



COURSE: (CL-1004) OBJECT ORIENTED PROGRAMMING LAB
LAB TASK # 07

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).

Q No.1: Create a class named '**Rectangle**' with two floating point **data members** - length and breadth.

The class has **three constructors** which are :

- having no parameter - values of both length and breadth are assigned zero.
- having two numbers as parameters - the two numbers are assigned as length and breadth respectively.
- having one number as parameter - both length and breadth are assigned that number.

The class has the following member functions:

- **float area()** to calculate and return the area of the rectangle.
- **void show()** to display the length and width of the rectangle
- **int sameArea(Rectangle)** that has one parameter of type Rectangle. **sameArea** returns 1 if the two Rectangles have the same area, and returns 0 if they don't.

Finally, add a destructor that will display an appropriate message when called.

1. Write the definitions for each of the above member functions.
2. Create objects of the 'Rectangle' class having none, one and two parameters and print their areas.
3. Create two more rectangle objects. Set the length and width of the first rectangle to 5 and 2.5. Set the length and width of the second rectangle to 5 and 18.9. Display each rectangle and its area.
4. Check whether the two Rectangles have the same area and print a message indicating the result. Set the length and width of the first rectangle to 5 and 18.9. Display each Rectangle and its area again. Again, check whether the two Rectangles have the same area and print a message indicating the result.

Q No.2: Create a class called time that has separate **int member data** for hours, minutes, and seconds. **One constructor** should initialize this data to 0, and **another** should initialize it to fixed values. Another **member function** should display it, in 11:59:59 format. The **final member function** should add two objects of type time passed as arguments.

A main() program should create two initialized time objects and one that isn't initialized. Then it should add the two initialized values together, leaving the result in the third time variable. Finally it should display the value of this third variable.

Q No.3: Write the definition for a class called **complex** that has floating point data members for storing real and imaginary parts. The class has the following member functions:
void set(float, float) to set the specified value in object
void disp() to display complex number object
complex sum(complex) to sum two complex numbers & return complex number

1. Write the definitions for each of the above member functions.
2. Write main function to create three complex number objects. Set the value in two objects and call sum() to calculate sum and assign it in third object. Display all complex numbers.

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