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Assignment 5

Ques 2 Definition class: Equation, Application class: Equation Demo

a, b, c

Void setCoefficients(int, int, int);

Void findRoots();

EquationDemo.java

```
import java.util.Scanner;
```

```
public class EquationDemo {
```

```
    public static void main(String[] args)
```

```
    {
```

```
        int a, b, c;
```

```
        Scanner sc = new Scanner(System.in);
```

```
        System.out.println("Enter coefficient a, b, c: ");
```

```
a = sc.nextInt();  
b = sc.nextInt();  
c = sc.nextInt();  
  
Equation eq = new Equation();  
  
eq.setCoefficient(a, b, c)  
eq.findRoots();
```

Equation.java

```
public class Equation {  
    int coeff1, coeff2, coeff3;  
    void setCoefficient(int a, int b, int c)  
    {  
        coeff1 = a;  
        coeff2 = b;  
        coeff3 = c;  
    }  
    void findRoots()  
    {  
        double d = (coeff2 * coeff2) - (4 * coeff1 * coeff3);  
        if (d < 0)  
        {  
            System.out.println("Roots are not real Numbers");  
        }  
    }  
}
```

else

{

double x1 = $(-coeff2 + \text{Math.sqrt}(d)) / (2 * coeff1);$

double x2 = $(-coeff2 - \text{Math.sqrt}(d)) / (2 * coeff1);$

System.out.println("Roots of " + coeff1 + "x² + " + " +
coeff2 + "x" + "x" + coeff3);

System.out.println("Root 1: " + x1);

System.out.println("Root 2: " + x2);

```
Run: EquationDemo x
▶ ↑ "C:\Program Files\Amazon Corretto\jdk17
⚙️ ↓ Enter Coefficients a, b, c:
☐ ⇐ -1 6 18
📷 ⚙️ Roots of -1x2+6x+18
🔌 🖨️ Root 1: -2.196152422706632
👉 🗑️ Root 2: 8.196152422706632
📊
📌 Process finished with exit code 0
```

Ques 1 Definition Class: Circle, Application class: Circle Demo
radius

void setDim(float)

void findArea();

void findPerimeter();

CircleDemo.java

import java.util.Scanner;

public class CircleDemo {

public static void main(String[] args)
{

Scanner sc = new Scanner(System.in);

System.out.println("Enter Radius of Circle: ");

int rad;

Circle cir = new Circle();

rad = sc.nextInt();

cir.setDim(rad);

cir.findArea(rad);

cir.perimeter(rad);

}

}

Circle.java

```
public class circle
```

```
{
```

```
    float area, dim, perimeter;
```

```
    void setDim(float rad)
```

```
    {
```

```
        dim = 2 * rad;
```

```
        System.out.println("Diameter: " + dim);
```

```
    }
```

```
    void findArea(int rad)
```

```
    {
```

```
        area = (float) (3.14 * rad * rad);
```

```
        System.out.println("Area: " + area);
```

```
    }
```

```
    void perimeter(int rad)
```

```
    {
```

```
        perimeter = (float) (2 * 3.14 * rad);
```

```
        System.out.println("Perimeter: " + perimeter);
```

```
    }
```

```
}
```

Run:

MenuDrivenMain x

CircleDemo x



"C:\Program Files\Amazon Corretto\jdk17



Enter Radius of Circle:



25



Diameter: 50.0



Area: 1962.5



Perimeter: 157.0



Process finished with exit code 0

Ques 3 Definition Class: MyNumber, Application Class:

MyNumberDem

Value

Void setValue(int);

Boolean isEven();

int FindFactorial();

Boolean isPrime();

int findSumofDigit()

