

# 123. Best Time to Buy and Sell Stock III

## Difficulty : Hard

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

You are given an array `prices` where `prices[i]` is the price of a given stock on the  $i^{\text{th}}$  day.

Find the maximum profit you can achieve. You may complete **at most two transactions**.

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

### Example 1:

**Input:** `prices = [3,3,5,0,0,3,1,4]`

**Output:** 6

**Explanation:** Buy on day 4 (price = 0) and sell on day 6 (price = 3), profit = 3-0 = 3.  
Then buy on day 7 (price = 1) and sell on day 8 (price = 4), profit = 4-1 = 3.

### Example 2:

**Input:** `prices = [1,2,3,4,5]`

**Output:** 4

**Explanation:** Buy on day 1 (price = 1) and sell on day 5 (price = 5), profit = 5-1 = 4.

Note that you cannot buy on day 1, buy on day 2 and sell them later, as you are engaging multiple transactions at the same time. You must sell before buying again.

### Example 3:

**Input:** `prices = [7,6,4,3,1]`

**Output:** 0

**Explanation:** In this case, no transaction is done, i.e. max profit = 0.

### Constraints:

- $1 \leq \text{prices.length} \leq 10^5$
- $0 \leq \text{prices}[i] \leq 10^5$