Lab Prog ①: Quadratic Equation

```
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 non
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("Root 2 = "+r1+" - i"+r2);
}
}
}
class QuadraticMain
{
public static void main(String args[])
{
Quadratic q = new Quadratic();
q.getd();
q.compute();
}
}
```

Output:

i) Enter the coefficients of a, b, c:
1 -3 2
Roots are real and ~~equal~~ distinct
Root 1 = 2 Root 2 = +1

ii) Enter the coefficients of a, b, c
0 2 3
Not a quadratic equation
Enter a non zero value of a

iii) Enter the coefficients of a, b, c
1 2 1
Roots are real and equal
Root 1 = Root 2 = -1

iv) Enter the coefficients of a, b, c

1 1 2

Roots are imaginary

Root 1 = 0.0 + i 0.322875

Root 2 = 0.0 - i 0.322875