Meta-Campus Evaluative Test

Marks Obtained:

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    Important Notes:

    * There are two sections in this evaluation for each tier(T[0]/T[1]).
    * First section (Character profiling) is common for learners of both tiers.
    * The second section will be B/C for T[0]/T[1] respectively.
    * Those who attempt section C must read the questions very carefully before proceeding as it will decide
    which level will you put on after this test
    * IT IS MANDATORY TO ATTEMPT ALL QUESTIONS IN SECTION A.

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Section A

Character Profiling (for both T[0]/T[1])

Question 1:

Do you prefer working independently or as part of a team? Why?
Hint: Think about when you've worked alone versus with others. What are the benefits and challenges of each situation?

Question 2:

Imagine you're developing a powerful AI that could potentially change the world. If you knew this AI could be used for both good and evil, would you still create it? Why or why not?
Hint: Consider the impact of technology on society—how can something meant for good be misused? Would you take the risk?

Question 3:

In a competitive coding competition, you discover a shortcut that would give you a significant advantage over your opponents. Would you use this shortcut, knowing it might be against the rules of the competition? Explain your reasoning.
Hint: Think deeply

Question 4:

While working on a team project, you realize that a teammate is plagiarizing (copying from somewhere) code. What would you do, and why?
Hint: Consider the consequences of plagiarism on the team, the impact on the project

Question 5:

You're developing a new app that involves collecting user data. How would you ensure that this data is collected and used ethically and responsibly? *Hint: Ethically means acting in a way that is morally right, fair, and responsible, following principles of honesty and respect for others*

Question 6:

If you were building a website that could be used by anyone, what would you do to make sure it's easy for everyone to use, even people with disabilities? *Hint: You can add features for colour blind people*

Question 7:

If you could automate any job in the world with technology, which one would you choose and why? Consider both the benefits and potential drawbacks to society.
Hint: Think about jobs that are repetitive, dangerous, or could benefit from automation. What impact would this have on workers and the economy?

Question 8:

You're part of a team developing a new educational app for children. How would you balance making the app engaging and addictive (to keep children learning) with concerns about screen time and digital well-being?
Hint: Consider how to create a healthy balance between keeping kids interested and ensuring they don't spend **too much time on the app.**

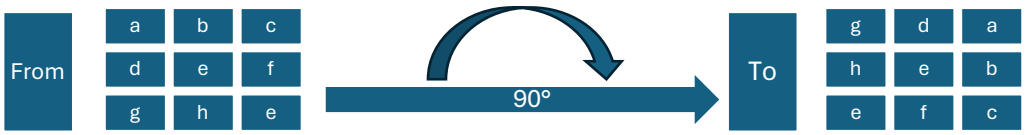
Section B

Non Coders Section

Problem Solving & Logical Reasoning **(attempt as many as you can)**

Question 1:

If you have a 3x3 grid of blocks and you can move only one block at a time, what is the minimum number of moves required to rotate the entire grid 90 degrees?



Question 2:

If "PROGRAMMER" is coded as " QTPKSINCFV ", how would you code "DEBUGGER"?

Question 3:

Coin Weighing: Question: You have 8 coins. 7 weigh the same, but 1 is slightly heavier. Using a balance scale, identify the heavier coin in minimum number of weighing possible.

Question 4:

A clock shows 3:15. What is the angle between the hour and the minute hand?

Question 5:

Question: Transform the word "COLD" into "WARM" by changing only one letter at a time, creating a valid word at each step. What's the minimum number of steps required?

Example of a word ladder (using different words): Let's transform "PLAY" into "WORK"

PLAY -> PRAY -> GRAY -> GROW -> WORD -> WORK

Question 6:

In a room, there are 2 fathers, 2 sons, and 1 grandfather. Yet, there are only 3 people in the room. How is this possible?

