

LABAdditional Program -

- 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, displays message stating that there are no real solutions.

```

=> import java.util.Scanner;
class Quadratic
{
    int a, b, c;
    double x1, x2, 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 (b == 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);
```

```
}
```

```
}
```

```
}
```

```
class QuadraticMain
```

```
{
```

```
    public static void main(String args[])
```

```
{
```

```
        Quadratic q = new Quadratic();
```

```
        q.getD();
```

```
        q.compute();
```

```
}
```

```
}
```

Output -

① Enter the coefficients of a, b, c

2 3 4

Roots are imaginary

Root1 = 0.0 + i1.98957

Root1 = 0.0 - i1.98957

② Enter the coefficients of a, b, c

0 0 0

Not a quadratic equation

Enter a non zero value for

5

Roots are real and equal
Root1 = Root2 = 0.0

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For
12/12/23