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/*
Develop 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 discriminate  $b^2 - 4ac$  is negative, display a
message stating that there are no real solutions.
*/

import java.util.Scanner;
class quad
{
    public static void main (String args[])
    {
        System.out.println("Enter the coefficients a & b & c of quadratic equation  $ax^2 + bx + c = 0$  and where a is not 0");
        Scanner sc = new Scanner(System.in);
        double a = sc.nextInt();
        if (a==0)
        {
            System.out.println("a can't be zero");
        }
        else
        {
            double b=sc.nextInt();
            double c=sc.nextInt();
            double z=b*b-4*a*c;
            Equation eq=new Equation();
            if (z<0)
            {
                System.out.println("There are no real solutions");
            }
            else if(z==0)
            {
                System.out.println("The solutions are real and equal");
                eq.check(a,b,c);
                eq.display();
            }
            else
            {
                System.out.println("The solutions are real and distinct");
                eq.check(a,b,c);
                eq.display();
            }
        }
    }
}
```

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```
    if (z<0)
    {
        System.out.println("There are no real solutions");
    }
    else if(z==0)
    {
        System.out.println("The solutions are real and equal");
        eq.check(a,b,c);
        eq.display();
    }
    else
    {
        System.out.println("The solutions are real and distinct");
        eq.check(a,b,c);
        eq.display();
    }
}

class Equation
{
    double a;
    double b;
    double c;
    double r1;
    double r2;
    void check(double a,double b,double c)
    {
        this.a=a;
        this.b=b;
        this.c=c;
        double z=Math.pow( b*b-4*a*c , 0.5 );
        r1=(-b-z)/(2*a);
        r2=(-b+z)/(2*a);
    }
    void display()
    {
        System.out.println(r1);
        System.out.println(r2);
    }
}
```

```
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C:\Users\priya>cd desktop

C:\Users\priya\Desktop>cd java

C:\Users\priya\Desktop\java>javac 2.java

C:\Users\priya\Desktop\java>java quad
Enter the coefficients a & b & c of quadratic equation ax2+bx+c=0 and where a is not 0
1
2
3
There are no real solutions

C:\Users\priya\Desktop\java>
```