Problem C
Ladder Game
Max no. of test cases: 30
Time limit: 2 seconds

A ladder diagram consists of n vertical lines with some random horizontal line segments connecting two adjacent vertical lines at different positions along the vertical lines. There are distinct lottery numbers at the bottom of the vertical lines, corresponding to the prizes won. The game is played by choosing to start at the top of a vertical line and move down the lines until a horizontal line segment is reached. In which case, the player followed that horizontal line segment to the adjacent vertical line and continue to move downward. The process is continued until all players have reached the bottom of the vertical lines and have received their prizes. Note that all players choose and start at the top of distinct vertical line and that all players move at the same pace.

For example, in Fig. 1 the sample input shows 4 vertical lines. There is a horizontal line segment connecting vertical lines 1 and 2 at position 1 along the vertical lines.. There is also a horizontal line segment connecting vertical lines 3 and 4 at position 3 along the vertical lines. If four players play the game, each starting at different vertical line, players choosing vertical lines 1 and 2 will cross each other at the first horizontal line segment, while players choosing vertical lines 3 and 4 will cross each other at the second horizontal line segment.

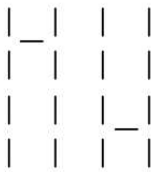

Figure 1: A valid ladder game with 4 vertical lines and 2 horizontal line segments.

For this ladder game, It is guaranteed that horizontal line segments will not appear in the last line. Furthermore, there will not be consecutive horizontal line segments that joins 3 or more vertical lines at the same horizontal position. The horizontal line segments shown in Fig. 2 are not allowed.

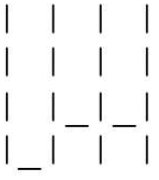

Figure 2: Invalid ladder game.

During the Lunar New Year, Jack and his family are playing the ladder game to draw red envelops. However, to ensure fairness, Jack want to make sure no two player cross path (meet up somewhere) during the game. Given a ladder game diagram, please help Jack determine what's the maximum number of people that can play the game without possibly crossing each other.

Input File Format

The first of input contains a single integer denoting the number test cases to follow. For each test case, the first line has two integers, n and m, where $1 \leq n, m \leq 1000$, denoting n vertical lines of length m. The next m lines define the ladder game to be played. For the next m lines, each line contains $2 \times n - 1$ characters, the characters are "|" (at the odd positions, denoting vertical lines) and "_" or space (at the even positions, denoting whether there is a horizontal line segment connecting two adjacent vertical lines). All input ladder games are guaranteed to be valid games.

Output Format

For each test case, output a single integer denoting the maximum number of players can play the given ladder game without having the possibility to cross path.

Sample Input

```
1
4 4
|_| | |
| | | |
| | |_|
| | | |
```

Output for the Sample Input

```
2
```