Cluster Innovation Centre, University of Delhi, Delhi-110007

Examination	: End Semester Examination – December 2019
Name of the Course	: B.Tech (Information Technology and Mathematical Innovations)
Name of the Paper	: Automating real world through Programs: Programming Fundamentals
Paper Code	: 32861103
Semester	: I
Duration	: 2 Hours
Maximum Marks	: 40

Instructions:

1. All questions are compulsory

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1. Write a program in C with proper input and output. You are given an array of 0s and 1s in random order. Segregate 0s on the left side and 1s on the right side of the array. The condition to follow is to traverse the array only once. Input array = [0, 1, 0, 1, 0, 0, 1, 1, 1, 0] and Output array = [0, 0, 0, 0, 0, 1, 1, 1, 1, 1]. [6]

2. Answer any four from the following. [8]

   a. Differentiate between the Call by Value and Call by Address.

   b. Differentiate between Logical error and Syntax error.

   c. Differentiate between the Array and Structure.

   d. What is the size of integer data type and why?

   e. While using "gets" we get the warning. Why is it not safe and how to make it safe?

3. Write a C program to count the frequency of each character in a string using loop. How to find the frequency of each character in a string in C programming. [8]

4. Write a structure to store the roll no., name, age (between 11 to 14) and address of students (more than 10). Store the information of the students. [12]

   a. Write a function to print the names of all the students having age 14.

   b. Write another function to print the names of all the students having even roll no.

   c. Write another function to display the details of the student whose roll no is given (i.e. roll no. entered by the user).

5. Write a program in C to count the number of words and characters in a file. [6]

OR

Given a 2D array, print it in spiral form. See the following example. [6]

Input:
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1  2  3  4
5  6  7  8
9  10  11  12
13  14  15  16
```
Output: 1 2 3 4 8 12 16 15 14 13 9 5 6 7 11 10