**DE Shaw**

Here are the approaches I applied for DE Shaw OT Questions. I don’t know whether they are correct or not.

**Question 1**

Given a vector of strings. Each string was made of 10 digits 0-9. We had to find the string whose

similarity was maximum with other strings. If more than one string with maximum similarity, then

return lexicographically smallest.

Here similarity means if difference of two string is less than k(given) then they are similar. E.g.,

0123456789 and 0123456788 their difference is 1 and if k is 2 then then they are similar.

Solution:

I used brute force.

Two nested loops.

Inside that there was another loop calculating difference of two string (looping through each

character)

I didn’t handle lexicographically smallest.

**Question 2**

Given a range [low,high] and n. we have to pick n elements out of it such that the sum of them is

even, repetition allowed. Return number of ways.

Solution:

Suppose there are x even elements and y odd elements in that range.

To get the sum even, we must choose even number of odd items and any number of even item.

Lets take r places out of n where I will put odd numbers, and in remaining places I will put even

numbers.

So number of ways would be

C(n,r)-for picking r places

y r - permutation of putting odd items at those places

x n-r – permutation of putting even items at remaining places

So it will be

C(n,r)x n-r y r We can only take r even 0,2,4,…

It is nothing but the all odd terms of (x+y) n in binomial theorem

And sum of these terms will be ((x+y) n +(x-y) n )/2

Question 3:

Given a vector and q queries. Query format (l r x) – means add x to every element from index l to

index r(inclusive).

Given a number p - denoting you can only apply p out of q queries.Return maximum and minimum sum of given vector after applying p queries(all possibilities of p out

of q).

Solution:

I knew one concept that if the given vector is containing all 0 initially, we can add x to lth index of

vector and subtract x to (r+1)th index of vector and do this for all query and, at last find the

cumulative sum.

I used this concept. Now I have to find which p queries out of q I should choose to get maximum sum

finally, and which p queries for minimum sum finally.

So I sorted the queries according to the impact they are making. Eg if query is (1,4,5) they will

increase (4-1+1)\*5 amount to the sum of vector, if query is (2,6,-2) then that will decrease (6-2+1)\*(-

2) amount to the sum of vector.

After sorting I took last p queries for maximum sum, and first p queries for minimum sum.

I made a mask(vector with all 0 initially)->applied the last p queries on that->took cumulative sum-

>got the sum of this vector again->let it be “maxSum”

I made another mask(vector with all 0 initially)->applied the first p queries on that->took cumulative

sum->got the sum of this vector again->let it be “minSum”

Let our given vector sum be “Sum”

So final values will be

Maximum=Sum+maxSum

Minimum=Sum+minSum

**Interview Experience:**

There was no introduction part, direct question was asked.

**Question 1**

Build a class module:

There is voting system where candidate, and timestamp is coming. That shows this candidate has got

a vote at this time.

There should be function which is accepting time in parameter, you have to return the candidate

name which has got max vote till that time

After doing some more cross question class was like this:

struct vote{

char name;

int time;

};class Voting{

Voting(vector<vote>votes){

}

char get\_candidate\_name(int time)

{

//return the candidate name with max vote till time

}

};

Do whatever you want to do with the class but implement that function

After doing this there was project discussion where they asked:

-What is this project, tell me about this

-What are the things you used to make this.

-Why are you using database

-How much time you took to make this

-How many were there in your group

After that they also opened the link of played that(it was a game).

**Arcesium**

**YASSER**

**OT Coding Questions:**

Q1. Formula 1, where N was no. of fans, M was total no of rows and the price of a ticket was K,

where K was the no. of vacant seats in that row.

Approach:

Since I had to maximize the cost, I need to sell the ticket of the row in which maximum seats are

vacant.

I used a max heap, stored all the initial seats in the heap, the top would always contain the

maximum.

Maintain res = 0 // will contain the final result.

Run a loop N times, in each iteration:

1. Add the top element to result and pop it from the heap;

2. Suppose the top element was 5, after selling a ticket, only 4 seats are available now, so

decrement the popped element.

3. If after decrement it is greater than 0, push it back to the heap.

Q2. Covid 19 spread, with infinite array of 0’s and 1’s. 1 means infected, 0 means covid free

Approach:

In the beginning only the 1 st element was 1. On each day i th city would be XOR of i th and (i – 1) th city

on the previous day, and had to print the max distance between two 1’s that could be achieved till

that day.

I wrote down the array configurations till the 8 th day and saw a pattern that whenever the day was a

power of 2, it contained all 1’s, so the day after has the most distance between 1’s because when we

XOR all 1’s, every index except the first and the last will become 0.

Day 1: 1000000000

Day 2: 1100000000

Day 3: 1010000000

Day 4: 1111000000

Day 5: 1000100000

Day 6: 1100110000

Day 7: 1010101000

Day 8: 1111111100

Day 9: 1000000010

So, the max would always be calculated like:

p = floor (log2(day));

if (pow(2, p) == day) //day is power of 2, then decrement p;

p--;

res = pow (2, p) – 1;Interview:

My interviewer just gave me 1 question.

Q. There are some trains on a station. Each train has some passengers. I need to deboard the

passengers from all the trains in the ascending order of their ages.

I suggested 2 solutions.

First one was to sort all the trains separately, then compare the first age in each train and print the

minimum, keep doing it till all the passengers are exhausted.

He told me to code the complete solution and code the sorting algorithm of my choice, I went with

quick sort.

Second solution was using a min-heap. Store all the passengers’ ages in the min-heap and then keep

popping the top element and printing it.

He told me to optimize it more, but I couldn’t come up with the most optimal approach.

No other questions were asked.

My interview lasted for around 40 – 45 minutes.

**SIMRAN GARG**

Hello Everyone,

This is my experience of Interview Round – 1 of Arcesium.

The interview started with a quick ‘Hi, how’re you doing?’. After that the interviewer

asked me to tell him about myself.

He asked me the programming language I am comfortable in. I answered C++. He asked why

so. Do I know any other language? I answered basic level Python.

OOPs related questions: -

* Features of OOPs
* Binding
* Polymorphism and its types
* Virtual Function
* Virtual Pointer Table
* Pure Virtual Function

DSA problem: -

There are N rooms arranged in a circular manner. You need to find the minimum cost path

taking care of below mentioned constraints:

1. Starting room is R1 (can’t begin with any other room)

2. Exit from any room

3. All rooms must be visited at least once.

1

1

100

1

R1 <-> R2 <-> R3 <-> R4 <-> R1

I told him starting from R1, I have two choices either, I can move to R2 to R4, I will choose

the one that costs less. In this case we can choose anyone.

R1 -> R2

Cost = 1

From R2, I can either move back or move forward. If I go R2 to R3, it will cost 1 but going

from R2 to R4 would cost 2, so

R1 -> R2 -> R3

Similarly, from R3 I can move to R4, but the cost of the path is 100. Though the cost of Path R3 -> R2 -> R1 -> R4 is 3 which is less than 100.

R1 -> R2 -> R3 -> R2 -> R1 -> R4

So, basically, we need to make choices, we can do it using recursion but it is inefficient so

we can do memoization and use the already computed value instead of finding them again.

But the interviewer was saying that memoization won’t reduce time complexity, I gave him

example of Fibonacci recursive tree, stating that it does. But he didn’t agree.

(Few more approaches for solving the problem were discussed but it didn’t satisfy him

much)

In the end, he asked me if I had any questions. I asked him the tech stack they’re currently

using in their projects.

I was not shortlisted for the next round.

**JAYSHREE:**

In the beginning I was asked “how’s your college and studies going”.After answering this, the

the interviewer asked me “How are your practicals done in college, like which platform”.

Then he moved on to a question. He gave me an array which was unsorted and asked me to

convert it into a wave array.

Like : arr[0] >= arr[1] <= arr[2] >= arr[3] <= arr[4] >= arr[5] ....

For example: if the given array is [ 2, 4, 6, 1, 3, 8, 5] then I had to convert it to an array of the

form : [ 4, 2, 6, 1, 8, 3, 5]

He told me to think of different solutions. First I thought one in o(n^2), he said optimize it as it

will not work.

Then I thought of using some extra space like stack or heap, he said it will work but can we do it

without using any extra space?

Then one more solution was using sorting, so he asked which sort you will use to bring down

the time complexity. I said either we can use quick sort or merge sort to do it in O(nlogn) without

using extra space.

Asked me to write the code and after that he told me to further optimize the time complexity.

And the last solution I reached was to check only the neighbours of an element and swap them.

Question link with both the solutions using sorting and without sorting in

O(n):https://www.geeksforgeeks.org/sort-array-wave-form-2/

It took around 45 minutes and he told me that I got your approach, he was done from his side.

This was the only question asked.

Microsoft

**AKRITI**

Due to technical issues I had 2 PI for round 1, the first one was rescheduled to a different time.

Result: Didn’t clear round 1

**First time:**

How do you implement a function to match regular expressions with ‘.’ and ‘\*’ in patterns? The character ‘.’ in a pattern matches a single character, and ‘\*’ matches zero or any number of characters preceding it. Matching means that a string fully matches the pattern where all characters in a string match the whole pattern.

 Ex : String = “aaa”

Pattern1 = “a.a” => true

Pattern2 = “ab\*ac\*a” => true

“aa.a” => false

“ab\*a” => false

This ques-

<https://leetcode.com/problems/regular-expression-matching/>

Due to technical issues, we weren’t able to work on this problem

**Second time:**

You are given a no. of rows of seats (basically a 2D matrix of size r\*c), in which some seats (seats can be empty also) are filled, by ‘n’ students. Out of these students, ‘s’ no. of students know a secret, and can spread the secret to the person in the up, down, left, right seat from him. Return the total no. of iterations in which all the students will know the secret.

The interview just said this statement, everything else was given by me, including input, test cases, how to differentiate b/w different categories of students, the return value.

I gave a very brute force solution, I think this is a Graph ques (I’m not sure). It’s not necessary that every interviewer will give you hints :)

**SIMRAN GARG**

Hello Everyone,

My interview started with a quick introduction of the interviewer. And then he asked TMAY (tell me about yourself).

He asked me to share any experience when I faced difficulties while making any project in a team. I answered it. From there he asked me if I could tell him about any of my projects. We had a 10 minute discussion on my project (made in a team), he listened to each of its features and asked questions from it.

**Coding Question**

Given a string A representing an absolute path for a file (Unix-style).

Return the string A after simplifying the absolute path.

Note:

1. Absolute paths always begin with ’/’ ( root directory ).
2. Path will not have whitespace characters.

Data Structure Used :- Stack

I solved 80% of it. I missed 1-2 corner cases (I realised it later after the interview)

**My Working Code**

<https://docs.google.com/document/d/1tnqAlx0iNor9Dw1GYLoPd3_ys2_UFheZ_4XSf-j-YD8/edit?usp=sharing>

P.S. :- I know the code can be shortened.

You can find the problem on Interview Bit (Link to it is attached in above doc)

The interview lasted for around 35-40 minutes. I was not shortlisted for the next round. The interviewer was very polite and nice.

**RUCHI**

Hello Everyone!!

My Interview started with a brief introduction.

Firstly the interviewer gave his intro and then asked me about myself.

Then he asked me about the projects  I have worked on recently.

Coding Question:

I was given a string

S=aabcdeabacdcexysz

l=4 ,r=10, k=2

I had to return the k th character in the lexicographical order of the string between l and r. Both index l and r are included.

 For eq: in the given string characters between l and r are

deabacd

Its lexo order will be: aabcdde

I had to return at position k=2

Therefore output = a

I gave two approaches

1. Brute force in nlogn
2. Optimised in o(n)

Extra space was allowed

I was allowed to use any code editor of my choice to code.

At last he asked me if i wanted to ask him anything.

**DIMPLE**

My interview directly began with a coding question. The question is as follows:

Sequence of numbers (coming in random order). Come up with a data structure that can find element and element at index in O(logn) in sorted order.

The input includes numbers in any random order. There were two tasks:

1. To search an element in O(logn) time.
2. To search an element on the basis of it’s index in sorted order in O(logn) time.

