

## Problem F - Fabled Treasure

You are on a quest for the Legendary Scroll of UBC Codearchive. You have reached the last room in the dungeon, and you see many treasure chests lying around. The dungeon can be represented as a rectangular grid of cells. Some cells are walls, some cells contain treasure, and some cells are empty. You are allowed to move horizontally and vertically, but not diagonally.

You would like to check as many treasure chests as possible, but some are blocked off by walls. The good news is that you have already obtained the Scroll of Teleportation that allows you to phase through a single wall cell. The bad news is that since you are low on mana, and you haven't got much time before the boss wakes up again. You have calculated that you can only safely use the scroll once as you need to reserve some mana for using the Return Home Spell to teleport out of the dungeon and into your home town.

How many treasure chests can you access?

Note: when you use the Scroll of Teleportation to walk into a wall, you can "exit" in all 4 directions; you do not have to exit straight ahead.

### Input

The first line contains an integer  $T$ , denoting the number of test cases.

Each test case begins with a single line containing two integers  $1 \leq n, m \leq 2000$ , denoting the number of rows and columns in the grid respectively. Then, the description of the dungeon are in the following  $n$  lines of  $m$  characters each.

Each character in the grid represents a cell, which is one of the following types:

- 'S': your starting cell
- 'T': a cell with a treasure chest
- '#': a wall cell
- '.': an empty cell

Exactly one cell of the grid has the character 'S'.

### Output

For each test case, output in a single line, the maximum number of treasure chests you can access.

### Sample Input

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```
1
4 5
S. .#.
.TT#.
###T.
.TT#.
```

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### Sample Output

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```
4
```

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