Tic-tac-toe is a game played between two players on a 3×3 grid. In a turn, a player chooses an empty cell and places their symbol on the cell. The players take alternating turns, where the player with the first turn uses the symbol **X** and the other player uses the symbol **O**. The game continues until there is a row, column, or diagonal containing three of the same symbol (**X** or **O**), and the player with that token is declared the winner. Otherwise, if every cell of the grid contains a symbol and nobody won, then the game ends and it is considered a draw.

You are given a tic-tac-toe board **A** after a certain number of moves, consisting of symbols **O**, **X**, and underscore(_). Underscore signifies an empty cell.

Print

- 1: if the position is reachable, and the game has drawn or one of the players won.
- 2: if the position is reachable, and the game will continue for at least one more move.
- 3: if the position is not reachable.

Note:

- Starting from an empty board, reachable position means that the grid is possible after a finite number of moves in the game where the players may or may not be playing optimally.
- The answer for each testcase should be with respect to the present position and independent of the results in the further successive moves.

Input

- The first line contains an integer T, the number of test cases. Then the test cases follow.
- Each test case contains 3 lines of input where each line contains a string describing the state of the game in ith row.

Output

For each test case, output in a single line 1, 2, or 3 as described in the problem.

Sample Input

```
3
XOX
XXO
O_O
XXX
OOO

___
XOX
OX_
XO_
```

Sample Output

```
2
3
1
```