Lab Program 1:

Q. Program to display the roots of quadratic equation.

Ans:

```
import java.util.scanner
class Quadratic {
    int a,b,c;
    double r1,r2,d;
    void getd() {
        Scanner s = new Scanner (System.in);
        System.out.println("Enter the coefficients a,b,c");
        a = s.nextInt();
        b = s.nextInt();
        c = s.nextInt();
    }
    void compute() {
        while (a==0) {
            System.out.println("Not a quadratic equation");
            System.out.println("Enter a non-zero value for a:");
            Scanner s = new Scanner (System.in);
            a = s.nextInt();
        }
```

```
        d = b*b - 4*a*c;
        if (d==0){
            r1 = (-b)/(2*a);
            System.out.println("Roots are real and equal");
            System.out.println("Root 1 = Root 2 = " + r1);
        }
        else if (d>0){
            r1 = ((-b)+(Math.sqrt(d)))/(double)(2*a);
            r2 = ((-b)-(Math.sqrt(d)))/(double)(2*a);
            System.out.println("Roots are real and distinct");
            System.out.println("Root 1 = " + r1 + "Root 2 = " + r2);
        }
        else if (d<0){
            System.out.println("Roots are imaginary");
            r1 = (-b)/(2*a);
            System.out.println("Root 1 = " + r1 + "+i" + r2);
            System.out.println("Root 2 = " + r1 + "-i" + r2);
        }
    }
}
class QuadraticMain {
    public static void main(String args[]){
        Quadratic q = new Quadratic();
        q.getd();
        q.compute();
    }
}
```

Output:

Enter the coefficients a, b, c:

Roots are imaginary

(i) 0 1 2
Not a quadratic equation
Enter a non-zero value of a:

(ii) 1 -2 1
Roots are real and equal
The roots are +1 and +1

(iii) 1 2 10
Roots are imaginary
Root 1 = -1.0 + i18
Root 2 = -1.0 - i18

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