For this purpose, BST should be used with a slight change in the definition of the node. The node should also include the count of children in the left subtree of the node. In this way, the main idea of BST was also preserved and we can compare the value of index with the count of children of every node and traverse accordingly.

**CHARU**

Interviewer gave his introduction and then asked me a coding question which was as follows

You have given a string **string** and another string **pattern**. Find the character in **pattern** that is present at the minimum index in **string**. If no character of **pattern** is present in **string** then print -1.

Input:

string = “adcffaet”, pattern = “onae”

Output: a

Then he asked me to write the code for this question and allowed me to use any code editor.

First I thought one in o(n^2), he said optimize it. Then i have given a solution using unordered\_map in which i have stored the char and the index and then searched for the char of the second str. And printed the char on the min index.

Goldman Sachs

**AAYUSHI**

**ROUND 1**

The interview started with a quick introduction of the interviewer.

He didn’t ask me to give an introduction but he straight moved to one of the projects which I have mentioned on my resume. So, he asked me to explain about my project.

After a quick discussion on the project, he asked me one puzzle.

[3 Mislabeled Jar of Jelly Beans Puzzle - Puzzles Asked in Interviews](http://www.crazyforcode.com/3-mislabeled-jars/)

I was able to answer it correctly and then he asked me one coding question:

<https://leetcode.com/problems/best-time-to-buy-and-sell-stock/>

Then I asked if you could give some test cases so that I can approach the problem. So, he gave me one test case and after considering all the edge cases I was able to give a solution in O(n^2)

Then he asked me to optimize it. At that time, I wasn’t able to optimize my solution but he helped me to think about the approach and then I was able to solve the problem in O(n).

He didn’t ask to write the code as he seems to be only interested in knowing the approach of the problem.

At last, he asked me if I wanted to ask him anything.

The interview lasted for around 35-40 mins.

Verdict: shortlisted for 2nd round

**ROUND 2**

The interview started with a quick introduction of the interviewer. And then he asked me to introduce myself. After that he asked me to tell about the projects that I have mentioned on my resume. So, he asked me to explain about my project.

After that, he asked me the following question:

<https://www.geeksforgeeks.org/minimum-number-of-square-tiles-required-to-fill-the-rectangular-floor/>

I was able to answer the approach for the question and then he gave me some of the test cases to check if my approach is correct or wrong.

After that he asked me about what complete binary tree is and the he gave me one DSA question:

<https://www.includehelp.com/icp/count-number-of-nodes-in-a-complete-binary-tree-leetcode-problem-solution.aspx>

I was able to give the naïve approach to the question but then he asked **how to find the number of nodes in a complete binary tree efficiently?**

I wasn’t able to think towards the approach so I asked if you could please give me some direction. So, he said you could use the height of the tree to find the number of nodes. But I wasn’t able to get through the approach.

And in this round also the interviewer didn’t ask me to write the code and the interview lasted for around 35-40 mins.

Verdict: Rejected

**HIMANSHI**

ROUND 1

My interview started with a brief introduction.

Firstly the interviewer gave his intro and then asked me about myself.

Then he asked me about the projects.I have worked on recently.The discussion on the project lasted for about 10-12 min.

Then he gave me a puzzle :

We have 21 cards and at most 3 cards we can choose and other people can also choose 3 cards.The person who will choose the last card will be the winner. Then how will you choose your turn?

I was able to answer it correctly and then he asked me a coding ques:

<https://leetcode.com/problems/best-time-to-buy-and-sell-stock-iii/>

I was able to answer the brute force approach for ques and he gave me some test cases which I was able to pass.

Then he asked me to optimize it but I was unable to optimize it.

After that he asked me 6-7 sql queries which were basic like:

Order by query

Count query

Join query

Verdict: Rejected

**Saurabh Anand 205120092**

Online Round Platform Hackerrank:

·        Section 1 Coding

o   Ques1 :<https://www.geeksforgeeks.org/print-matrix-zag-zag-fashion/>

Accepted

o  Ques2:<https://www.google.com/amp/s/www.geeksforgeeks.org/check-number-can-written-sum-k-prime-numbers/amp/> Partially Accepted 7/12 Cases Passed

·        Section 2 Quants & Math’s Mcq:

o   5/8 attempted

·        Section 3 Advanced Coding Ques:

o  [https://www.google.com/amp/s/www.geeksforgeeks.org/check-if-a-given-string-can-be-formed-using-characters-of-adjacent-cells-of-a-matrix/amp/](https://www.google.com/amp/s/www.geeksforgeeks.org/check-if-a-given-string-can-be-formed-using-characters-of-adjacent-cells-of-a-matrix/amp/" \t "_blank) Accepted

·        Section 4 Core CS MCQ:

o   4/7 attempted

·        Section 5 Behavioral:

o   2/2 answered

Personal Interviews Platform Zoom + Hackerrank codepair

·        Round 1 30-35 min:

o   He asked me to introduce myself, then we moved to the coding part straight.

o   Coding ques:<https://www.geeksforgeeks.org/median-of-two-sorted-arrays-of-different-sizes/> I gave the brute force, then we had a discussion about the optimized approach using binary search with some dry run over an example. After he was satisfied with my approach we moved ahead and he did not ask me to code the solution.

o   Puzzle: Two players are playing a game with 9 Pencils taking alternate moves, a person can pick up 1 to 4 pencils in a move, the person to pick up the last pencil wins, who will win if both play optimally – I tried to solve it and kept on discussing the approach and finally came with up with a solution.

o   Follow up - He asked me to solve the same puzzle for a general case with P pencils and pick up at most n in a move.

o   He asked me if I had any questions, and I asked a few questions about the company, he answered them very well.

·        Round 2 30-35 min:

o   The interview started straight with a Probability question.

o   Given B Bins, we have to throw balls until a specific bin gets a ball, what is the expected number of throws needed. I solved the question after a hint from him, I had some calculation mistake, but we moved forward because he was satisfied with my approach.

o   Coding question:<https://www.geeksforgeeks.org/design-a-stack-that-supports-getmin-in-o1-time-and-o1-extra-space/> we had some discussion and I gave a solution using O(N) extra space, but he did not ask for a more optimized solution and we moved forward.

o   Puzzle: A drawer with infinite socks of Red, Blue, Black, Green socks. You can draw a sock in one try without looking, Maximum draws to get a pair of the same color – I gave a solution and he was satisfied with it.

·        Round 3 40-45 mins:

o   He asked TMAY and walk me through your resume, I introduced myself and told him about all my projects in brief. He did not ask any questions.

o   Algorithm question – What are the best 2 sorting algorithms according to you, I answered quick and merge sort. He asked me to code merge sort function. After I was done coding, he asked me to dry run the code on an example given by him, I showed 3-4 iterations of merge sort and then we had some discussion about reference and pointer and how arrays are always passed by reference.

o   Hashing question – Design a hash function which will take a string of 100 characters and generate a key of 10 characters, then design a unhash function for the same. I asked him if I can design an integer key instead of a 10 character string key, to which he allowed. Try to minimize collision and in case of collision return all matched strings. I just gave the approach to hash and unhash, and he did not ask me to code it.

o   He asked me if I am comfortable with maths and statistics, I agreed at first, he asked me question about probability distribution, cumulative distribution, a numerical on bell curve, then he asked me about Atomicity in DBMS and relational algebra. Then he asked about Machine learning, I told him about what is machine learning, regression, gradient decent method and how it works. Logistic regression, he was satisfied with the explanation and asked no further questions.

o   Before leaving he told me he will forward my name and I will be called for another round.

·        Round 4 45-50 mins:

o   He was having my resume opened and asked me about the most recent project from my resume, I explained him the project and he asked no questions from it.

o   Next he asked a puzzle, 100 doors all closed initially and 100 people where the kth person will revert the door k, 2k, 3k….. (close and open door and open a closed one), Find the final orientation of doors after all 100 people are done, I told him a approach and answered that except for gate 1, 4, 9, 16…. (perfect square) all the doors will be closed in the end, perfect square numbered will be opened.

<https://www.geeksforgeeks.org/puzzle-16-100-doors/>

o   Another puzzle, actually similar to that in Round 1 with change in language, given 21 cards and two players taking alternate moves, the one to pick up the last card wins, in a move a player can pick up atmost 3 cards. Find who will win and how many cards should he draw in first move. Answer player 1 wins by drawing 1 card.

o   Another puzzle/ Maths problem. Given a square of side 2^n, and L shaped tiles of size 2, 2, 1,1,1,1. Prove that it is possible to fill the square with tiles, leaving only 1X1 square in a corner. He was expecting a question using PMI, I solved it for a general case and formed the relation and then he completed it from there and told me the solution.

o   He said we have only 10 mins left let's do a quick coding question,<https://www.geeksforgeeks.org/stock-buy-sell/> I gave the optimized approach at first and he asked me to code it quickly.

o   He asked if I have any questions for him, I asked a few questions regarding the company and he was happy to answer.

Then the process ended. After 2 hour results were announced, I was given an offer for summer analyst.

Verdict Accepted.

**SIMRAN GARG**

Hello everyone,

This is my experience of 3 technical rounds for internship for the role of Summer Analyst at Goldman Sachs.

Interview Round – 1

The interview started with a quick intro of mine. Then the interviewer asked me to join the HackerRank codepair link. I was asked a DSA problem of Linked List.

Problem: - There is a singly linked list, you have to do some operation (was not told) to get the required output.

I/P:-  1 -> 2 -> 3 -> 4 -> 5 -> 6 -> 7 -> 8 -> NULL

O/P:- 1 -> 2 -> 3 -> 4 -> 8 -> 7 -> 6 -> 5 -> NULL

Points I asked:

·    Do we have to reverse the linked list in a group of size, say K   - No, it’s just reversing the other half of LL.

·    Is length of the LL given   -   No

<https://codereview.stackexchange.com/questions/159299/reversing-second-half-of-linked-list>

I discussed my approach before coding. Discussed some cases (Length of LL is 1 or 2)

For fetching the middle, we discussed two ways: Computing length and then finding mid element of LL using it and second approach is slow pointer and fast Pointer.

I discussed that we could achieve this using two strategies – Using extra space (Stack) or just reversing the II half.

Then I just get the middle element and reverse the second half. And update the next of node before the start node of II half to the new head of the second half.

When he was fully satisfied with it, I coded the same. He asked me to write the main function and run the code. It ran!

After that he asked SQL related questions. He asked me Indexing and the difference between Unique and Distinct. One more question was asked related to it, I couldn’t recall it for now.

Last Question - Anything about the company that I want to ask.

[I was asked to wait for Round 2 by the Interviewer]

Interview Round – 2

This time the Interviewer didn’t ask my intro, but he took 2-3 minutes to go through my resume. He asked me to tell him about the project that I mentioned. He asked some questions from project and JavaScript questions.

He asked me whether he should ask questions from Project or DSA problems. Then he asked from both.

Some discussion on project’s features and all.

After that he asked me about the DP **Coin Change problem** with the infinite supply of coins. I was asked to count the number of ways so that we can achieve the target using the values given in the array of coins values.

<https://www.geeksforgeeks.org/coin-change-dp-7/>

Again, I discussed the approach thoroughly. While discussing it I made a table so that he understands my approach in a better way.

I coded it, I missed one thing. He asked me to run it and I didn’t get the correct answer in one go. He asked me to dry run on the given case and then I found the issue in the code. I was rectifying it but then he asked me to stop doing as he had other candidates waiting for their turn.

I got feedback and was told it is completely fine even if the code couldn’t work. I was directed to round 3 from there :)

Interview Round – 3

The interviewer asked me to TMAY. He asked the language I am comfortable in. I answered C++. He asked me to tell him about the latest features of C++ version.

He asked me about Smart Pointers. (I was a little uncomfortable as I couldn’t recall it exactly)

He then asked me about one DSA problem of the Binary Tree.

**Zigzag traversal of Binary Tree**

<https://www.geeksforgeeks.org/zigzag-tree-traversal/>

He asked me to write pseudo code, before coding we discussed the whole problem. He gave me a green flag to start coding. I did a dry run, and he was satisfied with it.

