12/12. Lab Program

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 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 Quadratic
{
  int a, b, c;
  double r1, r2, d;
  void getd()
  {
     Scanner s = new Scanner(System.in);
     System.out.println("Enter the coefficients of 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 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("Roots are imaginary");
    r1 = (-b)/(2*a);
    r2 = Math.sqrt(-d)/(2*a);
    System.out.println("Root1 =" + r1 + "+i" + r2);
    System.out.println("Root1=" + r1 + "-i" + r2);
}
}
}
class QuadraticMain
{
  public static void main(String args[])
  {
    Quadratic q = new Quadratic();
    q.getd();
    q.compute();
  }
}
```

C:\Users\Admin\Desktop\1BM22CS265>java Quadratic

O/P: Enter the coefficients of a, b, c

5

6

8

Roots are Imaginary

Root1 = 0.0+i1.1135528125660042

Root1 = 0.0-i1.1135528125660042

C:\Users\Admin\Desktop\1BM22CS265>java Quadratic

Enter coefficients of a, b, c

2

5

3

Roots are real and distinct

Root1 = -1.0 Root2 = -1.5

10

Sun
12/12/23