Lab₁

1. Develop a Java program that prints all real solutions to the quadratic equation ax2+bx+c=0. Read in a, b, c and use the quadratic formula. If the discriminate b2-4ac is negative, display a message stating that there are no real solutions.

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```

Code:

```
import java.util.Scanner;
public class QuadraticEquation{
  public static void main(String[] args){
     Scanner sc=new Scanner(System.in);
```

```
System.out.println("Enter coefficient a:");
    double a=sc.nextDouble();
    System.out.println("Enter coefficient b:");
    double b=sc.nextDouble();
    System.out.println("Enter coefficient c:");
    double c=sc.nextDouble();
    double discriminant=b*b-4*a*c;
    if(discriminant>0){
       double root1=(-b+Math.sqrt(discriminant))/(2*a);
       double root2=(-b-Math.sqrt(discriminant))/(2*a);
       System.out.println("Roots are real and distinct");
       System.out.println("Root 1="+root1);
       System.out.println("Root 2="+root2);
     }
    else if(discriminant==0){
       double root=-b/(2*a);
       System.out.println("Roots are real and equal");
       System.out.println("Root="+root);
    }
    else{
       System.out.println("There are no real solutions");
    }
  }
}
```

+Output:

```
Microsoft Windows [Version 10.0.22631.4391]
(c) Microsoft Corporation. All rights reserved.
C:\Users\Spandana>d:
D:\>cd Java_Lab_Programs
\label{lem:c:program} D:\Java\_Lab\_Programs>set path="C:\Program Files\Java\jdk-23\bin"
D:\Java_Lab_Programs>javac QuadraticEquation.java
D:\Java_Lab_Programs>java QuadraticEquation Enter coefficient a:
1
Enter coefficient b:
-3
Enter coefficient c:
Roots are real and distinct
Root 1=2.0
Root 2=1.0
D:\Java_Lab_Programs>java QuadraticEquation.java Enter coefficient a:
Enter coefficient b:
-6
Enter coefficient c:
Roots are real and equal Root=3.0
D:\Java_Lab_Programs>java QuadraticEquation Enter coefficient a:
1
Enter coefficient b:
2
Enter coefficient c:
There are no real solutions
D:\Java_Lab_Programs>
```