

LAB PROGRAM 1:

Problem statement: 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.

```
import java.util.Scanner;
import java.lang.Math;

class Quad
{
    public static void main(String args[])
    {
        Scanner x = new Scanner(System.in);

        double r1,r2,d;

        System.out.println("Enter value of a:");
        double a =x.nextDouble();
        System.out.println("Enter value of b:");
        double b =x.nextDouble();
        System.out.println("Enter value of c:");
        double c =x.nextDouble();

        d = b*b - 4*a*c;
        r1 = ((-1*b)+Math.sqrt(Math.abs(d)))/(2*a);
        r2 = ((-1*b)-Math.sqrt(Math.abs(d)))/(2*a);

        if(a==0)
        {System.out.println("Invalid inputs");}

        else{
            if(d==0)
            {
                System.out.println("The roots are:"+r1+"and"+r2);
            }
            else if(d>0)
            {
                System.out.println("The roots are:"+r1+"and"+r2);
            }
            else
            {
                System.out.println("The roots are:"+r1+" and i"+Math.abs(r2));
            }
        }
    }
}
```

```
C:\Users\bmsce>cd C:\Users\bmsce\Desktop\1BM21CS061

C:\Users\bmsce\Desktop\1BM21CS061>java Quad
Enter value of a:
1
Enter value of b:
2
Enter value of c:
1
The roots are:-1.0and-1.0

C:\Users\bmsce\Desktop\1BM21CS061>java Quad
Enter value of a:
2
Enter value of b:
3
Enter value of c:
4
The roots are:0.4489578808281798 and i1.9489578808281798

C:\Users\bmsce\Desktop\1BM21CS061>java Quad
Enter value of a:
2
Enter value of b:
5
Enter value of c:
2
The roots are:-0.5and-2.0

C:\Users\bmsce\Desktop\1BM21CS061>java Quad
Enter value of a:
0
Enter value of b:
2
Enter value of c:
5
Invalid inputs

C:\Users\bmsce\Desktop\1BM21CS061>_
```