MyNumberDemo.java

```
public class MyNum
```

```
public static void main(String[] args)
```

```
{
```

```
    MyNumber myNum = new MyNumber();
```

```
    myNum.setValue(6);
```

```
    System.out.println(myNum.findFactorial());
```

```
    System.out.println(myNum.isEven());
```

```
    System.out.println("Sum of Digit is: " + myNum.
```

```
        findSumofDigit());
```

```
}
```

```
}
```

```
Public class MyNumber  
{
```

```
    int myNum;
```

```
    void setValue(int a)
```

```
{
```

```
        myNum = a;
```

```
}
```

```
    boolean isEven()
```

```
{
```

```
        return myNum % 2 == 0;
```

```
}
```

```
    long findFactorial()
```

```
{
```

```
        long fact = 1, i;
```

```
        for(i = myNum; i > 0; --i)
```

```
{
```

```
            fact = fact * i;
```

```
}
```

```
        return fact;
```

```
}
```



```
int findSumofDigits()
```

```
{
```

```
    int eachDigit;
```

```
    int sum=0;
```

```
    while (myNum > 0)
```

```
    {
```

```
        eachDigit = myNum % 10;
```

```
        sum = sum + eachDigit;
```

```
        myNum = myNum / 10;
```

```
    }
```

```
    return sum;
```

```
}
```

```
}
```

```
Run: MyNumberDemo x
▶ ↑ "C:\Program Files\Amazon Corretto\jdk17
⚙ ↓ 720
☐ ≡ true
🔌 ⬇ Sum of digit is: 6
🖨
📑 🗑 Process finished with exit code 0
📌
```

Ques 4 Write a menu driven program in java which will do the following operations using scanner.

- a. Addition of two Number
- b. Multiplication of two Number
- c. Division of two Numbers
- d. Subtractions of two numbers

```
import java.util.Scanner;
```

```
public class MenuDrivenMain {
```

```
    public static void main(String[] args) {
```

```
        int myNum1, myNum2, myNum3 choice, result;
```

```
        MenuDriven menu = new MenuDriven();
```

```
        Scanner sc = new Scanner(System.in);
```

```
        do
```

```
        {
```

```
            System.out.println("Enter 2 Numbers");
```

```
            myNum1 = sc.nextInt();
```

```
            myNum2 = sc.nextInt();
```

```
System.out.println("====Menu====");
```

```
System.out.println("1. Addition");
```

```
System.out.println("2. Multiplication");
```

```
System.out.println("3. Division");
```

```
System.out.println("4. Subtraction");
```

```
System.out.println("5. Exit");
```

```
System.out.println("Enter Choice");
```

```
choice = sc.nextInt();
```

```
switch (choice)
```

```
{
```

```
    case 1:
```

```
        result = menu.Addition(myNum1, myNum2);
```

```
        System.out.println(myNum1 + " + " + myNum2 + ": " +  
                             result);
```

```
        break;
```

```
    case 2:
```

```
        result = menu.Multiplication(myNum1, myNum2);
```

```
        System.out.println(myNum1 + " * " + myNum2 + ":  
                             " + result);
```

```
        break;
```

case 3:

```
result = menu.Division(myNum1, myNum2);
```

```
System.out.println(myNum1 + " / " + myNum2 + " : " + result);
```

```
break;
```

case 4:

```
result = menu.Subtraction(myNum1, myNum2);
```

```
System.out.println(myNum1 + " - " + myNum2 + " : " +  
                    result);
```

```
break;
```

case 5 :

```
System.exit(0);
```

default

```
System.out.println("Invalid Choice");
```

```
}
```

```
}
```

```
while(true);
```

```
}
```

```
}
```

```
Public class MenuDriven {
```

```
int Addition(int num1, int num2)
```

```
{
```

```
    return num1 + num2;
```

```
}
```

```
int multiplication(int num1, int num2)
```

```
{
```

```
    return num1 * num2;
```

```
}
```

```
int division(int num1, int num2)
```

```
{
```

```
    return num1 / num2;
```

```
}
```

```
int Subtraction(int num1, int num2)
```

```
{
```

```
    return num1 - num2;
```

```
}
```

Run: MenuDrivenMain x

↑ "C:\Program Files\Amazon Corretto\jdk17

↓ Enter 2 Numbers

⇒ 10 20

⇓ =====Menu=====

1. Addition

2. Multiplication

3. Division

4. Subtraction

5. Exit

Enter Choice:

1

10 + 20: 30

Enter 2 Numbers