

**1. 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.**

**CODE:**

```
import java.util.*;
import java.lang.String;
class equation
{
    public static void main(String args[]){
        double r1=0,r2=0;
        Scanner root =new Scanner(System.in);
        System.out.print("Enter the value of a in
 $ax^2+bx+c=0$ :");
        double a=root.nextDouble();
        System.out.print("Enter the value of b of
 $ax^2+bx+c=0$ :");
        double b=root.nextDouble();
        System.out.print("Enter the value of c
 $ax^2+bx+c=0$ :");
        double c=root.nextDouble();
        double n=2*a;
        double D=(b*b)-4*a*c;
        if(D>0)
        {
```

```
System.out.println("solutions real and distinct");
r1=(-b+ Math.sqrt(D))/n;
r2=(-b- Math.sqrt(D))/n;
System.out.println("solutions are");
System.out.println(r1);
System.out.println(r2);
}
else if(D==0)
{
System.out.println("solution real and equal");
r1=r2=-b/n;
System.out.println("solutions are");
System.out.println(r1);
System.out.println(r2);
}
else
{
System.out.println("NO real solutions");
}
}
}
```

OUTPUT:

Enter the value of a in  $ax^2+bx+c=0$ :2

Enter the value of b of  $ax^2+bx+c=0$ :4

Enter the value of c  $ax^2+bx+c=0$ :6

NO real solutions