

2521. Paths in Matrix Whose Sum Is Divisible by K

Difficulty : Hard

<https://leetcode.com/problems/paths-in-matrix-whose-sum-is-divisible-by-k>

You are given a **0-indexed** $m \times n$ integer matrix `grid` and an integer `k`. You are currently at position $(0, 0)$ and you want to reach position $(m - 1, n - 1)$ moving only **down** or **right**.

Return the number of paths where the sum of the elements on the path is divisible by `k`. Since the answer may be very large, return it modulo $10^9 + 7$.

Example 1:

5	2	4
3	0	5
0	7	2

5	2	4
3	0	5
0	7	2

Input: `grid = [[5,2,4],[3,0,5],[0,7,2]]`, `k = 3`

Output: 2

Explanation: There are two paths where the sum of the elements on the path is divisible by `k`.

The first path highlighted in red has a sum of $5 + 2 + 4 + 5 + 2 = 18$ which is divisible by 3.

The second path highlighted in blue has a sum of $5 + 3 + 0 + 5 + 2 = 15$ which is divisible by 3.

Example 2:

0	0
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Input: `grid = [[0,0]]`, `k = 5`

Output: 1

Explanation: The path highlighted in red has a sum of $0 + 0 = 0$ which is divisible by 5.

Example 3:

7	3	4	9
2	3	6	2
2	3	7	0

Input: `grid = [[7,3,4,9],[2,3,6,2],[2,3,7,0]]`, `k = 1`

Output: 10

Explanation: Every integer is divisible by 1 so the sum of the elements on every possible path is divisible by `k`.

Constraints:

- `m == grid.length`
- `n == grid[i].length`
- $1 \leq m, n \leq 5 \cdot 10^4$
- $1 \leq m \cdot n \leq 5 \cdot 10^4$
- $0 \leq \text{grid}[i][j] \leq 100$

- $1 \leq k \leq 50$