Algorithms Fundamentals with Python: Exam

Please submit your solutions (source code) to all the below-described problems in Judge.

1. Maze Explorer

You are tasked with finding the **shortest path in a maze** that is represented by a **two-dimensional grid**. The maze contains walls denoted by the character **'#'**, and open paths denoted by the character **'.'**.

You can move in any of the four main directions (**up**, **down**, **left**, or **right**), but **cannot move through walls**.

You must start at the position (**0, 0**) and find the shortest path to the destination position (denoted with **'E'**).

The output of the program should be the shortest path from the starting position to the destination position.

Input

- The first line of the input contains a single integer n, which represents the size of the square maze.
- The next n lines of the input contain n characters each, representing the symbols in each row of the maze:
    - A "**#**" character denotes a wall.
    - A "**.**" character denotes an open path.
    - A "**S**" character denotes the starting position.
    - An "**E**" character denotes the end of the maze.

Output

- The output should be a single integer representing the number of steps required to follow the shortest path from the starting position to the destination position.

Constraints

- **1 <= n <= 20**, where n is an integer representing the **size of the square maze**.
- The symbols in the maze will be limited to "**S**" (representing the starting position), "**E**" (representing the destination position), "**#**" (representing a wall), and "**.**" (representing an open path).
- There will always be **at least one** valid path from the starting position to the destination position.

Examples

Input	Output
4 S.#. .##E .##.	8
4	4

S... .##E .##.	