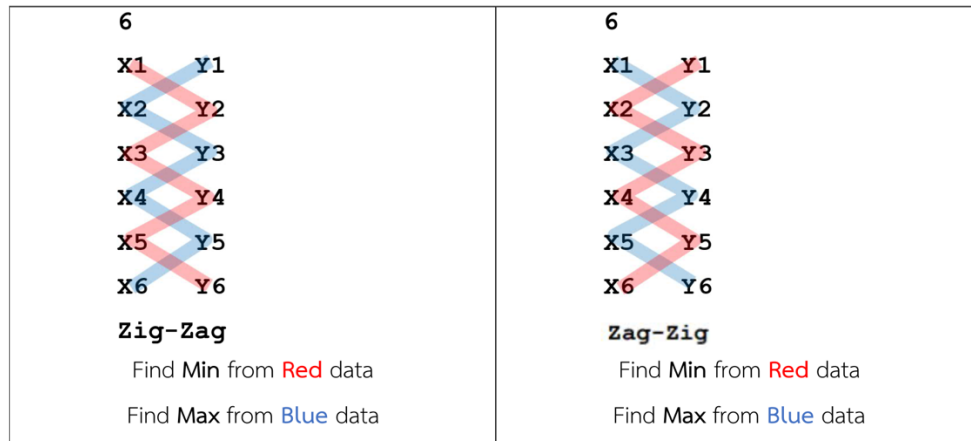# Zig-Zag / Zag-Zig (Version 1)

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

The first line is integer N that represents number of data pairs.

N 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)
3 -10 10 20 -20 -30 30 Zig-Zag	-30 30
3 -10 10 20 -20 -30 30 Zag-Zig	10 -10