Problem 2898: Maximum Linear Stock Score

Problem Information

Difficulty: Medium
Acceptance Rate: 60.73%
Paid Only: Yes
Tags: Array, Hash Table

Problem Description

Given a **1-indexed** integer array `prices`, where `prices[i]` is the price of a particular stock on the `ith` day, your task is to select some of the elements of `prices` such that your selection is **linear**.

A selection `indexes`, where `indexes` is a **1-indexed** integer array of length `k` which is a subsequence of the array `[1, 2, ..., n]`, is **linear** if:

* For every `1 < j <= k`, `prices[indexes[j]] - prices[indexes[j - 1]] == indexes[j] - indexes[j - 1]`.

A **subsequence** is an array that can be derived from another array by deleting some or no elements without changing the order of the remaining elements.

The **score** of a selection `indexes`, is equal to the sum of the following array: `[prices[indexes[1]], prices[indexes[2]], ..., prices[indexes[k]]`.

Return _the**maximum** **score** that a linear selection can have_.

Example 1:

Input: prices = [1,5,3,7,8] **Output:** 20 **Explanation:** We can select the indexes [2,4,5]. We show that our selection is linear: For j = 2, we have: indexes[2] - indexes[1] = 4 - 2 = 2. prices[4] - prices[2] = 7 - 5 = 2. For j = 3, we have: indexes[3] - indexes[2] = 5 - 4 = 1. prices[5] - prices[4] = 8 - 7 = 1. The sum of the elements is: prices[2] + prices[4] + prices[5] = 20. It can be shown that the maximum sum a linear selection can have is 20.

Example 2:

Input: prices = [5,6,7,8,9] **Output:** 35 **Explanation:** We can select all of the indexes [1,2,3,4,5]. Since each element has a difference of exactly 1 from its previous element, our selection is linear. The sum of all the elements is 35 which is the maximum possible some out of every selection.

Constraints:

* `1 <= prices.length <= 105` * `1 <= prices[i] <= 109`

Code Snippets

C++:

```
class Solution {
public:
long long maxScore(vector<int>& prices) {

}
};
```

Java:

```
class Solution {
public long maxScore(int[] prices) {

}
}
```

Python3:

```
class Solution:
def maxScore(self, prices: List[int]) -> int:
```