. given an array of integers how would you search an element?...I

said binary search. He asked what is it and time complexity.

2. He extended the above ques to n x n matrix where rows are sorted

and columns are not. How will you search an element. He dint ask me to

code.Just tell the algo and complexity

3. Built further on the abv ques. Now both rows and columns are sorted.

4. Abt my web apps project...abt HTTP request, servlets etc

5. Model a deck of cards(this is v common ques...u will find in glass door)

6. one thing you want to change abt amazon

7. abt dns server

2nd interviewer

1. tell about a project you are working on this sem. What technologies?

2. wht data stuc u knw?

3.write a function isSubtree(tree t1, tree t2) to check if one tree is

sub tree of other.

4. write a func that takes in array and an int k and find all pairs that sum up to k

Given two lists containing any kind of objects, build a function that takes them as input and outputs a list of common/different elements.

Write a function to transform one word to another word, changing one letter at a time, using only valid words (e.g., cat -> dog: cat, hat, hag, hog, dog).

Tell me about your self

Your Projects

What Data-structures are you aware of?

OOPs concepts

HAsh tables

Find the duplicate elements/Find the first duplicate element /find the first non repeated character in a string

Convert a string to integer- Integer.parseInt(string)

Convert integer to string

how to find a m'th element from last of a given linked list?

Time and space complexities for every coding question

Time and Space complexities for insertion & deletion in different data-structures

Some of the questions were:

1) A puzzle to find 3 numbers in an array which summed to 0.

2) Find all the anagrams in a file.

3) B-Trees.

Calculate the square root of a number.

A design question based on a real time customer scenario on Amazon website. Was asked to design the system as efficiently as possible. It included many structures inside other data structures which made the design very complex.

You are given a string with billions of characters spread across many geographically separate machines. Devise a distributed algorithm to find the first non-repeating character in this large string.

You are given a n\*n matrix of bits (1s and 0s) where 1 represents land and 0 represents water. Adjacent 1s can be considered as joined together to form sort of island in water. Count the number of islands. Discuss complexity.

Consider a rectangular mesh (intersecting horizontal and vertical lines ). These lines represent intersecting roads. You are standing at top left intersection and you need to reach to a resort located at bottom right intersection. On your way, you can see interesting sights which are given points (weightage). You are lazy to walk (i.e. you wont walk left / up. You will only walk to right or down). While reaching resort , you want to cover maximum points (see things that have more weightage). Write a program to calculate maximum number of points that you can cover. He later asked me to improve solution by avoiding paths already visited.

Write an iterator for binary search tree.

You are given a long stream of characters. Write a program to find first non repeating character. Discuss complexity.

Design lift (elevator) system.

1. on linked list.

2. finding the element that's repeated a maximum times in a set of array.

3. data structures

How would you distribute inventory to minimize the number of missed delivery dates while keeping costs to Amazon low?

How would you design a customer product review system and make it scalable (describe in terms of algorithms and data structures)?

Heap Sorting. What data structure do you use to implement it? Time to access and sort. Code it.

Provided two files, one with inventory and the other with warehouses, with the item ID present in both files; code something that would merge these two into one single file using the item ID as reference.

Is it possible to sort using linear time a file with lots of numbers that contain duplicates, when there are no limits of resources or space?

The interviewer wanted me to create a structure that represents a binary search tree and write a boolean function that verified to see whether a parameter was a binary search tree.

Telephone interview:

Find largest integer from an array of integers. The integers in the array are arranged in strictly increasing (no 2 integers are same) or strictly increasing then decreasing; so like a curve and you have to find the peak. Discuss time complexity. Write code. View Answers (3)

In Person with 4 people (~45min each):

1. Check if binary tree A is contained in binary tree B. Write code on paper.

2. Derive a formula for calculating the angle between the hour hand and minute hand in a clock.

3. Design a parking lot. Discuss what data structures to use.

1. Sum of Fibonacci series

Explain polymorphism

Given a tree and a prefix, find the word (in the tree) that starts with some subsequence of the prefix and also has the longest such subsequence.

You are given an array with n positive integers where all values in the array are repeated except for one. Return the one that is not repeated.

Reverse a linked list.

Write a function that returns the depth of a tree.

Serialize (flatten) and de-serialize a binary tree. First describe the approach, then write the code.

Given a list of points in 2D and a single reference point, find k nearest neighbors. No code required (iirc).

Given a binary tree, convert it into a doubly circular linked list. The structure of the tree was given by the interviewer and also the structure of the doubly circular linked list.

find a anagrams of given string from the paragraph.

Design a parking system, where each car is assigned a parking stall. What assumptions are you making? Any issues that could come up?

Sort a file containing a very large number of 16bit integers.

You want to keep the largest 1000 integer numbers from incoming pockets containing integers. Please write a program on how to do it.

How would you go about designing an university? What classes and methods will it have?

Delete extra spaces in a string.

Given an integer set of numbers, print all the subsets. For some reason the interviewer asked to print the supersets, but what he means is subsets.

Average, Best & Worst case complexity of an BST. On what basis these complexities are defined ?

Hasp map concepts theory questions

coding question : Program to check if binary tree is a BST

Complexity of the module written

Normalization questions

coding question: Program to find the element occurring odd number of times in an array

Complexity

How would you reverse a string without using buffer variables?

combing and sorting 2 different arrays ,

Find the largest branch in a tree that is itself a binary search tree

What is a binary search tree and how to get an ordered array from the tree

Numerical Roman numbers.

You have a node, each have three fields: value, next and random. How to make a deep copy.

The interviewee is helpful, he gave me hints and I finally solve it. First copy the list with only value and next. Save each one in the hashtable. And then change the random value.