After that he asked if I know OS concepts (I haven’t mentioned in my resume, but I was aware of the basics, so I told the same).

* Difference between Thread and Process
* Why do we use threads?
* Inter Process Communication

Last Question - Anything about the company that I want to ask.

This was my overall experience of the process.

**Verdict:** Selected

(Each round was of 35-45 minutes)

Thank you

**ASHISH 205120021**

 Date: 7 aug 2021

Time: 9:20-10:00 (40 minutes around)

Platform:  zoom (Just one female interviewer)

I didn’t code anything. I just verbally explained my approaches to her. I used pen and paper and occasionally showed her my register.

1) Introduction

2) Tell me about the internship you did (It was under an NGO back in 2018 so I told her everything about that)

3) Max path sum from root to leaf (print the path also and max sum)

4) Max path sum from leaf to leaf (print max sum, printing path wasn’t asked)

5) You can choose any three points on circumference of a circle. What is the probability that the triangle formed will be isosceles.

6) Detect a cycle in linked list

7) Intersection of two linked list

Verdict: Rejected

**Ruchi Panse 205120083**

The interviewer greeted me and said he will first download my resume.

Then he asked me about my Resume.

I started with TMAY and added a few details mentioned in my resume abt my projects along with it.

He then asked me which language i ' m comfortable with,

I replied C++, then he asked me which version i am more comfortable i replied both c++14 and 17,

He then asked me what is **AUTO POINTERS**. By then he got a call from one of his colleague so he asked me to wait.

I didnt knw the exact answer abt it so when he came back he again asked auto pointers i replied with whatever idea i had but he was not satisfied.

He asked few more oops questions i was able to answer some while i missed some. Some questions that i answered were:

Polymorphism and how its obtained in cpp

Virtual function and how they are implemented

Difference between array and vector

He then asked me to describe one of my projects in brief.

Then he asked few more theory questions of DBMS: **Atomicity**

Then he asked me to write all the features of one of my project on the codepair till then he went to fill the water, when he came  back he went through whatever i wrote on screen and asked me some questions related to javascripts library used in my projects.

Then he asked me sorting Algorithms: Difference between merge sort and quick sort

What do i mean by term Time complexity.

Gave me a worst case ans asked questions on Tc.

Asked me to write recurrence Relation for merge sort.

At last he asked if i had any questions for him. I asked 2 questions.

My interview lasted for 25 mins.

**KAJAL NERKAR - 205120039**

**Round 1:**

Firstly, the Interviewer gave her Introduction to me and my interview started with **Tell me about yourself.**

**Then** after she gave me a **puzzle** which was as follows:

Given 21 cards and two players who can take alternate moves, the one who picks the last card wins the game. In each move a player can pick  at most 3 cards. Find who will win and how many cards should he draw in the first move.

Firstly I discussed the puzzle with the panel and after some time she gave me some hints.I came up with one of the answers but she was not so satisfied with it.

Then she asked me, in which I am comfortable? She gave me options and the options were: Coding, Puzzles and Probability.

I answered that I’m comfortable in Coding part.

Then she moved on to **Graph Algorithms**and the questions were:

1. You have given one source and one destination then how will you find the shortest path from source to destination. Which algorithm will you use?

Reply: I asked her whether the edges are positive or negative and answered it accordingly.

1. You have given one source and multiple destinations then how will you find the shortest path from source to destination. Which algorithm will you use?

Reply: I gave her the modified version of dijkstra’s Algorithm and that was fine but she wants me to optimize it further and I was not able.

1. You have given multiple sources and one destination then how will you find the shortest path from source to destination. Which algorithm will you use?

Reply: Again, I gave her the modified version of dijkstra’s Algorithm and that was fine but she wants me to optimize it further and I was not able.

Then after this, she asked me to brief her about the projects which I have mentioned in the Resume.

I explained her each and every part of the projects in detail and No query arised from her side in this part.

Then she moved on to **DS/ Algo part**

1. Here she asked me to explain the Quick Sort. She gave me an array and wants me to dry run on it. I answered accordingly like What is pivot?… What is the role of pivot?
2. Here she asked me to explain the merge sort. I answered it then she told me to write the pseudocode for the same. And I wrote it on the whiteboard.

And with this she was done from her side

My Interview lasted for 40-45 minutes.

**Verdict**: Rejected

**THANK YOU :)**

**Dimple Gyanani - 205120028**

**Round 1:**

My round 1 started with a brief introduction of the interviewer followed by my introduction. Then, she asked my only probability questions.

* Given a circle, if we select any three points on the circumference of the circle, then what is the probability that the triangle formed with these points will be a scalene triangle.
* Given a circle, if we select any two points on the circumference of the circle and connect these two points with the centre of the circle, then what is the probability that the minimum angle formed with these lines will be 30 degree.

My interview was very short and was only based on these probability questions.

**Suruchi Bajaj 205120113**

The interviewer said he will first download my resume.

Then interviewer asked me about my Resume.

We had a brief discussion about project.

He asked what are the features of OOPS.

Then he said let’s talk about maths and he asked some statistics question

1. What is normal distribution?
2. Difference between normal and cauchy distribution.
3. How would you know that certain data is in normal distribution or not?
4. What is regression?

At last he asked do you have any question?

**Charu Bajaj**

Firstly, the Interviewer gave his Introduction to me and my interview started he did not ask my intro. Then he downloaded my resume.

He asked some questions on my project.

Then he asked me some OOPs concepts. After that he asked me two questions which were probability based questions and were based on Baye’s Theorem. We discussed both of them. And he told me two calculate it and tell me the answers. I solved both of them then he asked me if I have any questions for him.

**Jayshree Choudhary**

**Interview round 1**

The interview started with a quick intro of mine along with a brief intro of the projects.

I was asked about all the data structures, which one to be used in what cases and how they work in detail for each stack, queue, linked list.

Then I was asked which data structure I am most comfortable with, I answered linked list and stack.

**Then the first question given to me was:**

I am given the marks of 200 students; the marks lie in the range 0 - 100. I have to find the count of each of the marks which are greater than or equal to 50.

 Approach: I took an initial array of marks and an array of frequencies of size 100. Traversed through the initial array and increment the count of each mark in the frequency array

She said that I don’t have to store the initial array too. So, I took one value increment the count and then took another value.

She said OK but try to optimize the space of the frequency array.

Finally, I said that we can take frequency array only of size 50 instead of 100 as we have to store only the frequency of marks >= 50. Then I had to write the code for it.

This was the correct answer.

**The second question was:**

Given an array [ 4 1 3 3 1 2 4 ]. The task is to remove all the consecutive duplicate elements from the array.

In the given example 1st we remove 3 as 2 3’s are consecutive after removing both the 3’s 1 becomes consecutive so next we have to remove both the 1’s.

I discussed the output with her taking various cases. For the given sample it should be [ 4 2 4 ].

I discussed my approach using a stack. She said to explain along with writing the code and to dry run it explaining the sample.

She was satisfied with the answer and told me that she is sending me to another room and to wait there.There were also some managerial questions in the 1st round.

**Interview round 2**

Started with an introduction and asked about the projects in detail. Moved onto a question

Given some words of same length from the given dictionary,

{cat, rat, dog, rap, gym, pim, pym, pat, pit} at a time I can change only 1 character from the word and form a new word, the new word formed must there be in the dictionary given.

As an input a word is given and the destination word is also given, find the total path to be traversed between both the given words and the number of words traversed were to be returned.

Suppose source is cat and destination is gym, the path will be:

Cat -> pat -> pit -> pim -> pym -> gym

Second Question: Given a number in the form string like 12345, find the next number just greater than the given number with the same set of digits.

<https://www.geeksforgeeks.org/find-next-greater-number-set-digits/>

I was able to cover all the cases by taking many sample cases, I was not asked to code it as it was already nearly 45 minutes.

**Interview round 3**

In this round also I was asked to introduce myself with my project along with hobbies and interests.The interviewer asked me, which subject from the academics I like most, so  I said operating system and DBMS.

So he asked me about the process and threads in detail with real time examples.

After this, he gave me one function which contains an array and an integer as parameters.

int cycleLength( int arr[], int k)

Sample 1: ([ 1 2 1] , 0)

In this case k represents the index of the element for which we have to find the length of the cycle. Cycle means the number of elements traversed in between the given positioned number and it’s next occurrence( both inclusive)  in the array if the array is traversed cyclically.In the above case the answer will be 3.

Sample 2 : ([ 1 2 3 4 5] , 0)

In this case the length of cycle will be 6. As in the element will not be found after the index 0, so after reaching upto the last value it will again move to the 0th index.

In the output I have to return the length of the cycle as an answer.

I approached this by simply traversing the array from the index k + 1, taking a count variable and incrementing each time the value is not found.

He said to write the code and explain, so I wrote the code and he asked why Am I starting from index k +1. I discussed some cases with him in which if I traverse from the beginning it will produce the wrong answer.

I was disconnected from the meet in between after this, and after half an hour I was allotted another interviewer.

**Interview round 3 - second attempt**

Started with a detailed introduction of projects. Then he asked me to explain all the conditions in which we realize the need of Object oriented programming, and explain all the concepts of OOPs.

Then he asked the difference between function overloading and overriding, how runtime polymorphism is achieved, and the difference between the virtual and pure virtual functions.

First problem:

A ship is sinking, there are some people on the ship having different weights, you have a boat with a capacity of 120kg, and the boat can rescue only 2 people at a time. You have to find the minimum number of times the boat is to be used to rescue all the people on the ship. The weights of people are given in the form of array [ 85, 35, 75, 45, 90, 110 ]

He didn’t give me the output for this, just said to solve it and tell him the answer.

I solved it manually and said the answer would be 4 in this case, which was correct, and he told me to implement it.

Approach 1: using a min heap and a max heap, it was ok but said to optimize the extra space.

Approach 2: sort the array and pick elements from begin and end if the sum of both is less than or equal to capacity of the boat, increment count by 1 and move both pointers or else increment the count by 1 and move only the second pointer.

I coded it, and it was fine.

Second Problem:

Given 1 million songs, I have to make a music player which randomly selects one of the songs, and after playing never ever picks the same song again. I was asked to think of some data structures to implement it.

It was a long discussion, taking different data structures, he was directing me to think more, and I said we will go for using HashMap, with a flag variable associated with each song. He said that’s the answer he was asking for.

Then he asked are you comfortable implementing classes?'' I said yes. He told me to take the case of all the superheroes, all of them have some superpowers in common and some specific to each one of them.

He told me to make 4-5 classes in which one contains the common powers of all, and others respectively. In between he added some more like the class captain America contains some features of class Iron man, and so.

 It was a very long time and he said to conclude with a last puzzle,

The puzzle was: you are given 3 non transparent jars, 1 containing apples, another containing oranges, and the remaining one contains apples and oranges. All the 3 jars are labelled incorrectly, I have to pick only 1 fruit from any of the jars and have to identify the correct labels for each jar.

I was able to solve this, and this was the last question.

**Verdict:** Selected

Manish Pandey - Goldman Sachs

OT

There were 6 sections, including CGPA as a section

* Basic Coding (2 Question, 30 Minutes)
* Mathematical and Logical Reasoning (MCQ)
* OOPS and Data Structure Awareness (MCQ)
* Advance Coding Section (1 Question, 45 Minutes)
* Behavioural Aptitude (2 Question, Subjective)

One had to clear at least 3 of them to get shortlisted.

Interview - Round 1

The Interviewer started with the usual Introduction, they made it clear that there will be no coding in the first Round. The first Question was a puzzle. Here is the link

<https://www.interviewbit.com/problems/wizards-and-drawves/>

I struggled for the first 15 minutes, then I asked for a hint. He said to use XOR/Parity operations. I tried, but still I had many confusions. I couldn’t solve this puzzle on my own.

Next Question was from OOPS (Difference between OOP and functional with example). I told the answer and gave the examples. He asked if Javascript is OOP or functional. After that, there were questions from my project, and internship expectations. I was also asked if there was a time when I had to be adaptable to accomplish a task (Weirdly, this was also asked in OT) I did not give the same answer that I gave in OT. After that, The interview was wrapped up.

