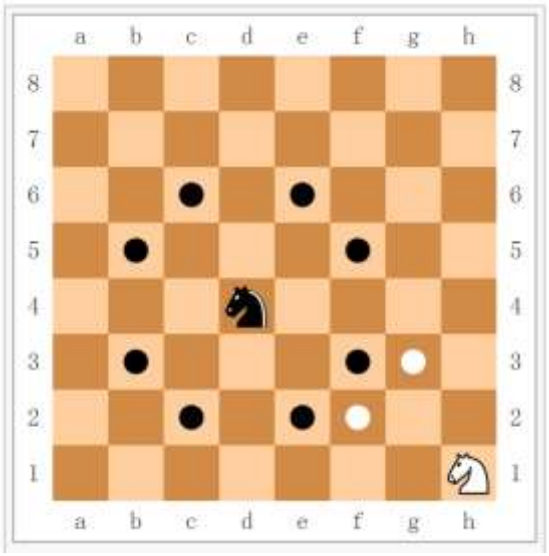
Playing Chess

International Chess is a two-player strategy board game played on a chessboard, a checkered gameboard with 64 squares arranged in an eight-by-eight grid. In the game, the knight could move to any of eight squares (shown in the picture).

Now, given the position of the black knight and the white knight, what is the minimum number of steps for the black knight to reach the white knight?

There are some occupied grids in the gameboard, placing king or queen or rooks, etc. The black knight cannot be placed on these grids.



Input

The first line of the input contains an integer **T**, indicating the number of cases. In each test case, the gameboard is described by a matrix of characters, consisting of 8 rows and 8 columns. The matrix consists of characters "#", "@", "-", "*", representing the black knight, the white

knight, an empty grid, an occupied grid. It guarantees that there is only one black knight and one white knight in the input. There is a blank line between two test cases.

Output

For each test case, print the minimum number of steps in a separate line. If it is impossible to reach the white knight, then print IMPOSSIBLE.

See the case in the example.

Sample Input	Sample Output
2 #----*-- ---*---- ----*--- ------*- --@----- -------- ---*--*- -----*-- #----*-- --**---- -*--*--- ------*- --@----- -------- ---*--*- -----*--	Case 1: 2 Case 2: IMPOSSIBLE

Hints

In the first example, the black knight '#' could choose the path:

(1,1) --> (3,2) --> (5,3), two steps.