Problem J
Tic Tac Toe Counting
Time Limit: 3 Second(s)

Tic Tac Toe is a simple children's game. It is played on a 3×3 grid. The first player places an `X` in any of the 9 cells. The next player places an `O` in any of the remaining 8 cells. The players continue to alternate placing `X`s and `O`s in unoccupied cells until either a player gets three of their symbols in a row, or the grid is full. If either player gets three in a row, in any of the three rows, three columns or two diagonals, that player wins and the game ends.

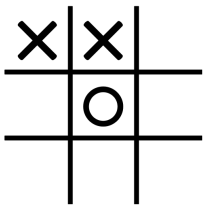
Fred and Sam are playing a game of Tic Tac Toe. In the middle of the game, Fred wonders: "How many games from this point in the game onward are winners for `X`? How many for `O`?" Two games are different if they have different sequences of moves, even if they result in the grid looking the same at any point.

Given a list of grids, determine first if they can be reached in a game of Tic Tac Toe, and if they can, how many games from that point on result in wins for `X`, and how many for `O`.

Input

The first line of input contains a single integer t ($1 \leq t \leq 10^5$), which is the number of test case grids.

Each of the next t lines contains a single string s ($|s| = 9$) which consists of only the characters `'.'`, `'X'` and/or `'O'`. These are the test case grids. The first three characters represent the first row, the second three are the second row, and the last three are the last row, with `'.'` representing an empty cell. For example, the string `XX..O....` represents this grid:



Output

For each test case, output two space-separated integers. If the grid is not reachable in a game of Tic Tac Toe, output `-1 -1`. If the grid is reachable, output the number of games from that point on (including that grid) that are wins for `X`, followed by wins for `O`.

Sample Input 1	Sample Output 1
4 XX..O.... X...OX... OOOX.X.X. OOOXXX...	191 194 232 200 0 1 -1 -1