

188. Best Time to Buy and Sell Stock IV

Difficulty : Hard

<https://leetcode.com/problems/best-time-to-buy-and-sell-stock-iv>

You are given an integer array `prices` where `prices[i]` is the price of a given stock on the i^{th} day, and an integer k .

Find the maximum profit you can achieve. You may complete at most k transactions: i.e. you may buy at most k times and sell at most k times.

Note: 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:

- $1 \leq k \leq 100$
- $1 \leq \text{prices.length} \leq 1000$
- $0 \leq \text{prices}[i] \leq 1000$