Problem 1074: Number of Submatrices That Sum to Target

Problem Information

Difficulty: Hard
Acceptance Rate: 74.56%
Paid Only: No
Tags: Array, Hash Table, Matrix, Prefix Sum

Problem Description

Given a `matrix` and a `target`, return the number of non-empty submatrices that sum to target.

A submatrix `x1, y1, x2, y2` is the set of all cells `matrix[x][y]` with `x1 <= x <= x2` and `y1 <= y <= y2`.

Two submatrices `(x1, y1, x2, y2)` and `(x1', y1', x2', y2')` are different if they have some coordinate that is different: for example, if `x1 != x1'`.

Example 1:

Input: matrix = [[0,1,0],[1,1,1],[0,1,0]], target = 0 **Output:** 4 **Explanation:** The four 1x1 submatrices that only contain 0.

Example 2:

Input: matrix = [[1,-1],[-1,1]], target = 0 **Output:** 5 **Explanation:** The two 1x2 submatrices, plus the two 2x1 submatrices, plus the 2x2 submatrix.

Example 3:

Input: matrix = [[904]], target = 0 **Output:** 0

Constraints:

* `1 <= matrix.length <= 100` * `1 <= matrix[0].length <= 100` * `-1000 <= matrix[i][j] <= 1000` * `-10^8 <= target <= 10^8`

Code Snippets

C++:

```
class Solution {
public:
int numSubmatrixSumTarget(vector<vector<int>>& matrix, int target) {

}
};
```

Java:

```
class Solution {
public int numSubmatrixSumTarget(int[][] matrix, int target) {

}
}
```

Python3:

```
class Solution:
def numSubmatrixSumTarget(self, matrix: List[List[int]], target: int) -> int:
```