Name: Akram

USN: 1BM21CS013

Class: 3A

Lab 1 Question: Develop a Java program that prints all real solutions to the quadratic equation ax2+bx+c = 0. Read in a, b, c and use the quadratic formula. If the discriminate b2 -4ac is negative, display a message stating that there are no real solutions.

Program:

Quadratic Equation 2.0

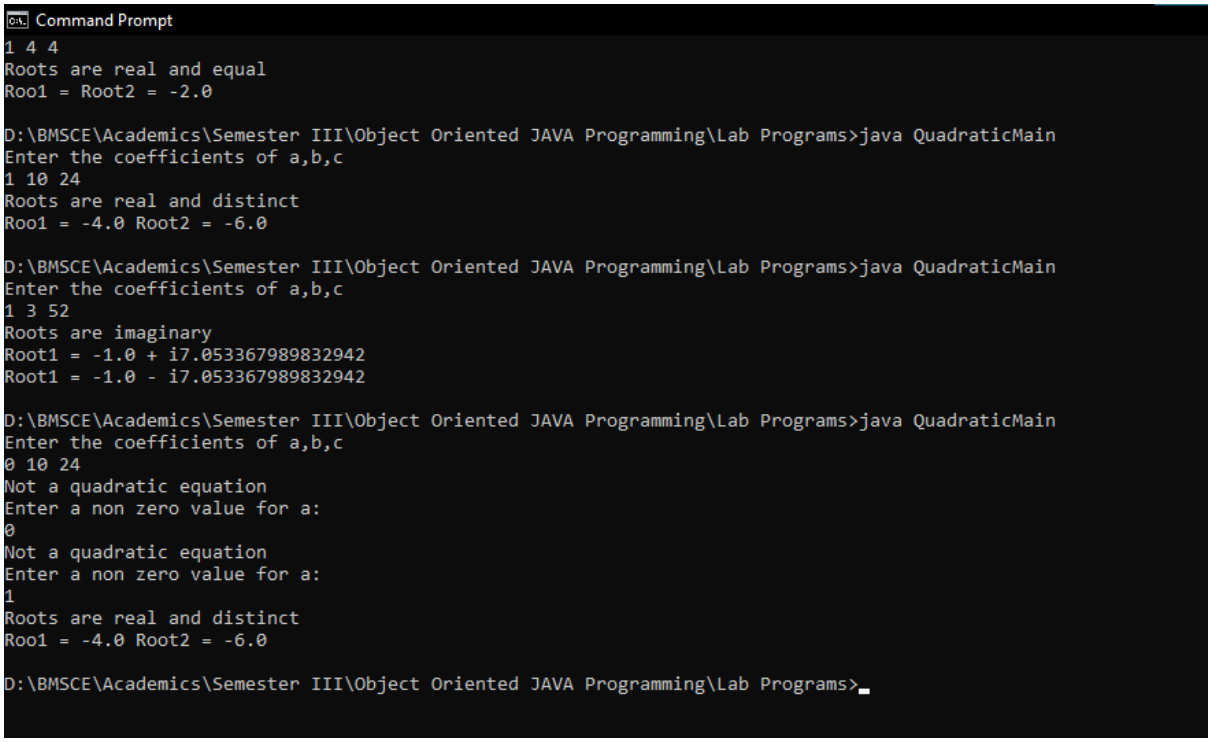
```
import java.util.Scanner;
class Quadratic
{
    int a, b, c;
    double r1, r2, d;
    void getd()
    {
        Scanner s= new Scanner(System.in);
        System.out.println("Enter the coefficients of a,b,c ");
        a = s.nextInt();
        b = s.nextInt();
        c = s.nextInt();
        while (a==0)
        {
            System.out.println("Not a quadratic equation ");
            System.out.println("Enter a non zero value for a: ");
            a = s.nextInt();
        }
    }
    void compute()
    {
        d= b*b - 4*a*c;
        if (d==0)
        {
            r1 = (-b)/(2*a);
            System.out.println("Roots are equal and real ");
            System.out.println("Root1 = Root2 = "+r1);
        }
```

```
else if (d>0)
{
    r1 = ((-b)/(2*a)) + (Math.sqrt(d))) / (double)(2*a);
    r2 = ((-b)/(2*a)) - (Math.sqrt(d))) / (double)(2*a);
    System.out.println("Roots are real and distinct");
    System.out.println("Root1 = "+r1+"Root2 = "+r2);
}
else
{
    System.out.println("Roots are imaginary");
    r1 = (-b)/(2*a);
    r2 = Math.Sqrt((-d)/(2*a));
    System.out.println("Root = "+r1+"+i"+r2);
    System.out.println("Root = "+r1+"-i"+r2);
}
}
}

class QuadraticMain()
{

public static void main(String args[])
{
    Quadratic q = new Quadratic();
    q.getd();
    q.compute();
}
}
```

Output:


Command Prompt
1 4 4
Roots are real and equal
Roo1 = Root2 = -2.0
D:\BMSCE\Academics\Semester III\Object Oriented JAVA Programming\Lab Programs>java QuadraticMain
Enter the coefficients of a,b,c
1 10 24
Roots are real and distinct
Roo1 = -4.0 Root2 = -6.0
D:\BMSCE\Academics\Semester III\Object Oriented JAVA Programming\Lab Programs>java QuadraticMain
Enter the coefficients of a,b,c
1 3 52
Roots are imaginary
Root1 = -1.0 + i7.053367989832942
Root1 = -1.0 - i7.053367989832942
D:\BMSCE\Academics\Semester III\Object Oriented JAVA Programming\Lab Programs>java QuadraticMain
Enter the coefficients of a,b,c
0 10 24
Not a quadratic equation
Enter a non zero value for a:
0
Not a quadratic equation
Enter a non zero value for a:
1
Roots are real and distinct
Roo1 = -4.0 Root2 = -6.0
D:\BMSCE\Academics\Semester III\Object Oriented JAVA Programming\Lab Programs>