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# 6203. Paths in Matrix Whose Sum Is Divisible by K

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You are given a **0-indexed** m x 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**  $10^9 + 7$ .

User Accepted:	0
User Tried:	0
Total Accepted:	0
Total Submissions:	0
Difficulty:	Hard

#### 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:



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

**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
- $1 \le m$ ,  $n \le 5 * 10^4$
- $1 \le m * n \le 5 * 10^4$
- 0 <= grid[i][j] <= 100
- 1 <= k <= 50

```
JavaScript
                                                                                                                                                                                                                                                                                                                                                                                     C
                const initialize3DArray = (n, m, p) \Rightarrow \{ let r = []; for (let i = 0; i < n; i++) \{ let d = []; for (let j = 0; j < m; i++) \}
                j++) { let t = Array(p).fill(0); d.push(t); } r.push(d); } return r; };
      3
                const mod = 1e9 + 7;
      4 ,
                const numberOfPaths = (g, K) \Rightarrow \{
      5
                            let n = g.length, m = g[0].length, dp = initialize3DArray(n + 1, m + 1, K);
      6
                            dp[0][1][0] = 1;
      7 •
                            for (let i = 0; i < n; i++) {
      8 ▼
                                          for (let j = 0; j < m; j++) {
      9 ▼
                                                      for (let k = 0; k < K; k++) {
    10
                                                                  dp[i + 1][j + 1][(k + g[i][j]) % K] += dp[i][j + 1][k];
                                                                  dp[i + 1][j + 1][(k + g[i][j]) % K] %= mod;
    11
                                                                  dp[i + 1][j + 1][(k + g[i][j]) % K] += dp[i + 1][j][k];
    12
    13
                                                                  dp[i + 1][j + 1][(k + g[i][j]) % K] %= mod;
    14
                                                     }
   15
                                         }
   16
                            }
                            return dp[n][m][0];
   17
   18
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