Lab Program 1:

Develop a Java program that prints all real solutions to the quadratic equation ax2+bx+c = 0. Read in a, b, c and use the quadratic formula. If the discriminate b2
-4ac is negative, display a message stating that there are no
real solutions.

CODE SNIPPET:

Date 18/11/22
Page

Friday

LAB-1

a) Develop a Java program that prints all real solutions to the quadratic equation $ax^2+bx+c=0$. Read 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;
class quad
{
    public static void main(String xx[])
    {
        int a; int b; int c;
        double d;
        double r1, r2;
        Scanner s1 = new Scanner(System.in);
        System.out.println("enter the values of a, b, c ");
        a = s1.nextInt();
        b = s1.nextInt();
        c = s1.nextInt();
        d = b*b-(4*a*c);
        if(a==0)
        {
            System.out.println("The equation is not quadratic ");
        }
        else if(d==0)
        {
            System.out.println("The roots are real and equal");
            r1 = -b/(2*a);
            System.out.println(r1);
        }
```

```
        else if (d >0)
        {
            System.out.println(" The roots are real and distinct ");
            r1 = (-b + Math.sqrt(d)) / (2*a);
            r2 = (-b - Math.sqrt(d)) / (2*a);
            System.out.println(r1 + ", " + r2);
        }
        else
        {
            System.out.println("The roots are imaginary");
            r1 = -b / (2*a);
            r2 = Math.sqrt(Math.abs(d));
            System.out.println("The roots are " + r1 + " + " + "i " + " * "
            + Math.sqrt(r2) + " and " + r1 + " - " + "i" + " * " + Math.sqrt(r2));
        }
    }
}
```

OUTPUT:

```
C:\Users\bmsce\Desktop\1BM21CS022>javac quad.java

C:\Users\bmsce\Desktop\1BM21CS022>java quad
enter the values of a,b,c
0 2 3
the equation is not quadratic

C:\Users\bmsce\Desktop\1BM21CS022>java quad
enter the values of a,b,c
3 -18 27
the roots are real and equal
3.0

C:\Users\bmsce\Desktop\1BM21CS022>java quad
enter the values of a,b,c
1 -1 -6
the roots are real and distinct
3.0, -2.0

C:\Users\bmsce\Desktop\1BM21CS022>java quad
enter the values of a,b,c
1 -2 5
the roots are imaginary
the roots are 1.0+i*2.0and1.0-i*2.0
```