**Verdict:** Rejected

**Morgan Stanley**

Manish Pandey(205120049) - Morgan Stanley

Online Test -

The platform was AMCAT, test was proctored. There were 3 sections.

1. Logical Reasoning and Aptitude - It had standard logical reasoning questions(Including Quantitative, Cube Partitions, PieChart, Histogram etc). There were 10 questions and 20 minutes was allotted. There was no negative marking.
2. Debugging - There were 7 questions. In each of them, Some code was already written but it was not compiling/not producing correct output. You had to correct the existing code, modify it a little bit, so that all test cases would pass for the given problem statement. 20 minutes was allotted for it.
3. Coding - There were 3 questions, 1 easy and 2 medium. 60 Minutes were allotted and it was enough. The questions were

<https://www.geeksforgeeks.org/count-of-sub-strings-with-equal-consecutive-0s-and-1s/><https://www.geeksforgeeks.org/boundary-traversal-of-binary-tree/>One easy question (could be solved with brute force)

Round 1 -

The Interview started without the formal introduction part. I had to write the code on the notepad. The interviewer asked a no. of questions. Which were -

Find the two max elements in array (max and second max). I told him first the sorting approach(nlogn), then doing two iterations(removing max once and then once again) and one iteration approach(keep 2 variables and compare twice each time).

Implement a queue using array, then identify the problem and solve that problem(circular array)

Given a tree structure, Print all direct and indirect children in the tree. (Create the data structure wisely). I took too much time in creating the data structure, but the approach was simple inorder traversal.

Next was a system design question

I have to create a software for a Garage (which repairs vehicles) to streamline the process, create the method to book appointment, check status, payment, and also allow the factory owner to see status of the Garage as well as see status of each user and their car. To implement this, I was allowed to use as many classes as I can, and use all the features of OOP. There were many questions about OOP during this question. I had to explain each method, what it does and create attributes and take care of data hiding as well. This question alone took 30 mins.

 Next Question was to remove a character from a string, and it had to be done recursively. I implemented the intended function quickly, but it took a while to explain how actually the recursion was working. Then Interviewer had me do some dry runs and told me to implement it iteratively as well. Afterwards I was told to optimize it, smaller than n. Then I was asked some questions about Binary search and possible modifications into it so that it can be used in this question. I could not figure out such modifications.

Round 2 -

It was a tech + hr round, At first, I had to introduce myself. Then Interviewer asked me to explain in detail about the project that i mentioned in the resume, what technologies I used and why. Then I was asked some key questions based on the technology and scalability(Multiple user etc). Then I was asked What did I learn from this project, and possible future goals.

After that, I was given a question.I was given a grade array and a score array, and a student score. Each element in grade array corresponds to element in score at same index, indicating a specific score for a grade(less than or equal to) achieved. This grade, score was given as input. I had to create a function which takes these inputs and returns the scores for a student. At First, I wrote the code, which was to check each grade of the student in the grades array, an O(n^2) Solution. I was asked to optimize it, and I determined that grades array is always sorted, so I replaced the inner loop with Binary Search. Final optimization was to implement a translation dictionary( it was only allowed in python so It did not count),

Second Question - We are given Some Stations, Some buses and their arrival and departure time. We have to find , if given a source and destination point, and arrival time, is it possible to reach from source and destination? If yes then what route would we take to reach destination at earliest. I discussed this question in detail using MS Whiteboard, and arrived at using Dijkstra Algorithm. I had to write the pseudo code. I treated the station as nodes, bus routes as edges and assigned a timestamp to each route and treated that as weight of the edge, and used priority queue for dijkstra and bfs as subroutine. He asked me the runtime complexity, I calculated it using (bfs + priority queue operation). Interviewer gave me hints and suggestions in between. It came to be O(V+ElogV).    
   
After this, there were 3-4 HR questions, like How did you prepared for NIMCET, how was BCA and How is online study going on. (Don’t be too open. Keep it formal).

That was the end of round 2.

**Ruchi Panse (205120083) Morgan Stanley**

**PI Round 1**

The interviewer was very sweet. She greeted me with hello and asked how I was doing?

Then she asked me to open NOTEPAD where she dictated me the question.

1)Given two numbers in the form of a linked list I have to return the sum of those two numbers in the form of a linked list.

EG:

9->9->9->7->2

9->9->8

O/P: 1-> 0-> 0-> 9-> 7-> 0

I told  her two approaches and she asked me to code one of them on the notepad.

2) IT was an oops question. She gave me a situation like if a class is defined and u have two parameters name and contact number but if at run time user passes more parameters than how will u handle it.

3) Given two binary trees. I had to find if the second tree is subtree of the first or not.

4) She gave me a situation to design a netflix feature.

If there were multiscreen allowed for a single account then how will u store all the binging details oof all the screens.

5)There was some more oops related question i don't remember them.

6) Gave me two string (pattern matching kinndda questions)

I had to find that whether second string was a substring of first or not.

She asked me to code this completely.

7) she then modified the above questions and asked me its approach.

This round lasted for 1hr 15 mins

**PI Round 2**

It was a HR round. Taken by some senior. He was very calm and cheerful exited to listen to me. He had my resume open and was going through it and talking to me abt it.

Then he asked how is college going. What do u prefer offline or online mode.

Then he asked me to describe one of my projects.(detailed discussion )

Then he asked me some team work based questions and gave me situations and asked me what would i DO in certain cases.

Then he asked me was there any situation where i started something but got stuck in between how i managed in that situation.

Then some general talks.

Then he asked me abt my clubs and committee and position of responsibility. This was again a detailed discussion.

Then again he shifted to what kinnda projects i would like to do, technology i would prefer and all.

In between i cross questioned him and he answered me well.

Then again we had some general discussions and hw asked me if i wanted to something else but since i already asked a good question before so i said no i was just curious abt that one and i got a good answer for it thankyou.

This round lasted fot 45 mins. And i personally enjoyed it a lot because it was more of a conversation type.

**Verdict : Selected**

**YASSER 205120110 - Morgan Stanley**

**Round 1**

1. Why is your preferred language C++?
2. Classes in C++, come with some default methods, what methods are those?
3. Difference between pass by reference and pass by value?
4. If you pass a vector to a function, would you pass it by reference or value?   Why?
5. What data structure would you use to implement the undo operation?
6. Time complexity of insert operation in a Linked List?
7. Time complexity of search operation in a Linked List and in an Ordered Map?
8. Coding question: Given an array and a value k, print all the pairs in the array whose sum is equal to the given value k.

**SHASHANK SHEKHAR PANDEY - 205120095 (MORGAN STANLEY)**

Round -1

1. Interviewer started with introducing himself, and then asked me for my introduction.
2. After that he discussed with me the projects I did, I told him 2 projects then he told me to explain any one of those to him. I explained the overview as well as the internal design of classes. Then he asked me a few questions regarding it and we discussed accordingly.
3. Next , He asked me about OOPS. He told me to explain the differences between COMPOSITION vs INHERITANCE.
4. He proceeded to DSA . First question was to write the quick sort algo and explain how partitioning works. Then he asked me about HEAP ds. After that he told me to create Heap from scratch. He asked me to make a max heap from a binary tree. Then implementation and working of  priority queue.
5. Next , OS section was there. He started with deadlock and conditions of deadlock. He asked me to write a code showing 2 processes are in deadlock. Then he asked me to write code for Bankers algo and explain it too. After that he asked me What are semaphores? Write the code for semaphore.
6. He then proceeded to DBMS section and asked me 2 sql querries.

First one was easy second one was to show unique records only in a table.

1. At the end a system design question was there which he asked , How to implement ATM machine system.

Verdict : - I was rejected from the 1st round.

**Charu Bajaj - Morgan Stanley**

**Round 1**

1. The interviewer asked me how is college going and do you like online mode.

1. After that he firstly introduce himself. Then then asked me to give my introduction.

1. He opened my resume and told me to explain the project which i have mentioned. He asked about the technology which I have used in the project and some other questions based on the project.

1. He asked me about the company what i know and then also explained me about the company.

1. After that he asked me question in dsa which was based on minimum distance

         and to identify that question and tell the approach how to solve it.         We discussed the approach only he did not ask me to code.

**Khushboo Khanchandani (205120041) - Morgan Stanley**

The interviewer started with how are you doing. Then she asked me to open the notepad and asked for first question which was..

1. Two linked lists are given. Let’s assume:

L1 = 1->2->3->4

L2 = 5->6->7->8

We have to create a new linked list in which we’ll store the values alternatively i.e. L3 = 1->5->2->6->3->7->4->8

After storing the values, we have to sort the linked list.

She asked me to code this program on notepad.

1. Discussed about cowin app, it’s features and what are the classes used to create such app. What changes can we perform in cowin app according to us.

The discussion went for 15-20 mins over this where we discussed some features and methodologies used.

1. Two strings were given in which we have to find that whether second string is a substring of first or not.

s1=”This is new world”

s2=”world new”

I discussed two approaches for this question and she kept on modifying the question.

At last she asked me to code.

Total time: 55 mins

**SURUCHI BAJAJ - Morgan Stanley**

1. Interview started with implement queue using array.
2. Then he gave me an array told me to find triplet such that ai+aj=ak. He told me to write brute force then explain the time complexity after that he asked me to optimize it write the code.
3. Asked the definition of recursion how it works then given an array reverse it by recursion and iterative approach.
4. After that there was discussion on oops he told me to implement the library management system he was giving me conditions(30 mins).
5. He told me to design a system for book where words are given you have to implement a class books, pages and words and then find the words on pages of the books and store the words and page numbers into a ds.

Total Time: 1 hr 15 mins

**Himanshi Bansal - Morgan Stanley**

**Round1**

The interviewer asked me to introduce myself.

After that she asked me a coding ques:

<https://www.geeksforgeeks.org/a-linked-list-with-next-and-arbit-pointer/>

I told her the approach then she asked me to code it. I was able to code it. Then she asked me 2 system design ques

1. Netflix system design
2. Codeforces system design

I told her what all classes will be there in system design. After that she asked me a coding ques:

<https://www.geeksforgeeks.org/check-if-a-binary-tree-is-subtree-of-another-binary-tree/>

I was able to code it. Then she asked me some sql queries which were basic. After that she asked me to tell about topological sort algo and khan’s algo.

Total time: 50 min

SAP Labs

**Hrishikant Mehta**

Online Test Questions:

**Q.No.1**

Given a string, how many letters would appear at same place when you reverse the string.

Eg. abcdesnjefcga

Highlighted letters will appear at same place, so answer is 6.

**Q.No.2**

Given two arrays find the number of elements which are not common in both the array.

**Technical Interviews**

Every round was verbal only, I didn’t code anything.

**Round 1**

·        Tell me about yourself

·        What topic you are comfortable in, I will ask question from that (I said DSA)

·        What is linked list

·        Given a circular conference table, where each person speaks one by one sequentially and mic has to be transferred, which DS will you use for this (I said CLL)

·        He extended the question saying that for each person there is another person who contradicts his opinion every time, so mic has to be transferred to that directly, what will you do (expected answer was something like linked list with next and random pointer)

·        OOPS question – there is a petrol vehicle servicing company which has implemented the class for vehicles, now a days electric vehicles are also coming, so how would you change that class (expected answer was inheritance and overriding)

·        This was extended to polymorphism virtual functions.

·        Give some real-life examples of data structure you use.

·        What is kernel

·        Little bit discussion about project.

**Round 2**

·        Tell me about yourself

·        2 rope and fire puzzle

·        Real life example of graph

·        Multiple inheritance and its problem

·        What is the problem with pointers in c and c++ as it is omitted in further languages?

·        Detailed explanation on project

·        Do you know or working on any new and trending technologies like data science, machine learning, Docker, Kubernetes, Data mining, etc.

**HR Round**

·        Introduce yourself

·        How is going virtually classes and all

·        How was previous round and your day?

·        Explain about your project

·        Is it coding really you like or something else also, like many people say I like coding but then say I like other things also?

