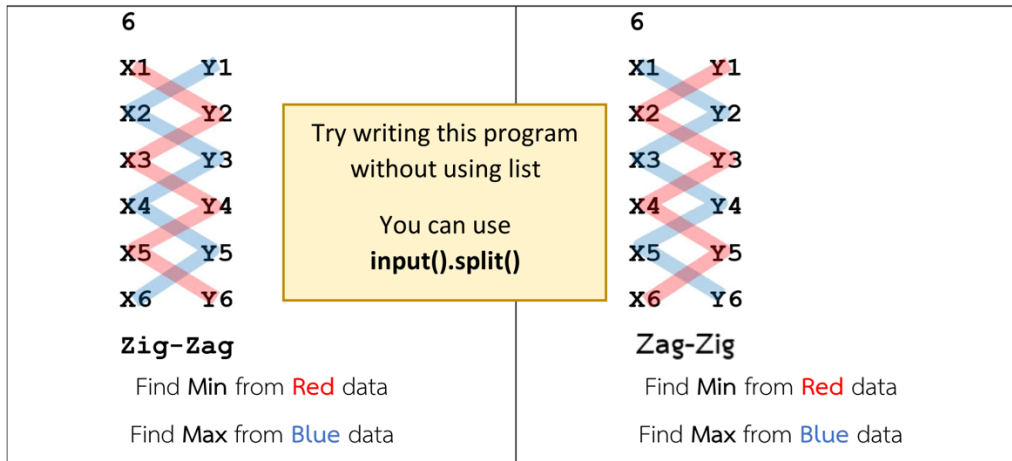


Zig-Zag / Zag-Zig (Version 2)

Write a program that gets pairs of data X and Y, and the last line gets a command that can be **Zig-Zag** or **Zag-Zig**.



- Zig-Zag case
 - Find Minimum number between X1, Y2, X3, Y4, X5, Y6, ... and find Maximum number amongst Y1, X2, Y3, X4, Y5, X6, ...
- Zag-Zig case
 - Find Minimum number between Y1, X2, Y3, X4, Y5, X6, ... and find Maximum number amongst X1, Y2, X3, Y4, X5, Y6, ...

Then output both Minimum and Maximum numbers.

Input

Multiple lines, each line contains two integers separated by a space.

The last line is string of either **Zig-Zag** or **Zag-Zig** (No other possible words).

Output

Minimum and Maximum numbers, separated by a space, as stated above.

Example

Input (from keyboard)	Output (on screen)
-10 10 20 -20 -30 30 Zig-Zag	-30 30
-10 10 20 -20 -30 30 Zag-Zig	10 -10