Assignment 3: Deadline: 5-12-2024

Task 1: (CLO1,CLO2,CLO3)

Create a class **Fraction** containing two integer data members named **num** and **den**, used to store the numerator and denominator of a fraction having the form **num/den**.
i. Implement all member functions required.

ii. Overload the + operator for adding two Fractions and returning the result. (a/b+c/d = a*d+c*b/bd).

iii. Overload the **-** operator for subtracting two Fractions and returning the result. (a/b - c/d = a*d - c*b/bd)

iv. Overload the * operator for multiplying two Fractions and returning the result. (a/b * c/d = a*c/bd)

v. Overload the ++ operator Fractions that will add 1 in a fraction.

viii. Overload the **--** operator Fractions that will subtract 1 from a fraction.

ix. Overload the / operator for multiplying two Fractions and returning the result. (a/b / c/d = a*d/c*b)

Write main function to demonstrate functionality of above class.

Task 2: (CLO1,CLO2,CLO3)

Recall that a complex number is of the form a + b*i*, in which *a* is the real part and *b* is the imaginary part. Implement a class named **ComplexNumber** which stores and manipulates a complex number e.g real part and imaginary part.

a. Implement the **constructors**. Default constructor should initialize both parts to 0.
Implement the getters and setters.

b. Implement the +, **-**, and ***** operators for **ComplexNumber**.
Adding two complex numbers
Subtracting two complex numbers
Multiplying two complex numbers

c. Implement the **<**, **>**, and **==** operators for **ComplexNumber**.

d. Implement the **>=**, **<=**, and **!=** operators for **ComplexNumber**.

e: Implement the pre and post increment and decrement operators for **ComplexNumber**. Increment and decrement operators should only add 1 or subtract 1 from real part.