

Computer Programming Set5

End Semester Exam

Instructions

1. This is a **closed book online proctored** exam.
 - a. You should not refer to books, notes or online resources.
 - b. You should not discuss questions or answers with anyone (including outsiders)
 - c. You should have your camera and microphone **ON** at all times and no headphones
2. Write the solutions clearly and legibly in A4 sheets, using pen (NOT pencil) and at the end of the exam you should submit the scanned copy of your solutions as explained by the faculty
3. **The name of the scanned copy should be the Roll No + '_' + Set No. (e.g., S20200010XYZ_Set5).**
4. **Write the name and the roll no. on each page of the answer sheets.**
5. Follow all other instructions given by the faculty during the exam

Subjective Questions (10 marks each)

1. Consider an array **arr** of n elements where n is even and $10 < n < 50$. Assume that the elements of the array are generated randomly in the interval $[10, 99]$ (all two digit numbers randomly generated using `rand()` function suitably). Now write the following functions that perform the specified tasks:
 - a) Write a recursive function that prints only the odd elements of the array **arr**
 - b) Write a recursive function that could convert all odd numbers into even numbers by adding 1 and all even numbers into odd numbers by adding 3 to it.
 - c) Write a recursive function that converts the given array of n elements into a 2D matrix with at most k rows, where k is an integer in $(1, 5)$, containing n/k elements each.
 - d) Write a recursive function to identify and print the elements that end with an even digit.

2. Write a program to create a structure (Struct) to capture the car details (Car ID, manufacturing year, colour, car's owner) and perform the following operation.
 - a. Write a function to add a new car
 - b. Write a function to Delete a car by ID
 - c. Write a function to Search car by ID

3. Write a C program to accept the student personal and academic details and store it in a file. Also, print students' mark sheet.