

26/09/2024

LAB 1

Q. Write a program to print all real solutions for a quadratic equation $ax^2+bx+c=0$.

```
import java.io.*;
```

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

```
class Quad-Eq-calc {
```

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

```
        int y=0;
```

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

```
        System.out.println("General form of a quadratic equation is  
                              $ax^2+bx+c=0$ ");
```

```
        do {
```

```
            System.out.print("\nEnter value of a= ");
```

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

```
            System.out.print("\nEnter value of b= ");
```

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

```
            System.out.print("\nEnter value of c= ");
```

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

```
            float d=(float)(Math.pow(b,2)-4*a*c);
```

```
            if(d<0) {
```

```
                System.out.print("There are no real solutions");
```

```
            }
```

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

```
                System.out.print("It has one repeated root (2 equal  
                                roots): ");
```

```
                float x=(-b/(2.0f*a));
```

```
                System.out.print("x = "+x);
```

```
            }
```

```
            else {
```

```
                System.out.print("It has two distinct roots:");
```

```
                double x1=(-b+Math.sqrt(d))/(2*a);
```

```
                System.out.print("x1 = "+x1);
```

```
                double x2=(-b-Math.sqrt(d))/(2*a);
```

```
                System.out.println("x2 = "+x2);
```

```
            }
```

```
            System.out.println("\nDo you want to calculate again? (yes=0 or  
                                no=1) : ");
```

```
            y=sc.nextInt();
```

```
        } while(y==0);
```

```
    }
```

```
}
```

Output: General form of a quadratic equation is $ax^2+bx+c=0$

Enter value of $a=1$

Enter value of $b=2$

Enter value of $c=3$

It has two distinct roots:

$$x_1 = -1.0$$

$$x_2 = -3.0$$

Do you want to calculate again? (yes=0 and no=1):

0

Enter value of $a=10$

Enter value of $b=8$

Enter value of $c=6$

~~There are no real solutions~~

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```

import java.util.Scanner;

class Quad_Eq_cal{
    public static void main(String [] args){
        int y=0;
        Scanner sc=new Scanner(System.in);
        System.out.println("General form of a quadratic equation is ax^2+bx+c=0");
        do{
            System.out.print("\nEnter value of a=");
            int a=sc.nextInt();
            System.out.print("Enter value of b=");
            int b=sc.nextInt();
            System.out.print("Enter value of c=");
            int c=sc.nextInt();
            float d=(float)(Math.pow(b,2)-4*a*c);
            if(d<0){
                System.out.println("There are no real solutions");
            }
            else if(d==0){
                System.out.println("It has one repeated root(2 equal roots):");
                float r=-b/(2.0f*a);
                System.out.println("x="+r);
            }
            else{
                System.out.println("It has two distinct roots:");
                double r1=(-b+Math.sqrt(d))/(2*a);
                System.out.println("x1="+r1);
                double r2=(-b-Math.sqrt(d))/(2*a);
                System.out.println("x2="+r2);
            }
            System.out.println("\nDo you want to calculate again?(yes=0 and no=1): ");
            y=sc.nextInt();
        }while(y==0);
    }
}

```

```
C:\Windows\System32\cmd.exe X + v
Microsoft Windows [Version 10.0.22611.2861]
(c) Microsoft Corporation. All rights reserved.

C:\317>javac Quad_Eq_cal.java

C:\317>java Quad_Eq_cal
Error: Could not find or load main class Quad_Eq_cal
Caused by: java.lang.NoClassDefFoundError: Quad_Eq_cal (wrong name: Quad_Eq_cal)

C:\317>java Quad_Eq_cal
General form of a quadratic equation is  $ax^2+bx+c=0$ 

Enter value of a=1
Enter value of b=-8
Enter value of c=12
It has two distinct roots:
x1=6.0
x2=2.0

Do you want to calculate again?(yes=0 and no=1):
0

Enter value of a=2
Enter value of b=4
Enter value of c=6
There are no real solutions

Do you want to calculate again?(yes=0 and no=1):
0

Enter value of a=-8
Enter value of b=5
Enter value of c=-3
There are no real solutions

Do you want to calculate again?(yes=0 and no=1):
|
```