

# Problem 3070: Count Submatrices with Top-Left Element and Sum Less Than k

## Problem Information

**Difficulty:** Medium

**Acceptance Rate:** 57.94%

**Paid Only:** No

**Tags:** Array, Matrix, Prefix Sum

## Problem Description

You are given a \*\*0-indexed\*\* integer matrix `grid` and an integer `k`.

Return \_the\*\*number\*\* of submatrices that contain the top-left element of the\_ `grid` , \_and have a sum less than or equal to\_ `k` .

**Example 1:**



**Input:** grid = [[7,6,3],[6,6,1]], k = 18 **Output:** 4 **Explanation:** There are only 4 submatrices, shown in the image above, that contain the top-left element of grid, and have a sum less than or equal to 18.

**Example 2:**



**Input:** grid = [[7,2,9],[1,5,0],[2,6,6]], k = 20 **Output:** 6 **Explanation:** There are only 6 submatrices, shown in the image above, that contain the top-left element of grid, and have a sum less than or equal to 20.

**Constraints:**

```
* `m == grid.length` * `n == grid[i].length` * `1 <= n, m <= 1000` * `0 <= grid[i][j] <= 1000` * `1
<= k <= 109`
```

## Code Snippets

### C++:

```
class Solution {
public:
    int countSubmatrices(vector<vector<int>>& grid, int k) {
        }
};
```

### Java:

```
class Solution {
    public int countSubmatrices(int[][] grid, int k) {
        }
}
```

### Python3:

```
class Solution:
    def countSubmatrices(self, grid: List[List[int]], k: int) -> int:
```