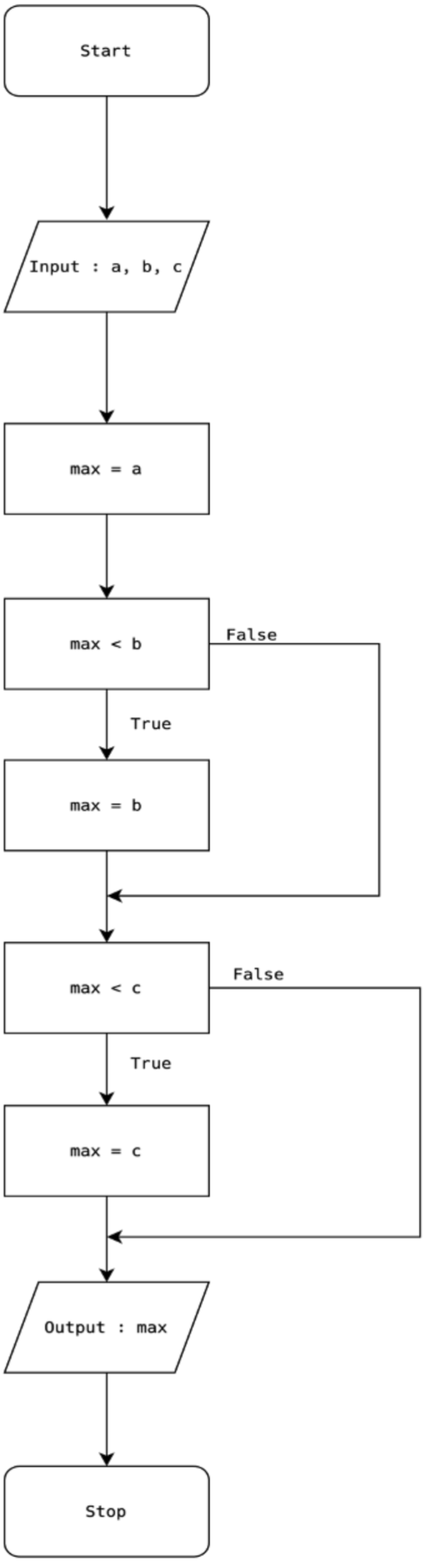
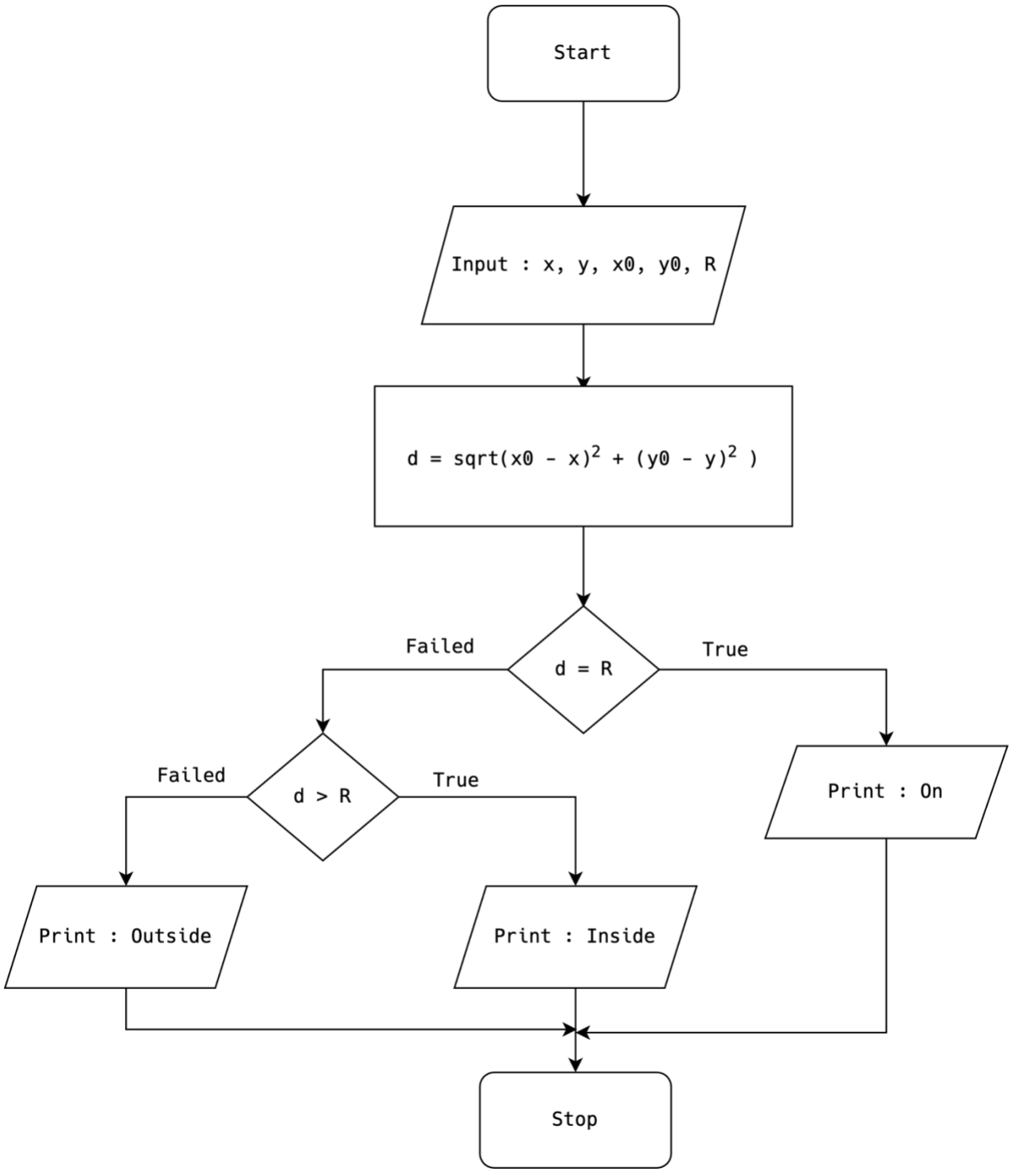
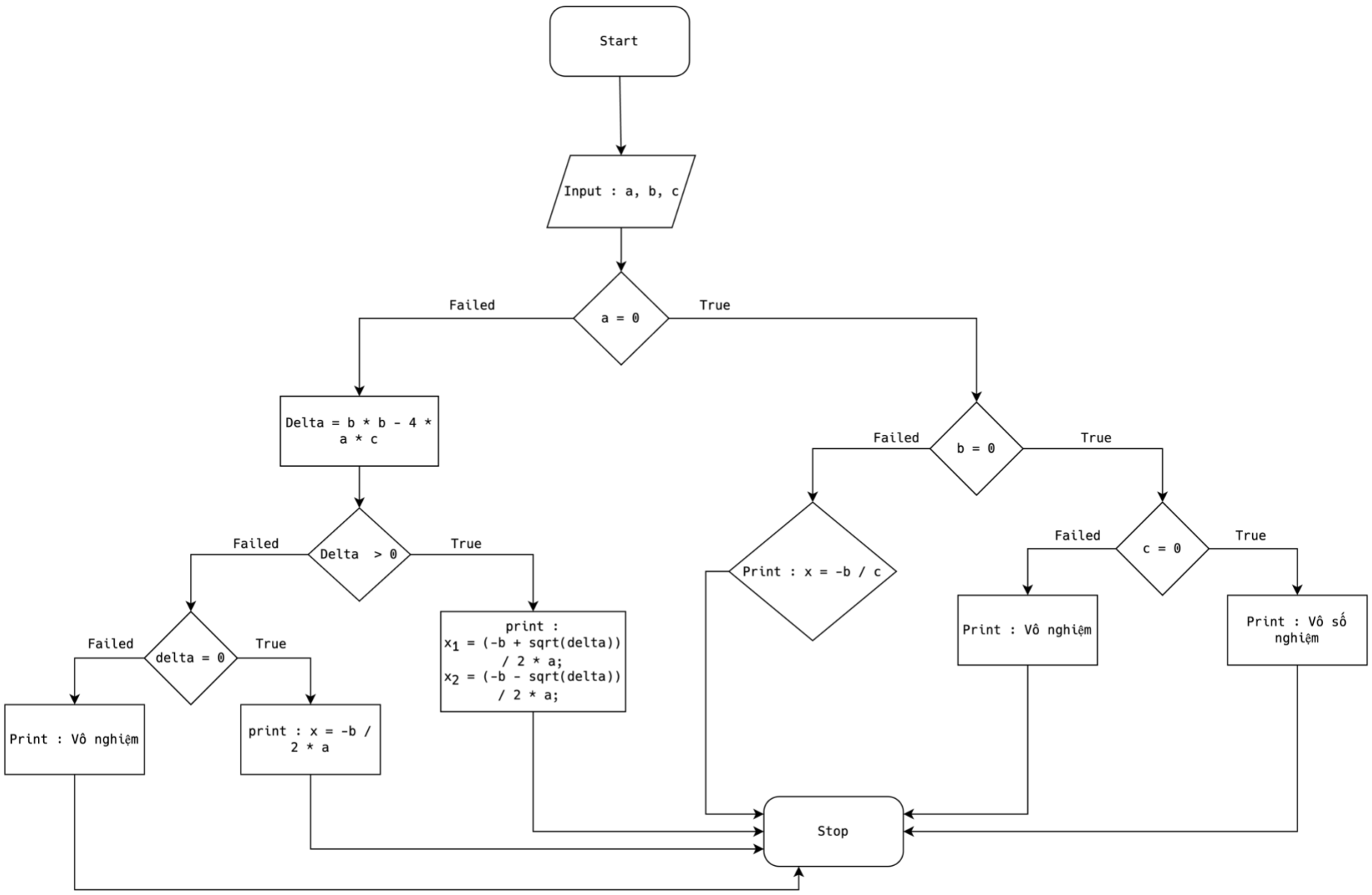
Exercise 1. Design an algorithm in flowchart to find the smallest number in a group of three real numbers.


