

01. The Prince's Treasure Hunt

Condition:

The Prince of Dobrolandia, a brave young traveler, has been ordered by his king to find the way to the mystical city of Zlatograd, hidden deep in the depths of the kingdom. According to legend, Zlatograd is an ancient city famous for its amazing golden towers and riches, but the road to it is difficult and dangerous. The prince must not only reach the city, but also fulfill an important mission - to collect the lost bags of coins that fell from a royal chariot carrying taxes to the king's treasury.

During his journey, the prince must pass through dense forests full of huge trees and heavy stones that make it difficult for him to move. In addition, the prince must be careful, as any wrong step can lead him astray from the goal and leave him without the precious coins.

Your task is to help the prince by finding the shortest route to Zlatograd while maximizing the number of bags of coins collected.

Input:

1. The first line specifies two integers N and M (≤ 100), representing the dimensions of the matrix.
2. The following are the lines, each containing a symbol, describing the map of the forest:
 - * - empty space where the prince can move.
 - | - trees that the prince cannot cross.
 - @ - stones that are also impassable.
 - € - bags of coins that the prince must collect.
 - # - the city marked with a square of four adjacent # symbols forming a 2x2 square.
 - 0 - the starting position of the prince, which is always at one of the four ends of the matrix.

Output:

Output an integer representing the minimum number of steps (pixels) the prince must take to reach the city while collecting the maximum possible number of bags of coins.

Additional conditions:

- The prince can only move up, down, left, or right (orthogonally).

- When passing through a position with a bag of coins (€), it is automatically added to the collected ones.
- The city is always located at a distance greater than half the dimensions of the matrix from the prince's starting position.
- If there are several paths of equal length, choose the one where the prince collects the most coins.

Example:

Input	Output
<pre>*** @@ *€* @@ ***€€ 0***€ * €€€ ***##</pre>	10

Explanation:

- The prince starts at position 0 (in this case, the bottom left), travels the shortest path, collecting a total of 4 bags of coins, and reaches the city (indicated by a square with a #). The total number of pixels he travels is 10.

Solving instructions:

- Represent the matrix as a graph, where each traversable cell is a vertex and neighboring cells are connected by edges.
- Use a search algorithm such as BFS or modified Dijkstra to find the shortest path.
- Keep a counter for the coins collected during the quest.
- Keep track of all possible routes to choose the one that brings the maximum number of coins.