Q1)

You need to create a class named Complex that models a complex number, numbers of the form x+yi, where x and y are real numbers, and I is the imaginary unit equal the square root of -1.

In the x+yi representation, we say that x is the real component of the complex number, and y is the imaginary component.

Complex object has two attributes (also known as instance variables) real and imag

The Class must include the following:

Constructor with two numeric arguments

- You must have a getter and setter methods for both real and imag
- You must have a method that can print the data of Complex object in the form "<real>+<imag>i" so you can use it to print complex object
- Create a method that can add complex number to current complex and return a new complex object
- Create a method that can multiply complex number to current complex and return a new complex object

Create a general function that can add two complex objects

Create a general function that can multiply two complex objects

Q2)

Create a class called Stack for storing integers. The data members are an integer array with MAX size = 10 for storing the integers and an integer for storing the top of stack (top). Include member functions for initializing top to 0, pushing an element to the stack and for popping an element from the stack. The push() function should check for "stack overflow" with function isFull() and pop() should check for "stack underflow" with function isEmpty().

- Can you make the methods push and pop private methods? why?
- Can you make the methods isEmpty and isFull private methods? Why ?

Q3)

modify the Stack Class that. the data members are dynamic integer array where size determine when create the object of Stack if it missing in creation assume the size=10.

If there is any need to create destructor, do it.

If there is any need to implement the copy constructor, do it.

Q4)

modify the stack Class that have a dynamic array to support more general type like float, double, string using template class

Q5)

Consider a bank account system. The bank account class could have attributes such as account number, account holder name, balance, and methods such as deposit, withdraw, and check balance. Each account holder would be an object of this class. When a customer opens a new account, an object is created with their account information.

Q6)

Create a class called **Fractions** with 2 private fields **Numerator, Denominator**. And a public constructor that sets Numerator and Denominator. This class must include 4 members functions in **Fractions** class: Sum, Difference, Product, Division. Final add to class a method print to print the fraction object in acceptable format