

LAB 1

PROGRAM #:

- Q Write a Java Program that prints all real solutions to the quadratic equation $ax^2 + bx + c = 0$ read in a, b, c if use the quadratic formula. If the discriminant $b^2 - 4ac$ is negative, display a message stating that there are no real solutions.

```
import java.util.*;  
import java.util.*;  
public class QuadraticEq {
```

```
    public static void main (String args[])  
    {
```

```
        float a, b, c, d, x1, x2;
```

```
        System.out.println("Enter values of  
        a, b, c.");
```

```
        Scanner scan = new Scanner(System.in);
```

```
        a = scan.nextFloat();
```

```
        b = scan.nextFloat();
```

```
        c = scan.nextFloat();
```

```
        System.out.println("a = " + a);
```

```
        System.out.println("b = " + b);
```

```
        System.out.println("c = " + c);
```

```
        if (a == 0 || b == 0 || c == 0)
```

```
        {  
            System.out.println("Invalid Input");  
        }
```


else

{

$$d = b^2 b - 4^*a^*c;$$

if (d > 0)

{

~~$$x1 = (-b + \text{Math.sqrt}(d)) / (2^*a);$$~~

$$x1 = (\text{float})(-b + \text{Math.sqrt}(d)) / (2^*a);$$

~~$$x2 = (-b - \text{Math.sqrt}(d)) / (2^*a);$$~~

$$x2 = (\text{float})(-b - \text{Math.sqrt}(d)) / (2^*a);$$

System.out.println("Roots are real and ~~equal~~
distinct x1 = " + x1 + " x2 = " + x2);

{

else if (d < 0)

{

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

{

else

{

$$x1 = -b / (2^*a);$$

$$x2 = x1;$$

System.out.println("Roots are equal
x1 = " + x1 + " x2 = " + x2);

{

System.out.println("Name: Adiker Chelvi

USN: IBM22C5012");

{

{

Output:

Enter values for a, b, c

12.5

25

12.5

Roots are equal $x_1 = 1.0$ $x_2 = 1.0$

Enter values for a, b, c

32

47

85

Roots are imaginary.

Enter values for a, b, c

29

172

46

Roots are real and distinct $x_1 = -0.2087$ $x_2 = 294$

$x_2 = -5.650305$

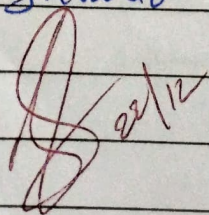
Enter values for a, b, c

0

56

0

~~Roots~~ Invalid input.

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```
C:\Users\bmsce\Desktop\1BM22CS012>java QuadraticEq
Enter the values for a,b,c
32
47
85
Roots are imaginary
NAME:ADIKAR CHARVI SREE TEJA USN:1BM22CS012
```

```
C:\Users\bmsce\Desktop\1BM22CS012>javac QuadraticEq.java
```

```
C:\Users\bmsce\Desktop\1BM22CS012>java QuadraticEq
Enter the values for a,b,c
29
172
46
Roots are real and distinct r1=-0.2807294r2=-5.650305
NAME:ADIKAR CHARVI SREE TEJA USN:1BM22CS012
```

```
C:\Users\bmsce\Desktop\1BM22CS012>javac QuadraticEq.java
```

```
C:\Users\bmsce\Desktop\1BM22CS012>java QuadraticEq
Enter the values for a,b,c
12.5
25
12.5
Roots are equal r1=-1.0r2=-1.0
NAME:ADIKAR CHARVI SREE TEJA USN:1BM22CS012
```

```
C:\Users\bmsce\Desktop\1BM22CS012>java QuadraticEq
```

```
Enter the values for a,b,c
```

```
0
```

```
1
```

```
0
```

```
Invalid Input
```

```
NAME:ADIKAR CHARVI SREE TEJA USN:1BM22CS012
```