

# 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:
```