COIMBATORE INSTITUTE OF TECHNOLOGY

(GOVERNMENT AIDED AUTONOMOUS INSTITUTION)

CIVIL AERODROME POST, COIMBATORE-641014.

PLACEMENT AND TRAINING CELL

PLACEMENT YEAR 2020-2021

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COMPANY NAME	: Accolite
COMPANY TYPE	: CORE
JOB DESIGNATION	: Software Engineer
SALARY (CTC)	: 9 - 11 LPA
INTERN OFFERED ?	: YES
BOND	: NO
HAVE YOU PLACED ?	: YES

*(Please comment this section **in detail** to guide your juniors in bright way)*

COMMENTS ON SELECTION PROCESS :

ROUND 1 :

- This round was online round, which had 30 MCQs.
- Accolite uses its own product called Eduthrill to conduct online test.
- Online test includes questions from Data structure, Algorithms,Aptitude ,DBMS, Operating System and some basic programming.

Have you cleared the round : YES

ROUND 2 :

- This round was a coding round conducted on their platform Codelyzer.
- One hour coding round.
- Question - You have 3 children and array of coins can you split the coins to three children's such that all of them have same amount of money.
  [2,3,2,1,1] - True (all children can have coins whos sum of value is 3)
  [2,4,1,1,1]- False

Have you cleared the round : YES

ROUND 3 :

- This was the first technical interview, it happened in skype.
- The asked to introduce myself and asked few questions on my projects.
- Then asked some basic OOP'S questions, Inheritance,polymorphism,encapsulation.
- Similarly questions on fundamental of DBMS like ACID properties and normalization.
- Then I had 2 problem solving questions 1st question was on array it was quite easy,
- The 2nd question was a tree based medium question. Asked to write the pseudo code for both.

Have you cleared the round : YES
Details about Questions on 3rd round:

QUESTION DOMAIN	QUESTION	SOLUTION / HOW DID YOU APPROACH
DS & Algorithms	Given an Arr[] of integers return all the values where all the elements to its right is less than its value. The elements should be given in order of the input array. Input [3,1,5,20,11,2,4] - output [20,11,4]	Max_value = last index value; Iterate from end, if the current element value is greater than max_value,update max_value and add to output array. Final reverse the output array. Time- O(n) Space- O(1)
DS & Algorithms	Given a binary tree, return the maximum GCD value of all the paths from root to leaf. https://www.geeksforgeeks.org/find-maximum-gcd-value-from-root-to-leaf-in-a-binary-tree/	Created a GCD_array. Did pre-order traversal for the tree. While doing a call will add the element->val to the array. When ever I reach leaf node will calculate GCD for the current array. And update the value in max_gcd when required. GCD function could have been optimised further. I took the least element in array and checked whether it can divide all elements, if not decrement and check.

ROUND 4 :

- This was a the second technical interview it also consisted of two problem solving question.
- I was asked to write complete code for both the problems.
- And final I wad asked the difference between map and unordered_map in STL.

Have you cleared the round : YES
Details about Questions on 4th round:

QUESTION DOMAIN	QUESTION	SOLUTION / HOW DID YOU APPROACH

DS & Algorithms	Given a 2D sorted array both row wise and column wise , search for an element you can consider all the elements to be unique and no of rows need not be equal to number of columns.
	
	//do not use search all elements
	mat[4][4] = { {10, 20, 30, 40},
	{15, 25, 35, 45},
	{27, 29, 37, 48},
	{32, 33, 39, 50}};
	
	Answer:-
	Searching 35
	
	Start at 32;
	
	32->33->39->37->35
		First I came up with ideas like I will check the mid element in the last row.
		If its greater than the mid element I need only in columns after mid.
		
		He accepted that it reduces the time complexity. But he asked me to get an linear time solution.
		
		Finally I came up with a solution where I start from the last row first column.
		If the search value is greater I move right if its lesser I move up.
		Until I find the element or reach the boundary.

