

## Algorithm

**Step 1: Start**

**Step 2: Input values of a, b, and c**

**Step 3: Calculate the discriminant**

$$d = b^2 - 4ac$$

**Step 4: If  $d > 0$ , then**

**Calculate two real and different roots**

**Display root1 and root2**

**Step 5: Else if  $d = 0$ , then**

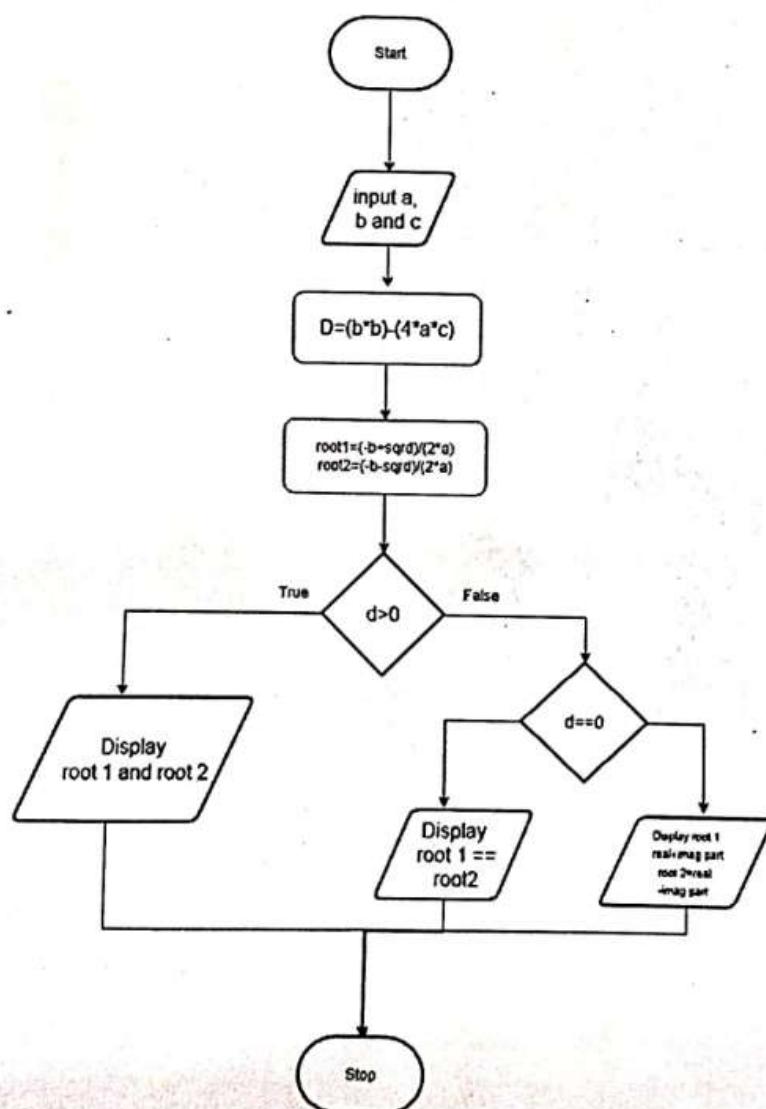
**Calculate one real and equal root**

**Display root1 = root2**

**Step 6: Else ( $d < 0$ ), then**

**Calculate two complex roots Display complex root1 and root2**

**Step 7: Stop**



## 2.1. Roots of a Quadratic Equation

Write a program to find the roots of a quadratic equation, given its coefficients  $a$ ,  $b$ , and  $c$ . Use the quadratic formula:  $\frac{(-b \pm \sqrt{b^2 - 4ac})}{2a}$

The discriminant  $D = b^2 - 4ac$  determines the nature of the roots:

- If  $D > 0$ : Roots are real and different
- If  $D = 0$ : Roots are real and the same
- If  $D < 0$ : Roots are imaginary

## Input Format:

- Three space-separated integers representing the coefficients  $a$ ,  $b$ , and  $c$ , respectively.

## Output Format:

- If roots are real and different, print:

```
root1 = <Root1>
root2 = <Root2>
```

- If roots are the same, print:

```
root1 = root2 = <Root1>
```

- If roots are imaginary, print:

```
root1 = <RealPart>+<ImaginaryPart>i
root2 = <RealPart>-<ImaginaryPart>i
```

## Sample Test Cases

## quadratic...

```
1 import math
2
3 a, b, c = map(int, input().split())
4 D = b**2 - 4*a*c
5 if D > 0:
6     root1 = (-b + math.sqrt(D)) / (2*a)
7     root2 = (-b - math.sqrt(D)) / (2*a)
8     print(f"root1 = {root1:.2f}")
9     print(f"root2 = {root2:.2f}")
10 elif D == 0:
11     root = -b / (2*a)
12     print(f"root1 = root2 = {root:.2f}")
13 else:
14     real_part = -b / (2*a)
15     imag_part = math.sqrt(-D) / (2*a)
```

Average time

0.003 s

2.83 ms

Maximum time

0.004 s

4.00 ms

3 out of 3 shown test case(s) passed

3 out of 3 hidden test case(s) passed

 Test case 1  3 ms

Expected output

1.5 6

root1 = 3.00

root2 = 2.00

Actual output

1.5 6

root1 = 3.00

root2 = 2.00

 Test case 2  3 ms

Terminal  Test cases

< Prev Reset Submit Next >