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();

  }
}
```

Output:

```
PS C:\Users\satis\OneDrive\Desktop\project> javac Main.java
PS C:\Users\satis\OneDrive\Desktop\project> java Main
enter the values of a,b, and c
2 3 6
-39.0
the solutions are
There are no real roots
PS C:\Users\satis\OneDrive\Desktop\project> javac Main.java
PS C:\Users\satis\OneDrive\Desktop\project>  java Main
enter the values of a,b, and c
1 2 1
0.0
the solutions are
roots are equal
-1.0
PS C:\Users\satis\OneDrive\Desktop\project> javac Main.java
PS C:\Users\satis\OneDrive\Desktop\project> java Main
enter the values of a,b, and c
1 5 3
13.0
the solutions are
roots are unique
-0.6972243622680054 -4.302775637731995
```

Written Code & Output:

WEEK - 1

1.) Develop a Java program that prints all real solutions to the quadratic equations $ax^2+bx+c=0$. Read in a, b, c and use the quadratic formula. If the discriminant b^2-4ac is negative, display a message stating that there are no real solutions.

```
import java.util.Scanner;
class Quadratic {
    float d;
    Scanner sc = new Scanner(System.in);

Void solver()
 {
    System.out.println("enter the values for 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("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();
    }
}
```

Output:

1) enter the values of a, b, and c
2 3 6
-39.0
the solutions are
There are no real roots.

2) Enter the values of a, b, c
1
2
1
0.0
the solutions are
roots are equal
-1.0

3) Enter the values of a, b and c
1 5 3
13.0
the solutions are
roots are unique
-0.6972243622680054
-4.302775637731995