

Problem L. Multistory Labyrinth

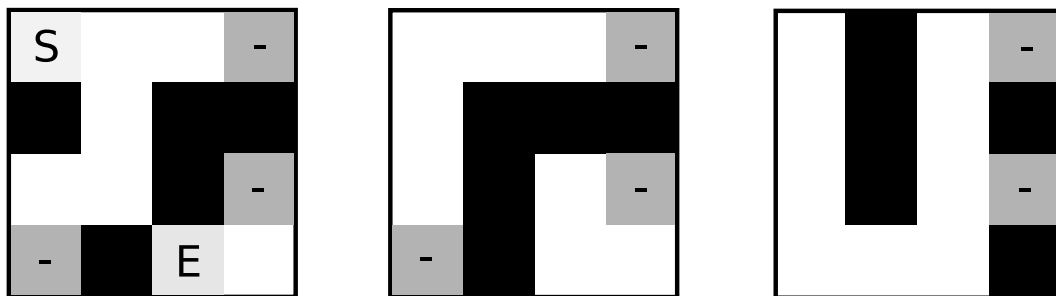
Input: Standard
 Output: Standard
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Ada has found an old video game called multistory labyrinth. As its name indicates, the game consists in a labyrinth (a field with multiple roads and walls where you should find a route from an origin point to a destination point) with a little difference: This labyrinth is conformed for several floors (like a building) where each floor belongs to the same labyrinth and you have elevators that connects different floors. The source point and the destination point could be in any floor.

Each movement made by Ada in x , y or z (moving to north, sur, east, west, up or down a floor) counts like a step. Ada is a strategic women and she doesn't want spend more steps than the necessary to resolve the labyrinth. Can you make a program that compute the minimum number of steps required to reach the end of the labyrinth?

The labyrinth is represented like a set of floors, and every floor is described as a grid with the next conventions:

- “#” Represents a wall.
- “.” Represents a free square.
- “-” Represents an elevator (Can go up or down to the next floor if and only if the next floor have an elevator in the same point). Elevators could be used as a free squares too, meaning that Ada could pass through them without changing floor.
- “S” Starting point. Could be in any floor.
- “E” End point. Could be in any floor.



Example of one text case representing the first, second and third floor. The black squares denote walls, the white free squares and those marked with an “-” are elevators.



Example

Input	Output
4 4 3	13
S..-	3
###	
..#-	
-#E.	
...-	
.###	
.#.-	
-#..	
.#.-	
.#.#	
.#.-	
...#	
2 4 2	
.-..	
....	
S--E	
####	
0 0 0	