COURSE: (CL-1004) OBJECT ORIENTED PROGRAMMING LAB

LAB TASK # 04
Classes and Objects

NOTE:
Only submit .cpp file of each question in a folder. Anyone who submits any other format file will get straight **ZERO.** Each question should have a separate .cpp file. Copy Paste or other UFM will also get **ZERO**. Use the following format for naming the folder Roll#_Name (P18-1234_NAME).

For user understanding purposes you should write comment with each line of code.

Q No.01: Toll Booth Class **(4)**

Imagine a tollbooth at a bridge. Cars passing by the booth are expected to pay a 50pkr toll. Mostly they do, but sometimes a car goes by without paying. The tollbooth keeps track of the number of cars that have gone by, and of the total amount of money collected.

Model this tollbooth with a class called tollBooth. The two data items are a type unsigned int to hold the total number of cars, and a type double to hold the total amount of money collected. A member function called setDataMembers(), initialise the two data members to 0. A member function called payingCar() increments the car total and adds 50pkr to the cash total. Another function, called nopayCar(), increments the car total but adds nothing to the cash total. Finally, a member function called display() displays the total number of cars, number of cars paid toll, number of cars that didn't pay toll and total toll collected.

Include a program to test this class. This program should allow the user to push one key to count a paying car, second to count a non-paying car and another key should cause the program to call display() function and then exit.

Q No.02: Laptop Class **(2)**

Write a program that creates a class called Laptop. The data members of the class are

Brand (string)

Model (string)

Serial (int)

Color (string)

Price (float)

ProcessorSpeed (float)

Ram (int)

ScreenSize (float)

Create member functions that will set the individual values. Since the RAM can be upgraded. Therefore, create a function that allows you to upgrade the RAM. In the end create a function that will display all the data members. Include a program to test this class.

Q No.03: Factorial **(4)**

Write a program that will create a class called number. Your class will have two data members namely num (float) and result (int). To find the factorial of the entered number you will need to design three functions as follow:

- Function to determine if the number is whole number or not
- Function to determine if the number is positive or not
- Function to find the actual factorial
- Function to display the number and its factorial.

Note: To find the factorial the number must be positive or whole number.

Sample Inputs	Sample Outputs
Number: -5	Invalid Input
Number: 5.5	Invalid Input
Number: 5	Number = 5 Factorial = 120