*QuadraticEquation.java - Notepad

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Lab Program 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 noreal solutions.

```
import java.util.Scanner;
class QuadraticEquation
{
	public static void main(String XX[])
	{
		Scanner input= new Scanner(System.in);
		System.out.println("Enter the value of the coefficients \n Enter the value of a: ");
		double a= input.nextDouble();
		System.out.println("Enter the value of b: ");
		double b= input.nextDouble();
		System.out.println("Enter the value of c: ");
		double c=input.nextDouble();
		double d= b*b-4.0*a*c;
		if(a==0.0) {System.out.println("The value of a cant be 0");}
		else{
		if(d>0.0)
		{
			double r1=(-b+Math.sqrt(d))/(2.0*a);
			double r2=(-b-Math.sqrt(d))/(2.0*a);
			System.out.println("The roots are real and distinct and are "+r1+" and "+r2);
		}
		else if(d==0.0)
		{
			double r1= -b/(2.0*a);
			System.out.println("The roots are real and equal and are "+r1+" and "+r1);
		}
		else
		{
			double r1=(-b/(2.0*a));
			double r2=(Math.sqrt(Math.abs(d))/(2.0*a));
			System.out.println("The roots are imaginary and are "+r1+" +i"+r2+" and "+r1+" -i"+r2);
		}
		}
	}
}
```

```
C:\Users\Aditi Suhrut\Documents\Aditi\Java>javac QuadraticEquation.java

C:\Users\Aditi Suhrut\Documents\Aditi\Java>java QuadraticEquation
Enter the value of the coefficients
 Enter the value of a:
1
Enter the value of b:
1
Enter the value of c:
1
The roots are imaginary and are -0.5 +i0.8660254037844386 and -0.5 -i0.8660254037844386

C:\Users\Aditi Suhrut\Documents\Aditi\Java>java QuadraticEquation
Enter the value of the coefficients
 Enter the value of a:
4
Enter the value of b:
-4
Enter the value of c:
1
The roots are real and equal and are 0.5 and 0.5

C:\Users\Aditi Suhrut\Documents\Aditi\Java>java QuadraticEquation
Enter the value of the coefficients
 Enter the value of a:
1
Enter the value of b:
4
Enter the value of c:
3
The roots are real and distinct and are -1.0 and -3.0
```