12/11/23

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("Root 1 - Root 2 = " + r1);
```

```
}
else if (d > 0)
{
    r1 = ((-b) + (Math.sqrt(d))) / (double)(2
    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" +
    System.out.println("Root1 = " + 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 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 coefficient of a, b, c
1 2 1
Roots are real and Equal
Root 1 = Rot 2 = -1

(iv) Enter the coefficient of a, b, c
1 1 2
Roots are imagnary
Root 1 = 0.0 + i 0.382875
Root 2 = 0.0 - i 0.382875