① Develop a Java program that prints all real soln to the quadratic eqn $ax^2+bx+c=0$. Read in a, b, c and use the quadratic formula.

```
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:");
            Scanner s=new Scanner(System.in);
            a=s.nextInt();
        }
        d=b*b-4*a*c;
        if (d==0)
        {       r1=(-b)/(2*a);
            System.out.println("Roots are real and 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("Roots are real and distinct");
    System.out.println("Root1=" +r1+ "Root2=" +r2);
}
else if(d<0)
{
    r1 = (-b)/(2*a);
    r2 = Math.sqrt(d)/(2*a);
    System.out.println("Root1" +r1+ "+i" + r2);
    System.out.println("Root2=" +r1+ "-i" +r2);
}
}
}

class QuadraticMain
{
public static void main(String[] args)
{
    Quadratic q = new Quadratic();
    q.getd();
    q.computs();
    System.out.println("Sanketh M Hancsi
                        1BM22CS262");
}
}
```

Output:

Enter the coefficients of a,b,c:

1 2 1

Roots are real and equal

Root1 = Root 2 = -1.0

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Enter

3 4 2

Roots are imaginary

Root1 = 0.0 + i 1.0554159678

Root2 = 0.0 - i 1.0554159678

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Enter

1 3 2

Roots are real and distinct

Root1 = -1.0 Root2 = -2.0

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