Start
Input : a, b, c
max = a
max < b
False
True
max = b
max < c
False
True
max = c
Output : max
Stop

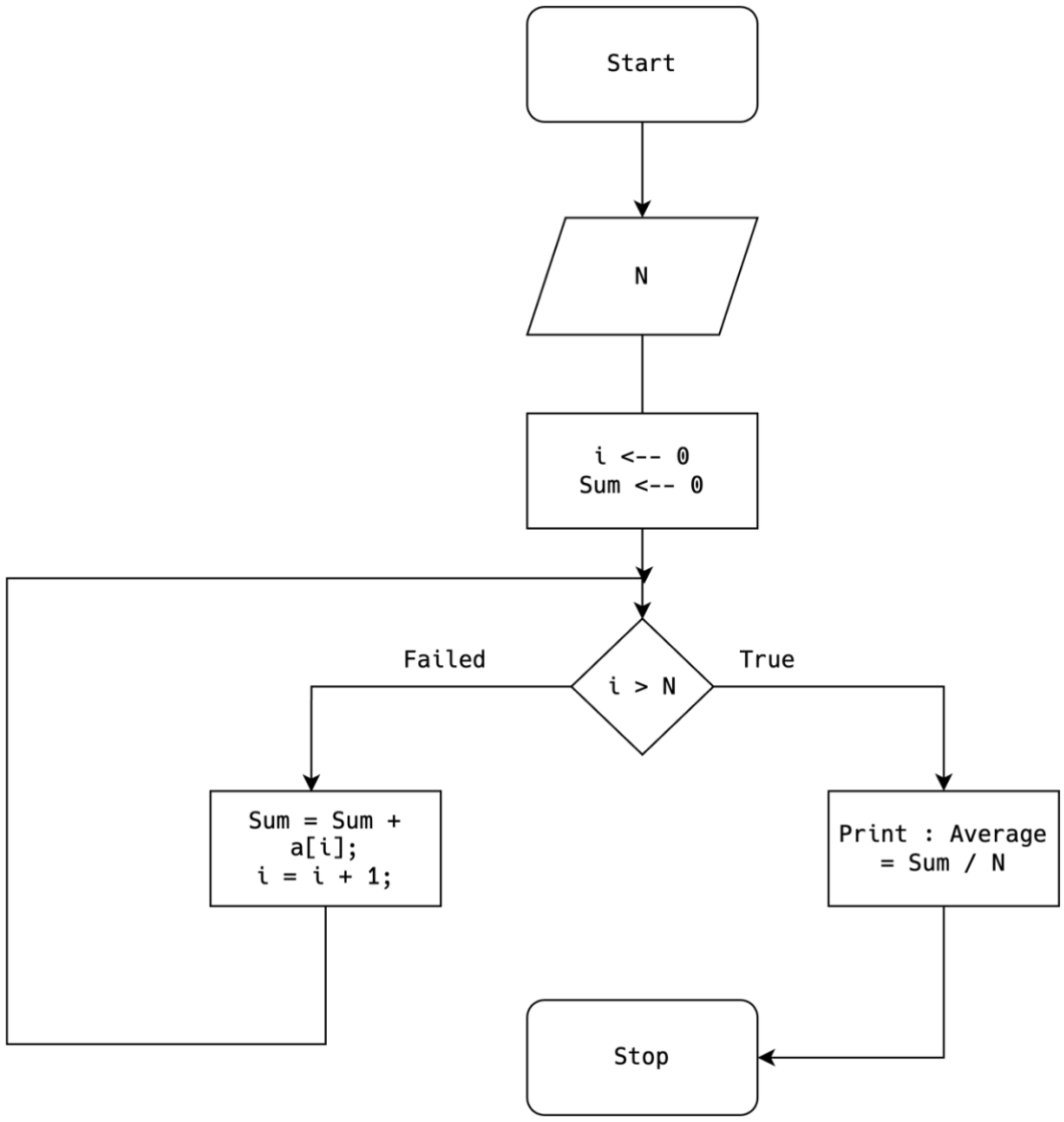
Exercise 2. Design an algorithm in flowchart to check whether a point *A(x, y)* is on, inside or outside the circle with center *O(x0, y0)* and radius of size *R*.


