Problem 1937: Maximum Number of Points with Cost

Problem Information

Difficulty: Medium
Acceptance Rate: 41.93%
Paid Only: No
Tags: Array, Dynamic Programming, Matrix

Problem Description

You are given an `m x n` integer matrix `points` (**0-indexed**). Starting with `0` points, you want to **maximize** the number of points you can get from the matrix.

To gain points, you must pick one cell in **each row**. Picking the cell at coordinates `(r, c)` will **add** `points[r][c]` to your score.

However, you will lose points if you pick a cell too far from the cell that you picked in the previous row. For every two adjacent rows `r` and `r + 1` (where `0 <= r < m - 1`), picking cells at coordinates `(r, c1)` and `(r + 1, c2)` will **subtract** `abs(c1 - c2)` from your score.

Return _the**maximum** number of points you can achieve_.

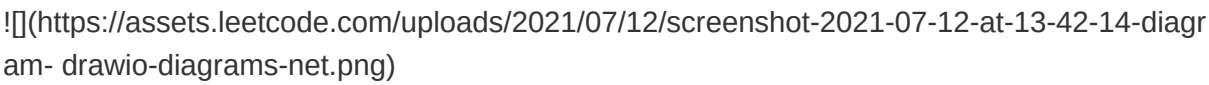
`abs(x)` is defined as:

* `x` for `x >= 0`. * `-x` for `x < 0`.

Example 1:****

Input: points = [[1,2,3],[1,5,1],[3,1,1]] **Output:** 9 **Explanation:** The blue cells denote the optimal cells to pick, which have coordinates (0, 2), (1, 1), and (2, 0). You add 3 + 5 + 3 = 11 to your score. However, you must subtract abs(2 - 1) + abs(1 - 0) = 2 from your score. Your final score is 11 - 2 = 9.

Example 2:



Input: points = [[1,5],[2,3],[4,2]] **Output:** 11 **Explanation:** The blue cells denote the optimal cells to pick, which have coordinates (0, 1), (1, 1), and (2, 0). You add 5 + 3 + 4 = 12 to your score. However, you must subtract abs(1 - 1) + abs(1 - 0) = 1 from your score. Your final score is 12 - 1 = 11.

Constraints:

* `m == points.length` * `n == points[r].length` * `1 <= m, n <= 105` * `1 <= m * n <= 105` * `0 <= points[r][c] <= 105`

Code Snippets

C++:

```
class Solution {
public:
long long maxPoints(vector<vector<int>>& points) {

}
};
```

Java:

```
class Solution {
public long maxPoints(int[][] points) {

}
}
```

Python3:

```
class Solution:
def maxPoints(self, points: List[List[int]]) -> int:
```