Lab: 1

Develop a Java program that prints all real solutions to the qudratic 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

```java
import java.util.Scanner;
class Qudratic
{
    int a, b, c;
    double r1, r2, d;
    void getd()
    {
        Scanner s = new Scanner (System.in);
        System.out.println ("Enter the cooefficients 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 non zero value for a:");
```

```java
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(" Root 1 = 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(" Root 1 = " + r1+ " Root 2="
        + 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[])
  {
    Qudratic q = new Qudratic();
    q. get();
    q. compute();
  }
}
```

Output:
C: \ Users \ Admin \ Desktop \ 2023bms02541>
   javaC Quadratic.java
C: \ Users \ Admin \ Desktop \ 2023bms02541>
   java Quadratic
   Enter the coefficients of a, b, c
   2
   5
   3

Roots are real and distinct
Root1 = -1.0 Root = -1.5

Enter the coefficients of a,b,c

2

4

6

Roots are imaginary

Root 1 = -1.0 + i1.4142135623730951

Root 1 = -1.0 - i1.4142135623730951

Enter the coefficients of a,b,c

0

5

3

Not a quadratic equation

Enter a non zero value for a:

8

Roots are imaginary

Root 1 = 0.0 + i 0.5266343608235224

Root 1 = 0.0 - i 0.5266343608235224

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