·        Detailed Project discussion (focus was to know the thought process while developing the project and everything)

**Verdict: Rejected**

**AKRITI UPADHYAY (07)**

**Round 1 (35-40 min):**

* Tell me about yourself, then she told some stuff about her
* Started with a Puzzle: [The 3 & 5 Litre Die Hard Water Puzzle | Practice | GeeksforGeeks](https://practice.geeksforgeeks.org/problems/the-3-5-litre-die-hard-water-puzzle) (I wasn’t able to give the complete answer, I missed the last step)
* She asked me what my project was about.
* Asked about OOPS concepts. Asked to explain Polymorphism in detail, with follow up questions. (I told her literally everything I know about Polymorphism, even tho she didn’t ask me) (Giving real life examples is very imp)
* Asked Networks. What happens when we type a URL in a search bar? (I told her that I know very basic, and told her about DNS and a few more steps, as I studied it in UG)
* What is hashing? Internal implementation of hashing?
* What are threads? How are they different from a Process? How many threads will be there in a CPU of 4 cores? (She asked me if I am aware of thread pooling, I said no)
* What all Languages I know? I said C++, Java (but don’t remember it), basic Javascript
* How is the “mutual friends” feature implemented in Facebook? (I said through graphs)
* How does the “friends suggestions” feature work in Facebook? (how we can implement it)
* 3 very easy SQL queries, using select, aggregate functions, where clause
* What DS we can use to implement a Dictionary, some follow up questions based on what I said.
* Coding ques (didn’t ask me to code anything)
* Find second largest element in an array (<https://www.geeksforgeeks.org/find-second-largest-element-array/>)
* Detect a loop in a Linked List (I gave the hashmap approach first, she was fine with it. But I wanted to tell the best approach of tortoise and hare also, so I gave it to her anyway) <https://www.geeksforgeeks.org/detect-loop-in-a-linked-list/>
* She asked if I knew any JS frameworks, I said no, but I have started with NodeJs, but she didn’t ask anything from it.

These are the only questions I can remember right now, others were related to above mentioned topics only.

**Round 2 (around 45 min):**

* Tell me about yourself, his introduction
* He asked about my areas of interests (I said OOPS, DSA and OS - as he really wanted to know what theory subjects are my favourite)
* He asked about the 4 OOPs concepts, with Data abstraction in very deep, he asked about how we can implement it (there are two ways, I knew only 1, which was using access specifiers. He emphasised on the second one as well, but I didn’t know about it. Then he told me we can also implement it by abstract classes and interfaces. He asked a question about interfaces, but I told him I am not aware of them).
* Asked about Inheritance, multiple inheritance
* Exception handling (quite deep) - about try, throw, catch, finally, exception class, a situation ques on exception classes - if an exception is happened in the child class, but the base class object is thrown in the throw statement, then how will things be handled? (I struggled a bit in this, but I answered with what I knew, I did mention polymorphism in this as well, but he said it is a simple inheritance concept)
* Asked about Paging in OS (again in depth) - I told what I remembered at that time, I am not sure it was completely right
* If a process is of size 4gb and we have only 2 gb space, how can we handle this process?
* Virtualization
* Some Computer Organization and Memory related ques
* Concept of Primary and foreign key
* Insertion, deletion and updation anomalies
* About Project (about, which DB I used, how the data is stored)
* Coding ques (didn’t ask me to code):
* [Find the repeating and the missing | Added 3 new methods - GeeksforGeeks](https://www.geeksforgeeks.org/find-a-repeating-and-a-missing-number/)

I gave multiples solutions (sorting, counting frequencies, sum of first n elements), even tho the I told him an approach with the desired complexity of O(n) + 1 traversal, he was looking for 1 particular solution which was none of the ones I mentioned before, so after a few tries, he told me I was close, but after taking a few egs, I was able to figure out the approach, and he was very happy with me.

* In what situations we should use Tree DS (gave real life eg)
* What is a BST

**HR Round (20 min):**

* Tell me about yourself, his introduction
* Asked me how was my day going?
* Reason, why I started learning german (I mentioned it in my TMAYS)
* What makes me different for other candidates (for the job profile and in general)
* What I know about SAP
* What products SAP works on
* My strengths
* My hobbies
* How do I describe myself
* How do people around me describe me
* What challenge I am facing for a while now/What I want to do for quite a while now
* How internship works in MCA (I told him, my course was of 3 years)

**Note:**All my interviewers were very nice. Whenever I was asked a topic I wasn’t aware of I just told them, they were very accepting of it.

**Result:**Selected

**Deepeeka - SAP Labs**

**OT**

Question 1) [Find one extra character in a string](https://www.geeksforgeeks.org/find-one-extra-character-string/)

Question 2) Remove vowels from the given string

**Round 1 (Timing - 40 mins)**

First interviewer asked me to introduce myself and then he straight asked me questions related area of interest as I had mentioned web development, Data Structure, OOPS and DBMS in resume, he asked me questions related to each domain

First he asked about web development, told me to brief about my recent project so I explained him about code pazaru, then he asked me what is oops and how I have implemented it in the project , (as I have not used oops concept in it I told him that instead this I gave a real life example ), then we had deep discussion about each principle, then he asked me OS concepts, process vs threads, which OS I'm using and can I tell him how OS concepts used behind windows, as he was not satisfied with my answer he asked me about how url work and I explained it through my projects,  then he asked what protocols for this, then explain difference between http and https, how ssl certificate works, what is encryption, decryption difference between asymmetric and symmetric encryption (as I was not sure about this so I told him I m not sure ), then he asked me difference b/w server side and client side, how it works and its related concepts,then discussion about exception handling in oops, what is try throw and catch, how to handle error and its examples, what if we have error in next then what we will do, after having deep discussion about exception handling he asked me how MongoDB store its data, what is JSON objects and discussion about mongo, then he jump to a coding question

[How to flatten a Vector of Vectors or 2D Vector in C++](https://www.geeksforgeeks.org/how-to-flatten-a-vector-of-vectors-or-2d-vector-in-c/)

I gave him two brute force approach, first was traversing 2D array and storing elements in 1D array (but it will fail if we have nested array)

Then he asked what is time complexity and how we will calculate in this scenario,

Then he asked me to optimize it and so I thought another approach using stack, but still he was not satisfied with it, so he said no problem let’s move on

Then he asked me to code a class showing polymorphism, then asked what is overriding and overloading, virtual functions, pure virtual functions, again asked me how I have implemented this in my project

Then he gave me one last question what are some trending technologies u know, and after that I asked him 2-3 question

**Verdict: Not Selected for Round 2**

**Sonu Gupta - SAP LABS**

**Round 1 (1hr 12 mins):**

·        Asked me to introduce myself

·        Asked me about generating palindromes with meaning (Like ‘madam’ has a meaning but ‘aba’ don’t have any meaning, for cross checking we can use dictionary)

·        Asked me about polymorphism (in depth)

·        Asked me to code the quicksort algorithm

·        Asked me to code the rain water trapping problem

·        Asked me what kind of data structure we can use to make a notepad. (I was not able to answer)

·        He then asked me about my project

·        Then he lastly asked me about Paging.

**Round 2 (50 mins):**

·        Asked me to introduce myself

·        Then he asked me to tell real-life examples of graphs.

·        Then he asked me about real life examples of DFS and BFS.

·        Asked me about Multiple inheritance and its problems.

·        Asked me that if the pointer of base class assigned to object of inherited class will there be any error and also the opposite as if pointer of inherited class and object of base class.

·        He then asked me about exception handling.

·        Asked me about abstract classes.

·        Then there was a detailed explanation of my project and what was my role in it.

·        He then asked me about Integrity Constraints.

·        Asked concept of primary key and foreign key.

·        He then asked me to code the Lowest Common Ancestor Problem for Binary Search Tree. I gave him storing path based approach and he was satisfied. <https://www.geeksforgeeks.org/lowest-common-ancestor-in-a-binary-search-tree/>

·        Lastly he asked me a puzzle :  cut a cake in 8 pieces in minimum number of cuts (i.e., 3 cuts)

·       <https://www.geeksforgeeks.org/puzzle-3-cuts-cut-round-cake-8-equal-pieces/> (I gave him a stack based approach, but he also wanted me to tell him about cutting the cake horizontally which I didn’t get at that time.)

·        He asked me if there was anything I wanted to know from him, so I asked about the flexibility of working hours.

**Round 3 (HR 18 mins ) :**

·        She first introduced herself and then asked me to introduce myself.

·        Then she asked me how was your day.

·        Asked me about the problems I am facing in virtual mode.

·        Then she asked me to explain my project in depth and how many members were in my project as well as my role in the project.

·        Asked me why I want to join SAP Labs.

**Verdict : Rejected**

**NEETU MEENA \_SAP LABS**

**PI ROUND 1:  (timing: 45 min)**

* First she introduced herself and asked about myself.
* Basic explanation of project
* Oops  all main features …(i also gave real life examples for all )
* Dbms ACID properties in deep
* She gave me a easy coding problem of  fibonacci series and wants to know different approaches for it …( first i told him about simple variable swapping and print sum kinda method ...second i explain her about recursive method .. and then i discussed  about DP approach ..and she was totally agree with it..also i code it. )
* Abstraction in depth and how I will use abstraction in FB database and  how structure will work for FB database … totally she wants to ask how I will create fb database then i explain structure for that .
* Pass  by value & Pass by reference
* Error handling methods in c.
* Static and run time polymorphism in depth and also  write pseudocode .

**PI ROUND 2:(around 40 min)**

* First he introduced himself and I did the same.
* How was your day?
* How is virtual mode going?
* Which entrance exam did I crack to get admission in NITT?
* What is NIMCET?
* Which subjects do we have to study for preparation of nimcet?(this all in depth)
* Then he ask what’s role played by shuffle button in music playlist .Then i told right ans . and then he said to implement A music player which will work on shuffle button .Basically he wants to implementation for shuffle button for which some cases already given. I told him a random method and 1 other method for that  and he said yes you can in that way.. But you can’t use any library function for this ..and you have to write an implementation of a random function also … I started coding by using circular doubly LL in which 1extra flag field  is taken ...as we cant play song in reputation..i started coding and it was time consuming for me..i told him to change the qus as i know only approach ..but he was not changing the qus.
* Constructors in detail ..write pseudocode for parameterised and copy constructor.(it was completely done by me and he was satisfied with it)

**Verdict : Rejected**

**Vandana Mandloi**

**SAP Labs Interview experience :**

**Round 1 : (about 50-55 mint)**

Firstly the interviewer introduced himself then I gave my introduction.

·        Discussion started with project . They asked some questions related to that.

·        Then switch to OOPs:

·        What is Object Oriented Programming .

·        Polymorphism (deep discussion)

·        Exceptional handling (with code)

·        How you handle errors in c.

Didn’t remember other questions but it was basic questions.

  ·        Some basic questions from OS.

·           Very basic question from DBMS : what is DBMS and RDBMS.

·        Then switch to DS:

·        What is Data Structures .

·        Data structure in which you are comfortable.

·        Favorite Algorithm in DS (I said Topological sort then we discuss 1 application of it).

·        1 coding question : Addition of two binary numbers. I code it on dev cpp

·        In last , he asked a puzzle :

<https://www.geeksforgeeks.org/puzzle-1-how-to-measure-45-minutes-using-two-identical-wires/>

He helped me in solving this puzzle.

Then in last, I asked some questions and 1st round completed.

**Round 2 : (50 mint)**

Again interviewer introduced himself then I introduce myself.

·        Round 2 started with deep discussion about project mostly related to DBMS.

·        Then switch to OOPS :

·        Polymorphism with real life example.

·        Difference between Abstract class and final class. (I gave answer for abstract class only and explain about abstraction . )

·        Then he asked that if we have a function **sum\_name()**in base class and same function  in derived class so which function will invoke if we call it by creating object of base class.   And then discuss about virtual function.

·        Macro in C language.

·           Asked 2 questions from OS :

·        What is paging.

·        What is multithreading.

Then he asked the subjects which I  have in bachelor. Then He asked About computer networking , I said no.

