

Problem 9.2	Labyrinth	(page 1 of 1)
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Overview:	Find the shortest path through a maze, if you can.
Description:	<p>After killing the Minotaur, the ancient Greek hero Theseus needed to escape the elaborate labyrinth in which the Minotaur was contained. However, the labyrinth was still fraught with other lesser monsters staking out key areas of the maze. However, there are also invisibility cloaks in the labyrinth that Theseus can use to slip past these monsters.</p> <p>Your goal is to write a program that determines the shortest path through the labyrinth. Each move is one unit: either up, down, left or right. Theseus doesn't have the dexterity to move diagonally.</p>
Filename:	pr92.{java, cpp, c, cc, py}
Input:	<p>The input consists of a square maze of dimensions 4x4 to 10x10. The first line of the input is a single integer n indicating the size of the maze ($n \times n$). The next n lines represent the maze and will contain n characters each. Possible characters for each maze are:</p> <ul style="list-style-type: none"> ○ Theseus' starting position. This character will appear exactly once. × Maze exit. Each maze contains exactly one exit, and it is Theseus' goal to reach it. # Wall. This is impassable. The outside of each maze will be surrounded by walls but walls appear on the inside as well. A Monster. Each maze will contain between 0 to 4 monsters, inclusive. They do not move and Theseus cannot pass through them unless he picks up an invisibility cloak first. @ Invisibility Cloak. Theseus can pass through those and once he does, he picks up the cloak and can pass through an arbitrary number of monsters unnoticed. Each maze contains between 0 to 4 invisibility cloaks. To pick up the cloak, pass through the square in which it is contained. . Empty space. This is a regular passable space and has no special significance.

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Output:	If Theseus can reach the exit, print the number of moves Theseus needed to reach the exit. If Theseus cannot reach the exit, print the number -1.
Assumptions:	
Sample Input #1:	<pre> 5 ##### #C#X# #.#.# #.#.# ##### </pre>
Sample Output #1:	-1
Sample Input #2:	<pre> 7 ##### #.....# #...#.# #..X#.# #####A# #@...C# ##### </pre>
Sample Output #2:	20