22/12/23 LAB Program 1

Q - Develop a Java program that prints all real solutions to the quadractic 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.

Code :-

```
import java.util.Scanner;
class Quadratic {
    int a,b,c;
    double r1,r2,d;
    void getdl() {
        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("Root1 = Root2 = " + 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("Root1 = " + r1 +
                "Root2 = " + r2);
    }
```

```
        else if (d<0) {
            System.out.println("There are no real
                                Solutions");
        }
    }
}
class QuadraticMain {
    public static void main(String args[]) {
        Quadratic q = new Quadratic();
        q.getd();
        q.Compute();
        System.out.println("Agam Tiwari", 1BM22CS023");
    }
}
```

Output :-

(1) Enter the coefficient of quadratic eqn a,b and c

2
4
2

Roots are real and equal

Root1 = Root2 = -1.0

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(2) Enter the coefficient of quadratic eqn a, b, c

2
8
3

Roots are real and distinct

Root1 = -0.41886119, Root2 = -3.58113883

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(3) Enter the coefficients :

4
2
4

No real roots

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