**188. Best Time to Buy and Sell Stock IV**

Hard

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You are given an integer array prices where prices[i] is the price of a given stock on the ith day.

Design an algorithm to find the maximum profit. You may complete at most k transactions.

**Notice** that you may not engage in multiple transactions simultaneously (i.e., you must sell the stock before you buy again).

**Example 1:**

**Input:** k = 2, prices = [2,4,1]

**Output:** 2

**Explanation:** Buy on day 1 (price = 2) and sell on day 2 (price = 4), profit = 4-2 = 2.

**Example 2:**

**Input:** k = 2, prices = [3,2,6,5,0,3]

**Output:** 7

**Explanation:** Buy on day 2 (price = 2) and sell on day 3 (price = 6), profit = 6-2 = 4. Then buy on day 5 (price = 0) and sell on day 6 (price = 3), profit = 3-0 = 3.

**Constraints:**

* 0 <= k <= 100
* 0 <= prices.length <= 1000
* 0 <= prices[i] <= 1000