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 solution.

```
import java.util.Scanner;
Class Quadratic {

public static void main (String [] args) {
 Scanner s = new Scanner (System.in);
 System.out.println ("Enter the value a\n");
  double root1, root2;
double a = s.nextDouble();
 System.out.println ("Enter the value of b\n");

 double b = s.nextdouble();
System.out.println ("Enter the value of c\n");

double c = s.nextdouble();

double dis = (b*b) - 4(a*c);

if (dis >= 0)
 root1 = (-b + Math.sqrt(dis) / (2*a));
 root2 = (-b - Math.sqrt(dis) / (2*a));
```

```
System.out.println("two distinct real roots exist:
                root1="+root1+"root2 = "+root2);
}
  else if (dis == 0)
  {
    root1 = root2 = -b/(2*a);
System.out.println("In two equal and real roots
                exist: root1 = "+root1+"root2 = "+root2);
}
  else {
   System.out.println("No real Solutions exists");
}
}
}
```

Output

enter the value of a

2

enter the Value of b

5

enter the Value of c

6

No real Solution exists.

quadratic - Notepad

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```
import java.util.Scanner;
class Quadratic{
    public static void main(String[]args){
        Scanner s = new Scanner (System.in);
        System.out.println("enter the value of a\n");
        double root1, root2;
        double a = s.nextDouble();
        System.out.println("enter the value of b\n");
        double b = s.nextDouble();
        System.out.println("enter the value of c\n");
        double c = s.nextDouble();
        double dis = (b*b)-(4*a*c);
        if (dis>0)
        { root1 = (-b + Math.sqrt(dis)/(2*a));
            root2 = (-b - Math.sqrt(dis)/(2*a));
            System.out.println("two distinct real roots exits: root1 ="+ root1 +" root2 =" +root2);
        }
        else if (dis==0)
        { root1 = root2 =(-b/(2*a));
            System.out.println("\n two real and equal roots exits: root1 ="+ root1 +" root2 =" +root2);
        }
        else{ System.out.println("\n no real solution exits");
        }
    }
}
```

Ln 25, Col 2 90% Windows (CRLF)

Windows PowerShell

```
PS C:\Users\sarayu\Desktop\ooj> javac Quadratic.java
PS C:\Users\sarayu\Desktop\ooj> java Quadratic
enter the value of a

2
enter the value of b

5
enter the value of c

6

 no real solution exits
PS C:\Users\sarayu\Desktop\ooj>
```

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LAB PROGRAM 1 Algorithm

Steps (1) Input the value of a, b, c

(2) Calculat $d = b * b - 4 * a * c$

(3) IF $(d < 0)$

Display that there are No real Soln's

else if $(d = 0)$

Display that Roots are Equal

Calculat $r1 = r2 = (-b/2*a)$

else

Display roots are real and

Calculat $r_1 = -b + d/2*a$ and

$r_2 = -b - d/2*a$

(4) print r_1 and r_2

(5) End program algorithm.