He asked 2 above questions from OS and 3rd question From computer network. It was very basic : about topology and LAN WAN ,so I answered it.

·           Then switch to DS:

·        Knapsack problem discussion (no code).

·        What is Dynamic programming and what is the difference between recursion and DP.

·        Difference between array and Linked list.

·        What is the use of pointers in Linked list.

Then he ask to share screen and open notepad. He gave a very basic problem  to code:

Print the pattern :)

1

12

123

1234

12345

Then in last he asked again an easy puzzle : Cut a cake in 8 pieces by applying 3 cuts.

<https://www.geeksforgeeks.org/puzzle-3-cuts-cut-round-cake-8-equal-pieces/>

Then he asked me if I have any question for him. I asked some questions and the 2nd round completed.

**HR Round :(15 mints)**

·        I received mail for **HR round**. It was about 15 mints.

·     Again interviewer introduce himself then I gave my introduction.

·        My Strength.

·        My weakness and how I m working on it to eliminate it.

·        What you know about SAP Labs.

·        How you resolved problems you face while working on projects.

·        What is your goal for next two year.

·        Will you prepare for PPO for SAP Labs.

In last I asked some questions to him. He wish me all d best And HR round completed.

I forget some questions from round 1 and 2.

**NOTE**: All the interviewer was nice. They was checking knowledge in every subject not only DS and coding.

**Result : Selected**                                                                     **ALL THE BEST**

**Jasbir (205120037)**

**Round 1: Technical (20 mins)**

* PI started with a formal introduction.
* She asked me to explain all the projects I have done along with the technologies and programming language used.
* She asked the following questions from OOP:
* Explain the principles of OOP with real-life examples.
* What is an abstract class
* Explain run time polymorphism.
* Error handling concepts (try-catch throw, some predefined exception classes)
* Some questions on constructor and destructors(e.g is it possible for the derived class to redefine the constructor of a base class etc.)

* She then asked the following questions on DBMS:’
* What is normalization and explain different normal forms.

* Then she started explaining the HANA database which they are using in SAP
* She asked the following questions on DSA (didn’t ask to code anything) :
* What is an advantage to using a specific data structure while solving a problem?
* Principle of the stack.
* Explain the working of merge sort.
* How will you implement merge sort and quick sort in a linked list. Which is more feasible and efficient and why.

**Round 2: Technical (50 mins)**

* PI started with a formal introduction.
* He asked me to explain all the projects I have done with technology stacks.
* He asked me to explain the complete architecture of one of the projects.
* Different programming languages used in the project.
* Different application components of projects.
* Then he asked to explain the components one by one with complete database design, pages, and functionalities, etc.
* He asked about the functionality of joining a team in the project.
* He asked different cases for the above functionality to check if I have implemented those in the project.
* Then he asked a hypothetical situation when a user try to join different teams at the same on different devices. I told him the atomic transaction feature available in Django and it’s working.

* He asked all the programming languages I know.
* He started asking questions on different programming languages:
* C++: polymorphism, pass by value vs pass by reference, disadvantages of returning a pointer from a function (in OOP reference).
* JS: const vs let vs var, ES6 syntax and concepts, filter and apply methods, precedence, and associativity.
* CSS: different selectors available and scenarios for applying CSS properties.
* JAVA: packages, interface, and abstract classes.
* Python: pass by value and pass by reference in python, special methods in python, and decorators.

* He asked the following concepts of OS:
* Multithreading vs multiprocessing vs multiprogramming
* Deadlock and necessary conditions for deadlock to happen.
* Paging, Spooling, Thrashing.

* Then he asked coding problems on backtracking and recursion (didn’t ask to code anything):
* All possible paths from starting position to end position in a matrix.
* Reverse string, check palindrome using recursion for different types of input and possible base cases.

**Round 3: HR (10 mins)**

* She first introduced herself and then asked TMAY.
* Then she asked me about college life in online mode.
* Then she asked me to explain one of my projects .
* In the end, she asked me why I want to join SAP Labs for the mentioned role.

**Result:**Rejected

**Himanshi Bansal**

**Round1**

The interviewer asked me to introduce myself.

Then he asked ques related to oops

1. Polymorphism and its types .also code it
2. Abstraction and code it.
3. Exception classes

Then he asked me some os ques

1. Diff b/w process and thread.
2. Paging in detail

 After that he asked me some dbms ques

1. Normalization and explain bcnf
2. Acid properties

Then there were some dsa based ques like

   Traverse a linked list, muliti dimensional linked list and binary tree.

**CISCO**

ASHISH SINGH KAPARWAN 205120021

PI round 1

Date: 19 august

Platform: cisco webex

Around 20 students were selected after OT. PIs started from 8 30 AM of selected students. My round 1 started around 10 30 AM and lasted for around 50 minutes.

A quick introduction and then he asked me about the biggest project I have done in my life. I told him about the android app I made in 2018 under my senior. He asked what DB you used. I said sorry sir it was three years ago, I am no longer fluent in android. He said ok ok no issues.

Then questions were asked from os,dbms,cn,oop. Listing them(without order):

Three way handshaking, semaphore, counting semaphore, time slicing, call by reference(proper examples and cross questions), diamond problem, what is pointer,dangling pointers,uses of pointer, hashtable, collision handling, how to find whether there is a path between two nodes in a graph…when and why to use bfs and dfs to find a path, deadlock(he also asked me to code it in cpp….i just gave him an idea and didn’t code). In between for some questions, I also said “sorry sir! I have no idea” and then he moved on to the next question.

Puzzle was also asked in between:<https://www.glassdoor.co.in/Interview/There-are-three-boxes-one-contains-only-apples-one-contains-only-oranges-and-one-contains-both-apples-and-oranges-The-b-QTN_114922.htm>

Coding question: Given an array, convert it into a bst with no left child. I simply told him that I will sort the array and make a bst out of it.

At last I asked him two questions:

1)  How has your experience been in cisco?

2)  How often do you feel burnt out and what do you do to avoid/tackle it.

Round 2 started around 12PM and it also lasted for 50 minutes

Introduction.

A DEEP discussion on the project. He wanted to know everything. Normalization(all 4 types and how i handled it in my project), session handling, what’s the low level design, models, views, what technology, why the technology, tokens, how to know when the current user is logged in, storing password in the db etc. The discussion went on for about 20 minutes. In between he also asked me about whether i have ever implemented data structures like stack,LL,tree,graph etc on a project. I said no. Then he gave me an example of my project where these data structures could be used. I acknowledged and told him that i will think of these features and try to implement them in future.

He also asked me things like compiler design. For many questions, I said sorry sir I have no idea or sorry sir I haven't heard about it. He seemed okay about it.

Then came everything about OOP: function overloading,overriding, all four pillars of OOP with real life examples, shallow and deep copy(he made me code it), diff between functional, procedural and object oriented programming language, difference between cpp and python and then came difference between interpreter and compiler. There were more related questions from OOP only.

Behavioural questions like: what will you do when you have conflicting views with your teammates, give a real life example too. What do you think you should have in your life etc.

One coding question: fibonacci numbers(He didn’t seem satisfied… I got a bit confused about taking the size of array n or n-1 or n+1 etc). I coded this on collabedit dot com along with the shallow and deep copy question.

In the whole round there was just one coding question, rest the whole round was based on the project, OOP and behavioural questions.

I asked him two questions at the end:

Q1) Even after 15 years of experience, can one still feel like having impostor syndrome.

Q2) How often do you feel burnt out and what do you do to avoid/tackle it.

It was a positive interview. I couldn’t answer all the questions but at different points he seemed impressed by my answers. At the end, he said “ok ashish, I will let the HR talk to you, you better prepare well for the HR round”. I thanked him and hoped that my HR round will start soon. And then I was rejected. Out of around 20 students, I could see that only 3 students were there who made it to round 3.

Verdict: rejected

**POOJA YADAV**

**Date: 19-August**

**Platform:Cisco Webex**

**ROUND-1(55 mins)**

Interviewer asked me to introduce myself and then he told me about the cisco company. After that he started discussing the project i have mentioned in the resume. Interviewer was satisfied with the project related answer.

Then he start asking question like,

1)Hash table and how we resolve the hash collisions.

2)Pointers and how we access a pointer value and why we need pointers.

3)How can we convert a binary tree into a linked list and if you can do so  then how will you take input from the user so that it can be considered as a linked list.

4)System design: There is an application in which millions of images are uploaded daily then you have to access its size and some other application notifies the category that will go in 2 mb size category or 50mb size category and so on and same notify the user about it.

5)What is semaphore,Time slicing, Deadlock and its prevention.

6)Full form of AVL  in avl tree.

7) How will you find two nodes connected in a graph?

At last he asked me whether I had any questions or not.

In some I got stuck and in some the interviewer was completely satisfied with my answer, getting a good response from him.

Verdict:Rejected

**Amit Kumar**

OT:

Q1. [Expressive Words - LeetCode](https://leetcode.com/problems/expressive-words/)

Q2.  You have given a Number and you have given that in some encrypted format and the format was like 1 can be represented as “ONE”, 2 as “TWO” and similar to 9 as “NINE” and 0 as “ZERO” and number is written in words and then words are rearranged in any order and some words may be in lower case while some may be in upper case

For example :

9542 can be written in words as NINEFIVEFOURTWO

And rearranged form of this are FUIEVNNIRWOTFEO

And now it was like fUieVNirWOtFeo

So in input you have given this encrypted word you have to find the number only condition is that number should be in decreasing order.

Sample i/p : fUieVnNirWOtFeo

Sample o/p: 9542

PI ROUND-|

It started at 8:30 am for all selected students. I was assigned to the first slot so it started around 8:40 am and lasted for 40 minutes.

First he asked me to give a brief intro and then asked a few questions regarding my management. Then he came to the interview process and asked the first question . What is a Hash table ? so at that time I was unable to recall so I told him that I don’t able to recall now. And then he asked the next question to sort the linked list so I discussed two sorting techniques with him quick sort and Merge sort , he only wanted the name of sorting technique and asked which is inplace sorting technique. And my next question was to get the 2nd largest element in a linked list. So first I discussed the naïve approach to sort linked list and get the 2nd element from the last. And then he said this will take too much time to sort and then we’ll get the element by traversing. So I discussed the next approach which is taking two pointer one is always pointing to max and other is pointing to 2nd largest and then he was fine with my answer.

Next he asked about the deadlock then I answered that . and then he asked which algorithm will you use to find whether there is a path between two nodes in a graph, then I told using any traversal BFS or DFS we can check. Then he asked me if I had some questions for him . I asked one question . and then a link for the next round has been sent to me .

PI ROUND-||

In the 2nd round again he started with my intro and we had some discussion on my projects. And then he told me to share the screen and open any text editor. Then he asked one coding question which is

. you have given two ranges as min1 & max1 and min2 & max2  and find whether this range overlap or not .

I have solved this question. Next question was

. To check whether a binary tree is BST or not.

I code this also using traversal.

And then he asked some general questions like how I managed things during the pandemic .

And then he said okay fine. “HR will contact you in the next round . all the best”.

And then they eliminated me.

Verdict : Rejected

**BNY Mellon**

ASHISH SINGH KAPARWAN (205120021)

**PI Round-1**

12 students were selected after OT for PIs

Date: 26 Aug, 2021

Platform: MS Teams

Time: 10:55 to 11:20 AM (approx.)

It was of around 22 minutes. No introduction. Just a general hi/hello and how are you etc. First he asked some details about me like my preferred language and my project. No details were asked about the project. He told me how the basics are so important and made it clear that he will focus on the basics in this round. He asked me about classes, objects, encapsulation, abstraction, polymorphism and inheritance. Then he asked what my favorite sport was. I replied badminton. Then he asked me to represent a badminton game using classes and objects. Since I know pretty much everything about badminton, I was able to do this question. I explained him verbally that so and so functionalities can be done. He was satisfied and gave me a feedback that instead of directly jumping on the design, one must think about the objects first. Next followed another question based on OOP. He explained me the question and asked me to think about it. My answer revolved around using inheritance. He was satisfied and told me interface can also be used. After this I asked him a couple of questions and after answering he told me that he will send me to 2nd round. I wasn’t told to code anything in this round. Everything was verbal.

