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Lab Program - 1

Develope a Java program that prints all real solutions to the quadratic equation $ax^2+bx+c=0$. Read in a, b, c and use the quadratic formula. If the discriminant b^2-4ac is negative, display a message stating that there are no real solutions

```
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();
    }
    void compute()
    {
        while(a==0)
        {
            System.out.println("Not a quadratic equation");
            System.out.println("Enter a non-zero value
                                for a:");
            a = s.nextInt();
        }
        d = b*b - 4*a*c;
        if(d==0)
        {
```

```
            r1 = (-b)/(2*a);
            System.out.println("Roots are real & equal");
            System.out.println("Root1 = Root2 = "+r1);
        }
        else if(d>0)
        {
            r1 = ((-b)+(Math.sqrt(d)))/(double)(2*a);
            r2 = ((-b)-(Math.sqrt(d)))/(double)(2*a);
            System.out.println("Root1 = "+r1+"+i"+r2);
            System.out.println("Root1 = "+r1+"-i"+r2);
        }
    }
}
class QuadraticMain
{
    public static void main(String args[])
    {
        Quadratic q = new Quadratic();
        q.getd();
        q.compute();
    }
}
```

done by

```
System.out.println("Shashank c 1BM22CS254");
```

Output :

(1) Enter the coefficients of a, b, c
2, 4, 5
roots are imaginary
root1 = -1.0+i1.2247448713915889
root2 = -1.0-i1.2247448713915889

(2) Enter the coefficients of a, b, c
1, 2, 1
roots are equals

root1 = root2 = -1.0

(3) Enter the coefficients of a, b, c
1, 4, 1
roots are real and distinct
root1 = -0.2679491924311228
root2 = -3.7320508075688772

Done by Shashank c 1BM22CS254
12/12/2023