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1770. Maximum Score from Performing Multiplication Operations

Hard

👍 2337

👎 505

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You are given two **0-indexed** integer arrays `nums` and `multipliers` of size `n` and `m` respectively, where `n >= m`.

You begin with a score of `0`. You want to perform **exactly** `m` operations. On the `ith` operation (**0-indexed**) you will:

- Choose one integer `x` from **either the start or the end** of the array `nums`.
- Add `multipliers[i] * x` to your score.
 - Note that `multipliers[0]` corresponds to the first operation, `multipliers[1]` to the second operation, and so on.
- Remove `x` from `nums`.

Return the **maximum** score after performing `m` operations.

Example 1:

Input: `nums = [1,2,3]`, `multipliers = [3,2,1]`
Output: `14`
Explanation: An optimal solution is as follows:
- Choose from the end, `[1,2,3]`, adding `3 * 3 = 9` to the score.
- Choose from the end, `[1,2]`, adding `2 * 2 = 4` to the score.
- Choose from the end, `[1]`, adding `1 * 1 = 1` to the score.
The total score is `9 + 4 + 1 = 14`.

Example 2:

Input: `nums = [-5,-3,-3,-2,7,1]`, `multipliers = [-10,-5,3,4,6]`
Output: `102`
Explanation: An optimal solution is as follows:
- Choose from the start, `[-5,-3,-3,-2,7,1]`, adding `-5 * -10 = 50` to the score.
- Choose from the start, `[-3,-3,-2,7,1]`, adding `-3 * -5 = 15` to the score.
- Choose from the start, `[-3,-2,7,1]`, adding `-3 * 3 = -9` to the score.
- Choose from the end, `[-2,7,1]`, adding `1 * 4 = 4` to the score.
- Choose from the end, `[-2,7]`, adding `7 * 6 = 42` to the score.
The total score is `50 + 15 - 9 + 4 + 42 = 102`.

Constraints:

- `n == nums.length`
- `m == multipliers.length`
- `1 <= m <= 300`
- `m <= n <= 105`
- `-1000 <= nums[i], multipliers[i] <= 1000`

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```
1 class Solution {
2 public:
3     int maximumScore(vector<int>& nums, vector<int>& multipliers) {
4     }
5 }
6
```

NEW