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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.

```
import java.util.Scanner;


 class Equation
{
   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 not be zero!");
      }
      else
      {
      double b=sc.nextInt();
      double c=sc.nextInt();
      double z=b*b-4*a*c;
      EquationCheck ob=new EquationCheck();


      if (z<0)
      {
         System.out.println("There are no real solutions");
         double realpart=-b/(2*a);
         double imagpart=Math.sqrt(-z)/(2*a);
```

```
        System.out.println("Root1= "+realpart+"+"+imagpart+"i"+" AND "+"Root2= "+realpart+"-
"+imagpart+"i");


      }
      else if(z==0)
      {
         System.out.println("The solutions are real and equal");
         ob.check(a,b,c);
         ob.display();
      }
      else
      {
         System.out.println("The solutions are real and distinct");
         ob.check(a,b,c);
         ob.display();
      }
      }
   }
}

class EquationCheck

{
   double a;
   double b;
   double c;
   double x1;
   double x2;

   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 );
        x1=(-b-z)/(2*a);
        x2=(-b+z)/(2*a);
    }

    void display()
    {
        System.out.println(x1);
        System.out.println(x2);
    }

}
```

OUTPUTS

```
C:\Users\BMSCECSE\Documents\vk>java Equation
Enter the coefficients a,b,c of quadratic equation ax^2 + bx + c = 0 and where a is not 0
2
-11
14
The solutions are real and distinct
2.0
3.5
```

```
C:\Users\BMSCECSE\Documents\vk>java Equation
Enter the coefficients a,b,c of quadratic equation ax^2 + bx + c = 0 and where a is not 0
4
2
1
There are no real solutions
Root1= -0.25+0.43301270189221193i AND Root2= -0.25-0.43301270189221193i
```

```
C:\Users\BMSCECSE\Documents\vk>java Equation
Enter the coefficients a,b,c of quadratic equation ax^2 + bx + c = 0 and where a is not 0
4
2
1
There are no real solutions
Root1= -0.25+0.43301270189221931 AND Root2= -0.25-0.43301270189221931
```