


# National University of Computer and Emerging Sciences, Lahore Campus

	Course:	Object Oriented Programming	Course Code:	CS217
	Program:	BS(Computer Science)	Semester:	Spring 2021
	Due Date:	9-April-2021	Total Marks:	10
	Section:	2E	Weight (Tentative)	3%
	Evaluation:	Assignment-02	Page(s):	2

**Submission Path:** [Google classroom](#)

**Submission Instruction:** Submit only one .cpp file to Google classroom in your corresponding repository/folder.

## Question 01: Complex Number

In mathematics, a complex number is a number that can be expressed in the form  $a + bi$ , where  $a$  and  $b$  are real numbers, and  $i$  is a symbol called the imaginary unit, and satisfying the equation  $i^2 = -1$ . Because no "real" number satisfies this equation,  $i$  was called an imaginary number by René Descartes.

In this assignment, you have to implement a class, called **ComplexNumber**, to declare an imaginary number. To perform some operations, a code stub is provided below. Your task is to complete the implementation of incomplete functions given in the class, so that the main program executes successfully. Before starting the assignment, read the following instructions carefully.

Instructions:

- You cannot add extra members (data members and member function) to the class **ComplexNumber**
- Define each function's body outside of the class
- Your program's output should be similar to the sample output given below

```
class ComplexNumber
{
private:
    double real;
    double imag;
public:
    ComplexNumber();
    ComplexNumber(double r=0.0, double i=0.0);
    void SetReal(double r);
    void SetImag(double i);
    ComplexNumber Add(ComplexNumber & cn);
    //performs addition of two complex numbers

    bool isEqual(ComplexNumber & cn);
    /*compares two complex numbers if they are equal.
    Two complex numbers are equal if there corresponding real and imaginary
    parts are equal*/

    void print();
};
```

```
int main()
{
    ComplexNumber c1;
    c1.SetReal(5.0);
    c1.SetImag(10.0);

    ComplexNumber c2(2.0, 4.0);
    ComplexNumber c3;
    if(!c1.isEqual(c2))
    {
        c3=c1.Add(c2);
    }
    else
        c3.print();

    c1.print();
    c2.print();
    c3.print();
    return 0;
}
```

**Sample Output:**

```
5 + 10i
2 + 4i
7 + 14i
```