

2.1.1 Roots of Quadratic Equation

ALGORITHM

1. Start
2. Import the math library.
3. Read three integers a, b, and c (coefficients of the quadratic equation).
4. Calculate the discriminant

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

5. If $D > 0$:

Calculate two real and different roots using:

$$\frac{-b+\sqrt{D}}{2a}, \frac{-b-\sqrt{D}}{2a}$$

Print both roots up to 2 decimal places.

- 6 Else if $D == 0$:

Calculate the single repeated root:

$$\frac{-b}{2a}$$

Print the root twice up to 2 decimal places.

- 7 Else ($D < 0$):

Calculate real part:

$$\frac{-b}{2a}$$

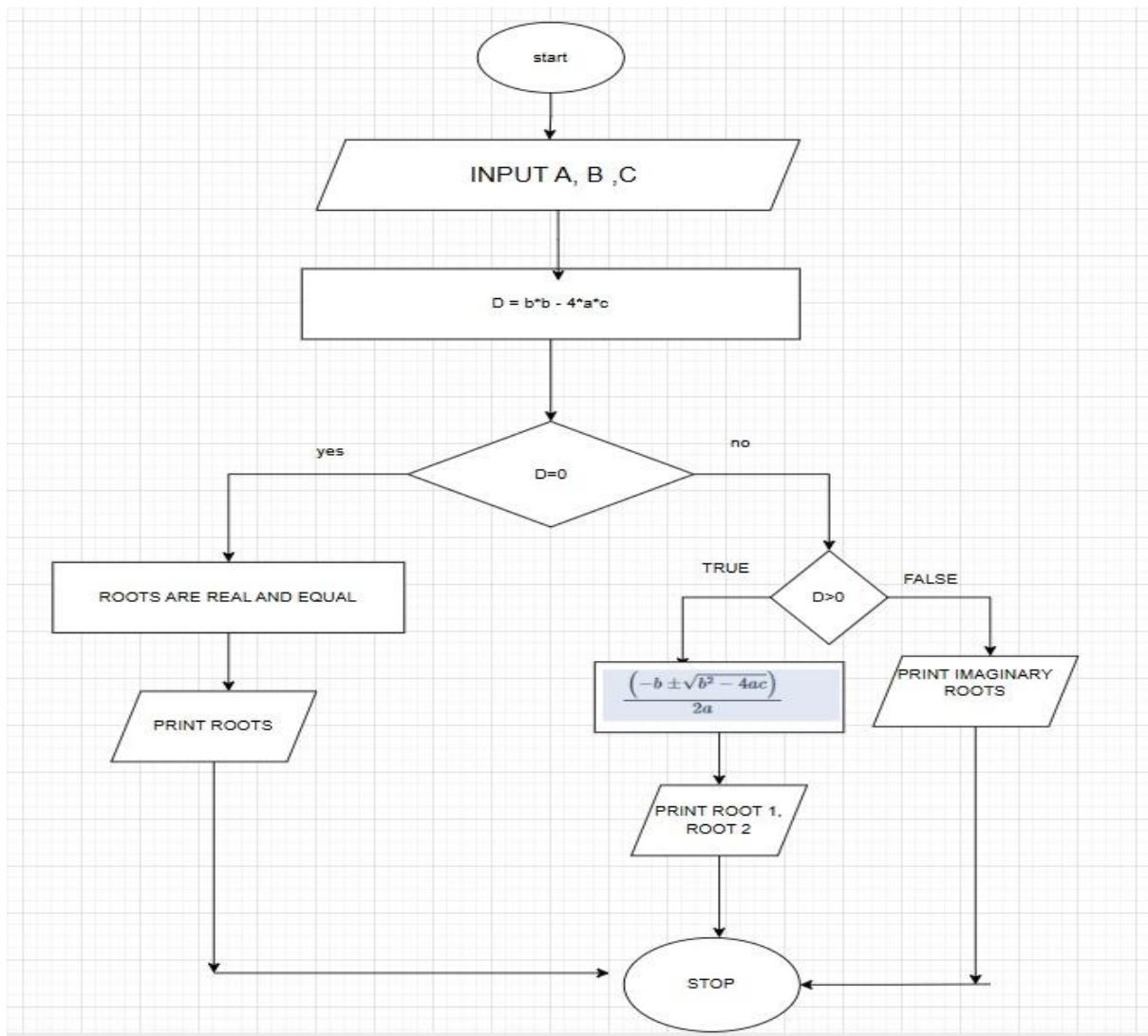
Calculate imaginary part:

$$\frac{\sqrt{-D}}{2a}$$

Print both complex roots up to 2 decimal places.

- 8 Stop

FLOWCHART



PROGRAM

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2.1.1. 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>
  
```

Sample Test Cases

quadratic...

```

1 a, b, c = map(float, input().split())
2 D = (b*b) - (4*a*c)
3 sqrtD = D ** 0.5
4 root1 = (-b+sqrtD)/(2*a)
5 root2 = (-b-sqrtD)/(2*a)
6 if D > 0:
7     print(f"root1 = {root1:.2f}")
  
```

Average time
0.037 s
 36.83 ms

Maximum time
0.065 s
 65.00 ms

3 out of 3 shown test case(s) passed
 3 out of 3 hidden test case(s) passed

Test case 1 61 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 65 ms

Terminal

Test cases

< Prev

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