



### 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.

```
import java.util.*;
import java.math.*;
public class quadratic
{
    public static void main (String args[])
    {
        Scanner in = new Scanner (System.in);
        System.out.println ("Enter the value of a");
        double a = in.next Double ();
        System.out.println ("Enter the value of b");
        double b = in.next Double ();
        System.out.println ("Enter the value of c");
        double c = in.next Double ();
        if (a != 0)
        {
            double d = b * b - (4 * a * c);
            if (d > 0.0)
            {
                double r1 = (-b + Math.pow(d, 0.5)) / (2.0 * a);
                double r2 = (-b - Math.pow(d, 0.5)) / (2.0 * a);
                System.out.println ("The roots are real & distinct");
                System.out.println ("The roots are " + r1 + " and " + r2);
            }
            else if (d == 0.0)
            {
                double r1 = -b / (2.0 * a);
```

```

system.out.println("The roots are real and equal");
system.out.println("The root is "+r1);
}
else
{
system.out.println("The roots are imaginary");
}
else
{
system.out.println("Invalid Input");
}
}
}

```

Outputs.

1. Enter value of a

1

Enter value of b

2

Enter value of c

3

The roots are imaginary.

2. Enter value of a

1

Enter value of b

2

Enter value of c

↓

The roots are real and equal.

The root is -1.0

3. Enter value of a

1

Enter value of b

1

Enter value of c

1

The roots are imaginary.

4. Enter value of a

1

Enter value of b

5

Enter value of c

-3

The roots are real and distinct.

The roots are  $-1.95861$  and  $-8.04138$

5. Enter value of a

0

Enter value of b

1

Enter value of c

2

Invalid Inputs.

*Alkalin*  
18/11/2022

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```
C:\Users\admin>cd C:\Users\admin\Desktop\1BM21CS058-Dikxya
C:\Users\admin\Desktop\1BM21CS058-Dikxya>javac Quadratic.java
C:\Users\admin\Desktop\1BM21CS058-Dikxya>java Quadratic
Enter the value of a
1
Enter the value of b
2
Enter the value of c
3
The roots are imaginary

C:\Users\admin\Desktop\1BM21CS058-Dikxya>java Quadratic
Enter the value of a
1
Enter the value of b
2
Enter the value of c
1
The roots are real and equal
The root is -1.0

C:\Users\admin\Desktop\1BM21CS058-Dikxya>java Quadratic
Enter the value of a
1
Enter the value of b
```



Date modified	Type	Size
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```
1
Enter the value of c
1
The roots are imaginary

C:\Users\admin\Desktop\1BM21CS058-Dikxya>java Quadratic
Enter the value of a
1
Enter the value of b
5
Enter the value of c
-3
The roots are real and distinct
The roots are -1.9586187348508903 and -8.04138126514911

C:\Users\admin\Desktop\1BM21CS058-Dikxya>java quadratic
Error: Could not find or load main class quadratic

C:\Users\admin\Desktop\1BM21CS058-Dikxya>
```