Amazon Internship Questions

1 Given triplets i, j ,k such that i<j<k , find the triplet such that a[i]< a[j]< a[k]

2. Check if two trees are mirror images to each other

3. Given a BST, replace each node with the sum of the values of all the nodes that are greater than that node .

4. Given an array, find the maximum count of duplets and triplets such that their sum is multiple of 3.

5. Given the stock prices of 10 days, find the best possible buy and sell pair .

6 Left view of a binary tree .

7. Rotate matrix by 90 degrees .

8. Given n coins for two players playing a game. Each player picks coins from the given n coins in such a way that he can pick 1 to 5 coins in one turn and the game continues for both the players. The player who picks the last coin loses the game. You have to tell that for given n coins who loses the game?

9.Next permutation of a number ?

10 . Given in facebook find an efficient way to find mutual friends between you and one of your given friends. Hint: hashing, dictionary data structure implementation

11. Multiplication of two numbers

12 . Detect cycle in a directed graph

13 . Zigzag traversal of a tree .

14 . Find the point of rotation in a sorted array .

15 . Job Scheduling

16. You are given an array of length k and it have numbers from 0 to n (where k>>>n) in O(n) time and no extra space find occurrences of each element in O(n) time only

17 . You are given a row and column wise sorted matrix you have to find and delete an element such that it is still sorted in O(n) time.

18 . Two sum in O(n) TC allowed for space .

19 . In a BST to every element add sum of elements greater than it.

20 . Given 2 linked list return a linked list with the sum of the given two

21. Find vertical sum of a binary tree

22 . Partition an array to parts having equal sum

23. Given a binary Tree where the structure of each node contains an extra "next" pointer (initially all NULL), modify the binary tree such that all the nodes at the same level gets connected by utilizing these given extra pointers.

[(GeeksforGeeks Link)](GeeksforGeeks Link)

24 . Diameter of Binary tree

25 . Given Linked list . reverse every k nodes

26 . Iterative and recursive code to reverse the linked list .

27 . Write a function to check whether the given binary is sub tree of the another binary tree

28 . create Segment tree , performing range minimum query , updating segment tree

29 .Suppose you have to maintain the stock values of various companies during various periods and return minimum stock value of a particular company over a given period of time.

30 . How to store a binary tree in a file & then read back.(It is not necessarily a BST) .

   Solution :- However the better approach was to use parenthesization.If this is the binary tree then it can be stored as (A(B(D),(E)),(C)) in the file.)

31. Merge overlapping intervals
32 . Convert a BST into inorder, preorder and postorder linkedlists inplace.
33. Make queue from stacks
34 . Find loop in linked list make it straight
35 . Given a Binary tree convert it into a BST .gfg
36 . Given an infinite stream of characters find the first non-repeating character at any instance Gfg link
37 . Print all binary values of number from 1 to n .
38. Given a number n and a number k , you have to find the next bigger from n which is obtained after k swaps .
39 . Check if the linked list is palindrome ?
40 . Given an array of n integers(positive or negative). Find the maximum sum of subsequence of the array and also total number such arrays possible having the maximum sum.

41 .A linked list consists of two pointers: a next pointer and a child pointer. We have to make the linked list linear
42 . Given a distance n. A person standing at position 0 has to reach n. He can either take 1 step or 2 steps at a time. In how many ways he can reach there.
43 . Given a set of integers, negative as well as non negative, You need to rearrange them such that negative and non negative integers at alternate positions.

44 . Given an array of size 2n+2 where n integers repeat 2 times and 2 integers come only once. Find both of them
45 . Given a string of characters, find the index of the first repeating character in the string.
46 . Given a binary tree, any node in the tree and an integer k, print all the nodes at a distance k away from the given node.
47 . No . of unique BST can be formed from N nodes ?
48 . Given n people, you are told all pairs of people who belong to the same country. You are to tell the number of pairs of people who do not belong to the same country .
49 . Generate parentheses .
50 . LRU Cache Design .
51 . Given a sorted circular linked list which is rotated at some point, write pseudo code to insert a new node
52 . Given a n-ary tree . Convert it into an array and return it . Construct the same n-ary tree from that array agin .
53 . Find the square root of a perfect square number in O(logn) time .
54 . Given an infinite 0s 1s sorted array . Find the first occurrence of 1 .
55 . Print max sum path from root to leaf .
56 . Print Spirally column order of a tree .
57 . Implement 2 stack 3 stack using an array .
58 . You are given an array . You have to create a stack when the user wants to do so and delete a stack when the user says.You wont be given the number of stacks that will be created.

59 .Given that at Amazon.in the details page of an item shows only one field that is dynamically picked up from the database, we have to improve the performance according to the line:

"80% of the users visit the details page of 20% of products."

I said we could store these 20% on the web server so that we don't have to fetch the item details from the database every time. He asked me where and how I would store it. I answered Main memory and will use BST to store it. Then after a lot of discussion(about 30 mins) on how the get and put operations will be used, he was satisfied with the solution.

OPERATING SYSTEM
1. What is semaphore ?
2. What is a deadlock ?
3. When a single threaded application is converted to multi-threaded applications, what kind of changes does the operating system have to make?
4. What steps are taken when the os shifts from one-thread execution to another?