**PI Round-2**

Date: 26 Aug, 2021

Platform: MS Teams

Time: 1:50 to 11:20 PM (approx.)

This went around for 30 minutes. No introduction. Just a general hi/hello, how are you, excited? etc.

He asked me<https://www.geeksforgeeks.org/rock-paper-scissor-in-c/>

The whole round revolved around this question. He gave me some conditions and asked me to code it in codepair. After writing, running and debugging the code he changed the conditions and asked me what changes could be done. At the end of this round, this was the code that I had in codepair after all the questions, condition changes etc.

#include <cmath>

#include <cstdio>

#include <vector>

#include <iostream>

#include <algorithm>

using namespace std;

void assignCharacter(char& computer){

// range of random\_number will be [0,99]

int random\_number=rand()%100;

// [0,33] -> stone,

// [34,66] -> paper

// [67,99] -> scissor

// according to the random number, we will assign

if(random\_number>=0 and random\_number<=33) computer='s';

else if(random\_number>=34 and random\_number<=66) computer='p';

else computer='c';

}

int playTheGame(char computer1,char computer2){

// case of a draw for computer1

if(computer1==computer2) return 0;

// three cases for win for computer1

else if(computer1=='s' and computer2=='c') return 1;

else if(computer1=='p' and computer2=='s') return 1;

else if(computer1=='c' and computer2=='p') return 1;

// case when computer1 is losing

return -1;

}

int main() {

// random numbers arent repeated

srand(time(0));

// stop when someone wins 10 games

// print number of games won, drawn and lost by both the players

int won1=0,lost1=0,drawn1=0;

int won2=0,lost2=0,drawn2=0;

int total=0;

while(1){

     char computer1,computer2;

     assignCharacter(computer1);

     assignCharacter(computer2);

     // draw->0

     // win->1

     // loss->-1

     int result=playTheGame(computer1,computer2);

     total++;

     if(result==0){

         drawn1++;

         drawn2++;

         //cout<<"Game ended in a draw"<<endl;

     }else if(result==-1){

         lost1++;

         won2++;

         //cout<<"Computer1 lost the game"<<endl;

     }else{

         won1++;

         lost2++;

         //cout<<"Computer1 won the game"<<endl;

     }

     if(won1==10 or won2==10) break;

}

cout<<"Total games: "<<total<<endl;

cout<<"For computer1:"<<endl;

cout<<"Won: "<<won1<<" "<<"Lost: "<<lost1<<" "<<"Drawn: "<<drawn1<<endl;

cout<<"For computer2:"<<endl;

cout<<"Won: "<<won2<<" "<<"Lost: "<<lost2<<" "<<"Drawn: "<<drawn2<<endl;

return 0;

}

Then he asked me to write all conditions in playTheGame() function in a single line. After a minute of thinking, I asked him for a hint. He told me about using map. But since we were running out of time, he asked me not to code it but just remember it. He gave me feedback: I should look for generic things in a problem, try to make proper functions for them and not write hardcoded values. He also appreciated a few things in code like comments, debugging code, approach etc.

Note to the reader: I would suggest the reader to take up a good amount of time while writing code in an interview. Write comments, keep speaking while writing the code and make functions with proper names.

**PI Round-3**

4 students made it to the final round

Date: 27 Aug, 2021

Platform: MS Teams

Time: 10:50 to 11:10 AM (approx.)

A small round of around 20 minutes. Tell me about yourself. The interviewer asked about my preferred language, technical skills, what courses I have done apart from the course curriculum. A situation based question was asked. It was somewhat like what will you do when the team is not working properly, they are demotivated etc. The round ended after I asked a couple of questions. Nothing about the company was asked. Some more easy and general questions were asked.

Verdict: selected (3 students were selected out of 4)

Adobe

Himanshi Bansal-(205120034)

Round1:                                                                    Duration: 1hr 15min

The interviewer started with coding ques. He asked me 5 coding ques:

1. <https://www.geeksforgeeks.org/level-order-tree-traversal/>
2. <https://www.geeksforgeeks.org/function-to-check-if-a-singly-linked-list-is-palindrome/>
3. <https://www.geeksforgeeks.org/flatten-a-binary-tree-into-linked-list/>
4. <https://www.geeksforgeeks.org/print-a-given-matrix-in-spiral-form/>
5. https://www.geeksforgeeks.org/check-if-a-binary-tree-is-subtree-of-another-binary-tree/

Time complexities were discussed in detail for each coding ques.My interviewer was very helping. He told me at this test case your code will fail and asked me to resolve that.He also provided me hints in between.

  Then he asked me some OS ques:

1. What is paging?
2. What is segmentation?
3. Diff b/w paging and segmentation?
4. Race condition. Explain with real life application.
5. Methods to solve race conditions. Explain with real life examples.
6. Deadlock.methods to prevent deadlock.explain with real life examples.
7. Bankers algo.explain algo.write code in cpp for bankers algo
8. What are non-blocking processes? (I didn’t know that so I told interviewer I don’t know abt this)

Then he asked do you have any questions for me I asked 2 -3 questions to him and my interview was over.

    Verdict: Selected

**Kajal Nerkar- 205120039**

**Round 1**                                                                   **Duration - 1 hr 20 min**

The interview started with a general introduction about how college is going on and the subjects you have studied in your semesters and all.

Then he moved to **OS**, and asked me the following questions:

1)Difference between threads and process

2)Context Switching

3)Dispatcher

4)Process Scheduling and its algorithms(only names)

5)Shortest Remaining Time First

6)Burst Time

7)How to calculate the burst time if CPU has not scheduled the process yet(Prediction Techniques)

8)Process Synchronization

9)Thread Synchronization

10)Critical Section

11)Real Life examples where the critical section is used.

12)Memory Layout in C/C++ programs

13)Global Variable is stored in which segment of memory layout

14)How many parts are there in the memory layout?

15)What are the executable files?

16)Mutex(Binary Semaphores)

17)Lock Variables

  I answered all the questions well and he was satisfied with it.

Then he moved to the **coding part:**

1. <https://www.fayewilliams.com/2011/09/21/bitwise-rgba-values/>

I gave him one approach but he wants me to solve it using bit manipulation and I failed here.

1. <https://leetcode.com/problems/intersection-of-two-linked-lists/>

I was able to solve this question.

Then he moved to the **OOPS**

1) Virtual Functions

2)Pure Virtual Functions

3)Dynamic Memory Allocation

4)How to allocate memory for 2-D array

5)How to access a[5][5] from the dynamically allocated 2-D array

Then he asked me some **Data Structure** questions:

1)Tell me about the Linked List

2)The situations where we should use the map.

I answered all the questions with real life examples (in OS also).

With this he was done from his side and asked me if I have some questions

Then I asked 3 questions and my interview ended with this.

**Tip:** Don’t miss the real life examples while explaining.

**Verdict**: Rejected                                                       Thank You :)

**AMIT PATIDAR- 205120017**

**Round 1**                                                              **Duration - 35 min(4 PM)**

The interview started with a coding question

I doesn’t get question properly it was asking for some cars are moving on a road from left to right and we are given their different speeds in the form of array and no two cars move parallely like this but I doesn’t get it properly what I have to give as a output.

Then she moved to **OS**, and asked me some questions:

1)What is thrashing

After answering this she asked  me how segmentation fault occur.

2)Difference between threads and process(in detail)

3)Context Switching(for both process and thread)

4)how the memory is managed in process and thread(in detail)

Then she again moved to the **coding part:**

1.https://www.geeksforgeeks.org/find-rotation-count-rotated-sorted-array/

I gave him one approach using linear search but she wants me to do in less complexity using binary search and I am unable to do it because we have given only a single array and at that time I doesn’t get the idea to reduce the complexity

Then she asked me to code in linear search and I made a code but then again she moved to binary search but again I doesn’t get the idea then she asked me how binary search work and after discussing this

She was done from her side and asked me if I have some questions

Then I asked one question and my interview ended with this.

Verdict – Rejected                                                      Thank You

**Amazon**

**Shashank Shekhar Pandey - 095**

**OT**

**It comprised  4 sections.**

1.> Debugging which was of 20 mins .

2.> Coding section ( 2 questions. 1 easy and other medium) of 75 mins

1. <https://www.geeksforgeeks.org/minimum-number-of-distinct-elements-after-removing-m-items/>
2. Second question was implementation of array/

3.> Behavioural questions of 35 mins based on amazon principles

4.> Aptitude section of 25 mins.

I solved all of the questions and 13 students were shortlisted for the PI.

**PI**

This was the only PI amazon took for hiring the interns.

Started with my introduction and a brief discussion on my project. I told her regarding OOPs concepts which I had used in it. She then asked me a few questions on OOPs(inheritance , abstraction and all) then she moved to the coding part.

The first coding question was of DP.

<https://www.geeksforgeeks.org/find-palindromic-sub-strings-given-string-set-2/>

I solved it using loops and brute force. Then she asked about my time and space complexities. I told her O(n^3) then she told me to further optimise the code which I was thinking of using DP. But she told me then that time is running out  so she proceeded to next section.

Second question was to Implement Queue data structure from scratch and then use this queue ds for printing the right vie**w of a tree without using STL queue of C++ or any other language.**

**I performed both the operations well and then I dry ran  it and  she was fin**e with the solution and she ended the interview as it was taking longer.

**Verdict : - Selected**

THANK YOU!!

**Yasser Osman Khan – 110**

**OT:**

1. **Debugging:**Solved 7/7, time limit was 20 minutes.
2. **Coding:**   
   **1.**[**Similar problem**](https://leetcode.com/discuss/interview-question/241808/Google-Two-sum-closest)**2.**Question based on Binary Search   
   Solved both, time limit was 70 minutes.
3. **Worklife assessment:**Don’t know the time limit, was sufficient. (The mail mentioned it would be 20 minutes but there was no timer in this section).
4. **Aptitue:**24 questions in 30 minutes.

**PI:**

He introduced himself and then asked me to introduce myself.   
My interview lasted for only 30 minutes

He told me that my interview was going to test me on my coding and problem solving skills.   
First, he asked me what a Linked List is.

3 Coding questions followed:

1. [Swap Nodes in pairs - Leetcode](https://leetcode.com/problems/swap-nodes-in-pairs/)He asked me to write the structure of the Node class for the Linked List first. Then I gave him an iterative approach. He told me to code it. As I started writing the code, I thought recursive would be cleaner, I said the same to him, and he told me to code whatever approach I want. I coded the recursive implementation. Once I was done, I told him that the code is done, just let me dry run it once. He said, let us do it together, he gave me an input, and I took him through every line of the code, what value was being stored in each variable after each line, I wrote all of this down in the comments, he was satisfied with it and moved on to the next question.
2. [Print all subsets of given array - Leetcode](https://leetcode.com/problems/subsets/)I gave him a backtracking approach, and told him how my code would execute on a given set of 3 elements, once he was satisfied, he asked me to code it. Once I was done with the code, I had to again take him through the dry run of the code on the same set of 3 elements, the recursion went very deep during the dry run, I got a little confused after 3 subsets were printed but I was able to go through till 4 or 5 subsets, he was satisfied then.   
   Tip: If you’re explaining the dry run of a recursive code, maintain a call stack and keep pushing all the function calls onto the stack, I didn’t do this so I got confused when I backtracked as I forgot what the last call was after 4 levels.
3. [Level Order Traversal of Binary Tree](https://www.geeksforgeeks.org/level-order-tree-traversal/)Since my first 2 questions were on the easier side of the medium questions, I figured he might give me a harder question now, but to my surprise he gave me the easiest question possible. I told him the queue implementation, he gave me a binary tree, I showed him by writing down the queue state in each iteration and printing the output. Once the complete level order traversal was done, he told me to code it.

After the code was done, he said that will be it, do you have any questions for me? I asked him about the tech stack used at amazon and at his team.

**Verdict -**Selected

**Amitabha Roy** – 205120013

I have solved two coding questions of OT completely.

PI:

My PI began with intro of the interviewer and he described about him and his work in Amazon. He have gone through his journey in detail. He was quite interactive.

