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 no real solutions.

```java
import java.util.Scanner;
class quadratic {
    float d;
    Scanner sc = new Scanner (System.in);

    void check()
    { System.out.printh ("Enter values of a,b &c:");
      int a = sc.nextInt();
      int b = sc.nextInt();
      int c = sc.nextInt();

      if (a==0){
          System.out.println("invalid equation");
      }
      else {
          d = b*b - 4*a*c;
          System.out.println(d);
          System.out.println("The solutions are:
          if (d>0){
              System.out.print ("Roots unique");
              double r1 = (-b+ Math.sqrt(d))/(2*a)
              double r2 = (-b- math.sqrt(d))/(2*a)
```

```
            system.out.println (x1+" "+x2);
            }
        if (d==0){
            System.out.println ("Roots are equal
            double x = -b/(2*a);
            System.out.println(x);
            }
        if (d<0){
            System.out.println ("No real soluti
            }
        }
    }
}

public class Main {
    public static void main ( String[] args){
        quadratic q1 = new quadratic();
        q1.check();
    }
}
```

Output : Enter the values of a,b, and c:

4

4

1

Discriminant : 0.0

The solutions are :

Roots are equal

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