

OOJ LAB

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3D Section

Batch D4

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.

Source Code

```
import java.util.Scanner;

import java.lang.Math;

class QuadraticEq {

    public static void main(String args[])

    {

        int a,b,c;

        double d,r1,r2;

        Scanner sc=new Scanner(System.in);

        System.out.println("Enter a,b and c in quadratic equation");

        a=sc.nextInt();

        b=sc.nextInt();

        c=sc.nextInt();

        d=Math.pow(b,2)-4*a*c;

        if(d==0)

        {

            r1=b/(2*a);

            r2=b/(2*a);

            System.out.println("Roots are equal");

            System.out.println("Roots are: "+r1+" and "+r2);
```

```

    }
    else if(d>0)
    {
        r1=(-b+Math.sqrt(d))/(2*a);
        r2=(-b-Math.sqrt(d))/(2*a);
        System.out.println("Roots are distinct and unequal");
        System.out.println("Roots are: "+r1+"and "+r2);
    }
    else
    {
        System.out.println("Imaginary roots");
    }
}
}

```

Output Screenshot

```

C:\Users\BMSCECSE\Desktop\1BM21CS242>javac Quad.java
C:\Users\BMSCECSE\Desktop\1BM21CS242>java QuadraticEq
Enter a,b and c in quadratic equation
2
4
2
Roots are equal
Roots are: 1.0 and 1.0

C:\Users\BMSCECSE\Desktop\1BM21CS242>java QuadraticEq
Enter a,b and c in quadratic equation
4
2
2
Imaginary roots

C:\Users\BMSCECSE\Desktop\1BM21CS242>java QuadraticEq
Enter a,b and c in quadratic equation
2
4
1
Roots are distinct and unequal
Roots are: -0.2928932188134524and -1.7071067811865475

C:\Users\BMSCECSE\Desktop\1BM21CS242>

```