6914   Maze Mayhem

As the title implies, your task in this problem is related to maze, specifically a 2D maze of size $N \times M$ (N rows and M columns). Starting from the top-left most of the maze — coordinate $(1, 1)$, you should clear the maze by moving to the goal point at the bottom-right most of the maze — coordinate (N, M). To simplify things, you are only allowed to move right or down at any step. Of course like any other mazes, there might be cells with obstacle which cannot be visited. For example, consider the Figure 1 below. There are two obstacles, one at $(3, 2)$ and the other at $(2, 4)$. The black line with arrow is one possible path from the starting point to the goal.
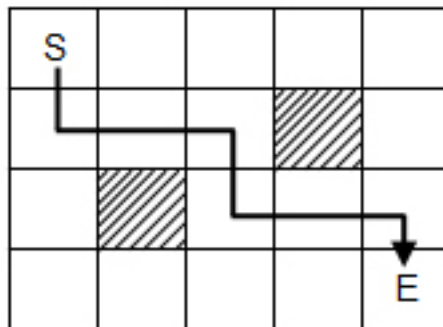

Figure 1.

Problems related to such maze are commonly found in programming contest. Usually for such problem, preparing the test data (i.e. the input maze) is much more troublesome than solving the problem itself. If we generate a random maze, then chances are the mazes will be invalid. A maze is invalid if at least one of the following conditions applies:

- There is an obstacle at the starting point $(1, 1)$ and/or at the goal point (N, M).

- There is no valid path from the starting point to the goal point.

  A path is valid if it consists of only moving right or down, i.e. from (r, c) you can only go to $(r + 1, c)$ or $(r, c + 1)$, and there is no obstacle along the path (visited cells).

Given the size of the maze $(N \times M)$ and an integer K, determine how many invalid mazes of such size which have at most K obstacles. Output the result *modulo* 1,000,000,007.

Input

The first line of input contains an integer T ($T \leq 100$) denoting the number of cases. Each case contains three integers: N, M, and K ($1 \leq N, M \leq 8$; $N * M > 1$; $0 \leq K \leq N * M$) denoting the size of the maze and the maximum number of obstacles respectively.

Output

For each case, output 'Case #X: Y', where X is the case number starts from 1 and Y is the number of invalid mazes with the given size and maximum number of obstacles, *modulo* by 1,000,000,007.

Explanation for 1st sample case:

Out of 4 possible mazes, only 1 which is valid (no obstacle in both cells). Thus there are 3 mazes which are invalid.

Explanation for 2nd sample case:

These are the 13 invalid mazes of size 2×2.
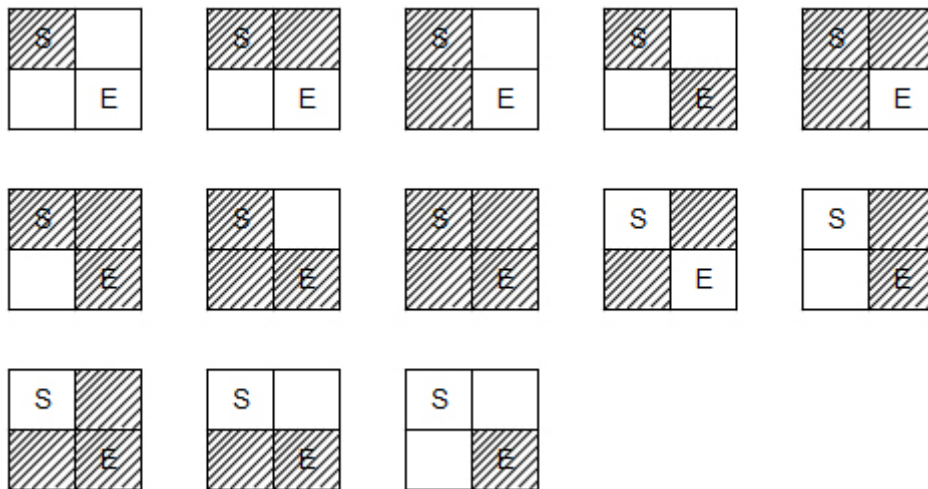
Explanation for 3rd sample case:

The maze size is exactly equal to the 2nd sample, but in this case you cannot have more than 2 obstacles. There are 8 such mazes; consult figures in 2nd sample case explanation above to figure out which.

Sample Input

```
4
1 2 2
2 2 4
2 2 2
4 3 11
```

Sample Output

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Case #1: 3
Case #2: 13
Case #3: 8
Case #4: 3800
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