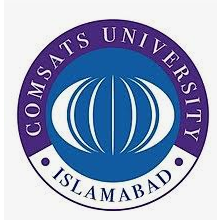
**OBJECT ORIENTED PROGRAMMING**

Lab Tasks 5

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**4) Stage a2 (assess) Assignment:**

**Define a class called Fraction. This class is used to represent a ratio of two integers. Create two constructors, set, get and display function. Include an additional method, equals, that takes as input another Fraction and returns true if the two fractions are identical and false if they are not.**

**Code**

import java.util.\*;  
  
public class Fraction {  
 private int numerator;  
 private int denominator;  
 public int GCF = 1;  
  
 public Fraction()  
 {  
 numerator = 0;  
 denominator = 1;  
 }  
  
 public Fraction(int newNumerator)  
 {  
 numerator = newNumerator;  
 denominator = 1;  
 }  
  
 public Fraction(int numerator, int denominator)  
 {  
 this.numerator = numerator;  
 this.denominator = denominator;  
 }  
  
 public int getNumerator()  
 {  
 return numerator;  
 }  
  
 public int getDenominator()  
 {  
 return denominator;  
 }  
  
 public void setNumerator(int Numerator)  
 {  
 this.numerator = Numerator;  
 }  
  
 public void setDenominator(int Denominator)  
 {  
 if(Denominator != 0)  
 this.denominator = Denominator;  
 else  
 denominator = 1;  
 }  
  
 public double getFractionValue()  
 {  
 return (double)numerator / denominator;  
 }  
  
 public String toString()  
 {  
 reduceFraction();  
 return numerator + "/" + denominator;  
 }  
  
  
 private void reduceFraction()  
 {  
 int n = numerator;  
 int d = denominator;  
  
  
 do{  
 int temp = n;  
 n = d % n;  
 d = temp;  
 }while (n != 0);  
  
 numerator = numerator / d;  
 denominator = denominator / d;  
 }  
  
 public void displayFraction()  
 {  
 reduceFraction();  
 System.*out*.println(numerator + "/" + denominator);  
 }  
 public boolean equals(Fraction other)  
 {  
 int num1, num2;  
 int num3, num4;  
 int num5 = 1;  
 for (int i = 2; i <= Math.*min*(numerator, denominator); i++)  
 {  
  
 if (numerator % i == 0 && denominator % i == 0)  
 num5 = i;  
 }  
  
 num1 = numerator / num5;  
 num2 = denominator / num5;  
  
 for (int i = 2; i <= Math.*min*(other.numerator, other.denominator); i++)  
 {  
  
 if (other.numerator % i == 0 && other.denominator % i == 0)  
 GCF = i;  
 }  
  
 num3 = other.numerator / GCF;  
 num4 = other.denominator / GCF;  
  
 return (num1 == num3 && num2 == num4);  
  
 }  
  
  
  
  
 }

import java.util.\*;  
public class Runnerr {  
 public static void main(String[] args) {  
 Scanner scan = new Scanner(System.*in*);  
  
 Fraction frac1 = new Fraction(20, 60);  
 Fraction frac2 = new Fraction(180, 120);  
  
 System.*out*.println("Fraction 1: " + frac1);  
 System.*out*.println("Fraction 2: " + frac2);  
  
 int numerator, denominator;  
 System.*out*.print("Enter target Fraction's Numerator: ");  
 numerator = scan.nextInt();  
 System.*out*.print("Enter target Fraction's Denominator: ");  
 denominator = scan.nextInt();  
 Fraction fraction = new Fraction(numerator, denominator);  
 String choice = "y";  
 do {  
  
  
 System.*out*.print("Enter new numerator: ");  
 int otherNumerator = scan.nextInt();  
 System.*out*.print("Enter new denominator: ");  
 int otherDenominator = scan.nextInt();  
 Fraction otherFraction = new Fraction(otherNumerator, otherDenominator);  
 if (fraction.equals(otherFraction)) {  
 fraction.displayFraction();  
 System.*out*.print(" is equal to ");  
 otherFraction.displayFraction();  
 } else  
  
 {  
 fraction.displayFraction();  
 System.*out*.print(" is not equal to ");  
 otherFraction.displayFraction();  
 }  
 System.*out*.println();  
 System.*out*.print("Continue another operation? (Y/N) ");  
 choice = scan.next();  
 System.*out*.println("--------------------------------");  
  
 } while (choice.equals("y") || choice.equals("Y"));  
  
  
  
 }  
}