Start
Input : x, y, x0, y0, R
d = sqrt(x0 - x)2 + (y0 - y)2)
d = R
Failed
True
d > R
Failed
True
Print : On
Print : Outside
Print : Inside
Stop

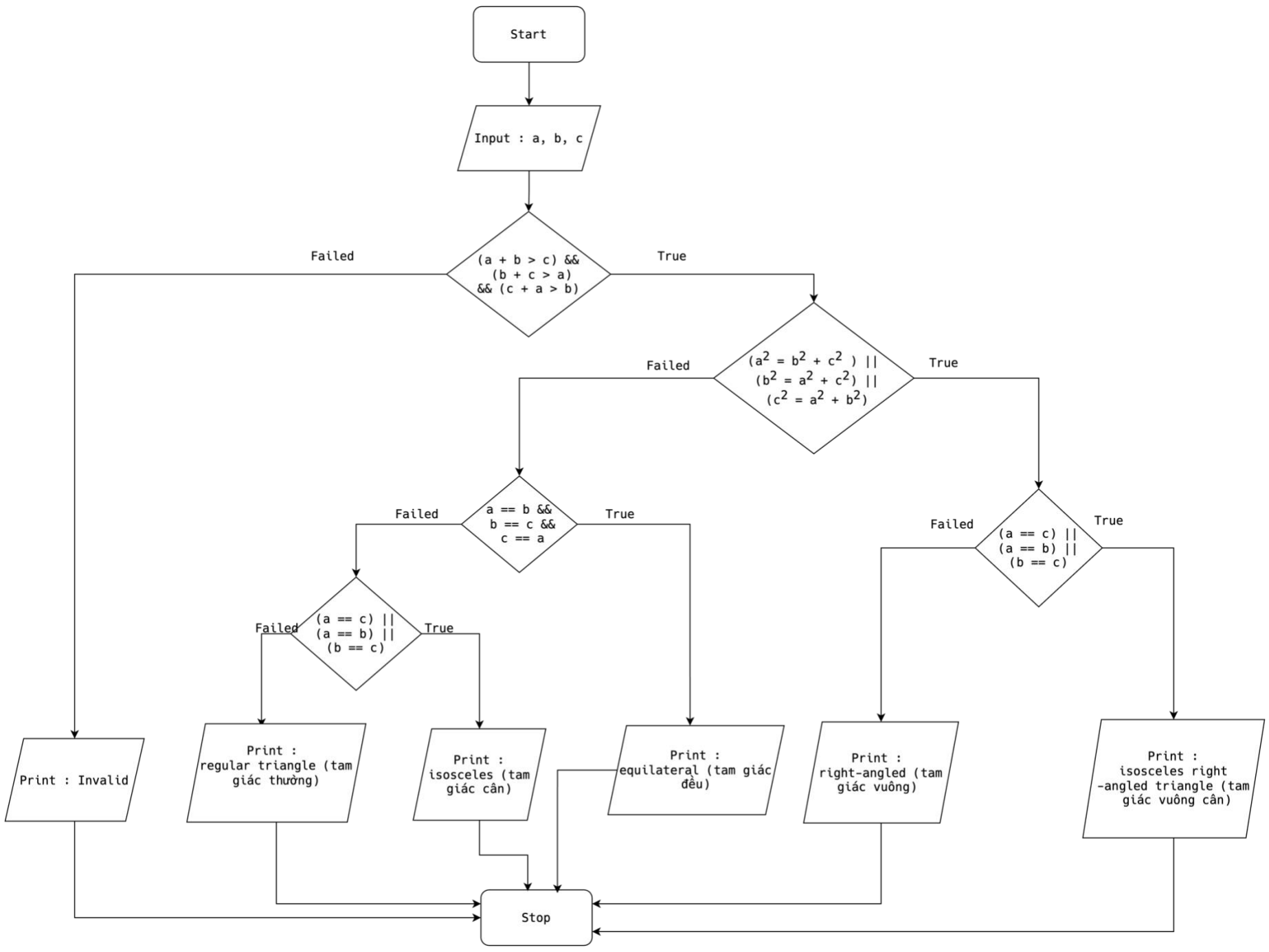
Exercise 3. Design an algorithm in flowchart to solve the quadratic equation: $ax^2 + bx + c = 0$ with the inputs *a*, *b*, and *c*.


Start
Input : a, b, c
a = 0
Failed
True
Delta = b * b - 4 * a * c
b = 0
Failed
True
Print : x = -b / c
Delta > 0
Failed
True
c = 0
Failed
True
Print : Vô nghiệm
Print : Vô số nghiệm
delta = 0
Failed
True
print : x_1 = (-b + sqrt(delta)) / 2 * a; x_2 = (-b - sqrt(delta)) / 2 * a;
Print : Vô nghiệm
print : x = -b / 2 * a
Stop

Exercise 4. Design an algorithm in flowchart to read in a group of N numbers and compute the average of them, where N is also an input.


Start
N
i <-- 0
Sum <-- 0
Failed
i > N
True
Sum = Sum +
a[i];
i = i + 1;
Print : Average
= Sum / N
Stop

Exercies 5. Design an algorithm in flowchart to determine a triangle is **equilateral (tam giác đều), isosceles (tam giác cân), right-angled (tam giác vuông) or isosceles right-angled triangle (tam giác vuông cân)** when a,b,c - the lengths of three sides of this triangle - are given.


Start
Input : a, b, c
(a + b > c) &&
(b + c > a)
&& (c + a > b)
Failed
True
(a² = b² + c²) ||
(b² = a² + c²) ||
(c² = a² + b²)
Failed
True
a == b &&
b == c &&
c == a
Failed
True
(a == c) ||
(a == b) ||
(b == c)
Failed
True
(a == c) ||
(a == b) ||
(b == c)
Failed
True
Print : Invalid
Print :
regular triangle (tam
giác thường)
Print :
isosceles (tam
giác cân)
Print :
equilateral (tam giác
đều)
Print :
right-angled (tam
giác vuông)
Print :
isosceles right
-angled triangle (tam
giác vuông cân)
Stop