Indian Institute of Information Technology, Vadodara - International Campus Diu
Block No. 9, IIITV, Government Engineering College, Sector 28,
Gandhinagar, Gujarat, India - Contact No. +91-79-29750281

Date: November 23, 2023

CS 261 Object Oriented Design and Programming Lab

Assignment 8

Batch: Diu Section

INSTRUCTIONS:

*1. This is to be **done within lab hours,** following which you will be evaluated on the **code and some related questions asked by the TA.***

2. Once your evaluation has been done during the lab hours, you are supposed to submit one pdf file through GOOGLE CLASSROOM with the following:

a. Name and Roll number at the top of the report

b. Assignment question. Answer/program code

c. Comment the lines of code wherever required such as the declaration of an object, constructor, use of keywords etc.

d. For each question related to codes describe the process of your approach in words /diagrams.

e. Screenshot of the output which you get after executing the program. Multiple screenshots may be uploaded to clarify the execution of the program.

3. While Submission, name the file to be submitted in the following format: <OODP_your roll number>

*4. No **GOOGLE CLASSROOM** submission would be considered for those students who were absent during the in-person lab hours.*

*5. DO NOT COPY from others. **All reports** which are found to be copied will be given 0 marks for the assignment.*

Objective:

Demonstrate a practical application of object-oriented programming principles, including inheritance, advanced method overloading, and operator overloading, through the design and implementation of a real-life geometry calculator.

Instructions:
This assignment consists of distinct concept (Inheritance, Method Overloading and Operator Overloading)

Real-life Geometry Calculator:-

Class Hierarchy:

- Create a base class named ***Shape*** with attributes like color and a method area.
- Derive two classes, ***Circle*** and ***Rectangle***, from the ***Shape*** class.
- Add specific attributes such as radius for ***Circle*** and length, width for ***Rectangle***.
- Implement the area method as an abstract method in the ***Shape*** class and override it in the derived classes.

Method Overloading :

- In the ***Rectangle*** class, implement advanced method overloading for the "calculate_area" method.
- Overload the method to accept variable-length arguments, allowing users to calculate the area for rectangles with different numbers of sides.
- Provide at least three variations of the method with different parameter combinations.

Operator Overloading :

- Overload the * operator in the ***Circle*** class to allow scaling the area by a numeric factor.
- Overload the - operator in the ***Rectangle*** class to allow subtracting the area of one rectangle from another.

Submission Details:

- Submit your work in a single pdf document.(Code and screenshot of output)
- The submission deadline will be **4:00 PM 23- November 2023.**