

WEEK 3

① Write a program to calculate roots of a quadratic equation $(ax^2 + bx + c)$

STEP 1 INPUT a, b, c

STEP 2 $D = b^2 - 4ac$

STEP 3 IF $(D > 0)$
 PRINT Real Roots
 Roots are $(-b + \sqrt{D}) / (2a)$
 Roots are $(-b - \sqrt{D}) / (2a)$

EISE IF $(D = 0)$
 PRINT EQUAL Roots
 Roots is $(-b) / (2a)$

ELSE
 PRINT IMAGINARY ROOTS
~~Roots~~ Roots are $(-b + i\sqrt{-D}) / (2a)$
 Roots are $(-b - i\sqrt{-D}) / (2a)$

STEP 4 STOP

Java code

```
import java.util.*;  
import java.lang.*;  
public class quadratic
```

```
{  
    private static int double a;  
    private static double b;  
    private static double c;  
    public static void read()
```

```
{  
    Scanner sc = new Scanner (System.in);  
    System.out.println("Enter the Co-efficient a");  
    a = sc.nextDouble();  
    System.out.println("Enter the Co-efficient b");  
    b = sc.nextDouble();  
    System.out.println("Enter the Co-efficient of c");  
    c = sc.nextDouble();  
}
```

```
public static void calc()
```

```
{  
    read();  
    double d =  $b^2 - 4 * a * c$ ;  
    if (d > 0)
```

```
{  
        System.out.println("ROOTS ARE  
        REAL AND  
        DISTINCT");  
    }  
}
```


System.out.println("First root is " + $(-b + \text{Math.sqrt}(d)) / (2 * a)$);

System.out.println("Second root is " + $(-b - \text{Math.sqrt}(d)) / (2 * a)$);

}
else if (d == 0)

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

System.out.println("Roots are " + $(-b) / (2 * a)$);

}
else

System.out.println("Roots are imaginary");
System.out.println("Roots are " + $-b / (2 * a)$
+ " + " + " + "
 $(\text{Math.sqrt}(-d)) / (2 * a)$);

System.out.println("Roots are " + $(-b) / (2 * a)$
+ " - " + " + "
 $(\text{Math.sqrt}(-d)) / (2 * a)$);

}

}

public static void main (String[] args)

{

val1();

}

}