Mountain Hiking

Mountain hiking is a very adventurous, yet somewhat dangerous, pastime. On certain mountain ranges, the heights could vary sharply. An amateur hiker can move to an adjacent (left/right, up/down, but not diagonally) location only if the height difference with the current location is at most 1. Given a height map of a mountain range, determine the distance of the shortest viable path between the left and the right edges.

Input

The first line of the input will contain an integer T, the number of test cases. Each test case consists of a 10×10 map of digits 0 to 9, each digit representing the height of that location. A line of hyphens ---------- follows each test case for visual separation.

Output

The output will contain T lines, with the lest number of steps to cross the mountain range in each case. If the hiker can't get across, output "IMPOSSIBLE" (without quotes) instead.

Notes: the hiker could start at any of the left-most positions. The steps counted are the transitions from one location to the next. Thus appearing in that very first location requires no steps.

Example

Input:
1
9324892342
1334343293
3524523454
2634232043
0343259235
2454502352
4563589024
7354354256
9343221234
2653560343

Output:
11

Explanation for the Sample test case:
9324892342
1334343293
3524523454
2634232043
0343259235
2454502352
4563589024
7354354256
9343221234
2653560343