2087. Minimum Cost Homecoming of a Robot in a Grid

Solved ●

Medium   🏷 Topics   ☷ Companies   💡 Hint

There is an $m \times n$ grid, where $(0, 0)$ is the top-left cell and $(m - 1, n - 1)$ is the bottom-right cell. You are given an integer array startPos where startPos = [start_row, start_col] indicates that **initially**, a **robot** is at the cell $(start_{row}, start_{col})$. You are also given an integer array homePos where homePos = [home_row, home_col] indicates that its **home** is at the cell $(home_{row}, home_{col})$.

The robot needs to go to its home. It can move one cell in four directions: **left**, **right**, **up**, or **down**, and it can not move outside the boundary. Every move incurs some cost. You are further given two **0-indexed** integer arrays: rowCosts of length m and colCosts of length n.

- If the robot moves **up** or **down** into a cell whose **row** is r, then this move costs rowCosts[r].

- If the robot moves **left** or **right** into a cell whose **column** is c, then this move costs colCosts[c].

Return *the **minimum total cost** for this robot to return home.*

Example 1:
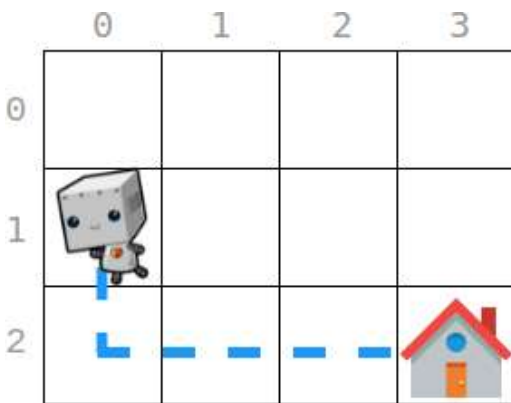
Input: startPos = [1, 0], homePos = [2, 3], rowCosts = [5, 4, 3], colCosts = [8, 2, 6, 7]
Output: 18
Explanation: One optimal path is that:
Starting from (1, 0)
-> It goes down to (**2**, 0). This move costs rowCosts[2] = 3.
-> It goes right to (2, **1**). This move costs colCosts[1] = 2.
-> It goes right to (2, **2**). This move costs colCosts[2] = 6.
-> It goes right to (2, **3**). This move costs colCosts[3] = 7.
The total cost is 3 + 2 + 6 + 7 = 18

Example 2:

Input: startPos = [0, 0], homePos = [0, 0], rowCosts = [5], colCosts = [26]
Output: 0
Explanation: The robot is already at its home. Since no moves occur, the total cost is 0.

Constraints:

- m == rowCosts.length

- n == colCosts.length

- $1 <= m, n <= 10^5$

- $0 <= rowCosts[r], colCosts[c] <= 10^4$

- startPos.length == 2

- `homePos.length == 2`

- `0 <= start_row, home_row < m`

- `0 <= start_col, home_col < n`

Seen this question in a real interview before?   1/5

Yes   No

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