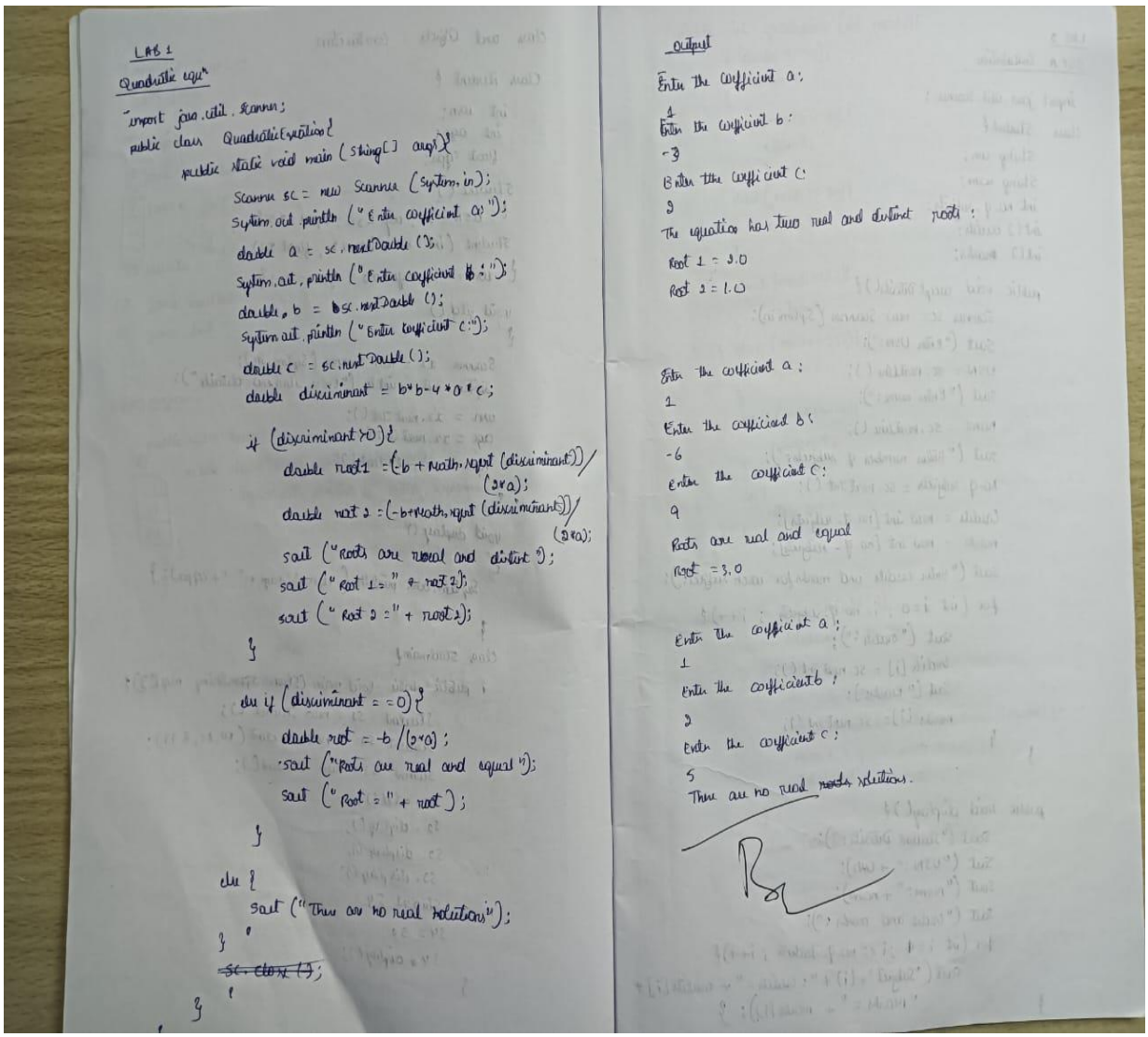
Lab 1

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.



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]
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C:\Users\Spandana>d:

D:\>cd Java_Lab_Programs

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:
2
Roots are real and distinct
Root 1=2.0
Root 2=1.0

D:\Java_Lab_Programs>java QuadraticEquation.java
Enter coefficient a:
1
Enter coefficient b:
-6
Enter coefficient c:
9
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:
5
There are no real solutions

D:\Java_Lab_Programs>
```