

## ReflectionLogs - QuadraticEquations(Mastery)

```
package Mastery;

import java.util.Scanner;
import java.lang.Math;

public class QuadraticEquation {

    public static void main(String[] args) {
        // TODO Auto-generated method stub

        //Preparing for user input
        Scanner input = new Scanner(System.in);

        //Declaration (for a , b , c and discrim, root1, root2
        int a, b, c, discrim, root1, root2;

        //prompt user for a, b and c value (used in quadratic equation)
        System.out.println("Enter an int value for a: "); //a
        a = input.nextInt();

        System.out.println("Enter an int value for b: "); //b
        b = input.nextInt();

        System.out.println("Enter an int value for c: "); //c
        c = input.nextInt();
```

Prepared for user input, declared the variables for later use and retrieved the a, b and c value. I also added `java.lang.Math`; which I will use later for the square root part of the quadratic equation.

```
        discrim = (b*b - 4*a*c); //Determine the value of the discrim

        if (discrim < 0 ) //If discrim < 0,
        {
            System.out.print("There are no real roots since the discriminant is less than 0.");
        }
        else if (discrim >= 0) //if discrim is greater than or equal to 0
        {
            root1 = (int)((-b + (Math.sqrt(discrim))) / (2 * a)); //calculate root1 (this root is
            root2 = (int)((-b - (Math.sqrt(discrim))) / (2 * a)); //calculate root2 (this root is
            if (root1 == root2) //This if statement compares the value of root1 and root2
            {
                System.out.print("The root of the quadratic equation is " + root1); //if root1
            }
            else
            {
                System.out.print("The roots of the equation are " + root1 + " and " + root2); //
            }
        }
    }
}
```

After getting the user input earlier, I have calculated the discriminant. I made the code end automatically if the discriminant is less than 0, since there would be no roots if it was. This is checked within an if statement. And if that doesn't happen, the code reads the else if statement which then calculates the two roots using the quadratic formula. This is where I used the `java.util.math`; from earlier. After that calculation, the code compares the value of the two roots, if they are the same, that means there is only 1 singular root, which is then displayed. Otherwise the program displays both roots since there will be two roots to the quadratic equation.