

Program-1

Develop a Java Program that prints all solutions to the quadratic equation $ax^2+bx+c = 0$. Read in a, b, c and use the quadratic formula.

CODE:

```
import java.util.Scanner;

class Quad
{
    double d, r1, r2;

    Quad(double a, double b, double c)
    {
        if(a==0)
        {
            System.out.println("Coefficient 'a' can not be zero for this.");
        }
        else
        {
            d = b*b-4*a*c;
            if(d>0)
            {
                System.out.println("The roots are real and distinct");
                r1 = (-b+Math.sqrt(d))/(2*a);
                r2 = (-b-Math.sqrt(d))/(2*a);
                System.out.println("First root is: " + r1 + "\nSecond Root is: "
+ r2);
            }
            else if(d==0)
            {
                System.out.println("The roots are real and equal");
```

```

        r1 = -b/(2*a);
        System.out.println("The roots are both: " + r1);
    }
    else
    {
        System.out.println("The roots are imaginary and distinct.");
        r1 = -b/(2*a);
        r2 = (Math.sqrt(Math.abs(d)))/(2*a);
        System.out.println("First root is:" + r1 + "+i" + r2);
        System.out.println("Second root is:" + r1 + "-i" + r2);
    }
}
}
}

```

```

class Quadratic_Equations

```

```

{
    public static void main(String args[])
    {
        System.out.println("Enter your coefficients:\n");
        Scanner ss = new Scanner(System.in);
        Quad One = new Quad(ss.nextInt(), ss.nextInt(), ss.nextInt());
    }
}

```

OUTPUT SCREENSHOT:

```
C:\Users\BMSCECSE\Desktop\1BM21CS246\JAVA>java Quadratic_Equations
Enter your coefficients:

1 -2 1
The roots are real and equal
The roots are both: 1.0

C:\Users\BMSCECSE\Desktop\1BM21CS246\JAVA>javac Quadratic_Equations
error: Class names, 'Quadratic_Equations', are only accepted if annotation processing is explicitly requested
1 error

C:\Users\BMSCECSE\Desktop\1BM21CS246\JAVA>java Quadratic_Equations
Enter your coefficients:

20 1 1
The roots are imaginary and distinct.
First root is:-0.025+i0.22220486043288973
Second root is:-0.025-i0.22220486043288973

C:\Users\BMSCECSE\Desktop\1BM21CS246\JAVA>java Quadratic_Equations
Enter your coefficients:

1 20 1
The roots are real and distinct
First root is: -0.05012562893380057
Second Root is: -19.9498743710662

C:\Users\BMSCECSE\Desktop\1BM21CS246\JAVA>
```