

# Finding a Longest Increasing Substring

Input: sequence (or array)  $X = x_1x_2 \dots x_n$  of integers

Output: increasing substring of  $X$  that is as long as possible.

What is a substring?

- ▶ A substring is a string that begins at some  $x_i$  and ends at some  $x_j$  (with  $j \geq i$ ) and includes all the intermediate elements.

For example,  $x_2, x_3, x_4$  is a substring but  $x_2, x_4$  is not.

Suppose  $X = 1, 3, 1, 8, 2, 4, 9, 2, 10, 3$ .

- ▶ What are some increasing substrings?
- ▶ What are some increasing subsequences?