LAB1

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

ALGORITHM

1) START
2) READ a, b, c (Co-efficients of the quadratic equation)
3) Calculate $d = b^2-4ac$
4) If $(d > 0)$
   - → Calculate r1 (root 1) $= \left(\frac{-b+\sqrt{d}}{2a}\right)$
   - → Calculate r2 (root 2) $= \left(\frac{-b-\sqrt{d}}{2a}\right)$
   - → Display two real and different roots (r1, r2)
5) Else If $(d == 0)$
   - → Calculate (r1)(root 1) = (root 2)(r2) $= \frac{-b}{2a}$
   - → Display real and equal roots (r1, r2)
6) Else If $(d < 0)$
   - → Display, no real solutions.
7) STOP

```
import java.util.*;
class lab1 {
 public static void main (String ss[]) {
  double r1, r2;
  Scanner s= new Scanner (System.in);
  System.out.println ("Enter the coefficients of the quadratic
                                                    equation");
  System.out.println ("Enter a");
  double a = s.nextDouble ();
  System.out.println ("Enter b");
  double b = s.nextDouble ();
  System.out.println ("Enter c");
  double c = s.nextDouble ();
  double d = (b*b)-(4*a*c);
  if (d>0)
  { System.out.println ("Roots are real and different");
    r1 = (-b+ Math.sqrt (d)) /(2*a);
    r2 = (-b - Math.sqrt (d)) /(2*a);
    System.out.println ("root 1 ="+r1+"\n root 2 ="+r2);
  }
  else if (d==0)
  {
    System.out.println ("Roots are real and equal");
     r1 = r2 = -b/(2*a);
    System.out.println ("root1 = root 2 ="+r1);
  }
    else
    {
     System.out.println ("No real solutions");
    }
  }
}
```