```
import java.util.Scanner;
class QuadraticEquation {
   public static void main(String[] args) {
      Scanner sc= new Scanner(System.in);
      System.out.print("Enter the Coefficient. of a:");
      int a= sc.nextInt();
      System.out.print("Enter the Coefficient of b:");
      int b= sc.nextInt();
      System.out.print("Enter the Coefficient of c:");
      int c= sc.nextInt();
      if (a==0){
         System.out.println("Invalid Input");
      }
      double d=(b*b)-4*a*c;
      if (d>0){
         System.out.println("Real and Distinct Roots");
         double r1= (-b+ Math.sqrt(d))/(2*a);
         double r2= (-b- Math.sqrt(d))/(2*a);
         System.out.println("The roots of the Equation is:");
         System.out.println(r1+" and "+r2);
      }
      else if (d==0){
         System.out.println("Real and Equal Roots");
         double r= -b/(2*a);
         System.out.println("Roots:"+r);
      }
      else{
         System.out.println("No Real Roots");
      }
   }
```

```
Enter the Coefficient. of a:2
Enter the Coefficient of b:-8
Enter the Coefficient of c:3
Real and Distinct Roots
The roots of the Equation is:
3.58113883008419 and 0.41886116991581024
```

}

LAB PROGRAM-1

Q. Develop a java program that prints all real numbers solutions to the quadratic equation $ax^2+bx+c=0$. Read a, b, c and use the quadratic formula.

```
import java.util.Scanner;
class QuadraticEquationSolver {
        public static void main (String[] args) {
        Scanner sc = new Scanner(System.in);
        int a = sc.nextInt();
        System.out.println("Enter coeff. of 'a'");
        int b = sc.nextInt();
        System.out.println("Enter coeff. of b");
        int c = sc.nextInt();
        if (a==0) {
                system.out.println("Please enter valid");
        }
        double d = b*b - 4*a*c;
        if (d>0) {
                System.out.println("Real and distinct");
                double r1 = (-b + Math.sqrt(d))/2a;
                double r2 = (-b - Math.sqrt(d))/(2*a);
                system.out.println("Roots are:"+r1+"and"+
                                        r2);

        else if (d==0) {
                system.out.println("Roots are real and
                                        equal");
                double r = -b/(2*a);
                system.out.println("Roots:"+r);
```

```
            System.out.println("No Real Roots");
        }
    }
```

Output ⇒

* Enter coefficient of a : 2
  Enter coefficient of b : -8
  coefficient of c : 3
  Real & Distinct Roots
  Roots are : 3.58 and 0.42

* Enter coefficient of a : 1
  coeff of b : -4
  coeff of c : 4
  Roots are real and equal
  Roots : 2

* Enter coeff of a : 1
  coeff of b : 1
  coeff of c : 1
  Equation has no real solution.

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