

ACCOLITE INTERVIEW EXPERIENCE: SDE-1

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M.C.A (2018–2021)

DAY 1 : 27th August 2020

Round 1: Aptitude Test

Platform : EduThrill

No. of Questions : 30 MCQ

Test Duration : 30 minutes

* No negative marking.

Questions would be related to CS concepts & Programming and overall Aptitude.

- | | |
|------------------|---------------------|
| 1. OOPs Concepts | 2. Operating System |
| 3. Networking | 4. Data Structures |
| 5. DBMS | |

Tip: It is advisable to practice on EduThrill app as questions get repeated.

Round 2: Online Coding Test

Platform : CodeAnalyzer

No. of Question : 1

Test Duration : 60 minutes

Problem:

Given a list of coins, father needs to distribute them amongst his three children.

Complete the function to return 1 if the coins can be distributed so that each receive equal value of money from father, else 0.

Example:

- S = [4, 2, 3, 5, 1]
Output: 1 // [1,4][2,3][5]
- S = [2, 5, 1, 6, 10, 8]
Output: 0

Tip: Try not to compile frequently as it takes a lot of time to get compiled/run.

* Both Rounds were Elimination Rounds.

DAY 2 : 28th August 2020

Technical Round 1: (10.30am-11.35am)

Platform : Skype, Google Docs

Test Duration : 1 hour 5 minutes

1. The interviewer was friendly. She introduced herself and asked me to do the same.
2. Then, she asked me about the projects I have worked on. (Start with your best project)
 - a. Tell about the inspiration behind your project.
 - b. What features you have implemented.
 - c. Mention the Tech Stack used.
 - d. Explain briefly about the database.

3. Programming Question 1:

Given two strings s and t , write a function to determine if t is an anagram of s .

Examples:

- Input: $s = \text{"anagram"}, t = \text{"nagaram"}$
Output: true
- Input: $s = \text{"rat"}, t = \text{"car"}$
Output: false

Link: <https://leetcode.com/problems/valid-anagram/>

Discussion:

- Approach 1- Count characters using 1 array
Time Complexity: $O(n)$
**She then asked me to code the above approach*
- Approach 2- Sort and Compare
Time Complexity: $O(n \log(n))$

4. Programming Question 2:

If an office is represented by a matrix $Ar[][]$ of size $m \times n$, where 0 : walls and 1 : chairs .

Find Minimum number of bay areas that the office can have?

A bay is created using chairs aligned horizontally or vertically and/or surrounded by walls.

Examples:

- Input: $Ar = \begin{bmatrix} 1, 1, 1, 1, 0 \\ 1, 1, 0, 1, 0 \\ 1, 1, 0, 0, 0 \\ 0, 0, 0, 0, 0 \end{bmatrix}$

```

    ]
Output: 1
● Input: Ar = [
    [1, 1, 1, 1, 0],
    [0, 0, 0, 1, 0],
    [1, 1, 0, 0, 1]
]
Output: 3

```

HINT: Equivalent to the “Number of Islands problem”

Link: <https://leetcode.com/problems/number-of-islands/>

Discussion:

- Approach 1- using DFS
- Time Complexity: $O(m*n)$
- *She then asked me to code the above approach
- Code -> Dry - run -> update -> Dry - run -> Done

5. **Programming Question 3:**

Given a non-empty array of integers, return top k most frequent elements.

Examples:

- Input: nums = [1,1,1,2,3], k = 2
Output: [1,2]
- Input: nums = [1], k = 1
Output: [1]

Link: <https://leetcode.com/problems/top-k-frequent-elements/>

Discussion:

- Approach 1- find and store frequency in a map of form map<el, key>
- Time Complexity: $O(n)$
- Space Complexity: $O(x)$ x : distinct integers in array

Added constraint: Do it in only 1 pass

- Approach 2- Though I was not sure, since we have to do it in 1 pass so I found the input equivalent to a stream of integers (i.e n unknown).
- Hence, I proposed to use a **minimum priority_queue**< pair < freq[el] , el > > of size k prioritized with freq[el].
- So at any point of time (i.e i^{th} element read) we will have top k frequent elements in the priority_queue uptill this point.

6. **OOPS Concept:** Given 3 entities in a Database : TEACHER, SUBJECT, BOOK

Define the classes for the same and determine how the relationships between corresponding classes will be implemented.

HINT: Class Design (OOPS Design)

Link: [Example](#)

7. Lastly, She asked me if I have any questions for her. I asked her about the kind projects/products Accolite develops and if she can brief me about any of them.

Technical Round 2: (12.15pm-12.40pm)

Platform : Skype

Test Duration : 25 minutes

1. He started by telling me to explain any of my **projects**, while scanning through my Resume.

Again, include the following while answering this:

- a. Tell about the inspiration behind your project.
- b. What features you have implemented.
- c. Mention the Tech Stack used.
- d. Explain briefly about the database.

Follow-up Questions:

- a. How are you storing intended data (in this case, files)?
- b. Discussion about Accessibility of the webApp.

2. He then asked to explain my other project which was based on Socket Programming and what all challenges I faced.

Possible answer: To implement concurrency among multiple client processes, we had to use select command and store status of every client as: last_operation_executed, user info, etc.

3. Then, he questioned me about **Multi-threading**.

4. He inquired about the subjects we have studied in our curriculum so far.

And then, he asked what **Abstract Class** is.

Follow-up Question:

- a. How is Abstract class different from Interface?

HINT: Try explaining through examples.

5. Next Question was from DBMS: What is a **transaction**?

I tried to define a transaction and then listed the ACID properties. But I felt he wasn't satisfied with my answer, so I explained it using an example of a Bank Transfer.

6. Lastly, he asked me if I have any questions to which I questioned him about:

- a. the challenges I may encounter working in Accolite

- b. project he is currently working on, to which he briefly told me about “Evernote” and its upcoming updates

Points to Remember :

1. Confirm the requirements of the question.
2. Think out loud and keep reciting what comes to your mind.
3. Also prepare theoretical topics of: OOPS, DBMS, OS
4. One must know his/her project inside and out.
5. Don't try to bluff, be clear and honest while answering.
6. Most importantly, Keep Calm and Be Positive.

For further queries, contact me @ disha.mca.18.du@gmail.com

Happy to Help!

Good Luck!

