Problem 118: Stalling Out

Difficulty: Easy

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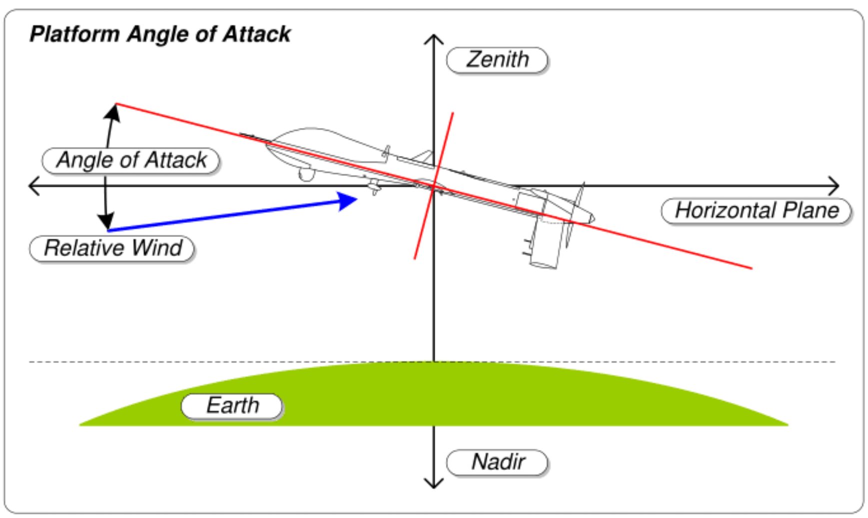
Originally Published: Code Quest Australia 2019

Problem Background

Despite their size, airplanes are very delicate machines. They make use of the laws of aerodynamics to produce enough lift to keep themselves in the air. Even the slightest alteration in an airplane's trajectory can reduce the amount of air moving past its wings, reducing its lift and causing the aircraft to lose altitude. In extreme cases, an airplane can lose so much lift that it begins falling; this is known as a stall.

While pilots are trained to avoid stalling, and to recover from a stall should one occur, some airplane manufacturers have been adding safety mechanisms to warn pilots of an impending stall, or to automatically prevent one before it occurs. These systems rely on sensors to measure the airplane's "angle of attack;" the angle between the oncoming air and a reference line on the airplane.



When an airplane is at its "critical angle of attack," it's getting the maximum amount of lift possible. An angle of attack above this point will cause the airplane to lose lift and can lead to a stall; in this case, the pilot will need to bring the airplane's nose down quickly to avoid problems.

Problem Description

Your team has been tasked with designing an anti-stall system based on an airplane's angle of attack. Given the airplane's critical angle of attack and the current angle of attack readings from two sensors on the airplane, your system will need to determine the course of action to take, if any.

- If the average angle of attack reported by the sensors is at least 2.0° higher than the airplane's critical angle of attack, the system should sound an alarm and begin bringing the airplane's nose downward to avoid a stall.
- If the average angle of attack reported by the sensors is less than 2.0° higher than the airplane's critical angle of attack, the system should remain inactive.

Your system uses two sensors to avoid erroneous data. Since the two sensors are placed on opposite sides of the aircraft, it's expected that they will receive different readings. However, extremely different readings may be an indication that the sensors have become misaligned and cannot be trusted. If, at any point, the difference between the two sensor readings exceeds 5.0°, the system should deactivate and turn on a warning light to notify the pilots that the system requires maintenance.

Sample Input

The first line of your program's input, received from the standard input channel, will contain a positive integer representing the number of test cases. Each test case will include a single line with three decimal numbers separated by spaces. These numbers indicate, respectively:

- The airplane's critical angle of attack, in degrees
- The angle of attack reading from the airplane's port-side sensor, in degrees
- The angle of attack reading from the airplane's starboard-side sensor, in degrees

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3
15.5 13.2 14.1
16.7 20.3 18.6
16.5 14.2 19.3
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Sample Output

For each test case, your program must print a single line, indicating the anti-stall system's response:

- If the difference between the sensor readings is greater than 5.0°, print the word "WARNING"
- Otherwise, if the average sensor reading is at least 2.0° greater than the critical angle of attack, print the word "ALARM"
- Otherwise, print the word "OK"

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OK
ALARM
WARNING
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