DS & Algorithms	Given a vector of pairs you should merge them if the overlap,or if it is a subset. Return disjoint intervals. Input: [[1,4],[3,6],[8,10],[15,18]] Output: [[1,6],[8,10],[15,18]] Input : [[6,8],[4,7],[1,4][2,9]] Output : [[1,9]]	My approach was to sort the vector of pairs based on the first element in the pair value. Check if pairs values in a manner that I don't include it if they are a subset, merge it if the are overlapping. Add a new pair to output if they are disjoint.

ROUND 5:

- This was the final technical interview.
- This round also consisted of two problems solving questions.
- First question was comparatively easy, I was asked to type the code and run it, and was tested with some inputs.
- Second question Approach was discussed in depth.

Have you cleared the round : YES
Details about Questions on 5th round:

QUESTION DOMAIN	QUESTION	SOLUTION / HOW DID YOU APPROACH
DS & Algorithms	Given a sum , you have to find the exact page number, if it's a invalid input you should return false. A page value is equal to number of digits. Input sum= 15 Output page no: 12 Page numbers -- Number of digits 1 -- 1 2 -- 1 3 -- 1 4 -- 1 5 -- 1 6 -- 1 7 -- 1 8 -- 1 9 -- 1 10 -- 2 11 -- 2 12 –2	Used a brute force approach increment the pages from 1 untill the sum becomes zero. If it becomes exactly zero will return page if not return false. Was asked to optimise it. Found that no of numbers in each case, the pattern 9 – 1 digit number 90 – 2 digit number 900 – 3 digit number Used this to form the a solution in O(log10(n))
DS & Algorithms	A majority element in an array A[] of size n is an element that appears more than n/2 times (and hence there is at most one such element). Write a function which takes a sorted array and prints the majority element (if it exists), otherwise prints "No Majority Element". Input={1,1,2,2 ,2 ,2 ,2,2,6 ,7} output=True	Came up with O(n) solution by iterating the elements. Was asked to optimise. Found that the mid element has to be the majority element . so will find its lower bound and upper bound, and based on difference will decide. O(log(n)) solution Was asked to do lower bound search by myself. Then asked to eliminate the need of finding upper bond. The final answer was to find lower bound and check if lower bound + (n/2+1) index is same value.

AREAS TO PREPARE :

Data Structures & Algorithms ,basic OOPS, basic DBMS and general computer science questions to clear the first round.

SITES / BOOKS YOU SUGGEST FOR PREPARATION FOR THE PROCESS :

Problem Solving:

- Leetcode : Solved 100 question – 2/3 Easy questions 1/3 medium questions read the best approach for most of the problems.
- Top Interview questions on leetcode: https://leetcode.com/explore/featured/card/top-interview-questions-easy/
- Geeks for Geeks blogs.
- Mock Interviews : https://www.pramp.com/
- Youtube Channels : Abdul Bhari, Gaurav sen, Tushar Roy
- Educative.io
- Hackerank

Coding:

- C++ with STL

Operating System:

- Geeks for geeks
- Georgia tech udacity course

OOPS:

- Geeks for Geeks
- Study Tonight:https://www.studytonight.com/cpp/cpp-and-oops-concepts.php

DBMS:

- Interviewbit: https://www.interviewbit.com/sql-interview-questions/
- W3Schools :SQL
- Hackerank

OVERALL EXPERIENCE :

The experience was good overall. It was a packed day with 3 interviews in a span of 6 hrs and in all the interviews I solved 2 questions and coded it, so it was a challenging task. I was always expected to optimize my solution. The interviewers were friendly and gave hints if we needed help. My problem-solving skill was put into test in the interview process.

GENERAL TIPS :

- Be very strong with Data Structures and Algorithms and also coding it in the language of your choice.
- If you cover until trees it should be enough, graph questions were not asked.
- You are expected to get the optimized solution, so give the Brute force solution to start with and go towards optimizing it.
- Be ready to have multiple rounds and attend each of them with the same enthusiasm.