Question 7:

You are outside a room with three light switches, each connected to a light bulb inside the closed room. You can only enter the room once. How can you determine which switch is connected to which bulb?

Question 8:

If you have 5 computers and want to connect each one directly to all others, how many cables would you need? (draw a diagram if you want)

Question 9:

You have a 5-liter jug and a 3-liter jug. How can you measure exactly 4 liters of water?

Question 10:
What's the next string in this sequence? "a", "ab", "ba", “bab” "bba", "bbab", ?

Section-C

For Coders(all level)

Coding-Related Brain Teasers

How to Approach These Questions:

1. **Understand the Problem:** Read the question carefully and make sure you understand what is being asked.
2. **Break it Down:** If the problem seems complex, try to break it down into smaller, simpler steps.
3. **Use Examples:** Sometimes, it can be helpful to use specific examples to visualize the problem.
4. **Think Logically:** Use your problem-solving skills to come up with a solution.

If you know any language you can write the code in that language

Example:

Question:

If you have a list of numbers, how would you find the biggest one?

Answer:

I would start by assuming the first number in the list is the largest. Then, I would compare it to each of the other numbers in the list. If any number is larger than the current maximum, I would update the maximum. After comparing all the numbers, the maximum number you found would be the largest in the list.

OR

```java
import java.util.Arrays;
import java.util.List;

public class FindBiggestNumber {
    public static int findBiggest(List<Integer> numbers) {
        if (numbers == null || numbers.isEmpty()) {
            throw new IllegalArgumentException("List is null or empty");
        }

        int biggest = numbers.get(0);  // Assume the first number is the biggest

        for (int number : numbers) {
            if (number > biggest) {
                biggest = number;  // Update biggest if we find a larger number
            }
        }

        return biggest;
    }

    public static void main(String[] args) {
        List<Integer> numbers = Arrays.asList(10, 5, 8, 12, 3, 7);
        int result = findBiggest(numbers);
        System.out.println("The biggest number is: " + result);
    }
}
```

1. Given the string "Hello, World!", how would you reverse it to produce "!dlroW ,olleH"?

2.Given the list of integers [10, 5, 2, 3, 7, 5] and a target sum of 10, how would you find all pairs of numbers that add up to 10? The expected output would be: (3, 7), (5, 5).

3. Determine if a phrase is a palindrome:

   How would you check if the following phrases are palindromes?

   a) "A man a plan a canal Panama"

   b) "race a car"

   Note: Ignore spaces, punctuation, and capitalization.

4. In the list [45, 67, 12, 89, 67, 23, 89], how would you determine that 67 is the second largest number?

5. For the string "programming is fun", how would you count the occurrences of each character? The expected output would be something like:

   {'p': 1, 'r': 2, 'o': 1, 'g': 2, 'a': 1, 'm': 2, 'i': 2, 'n': 2, ' ': 2, 's': 1, 'f': 1, 'u': 1}

6. Given the list [1, 2, 3, 2, 4, 3, 5, 1, 2], how would you remove all duplicates to produce [1, 2, 3, 4, 5]?

7. How would you determine if these pairs of strings are anagrams?

   a) "listen" and "silent"

   b) "hello" and "world"

8. Find the missing number:

In the sequence [1, 2, 4, 5, 6, 7, 8, 9, 10], how would you determine that 3 is the missing number?

9. How would you check if the following numbers are prime?

a) 17

b) 24

c) 97

10. How would you determine if the parentheses are balanced in these strings?

a) "((()))"

b) "(()"

c) "(()())"

d) ")("

BONUS QUESTION: <*twoSum()*>

Given an array of integers nums and an integer target, write a function that returns the indices of the two numbers such that they add up to target. You may assume that each input will have exactly one solution, and you cannot use the same element twice. For example, given nums = [2, 7, 11, 15] and target = 9, the function should return [0, 1] because nums[0] + nums[1] = 2 + 7 = 9. Implement this function efficiently using appropriate data structures.