Maximum length of valid parenthesis
Create a binary tree from only one traversal
Singleton class

Maximum product of subarray
Maximum depth of binary tree using dfs and stack
OOPS :-

1) Inheritance and types and diamond problem,abstraction vs encapsulation
2) How encapsulation is implemented
3) #include and inner functioning
4) How compiler works
5) Virtual class and virtual function
6) Friend function and what advantages it have

rotate array by 180
find the next greater number which is palindrome -> [1234] -> [1331]
buy and sell stock unlimited number of time
difference between heap and static memory
what is cin and operator overloading
c++ compiler steps
singleton classes
way to stop inheritance
memory leakage and heap overflow and stack overflow

Finding occurrence of each characters in a chemical formula. ex..Al2(0)3

Design a data structure to randomly return a message from a list of messages. No messages shall be repeated till all messages are used.

Compilation process in Python

oops questions like polymorphism, operator overloading,
react js questions like difference between functional and class components
given one binary search question to code-> even indices sorted and odd indices swapped only once, find a number

They talked about technologies used in project

They asked about difference between c and c++

First qn dsa was given a complement string vector. I have to randomly pick some elements such that no one is repeated and I have to print all of them at once… like we can print in any permutation … you have to swap the current index to the last by random generator and decrease the size.

Second qn is you are given an array you have to take k elements from last ro first you have to maximsie the sum… so we can use 2 pointer approach in end and last and we can find the sum… for each case here no extra space o(k)

A sorted array exists.
Then the following operation is done many times
Pick two different elements at odd indices and swap them
An element can be picked for swapping only once.

Then search for a number in the array.

OOPS - What is Abstraction, Encapsulation, Polymorphism
What is operator overloading?
Demonstrate with code

Given n
In one operation You can reduce n to n-1 or divide it by any of its divisors
Reduce n to 0 in least operations

Given a square matrix, rotate it 180 degrees and give output to new matrix.
Given an array of elements, output the maximum contiguous sub array product of the given array.
Explain polymorphism,Runtime polymorphism vs compile time polymorphism.
Define a class which cannot be inherited.
What are access specifiers?

A sorted array is taken and all elements from kth index(unknown) to last is shifted at the starting. find any number x.

Discussion about all my projects in brief and even asked me about couple of different techs I used.
given an array -> find the min difference between arr[i] and arr[j] such that (j-i == k-1)
// this was what the question reduced to(simple sorting)
given a binary tree, you can put camera on nodes where camera can see current node and its parent and immediate children, -> dp question
in a binary matrix of 0 and 1, find the largest connected components -> dfs
virtual inheritance, diamond problem, preprocessor, sizeof() function, what is #include, what is namespace, can there be multiple namespace in a file (YES)
open ended question -> implement a contact feature in phone (hashing with phone number as key or BST with key as phone number in sorted order), if no phone number and only name (use trie)
Given a list of logs, group the similar log messages (i tried to use dictionary and interviews were okay) -> this is a vague question and thus im still not clear

Given a binary tree, you have to put camera on some nodes. One camera on a node will cover that node as well its adjacent node. Find the minimum number of camera to be placed to cover the tree completely.

Given a string, rearrange it to form a string which has no two adjacent same characters

Mayank Kumar:

1. The input is a stream of integers. U need to design a Data Structure which supports the following operations all in O(1) time complexity
    a. insert
    b. search
    c. delete
    d. get a random number (must be in the data structure already) all with equal probability
2. a. What is the difference between Abstraction and Encapsulation ?
    b. What is polymorphism ?
    c. What are friend functions ? What are access specifiers ?
    d. What are the types of inheritance supported by C++ ?
3. U can assume a huge dictionary of all words of fixed length (say k), for example for k = 5, the dictionary is [aaaaa, zzzzz]. Given a word of length k, find its index in the dictionary .

Q. Given a list of strings of same length. And a start string and end string. In one operation, You can move to another string which has only character different and it should exist in the list. Minimize number of operations from start string to end string.
Ans. Assume there is an edge between two strings if they differ in exactly one character. Find shortest distance between start and end strings.(BFS)

Q. You have a list of Urls. Urls get visited and number of views need to be updated when it's visited. At some moment, Find k most visited Urls. It should support updating views too.

Given an array of integers, find the first missing positive integer.
-1e9<=a[i]<=1e9. (Do in ‘n’ time and constant memory)

Implement a hashmap which can return any random value present in it uniformly.

Language part:
Why is C++ faster than Python?
Why is C++ closer to hardware?
Why are all the ml/ai libraries not present in C++?
Difference between compiled and interpreted languages.
What does #define do?
How does the compiler work?

Round 1
Introduce urself

Can you implement a class which you cannot inherit from.
Do you know about singleton class? Implement in c++

Given a binary tree and a node, find all ancestors of the node. (Optimise time and space complexity O(1) space it seems)

Implement a data structure using stack, which can be used to implement both stack and queue.
Given array find max subarray with greatest sum, given that you can delete atmost 1 element.

Round 2
How are you
How is your family in covid
Introduce urself

You said u used react which component did you use in your project (class or functional)? (I said functional)
Are you familiar with class components? (I said I used in old project)
Do you know about life cycle methods?
Why is render needed in class component.

Q1
There is a taxi service which charges 1rs per km.
Given integer pickup locations and drop location of each customer (consider a number line starting at 0).
Each customer also pays some tip.
Taxi can only take 1 customer at in an interval of distance (basically you cant take intervals which overlap), find maximum money the taxi can get.

Q2
In a grid containing water cell and land cell find size of biggest island

Q3
Given sorted linked list, delete all the repeated elements

Q4
In twitter how will you search for a given username

Q5
Diamond problem
Class B{
Int arr[10];
}

classD1 : public B{}
classD2:public B{}

classD3:public D1,D2{}
D3 d3;
cout<<sizeof(d3);
What is output

And then some simple follow ups on this (Like, if you do not do virtual inheritance and if you call a method in base class then you will get what error, and how to fix it)