Then he told me to introduce myself, I told him my intro.

I was told to share my screen via Amazon Chime.

Then, I was asked two questions->

1. Find the no of elements greater than that elements toward right

<https://www.geeksforgeeks.org/count-of-larger-elements-on-right-side-of-each-element-in-an-array/>

At first I told him brute force approach then he told me to give a optimised solution. I was quite nervous at that time. Then I gave this answer he was satisfied with it and told me to code it in their environment.

1. Given a sentence, if you encounter space it will consider it as backspace

i/p-> ab c

o/p-> ac

I have given him a solution with brute force approach, he was okay with it.

At that time he went for a break and came back after some time.

Then he told me to code with it.

My interview lasted about 40 minutes.

Result - Rejected.

**Jasbir – 205120037**

**OT:**It contains 4 sections;

* **Debugging (20 min):**errors were pretty simple solved 7/7 within 5 min
* **Coding (70 min):**

Got same two questions, descriptions were different butboth asking   to find the root node of the N-ary tree having highest average  value.

<https://leetcode.com/discuss/interview-question/349617>

* **Logical Reasoning (30 min):**Questions were from Relations, Round table positioning, Directions, Patterns, Assertion reasoning.

Solved all questions.

* **Behavioural and work style questions (20 min):**We didn’t have to write anything here. Just have to select possible response corresponding to the situations asked.

**PI (1 Hr):**

Interview started with a formal introduction of the interviewer and then he asked to introduce myself.

He said we will directly go the DSA problems, he asked following two problems:

1. [Swap adjacent nodes of linked list without changing the data](https://www.geeksforgeeks.org/pairwise-swap-elements-of-a-given-linked-list/)

He explained the problem, gave 2 testcases and asked me to explain the approach to solve the problem. I gave him an iterative approach where I will maintain 3 pointers to update the links of the nodes while traversing the list. He then writes the declaration of the function and asked me to complete that function.

After the completion of the code, he asked to dry run the given test cases. I explained the logic and functionality of my code by drawing it on paints. During the dry run he told me I am missing a condition within my loop, I found and correct the same.

At last, he asked the time and space complexity of my approach.

1. [Reverse a Linked List in groups of given size](https://www.geeksforgeeks.org/reverse-a-list-in-groups-of-given-size/)

I explained recursive approach for above problem. He didn’t ask to code this problem.

1. [Find whether it is possible to finish all tasks or not from given dependencies](https://www.geeksforgeeks.org/find-whether-it-is-possible-to-finish-all-tasks-or-not-from-given-dependencies/)

He explained the problem and gave two testcases. I draw the dependencies on paints and explained him that we only have to detect cycle in the undirected graph of the given dependencies to decide the result.

I gave him DFS approach for the same and explained him all vectors I’ll be using to solve it. A small discussion went on why I’m using recursion stack vector. He told me to code the solution. After completion, I explained the code while dry run the test cases (showing the stack, and vector contents).

He asked me the alternative of the recursion stack vector to make decision of cycle. I told him by maintaining three parameters for every node (not visited, in progress and completely visited).

He asked the space and time complexity of the approach.

After this he asked if I have any questions for him. I asked two questions related to projects and teams in Amazon.

**Verdict: Selected**

Page Break

**Manish Nangliya – 205120050**

**Online Test: 4 section**

**Section 1: 20 min**

7 easy question to correct logical errors and I solved all 7 in 8-10 min.

**Section 2: 70 min**

2 Coding question

First: <https://leetcode.com/discuss/interview-question/349617>

Second: <https://leetcode.com/discuss/interview-question/1412479/amazon-online-assessment-fetchitemstodisplay>

All test cases passed in both questions.

**Section 3: 20 min**

some behavioural questions and situational based question. Just have to respond according to situation given in question.

**Section 4: 30-35 min**

Aptitude and reasoning type question.

**Personal Interview:  duration( 1 hr 18 min)**

First Interviewer introduced himself and then asked me to introduce myself.

Then he asked me to give some details on which project I am working on.

Then he explains the procedure of Interview.

Then he gave me first question:

**Question 1:** I have given a root node and two node N1, N2 of Binary search Tree. I have to print the path between these two nodes.

<https://www.geeksforgeeks.org/print-path-between-any-two-nodes-in-a-binary-tree/>

Above link is of binary tree... but I was asked for binary search tree.. Modification.

Honestly, I faced this type of question first time, I first tell the approach and he gave me inputs and tell that execute your approach which you are thinking. I tell him approach and it was looking fine. He gave me 3 input case to dry run one by one.

 n1 root n2, n1 n2 root, root n1 n2 … I missed a single case and I was not able the figure out at that time.

**Question 2:**Question was framed like that I have given X school’s students rank in descending order and every school have equal no. of students i.e., n. then I have to return an array of X\*n size having students rank in descending order.

Ex:

School1- 98, 97, 67,45…

school2- 89 78 34 23

school3- 56 34 12

answer- 98 97 89 78 67……

[**https://www.geeksforgeeks.org/merge-k-sorted-arrays/**](https://www.geeksforgeeks.org/merge-k-sorted-arrays/)

**Brute force:**First I gave him brute force approach that I can put all student's data in single array and then I sort…

TC: n\*X (log n\*X)

Then he told me for optimize time complexity.

**Efficient approach:** I explain the approach of above link ..

Data are given in matrix form of size X\*n

First, I put the first column to the priority queue(min-heap) and then repetitively popping the top element of Priority Queue until not empty and again putting back the next element of popped element.. then he satisfied with my dry run . then he told me to code..

I code simultaneously and explaining the approach again which I have discussed. Then he told me that I got it .

Time Complexity : X\*n log(X)

X is the no. Of schools and n is the students in each school.

**Verdict : Rejected**.

**Sachin Sharma ( 205120085 )**

**OT :**

I attempted all the questions and I was able to pass all test cases of all debugging and coding questions.

Coding questions were :

1. <https://www.geeksforgeeks.org/maximum-distinct-elements-removing-k-elements/>

1. Easier version of this <https://www.geeksforgeeks.org/find-the-maximum-of-minimums-for-every-window-size-in-a-given-array/> as the window size was given in ques as k

**Interview:**

The Interview started with the interviewer telling me that he is going to ask two questions and I have to give him the optimised approach (if I get it at once) and code should be working. Then he asked for my introduction and then gave his introduction. We had some 5 min discussion from some points I told in my introduction (we can include points on which we want the discussion).

Then he moved on to coding part, he started with pattern searching in strings.

Given two strings ABADRABABA and ABA we need to find at what indexes in our first string, the second string occurs. Output: 0, 5, 7

I first told the brute force that we will check each window of the length of second string and compare with second string and that will be of O(m\*n). He asked to code it, he found it okay and then asked to optimise it. I said that we will hash the second string and slide a window in the first string and compare the hash and time complexity would be reduced to O(m) basically Rabin Karp algorithm. He didn’t ask to code it.

Next was a question where K largest elements were asked from a array, I told to sort it and fetch the last k elements, then I told we can also use heap but time complexity would be same. Asked what do you want to code Merge sort or Heap. I coded merge sort. He checked and it was all right.

At last, I asked him a few questions and we had a 10 min discussion on that before the interview ended.

**Verdict: Selected**

**Moh Azhar Hussain (205120052)**

**OT:**It contains 4 sections;

* **Debugging (20 min):**

Fix the errors solved 7/7 within 7-8 min

* **Coding (70 min):**

First: <https://leetcode.com/discuss/interview-question/349617>

Second quetion is based on array

* **Logical Reasoning (30 min):**

Aptitude and reasoning questions

* **Behavioural and work style questions (20 min):**

Questions to test the work styles and situations handling,

**PI: 35-40 min**

He asked me about my intro and project, then he directly skipped to the coding part.

**Que 1:**

[**https://practice.geeksforgeeks.org/problems/print-anagrams-together/1**](https://practice.geeksforgeeks.org/problems/print-anagrams-together/1)**#**

He gives me a string array and one output 2d array.

He told me to analyse situation and want I am thinking, I said its related to grouping anagrams in string array, he said you got it now code your solution and explain me every step,

I code some lines then he told me I got you what is the complexity of the code, I told O(n\*n\* s) where s is length of each string, then he asked me to optimize,

I used hash map with a string as key and string array as value and I coded the same, he was satisfied with the solution.

**Que 2:**

<https://www.geeksforgeeks.org/find-the-largest-subarray-with-0-sum/>

He gives me an array and asked me to find longest subarray with sum 0, I told the brute force of O(n\*n) to find all subarray with sum 0 and return the max from it, then he told to optimize,

 I tried to optimize it using a map then he said we are running out of time and if you got the approach then code, it and then he just listened to my approach.

NO OOPS, OS, DBMS que asked.

**Verdict: Rejected.**

**AAYUSHI (205120002)**

**OT:**

I attempted all the questions and I was able to pass all test cases of all debugging and coding questions.

**PI:**

**DURATION:** 1 hour(approx.)

* The interview started with a quick introduction of the interviewer, then I introduced myself.
* In the beginning itself he told me that we’ll do two coding questions and then he shared the code pair link for the same.
* **1st question**: <https://www.geeksforgeeks.org/next-greater-element/>

Firstly, I gave him the naïve approach. Then he asked me about the time complexity for which I said that it’ll be O(N^2). So, he asked me to optimise it, for which he himself gave me a hint that you can use stack data structure for this. So, I explained my whole approach to him by doing a dry run on the test case that he provided and he said that yes it will work. But he asked me to code only the naïve approach. Before writing the code, he asked me to use descriptive function and variable names and also keep explaining your code as you write. Then after doing the code, we moved on to the next question.

* **2nd question:** <https://www.interviewbit.com/problems/magician-and-chocolates/>

I gave him the naïve approach for this with also mentioning it’s time complexity. Then I gave him the approach that uses max heap. After this, he asked me to code it up for which I did it by explaining each and every line to him. As I was coding, I was also adding comments to the code. Then, He asked me the time complexity of the push, pop and top functions of heap.

* Later he asked me whether I have any questions for him. I asked 2-3 questions and the interview ended.

The interviewer was really nice and helping me at every step.

Verdict: Rejected

**Harsh Rai - 205120032**

**OT**

Online test comprised of **4 sections**

1. **Code debugging** with some easy C++ code given **(Solved 7/7). [Time limit: 20 minutes]**
2. **Logical Reasoning** with 24 questions with questions like patterns and puzzles. **[Time limit: 35 minutes]**
3. **Coding test had** two questions **(Solved both questions with all test cases passing) [Time limit: 70 minutes]**
4. one question was about a **sliding window** where you have to **find a pair of numbers with the sum closest to the given number.**
5. Second question was based on greedy approach. I don't exactly remember the question.
6. **Behavioural and workstyles-based** questions. (**No timer)**

**PI**

My Interview started with a short introduction and then we directly jumped to the DSA question's part, **The Interviewer didn't ask any core subjects or about my projects he only focused on DSA.**

 

* [Number of Islands](https://leetcode.com/problems/number-of-islands/)

Firstly, I discussed my approach with the interviewer and assumed that only a cell is connected to 4 of its neighbours so he corrected me there and then he asked me to write the code (only the function and not the whole code with I/O handling).

After writing the code he checked it line by line with the given test case. I was missing a few edge cases so he just hinted to me about that and I corrected it, then he asked me about Time and space complexity in depth with other possible test cases and also for DFS in general.

* [Longest Substring Of All Vowels in Order](https://leetcode.com/problems/longest-substring-of-all-vowels-in-order/)

I explained my approach to the sliding window and discussed some corner cases with the interviewer. I got stuck at one point so I did a dry run of the code. The interviewer was also giving his input in between and at the end he wrote his own approach from scratch which was the same but the code was much simpler.

 

At the end i asked him questions like,**in which project he is currently working?**and**how was his experience in his initial days?**

 

**Note:**The Interviewer in my case was focused on how I discussed with him the problem and approaches, try to give your input while he/she is explaining or giving hints.

**Verdict - Selected**

   
   
   
   
   
   
   
   
   
   
 