Problem F: Three Sides Make a Triangle

You work for an art store that has decided to carry every style and size of drafting triangle in existence. Unfortunately, sorting these has become a problem. The manager has given you the task of organizing them. You have decided to classify them by edge length and angles. To measure each triangle, you set it on a large sheet of very accurate graph paper and record the coordinate of each point. You then run these three points through a computer program to classify the triangles according to:

- **Scalene** no equal sides
- **Isosceles** two equal sides
- **Equilateral** three equal sides

and

- **Acute** all angles under 90
- **Right** one angle equal 90
- **Obtuse** one angle over 90

Of course, sometimes you make mistakes entering the data, so if you input points that do not form a valid triangle, your program should tell you.

**Input**

One triangle is described per line. Each line has six measurements taken to the nearest 0.001 in the order:

\[ x_1 \ y_1 \ x_2 \ y_2 \ x_3 \ y_3 \]

The final line of input will contain only a -1.

None of the test sets contain non-right angles in the range 88-92 degrees, nor do any of the test sets include any non-equal side lengths for one triangle within 0.01 of one another.

**Output**

You will output one line for each triangle, which will contain two words:

\(<\text{length \ classification}>\) \ <\text{angle \ classification}>\)

or

**Not a Triangle**

The final line of your output file will be:

End of Output
Example
Input:
10.000 10.000 10.000 20.000 20.000 10.000
0.000 0.000 4.000 0.000 2.000 3.464
-1

Output:
Isosceles Right
Equilateral Acute
End of Output