PROGARM 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.

```
import java.util.Scanner;

public class QuadraticSolver {
    public static void main(String[] args) {

        Scanner scanner = new Scanner(System.in);

        System.out.print("Enter coefficient a: ");
        double a = scanner.nextDouble();

        System.out.print("Enter coefficient b: ");
        double b = scanner.nextDouble();

        System.out.print("Enter coefficient c: ");
        double c = scanner.nextDouble();

        double discriminant = b * b - 4 * a * c;
```

```
        if (discriminant < 0) {
            System.out.println("There are no real solutions.");
        } else {

            double root1 = (-b + Math.sqrt(discriminant)) / (2 * a);
            double root2 = (-b - Math.sqrt(discriminant)) / (2 * a);

            if (discriminant == 0) {
                System.out.println("There is one real solution: " +
root1);
            } else {
                System.out.println("The real solutions are: ");
                System.out.println("Root 1: " + root1);
                System.out.println("Root 2: " + root2);
            }
        }


        scanner.close();
    }
}
```

OUTPUT

```
Enter coefficient a: 1
Enter coefficient b: -3
Enter coefficient c: 2
The real solutions are:
Root 1: 2.0
Root 2: 1.0
```

```
Enter coefficient a: 7
Enter coefficient b: 8
Enter coefficient c: 5
There are no real solutions.
```

```
Enter coefficient a: 2
Enter coefficient b: 4
Enter coefficient c: 2
There is one real solution: -1.0
```

NOTES:

PAGE NO :
DATE :

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

->
```
import java.util.Scanner;
public class QuadraticEquation{
public static void main (String[] args){
Scanner scanner = new Scanner (System.in);
System.out.print ("Enter coefficient a ");
double a= scanner.nextDouble();
System.out.print ("Enter coefficient b ");
double b= scanner.nextDouble();
System.out.print ("Enter coefficient c ");
double c =scanner.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("The equation has two
real solutions");
System.out.println("Root1 "+root1);
System.out.println("Root2 "+root2);
}
else if (discriminant==0){
double root = -b/(2*a);
system.out.println("The equation has one
real Solution");
System.out.println("Root "+Root);
```

PAGE NO :
DATE :

```
}
else
{
System.out.println("There are no real solutions");
}
scanner.close();
}
}
```

2. output

1
-3
2
2.0 and 1.0