WEEK 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.

Source Code:

```
import java.util.Scanner;

class Quadratic {
    float d;
    Scanner sc = new Scanner(System.in);

    void solver()

    {
        System.out.println("enter the values of a,b, and c");
        int a = sc.nextInt();
        int b = sc.nextInt();
        int c = sc.nextInt();


        if (a == 0) {
            System.out.println("invalid equation");
        }
        else{
            d= b*b - 4*a*c;
            System.out.println(d);
            System.out.println("the solutions are");
            if(d>0){
                System.out.println("roots are unique ");
                double r1 = (-b+Math.sqrt(d))/(2*a);
                double r2 = (-b-Math.sqrt(d))/(2*a);
                System.out.println(r1 +" " + r2);
            }
            if(d==0){
                System.out.println("roots are equal ");
                double r = -b/(2*a);
                System.out.println(r);
            }
            if(d<0){
                System.out.println("There are no real roots" );
            }
        }

    }
```

```
}



public class Main {
    public static void main(String[] args) {
        Quadratic q1 = new Quadratic();
         q1.solver();

  }
}
```

```
D:\shreyas achar\web_dev>javac quad.java

D:\shreyas achar\web_dev>java quad
Enter the values a, b and c:
1 2 1
0.0
Roots are equal
-1

D:\shreyas achar\web_dev>java quad
Enter the values a, b and c:
2 5 3
1.0
Roots are unique
-1.0 -1.5

D:\shreyas achar\web_dev>java quad
Enter the values a, b and c:
1 2 3
-8.0
```

Written Code & Output:

Java lab – 1

① Develop a Java program that prints all real solutions to quadratic equation $ax^2+bx+c=0$. Read in a, b, c and use quad eqn formula. If discriminate is negitive display a method stating that there are no real solutions

```
import java.util.Scanner;
class quadratic{
    float d;
    Scanner sc = new Scanner(System.in);
    void check()
    {
        System.out.println("Enter the values a, b and c");
        int a = sc.nextInt();
        int b = sc.nextInt();
        int c = sc.nextInt();
        if(a==0){
            System.out.println("invalid equation");}
        else{
            d = b*b - 4*a*c;
            System.out.println(d);
            if(d>0){
                System.out.println("roots are unquie");
                double r1 = (-b+math.sqrt(d))/(2*a);
                double r2 = (-b-math.sqrt(d))/(2*a);
                System.out.println(r1+" "+r2);
            }
            if(d==0){
                System.out.println("roots are equal");
                System.out.println(-b/(2*a));
            }
```

```
        if(d<0){
            System.out.println("roots are imaginary");
            double r1 = Math.sqrt(-d)/(2*a);
            double r2 = (-b)/(2*a);
            System.out.println(r2+"i"+r1+","+r2+"-i"+r1);
            }
        }
    }
}
public class main{
    Public static void main(String[] args){
        quadratic q1 = new quadratic();
        q1.check();
    }
}
```

Output

1) Enter values of a,b,c
~~50, 100 50 2 5 3~~
1 2 1
0.0
roots are equal

2) Enter value of a,b,c.
~~50 50 50~~
0 2 3
Invalid equation.

3) Enter values of a,b,c
~~0, 50, 50~~
2, 5, 3
1.0
roots are unquie.

4) Enter values of a,b,c.
~~50 50 0~~
1 2 3
~~root~~ -8.0
roots are imaginar
-1+i1.4 -1.-i1

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