

Program 1

- 1) Develop a Java program that prints all real solution to Quadratic Equation $ax^2+bx+c=0$.
Read a, b, c and use Quadratic formula.

```
import java.util.Scanner;
```

```
import java.lang.Math;
```

```
class Quadratic
```

```
{
```

```
Scanner s = new Scanner(System.in);
```

```
int a, b, c;
```

```
double x1, x2, d;
```

```
void getd();
```

```
{
```

```
Scanner s = new Scanner(System.in);
```

```
System.out.println("enter the coefficients a, b, c");
```

```
int a = s.nextInt();
```

```
int b = s.nextInt();
```

```
int c = s.nextInt();
```

```
}
```



```
void compute()  
{
```

```
    if (a != 0)
```

```
        d = b*b - 4*a*c;
```

```
        if (d > 0) {
```

```
            System.out.println("Roots are real and distinct");
```

```
            r1 = -b + b - 4*a*c
```

```
            r1 = -b + Math.sqrt(d) / (2*a);
```

```
            r2 = -b - Math.sqrt(d) / (2*a);
```

```
            System.out.println("Roots are real and distinct");
```

```
            System.out.println("The roots are: " + r1 + " " + r2);
```

```
        else if (d == 0)
```

```
        {
```

```
            r1 = r2 = (-b) / (2*a);
```

```
            System.out.println("Roots are real and equal");
```

```
            System.out.println("Roots are r1=r2 " + r1);
```

```
        }
```

```
        else
```

```
            System.out.println("The roots are imaginary");
```

```
        }
```

```
    else if (a == 0)
```

```
        System.out.println("Invalid output");
```



```
}  
}  
class Quad
```

```
{
```

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

```
        Quadratic SI = new Quadratic();
```

```
        SI.getD();
```

```
        SI.compute();  
    }  
}
```

output:

enter the value of a, b, c

1

2

3

The roots are imaginary.

Enter the values of a, b, c

1

5

1

The roots are real and distinct

roots are :- -2.70821

Enter the values a, b, c

1

2

3

roots are real & equal

the root is -1.0.

```
C:\Command Prompt
Microsoft Windows [Version 10.0.22000.1455]
(c) Microsoft Corporation. All rights reserved.

C:\Users\hp>cd C:\Users\hp\OneDrive\Desktop

C:\Users\hp\OneDrive\Desktop>java quadratic.java
Enter the value of a,b,c

The roots are imaginary

C:\Users\hp\OneDrive\Desktop>java quadratic.java
Enter the value of a,b,c

The roots are real and distinct
The roots are -2.70871215252208 and -7.2912878474779195

C:\Users\hp\OneDrive\Desktop>java quadratic.java
Enter the value of a,b,c

The roots are real and equal
The root is -1.0

C:\Users\hp\OneDrive\Desktop>
```