SCS 1310 - Object Oriented Programming

Practical – 08

Function / Operator Overloading & Data Conversion

Upload the C++ files inside a compressed zip file renamed with your index number.

1. Write a C++ program that defines a class with functions to calculate the area of different shapes. The class should provide overloaded functions for calculating the area of a circle and rectangle. The program should utilize constant values for the circle's radius and the rectangle's length and width instead of directly accepting user input for their values. // not inheritance

2. Create a C++ class to represent a simple integer and implement the following tasks:
    a. Write a constructor for the class that sets the initial value of the number.
    b. Overload the - (unary minus) operator in the class to negate the number.
    c. Include a function that prints the current value of the number.

3. Write a C++ program that demonstrates operator overloading using a class called Point to represent points in a 2D coordinate plane. The program should:
    a. Allow for the creation of Point objects with x and y coordinates.
    b. Overload the addition operator (+) to enable adding two Point objects together, resulting in a new Point object with the sum of their coordinates.
    c. Overload the stream insertion operator (<<) to enable direct printing of Point objects using std::cout, displaying them in the format "(x, y)". (Hint: Friend
    d. Functions)
    e. In the main function, create two Point objects and demonstrate their addition using the overloaded + operator. Print the resulting point using the overloaded << operator.

4. Write a C++ program implementing conversion operators (within the class) to seamlessly convert temperatures between Celsius and Fahrenheit. To demonstrate this conversion, create an instance of the class, initialize it with a specific value in Celsius, and display the converted value in Fahrenheit. A successful solution should output information about the original temperature in Celsius and the converted temperature in Fahrenheit.