

SCS 1209 - Object Oriented Programming

Tutorial - Function / Operator Overloading & Data Conversion

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 Functions)
 - d. 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.