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PLACEMENT YEAR 2020-2021

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COMPANY TYPE	:	CORE
JOB DESIGNATION	:	Software Engineer
SALARY (CTC)	:	9LPA-11LPA
INTERN OFFERED ?	:	YES
BOND	:	None
HAVE YOU PLACED ?	:	YES

*(Please comment this section **in detail** to guide your juniors in bright way)*

COMMENTS ON SELECTION PROCESS :

ROUND 1 :

- Round 1 consists of 30 MCQs to be completed in 30 mins of time.
- Composed of MCQs from Data structures(trees ,graph and traversals), Algorithms and applications, complexities of sorting, questions from subnetting in computer networks, Normalisations in dbms, memory management questions from OS and few general aptitudes.
- No negative marking, but differs year by year.
- Aptitude test was conducted on their own edu thrill platform.

Have you cleared the round : YES

ROUND 2 :

- 1 Coding questions to be solved in 1hr.
- Coding round was conducted on their own codelyzer platform.
- The platform was little different from usual platforms like hackerrank and hackerearth.
- Preferred coding language is to be chosen carefully and once decided can't be changed.
- There were 16 system cases and the students were also expected to write their own test cases.

Details about Questions on 2nd round:

QUESTION DOMAIN	QUESTION	SOLUTION / HOW DID YOU APPROACH
Recursion and Backtracking	Father wants to distribute set of coins he have between his 3 daughters in such a way that the sum of the amount split remains equal. In other words, given an array of integers, split it into 3 subsets such that their sum is equal. Return(true or false) whether it is possible to split the array into 3 parts. **Sample Input:** 1,2,3,2,2,2,3 **Sample Output:** 1 **Explanation:** can be split into 3 parts with equal sum. { {1,2,2},{2,3},{2,3}} **Sample Input:** 5,3,10,1,2 **Sample Output:** 0 **Explanation:** cannot be split into 3 parts with equal sum.	It's Almost equal to partitioning the array into k equal subsets problem.Used that approach and Passed 12 system cases.

Have you cleared the round : YES

ROUND 3 :

- 1st Technical interview in skype started with self intro.
- As I have mentioned my strongest areas were OOPs, dbms, ds & algos in my resume , I was asked to explain the concepts of polymorphism, Normalisation, Transaction and Concurrency control, ACID properties.
- He expected a clear and in depth explanation with real time examples in all the above concepts.
- 2 programming questions to be coded and to make up a production ready code in preferred language/editor.
- Total duration: 45 Min.

Details about Questions on 3rd round:

QUESTION DOMAIN	QUESTION	SOLUTION / HOW DID YOU APPROACH
Math problem	Find the trailing no of zeros in the factorial of the given number. **Constraint:** Not allowed to calculate the factorial which will be more time consuming. **Sample Input:** 5 **Sample Output:** 1 **Explanation:** 5!=120. No of trailing zeros=1. **Sample Input:** 25 **Sample Output:** 6 **Explanation:** 25!=15511210043330985984000000 No of trailing zeros=6.	A trailing zero is always produced by prime factors 2 and 5. If we can count the number of combinations of 5s and 2s,we can get the solution. As the number of 5s will be lesser than the number of 2, it's enough to calculate a total no of 5s in 1 to n. Coded the approach and shown the output. Some edge cases have been corrected.
Math problem	There are *n* bulbs that are initially off. You first turn on all the bulbs. Then, you turn off every second bulb. On the third round, you toggle every third bulb (turning on if it's off or turning off if it's on). For the *i*-th round, you toggle every *i* bulb. For the *n*-th round, you only toggle the last bulb. Find how many bulbs are on after *n* rounds. **Sample Input:** 3 **Sample Output:** 1 **Explanation:** 1ntially : three bulbs are [off, off, off]. 1st iteration:three bulbs are [on, on, on]. 2nd iteration:the three bulbs are [on, off, on]. 3rd iteration: the three bulbs are [on, off, off]. So you should return 1, because there is only one bulb on after all iterations	Coded the brute force approach.For every ith iteration, toggle the multiples of i(2 for loops).

