OBSERVATION:

Program 1

1] Develop a Java program that prints all real solutions to the quadratic equation $ax^2+bx+c=0$. Read in 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,b,c;
        Scanner s = new Scanner (System.in);
        System.out.println("Enter the coefficients a,b,c");
        a = s.nextInt();
        b = s.nextInt();
        c = s.nextInt();
        double des = (b*b)-(4*a*c);
        double root1, root2;
        if (a==0){
        System.out.println("The equation is not quadratic");
        }
        else if (des>0){
                root1 = -b+Math.sqrt(des);
                root2 = -b-Math.sqrt(des);
                System.out.println("The roots are real
                and distinct\n Root 1:  "+root1+"\n root
                2 : "+root2);
        }
        else if (des==0){
                root1 = root2 = -b/(2*a);
                System.out.println("The roots are
                real and equal\n Root 1 : "+root1+"
                \n root 2 : "+root2);
        }
```

```
else {
        root1 = -b/(2*a);
        root2 = Math.sqrt(Math.abs(dis));
        System.out.printf("The roots are imaginary\n
        Root 1 : " + root1 + "+i" + root2 + "\nRoot 2: "
        + root1 + "-i" + root2);
        S.close();
    }
  }
}
```

OUTPUT:

```
C:\Users\amshu\OneDrive\Desktop\Downloads\OOJ-1BM21cs019--main\OOJ-1BM21cs019--main>javac lab1_java.java

C:\Users\amshu\OneDrive\Desktop\Downloads\OOJ-1BM21cs019--main\OOJ-1BM21cs019--main>java Quad
Enter the coefficients a,b,c
0 0 0
The equation is not quadratic


C:\Users\amshu\OneDrive\Desktop\Downloads\OOJ-1BM21cs019--main\OOJ-1BM21cs019--main>java Quad
Enter the coefficients a,b,c
1 2 1
The roots are real and equal
Root 1:  -1.0
root 2:   -1.0

C:\Users\amshu\OneDrive\Desktop\Downloads\OOJ-1BM21cs019--main\OOJ-1BM21cs019--main>java Quad
Enter the coefficients a,b,c
1 4 1
The roots are real and distinct
root 1:    -0.5358983848622456
root 2:   -7.464101615137754

C:\Users\amshu\OneDrive\Desktop\Downloads\OOJ-1BM21cs019--main\OOJ-1BM21cs019--main>java Quad
Enter the coefficients a,b,c
1 1 1
The roots are imaginary
Root1 :   0.0+i1.7320508075688772
Root 2:   0.0-i1.7320508075688772

C:\Users\amshu\OneDrive\Desktop\Downloads\OOJ-1BM21cs019--main\OOJ-1BM21cs019--main>
```