

- 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.

```
import java.util.Scanner;

class quad
{
    public static void main(String xx[])
    {
        double a,b,c,r1,r2,d;
        Scanner s1=new Scanner(System.in);
        System.out.println("Enter the values of a,b,c");
        a=s1.nextDouble();
        b=s1.nextDouble();
        c=s1.nextDouble();
        d=b*b-4*a*c;
        System.out.println("The value of d is:"+d);
        if(d>0)
        {
            System.out.println("The roots are real");
            r1=(-b+Math.sqrt(d))/(2*a);
            r2=(-b-Math.sqrt(d))/(2*a);
            System.out.println("First root is:"+r1);
            System.out.println("Second root is:"+r2);
        }
        else if(d<0)
        {
            System.out.println("The roots are not real");
            r1=-b/(2*a);
            r2=Math.sqrt(-d)/(2*a);
            System.out.println("First root is:"+r1);
            System.out.println("Second root is:"+r2);
        }
    }
}
```

```

}

else

{

System.out.println("The roots are equal");

r1=r2=-b/(2*a);

System.out.println("The roots are:"+r1+" "+r2);

}

}

}

```

```

C:\Users\Lakshitha.L\Desktop\java lab>javac quad.java

C:\Users\Lakshitha.L\Desktop\java lab>java quad
Enter the values of a,b,c
1
-4
4
The value of d is:0.0
The roots are equal
The roots are:2.0 2.0

C:\Users\Lakshitha.L\Desktop\java lab>java quad
Enter the values of a,b,c
1
-7
12
The value of d is:1.0
The roots are real
First root is:4.0
Second root is:3.0

C:\Users\Lakshitha.L\Desktop\java lab>java quad
Enter the values of a,b,c
1
4
5
The value of d is:-4.0
The roots are not real
First root is:-2.0
Second root is:1.0

```