Have you cleared the round : YES

ROUND 4 :

- 2nd Technical interview in skype started directly with project discussions.
- Questions on the projects.
- Asked about my data structure skills.
- 2 Coding question. Expected to type out the function in google docs.
- Total Duration: 1hr

Details about Questions on 4th round:

QUESTION DOMAIN	QUESTION	SOLUTION / HOW DID YOU APPROACH
2 D Arrays	**Sample Input:** {{10,20}, {5,7}, {15,12}, {7,5}, {20,19}} **Sample Output:** {{5,7}, {10,20}} **Explanation:** To find out the pattern in input and output.(Pattern is to return all symmetric array pairs)	Discussed the brute force approach o(n^2) and came up with an optimised solution using hash maps and coded it in docs.
Trees	Given a tree, replace every node with the sum of successor and predecessor and return the tree. **Sample Input:** 5 1 10 **Sample Output:** 11 5 5	My approach was to get the inorder of the tree and to store it in an array. Hence we can find the sum of the predecessor and successor of each ith element in the array.Then again traversed the tree inorder and replaced every node with the result. Coded this approach in docs.
DBMS-Schema construction and queries on it.	Given a scenario with employees, departments and projects. Design a table with attributes,relations and keys. After designing, given 2-3 queries according to the design. ● Find employees department wise. ● Find employee whose name start with "X" (department wise,project wise) ● Find employees working in the project "X"	Designed the schema and typed out queries.

Have you cleared the round : YES

ROUND 5 :

- 3rd Technical interview in skype.
- A short discussion about previous rounds.
- 1 coding question to be coded in any languages/editors.
- Total Duration: 1hr

Details about Questions on 5th round:

QUESTION DOMAIN	QUESTION	SOLUTION / HOW DID YOU APPROACH
Puzzle	Fill in the operators to get the answer 3 1 3 6 =8	Hr expected to give 2 solutions. I just gave one solution. 3-1^3+6=8
Puzzle	From 25 bikes, find 3 fastest bikes. You have only one track where 5 bikes can compete in one race. How many races [minimum] would you need	He gave me the excel sheet to split out the logic to calculate min no of races. (Refer geeks for geeks , horse race puzzle)
Linked List	Swap kth node from start with kth node from end in a single linked list k=2 **Constraint :** Not allowed to copy the data(only change the pointers) **Sample Input:** 1->2->3->4-5>-6->7->8 , k=2 **Sample Output:** 1->7->3->4->5->6->2->8	Given the limited time was just able to code the approach but output was partial.

Have you cleared the round : YES

AREAS TO PREPARE :

- As all technical round programming questions focussed on Data structures, It is recommended to have hands-on implementation experience in linked list,trees,graphs.
- Mathematical problem solving.
- Logical thinking.

SITES / BOOKS YOU SUGGEST FOR PREPARATION FOR THE PROCESS :

- Coding(Hackerrank,leetcode)
- Concepts(Geeks for geeks)
- Interview experiences(Glass door, geeksforgeeks)

OVERALL EXPERIENCE :

- The process was smooth, Hr’s were kind and helpful to come up with solutions.Though the 3 f2f interviews happened in one same day, they weren't getting frustrated and weren't urged to wind up on time.

GENERAL TIPS :

- Seeing interview experience videos when we are being idle will definitely help to handle situations.
- As all technical round programming questions focussed on Data structures, It is recommended to have hands-on implementation experience in linked list,trees,graphs.
- Despite learning many technologies, try to be strong in the core concepts.
- Take a random problem for a day and try solving it on your own. This will be helpful to solve problems instantly but try not to google it before finding a solution on your own.