Week 9's participation activity

CSC 2110

Objective

Students will create a visual studio project where they will practice the overloading of a few operators.

Instructions

1. Open **Visual Studio 2019**.
2. Create a new project named **week09**.
    a. Define a location for your project.
    b. Check the box "Place solution and project in the same directory" to have only one folder where the project and solution are stored.
3. In the Solution explorer (at the left on the Visual Studio Interface), select the Header Files folder and add a new header file named **circle.h.** This class has one private variable radius and calculate its area. Also, the (+) operator is overloaded using a member function and the (-) operator is overloaded using a non-member function.

```
#pragma once


class circle {
    friend circle operator-(const circle& ac1, const circle& ac2);
private:
    double radius;
public:
    void setRadius(double ar);
    double getRadius() const;
    double area() const;
    circle operator+(const circle& ac) const;
};
```

4. In the Solution explorer (at the left on the Visual Studio Interface), select the Source Files folder and add a new source file named **circle.cpp.** This file contains the implementation of the functions described in **circle.h**.

```
#include "circle.h"

circle operator-(const circle& ac1, const circle& ac2) {
    circle newCircle;
    newCircle.radius = ac1.radius - ac2.radius;

    return newCircle;
}

void circle::setRadius(double ar) {
    radius = ar;
}
double circle::getRadius() const {
    return radius;
}
double circle::area() const {
    return radius * radius * 3.14159;
}
circle circle::operator+(const circle& ac) const {
    circle newCircle;
    newCircle.radius = radius + ac.radius;

    return newCircle;
}
```

5. In the main program (week09.cpp), create different circle objects and use the (+) and (-) operators.

```
#include <iostream>
#include "circle.h"
```

```
int main()
{
    std::cout << "Hello World!\n";
    circle c01;
    c01.setRadius(4);
    circle c02;
    c02.setRadius(6);
    circle c03;
    c03 = c01 + c02;
    circle c04;
    c04 = c02 - c01;

    printf("Circle 01: Radius: %.2f Area: %.2f\n", c01.getRadius(),
c01.area());
    printf("Circle 02: Radius: %.2f Area: %.2f\n", c02.getRadius(),
c02.area());
    printf("Circle 03: Radius: %.2f Area: %.2f\n", c03.getRadius(),
c03.area());
    printf("Circle 04: Radius: %.2f Area: %.2f\n", c04.getRadius(),
c04.area());
}
```

6. Compile, debug and test this project.

Submission

Once you have verified your project compiles without errors.

Compress (zip) the project folder week09 and submit the ZIP file in Canvas.