Given an unsorted array return whether an increasing subsequence of length 3 exists or not in the array.

Formally the function should:

Return true if there exists *i, j, k*  
such that *arr[i]* < *arr[j]* < *arr[k]* given 0 ≤ *i* < *j* < *k* ≤ *n*-1 else return false.

**Note:**Your algorithm should run in O(*n*) time complexity and O(*1*) space complexity.

**Example 1:**

**Input:** [1,2,3,4,5]

**Output:** true

**Example 2:**

**Input:** [5,4,3,2,1]

**Output:** false