

12/10/23

LAB-Ry 2

Quadratic Eqn:-

Develop a Java Program that prints all real solutions to the quadratic equation  $ax^2+bx+c=0$ . Read in  $a, b$ , and  $c$  and use the quadratic formula. If the discriminant  $b^2-4ac$  is  $< 0$ , display a message that there are no real solution.

```
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 eqn");
```

Scanner s = new Scanner(System.in);

a = s.nextInt();

y

$$d = b^2 - 4 * a * c$$

; if (d == 0)

{

$$\gamma_1 = (-b) / (2 * a)$$

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

System.out.println ("Root1 = Root2 = " + r1);

System.out.println ("Root1 = Root2 = " + r2);

y

else if (d > 0)

{

$$\gamma_1 = ((-b) + (\text{math.sqrt}(d))) / (2 * a);$$

$$\gamma_2 = ((-b) - (\text{math.sqrt}(d))) / (2 * a);$$

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

System.out.println ("Root1 = " + r1 + "Root2 = " + r2);

y

else if (d < 0)

{

System.out.println ("Roots are imaginary");

$$\gamma_1 = (-b) / (2 * a);$$

$$\gamma_2 = \text{math.sqrt}(-d) / (2 * a);$$

System.out.println ("Root1 = " + r1 + " + " + r2);

System.out.println ("Root2 = " + r1 + " - " + r2);

y

```
121  
1      3  
}  
class Quadratic{  
public static void main (String args[])  
{  
Quadratic q = new Quadratic();  
q.getd();  
q.compute();  
}  
}  
}
```

## Output

Enter the coefficients of a,b,c

1  
2  
1

roots are real and equal.

Roots 1 = Roots 2 = -1.0

Enter the coefficients of a,b,c (d=1=1)

1  
4  
1

roots are real & distinct

~~Roots - 1 = 0.267949~~

Roots 2 2 - 3.72 205080

2-2023

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