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MONOTONES

(12 points) In many mathematical and nonmathematical problems it is necessary to determine whether a given sequence of numbers, X(1), X(2), ..., X(n), is monotone increasing, monotone decreasing, or neither. The sequence is monotone if X(i) < X(i+1) for all i = 1, ..., n-1. Similarly, the sequence is monotone decreasing if X(i)>X(i+1) for all i = 1, ..., n-1. Write a program that, for a given sequence of input integers, finds the longest monotone increasing sequence and the longest monotone decreasing sequence and their respective lengths and then prints them both. Assume that the input sequence will not contain more than 200 integers.

EXAMPLE: 3 5 7 2 1 4 6 7 5

longest monotone increasing: 1 4 6 7 (length = 4)
longest monotone decreasing: 7 2 1 (length = 3)