


감시

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⚙️ Status	Done
🏷️ Tags	Python Simulation
📅 UpdatedAt	@September 28, 2022

15683번: 감시

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[/> https://www.acmicpc.net/problem/15683](https://www.acmicpc.net/problem/15683)

1. Dynamic Programming Algorithm

1. Dynamic Programming Algorithm

```
import copy
import sys

def dfs(matrix, direction, n, m, cctv, result):
    if not cctv:
        return result

    origin = result
    for d in direction[cctv[0][2]]:
        cur = copy.deepcopy(matrix)
        answer = origin
        for (dx, dy) in d:
            i = cctv[0][0]
            j = cctv[0][1]
            while 0 <= i + dx < n and 0 <= j + dy < m:
                i += dx
                j += dy
                if cur[i][j] == 6:
                    break
                elif cur[i][j] == 0:
                    cur[i][j] = 7
                    answer -= 1

        result = min(result, dfs(cur, direction, n, m, cctv[1:], answer))
```

```

return result

def sol():
    n, m = map(int, sys.stdin.readline().split())
    matrix = []
    cctv = []
    direction = {
        1: [(-1, 0)], [(0, 1)], [(1, 0)], [(0, -1)]],
        2: [(-1, 0), (1, 0)], [(0, -1), (0, 1)]],
        3: [(-1, 0), (0, 1)], [(0, 1), (1, 0)], [(1, 0), (0, -1)], [(0, -1), (-1, 0)]],
        4: [(0, -1), (-1, 0), (0, 1)], [(-1, 0), (0, 1), (1, 0)], [(0, 1), (1, 0), (0, -1)],
            [(1, 0), (0, -1), (-1, 0)]],
    }

    cctv_5 = []
    answer = 0

    for i in range(n):
        row = list(map(int, sys.stdin.readline().split()))
        matrix.append(row)
        for j, r in enumerate(row):
            if r == 0:
                answer += 1
            if 1 <= r < 5:
                cctv.append((i, j, r))
            if r == 5:
                cctv_5.append((i, j))

    for c in cctv_5:
        for d in [(-1, 0), (0, 1), (1, 0), (0, -1)]:
            i = c[0]
            j = c[1]
            while 0 <= i + d[0] < n and 0 <= j + d[1] < m:
                i += d[0]
                j += d[1]
                if matrix[i][j] == 6:
                    break
                elif matrix[i][j] == 0:
                    matrix[i][j] = 7
                    answer -= 1

    print(dfs(matrix, direction, n, m, cctv, answer))

sol()

```