EXPERIMENT - 2

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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:

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

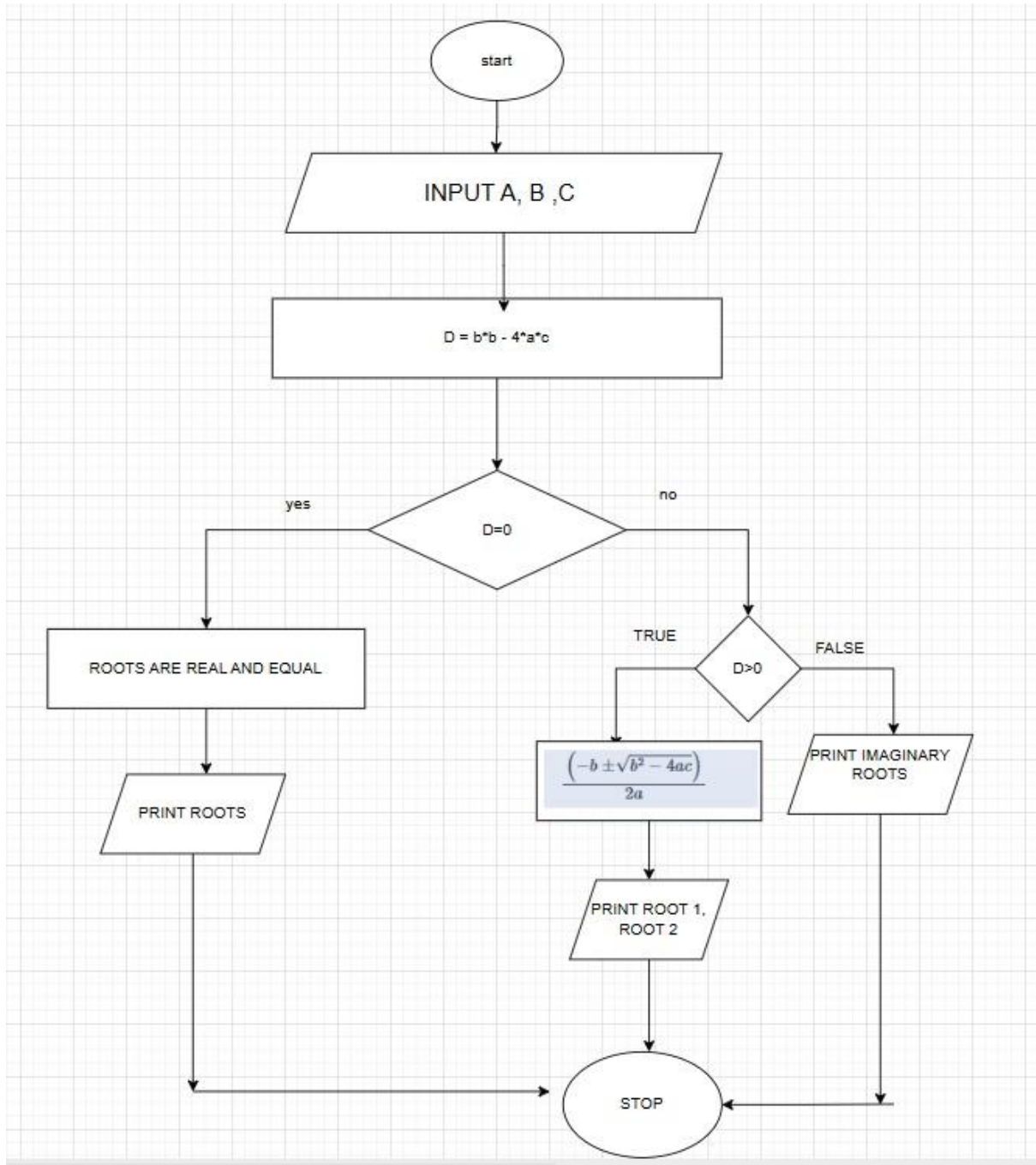   Calculate imaginary part:

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

   Print both complex roots up to 2 decimal places.

8 Stop

FLOWCHART

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PHYTHON CODE

```
import math


a, b, c = map(int, input().split())


D = b*b - 4*a*c
```

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```python
if D > 0:

    root1 = (-b + math.sqrt(D)) / (2*a)

    root2 = (-b - math.sqrt(D)) / (2*a)

    print(f"root1 = {root1:.2f}")

    print(f"root2 = {root2:.2f}")


elif D == 0:

    root = (-b) / (2*a)

    print(f"root1 = root2 = {root:.2f}")


else:

    real = (-b) / (2*a)

    imag = math.sqrt(-D) / (2*a)

    print(f"root1 = {real:.2f}+{imag:.2f}i")

    print(f"root2 = {real:.2f}-{imag:.2f}i")
```

EXCECUTION