

1263. Minimum Moves to Move a Box to Their Target Location

Description

A storekeeper is a game in which the player pushes boxes around in a warehouse trying to get them to target locations.

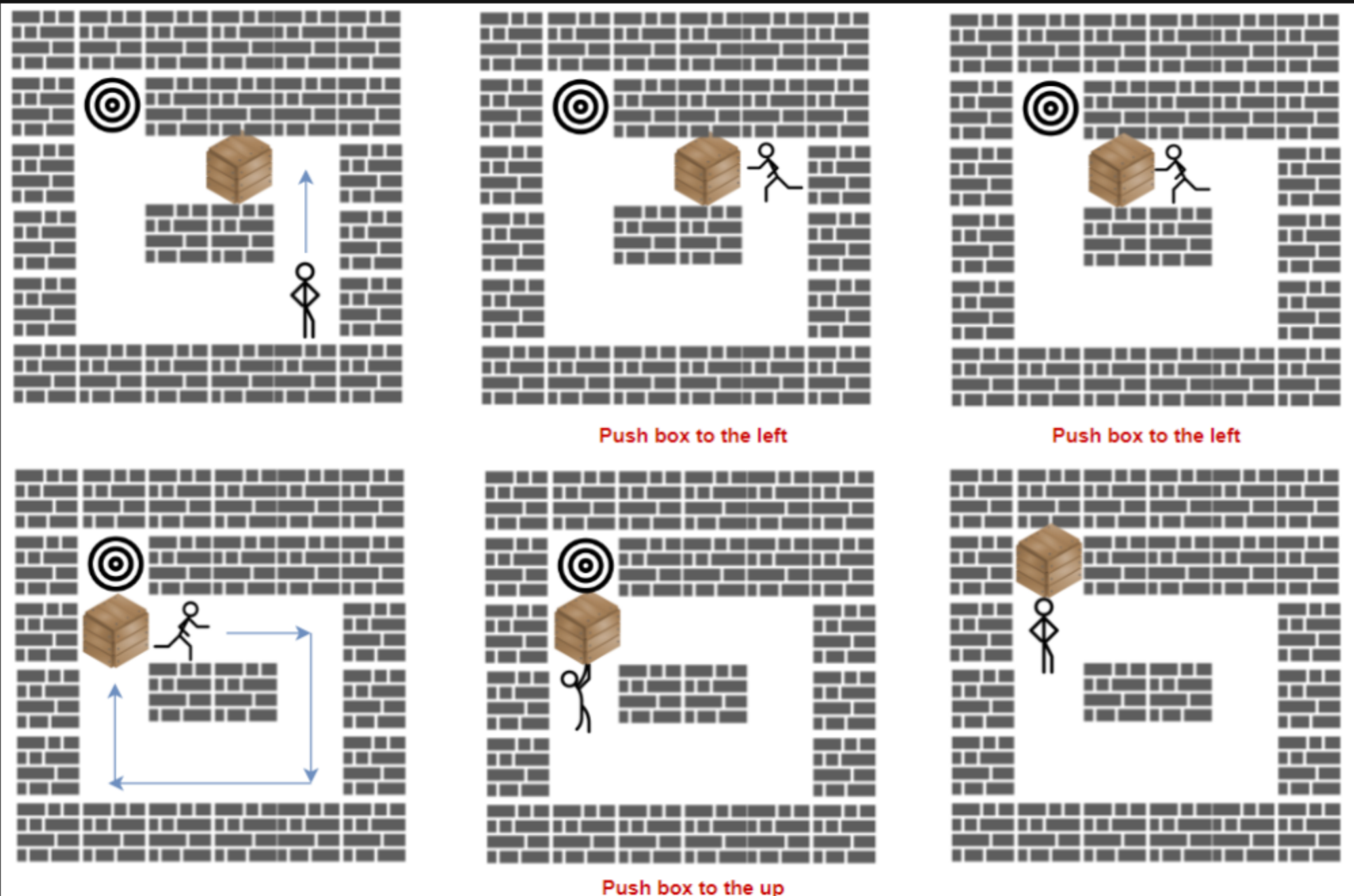
The game is represented by an `m x n` grid of characters `grid` where each element is a wall, floor, or box.

Your task is to move the box `'B'` to the target position `'T'` under the following rules:

- The character `'S'` represents the player. The player can move up, down, left, right in `grid` if it is a floor (empty cell).
- The character `'.'` represents the floor which means a free cell to walk.
- The character `'#'` represents the wall which means an obstacle (impossible to walk there).
- There is only one box `'B'` and one target cell `'T'` in the `grid`.
- The box can be moved to an adjacent free cell by standing next to the box and then moving in the direction of the box. This is a **push**.
- The player cannot walk through the box.

Return *the minimum number of pushes to move the box to the target*. If there is no way to reach the target, return `-1`.

Example 1:



Input: `grid = [['#', '#', '#', '#', '#', '#'],`
 `['#', 'T', '#', '#', '#', '#'],`
 `['#', '.', '.', 'B', '.', '#'],`
 `['#', '.', '#', '#', '.', '#'],`
 `['#', '.', '.', '.', 'S', '#'],`
 `['#', '#', '#', '#', '#', '#']`

Output: `3`

Explanation: We return only the number of times the box is pushed.

Example 2:

Input: `grid = [['#', '#', '#', '#', '#', '#'],`
 `['#', 'T', '#', '#', '#', '#'],`
 `['#', '.', '.', 'B', '.', '#'],`
 `['#', '#', '#', '#', '.', '#'],`
 `['#', '.', '.', '.', 'S', '#'],`
 `['#', '#', '#', '#', '#', '#']`

Output: `-1`

Example 3:

Input: `grid = [['#', '#', '#', '#', '#', '#'],`
 `['#', 'T', '.', '.', '#', '#'],`
 `['#', '.', '#', 'B', '.', '#'],`
 `['#', '.', '.', '.', '.', '#'],`
 `['#', '.', '.', '.', 'S', '#'],`
 `['#', '#', '#', '#', '#', '#']`

Output: `5`

Explanation: push the box down, left, left, up and up.

Constraints:

- `m == grid.length`
- `n == grid[i].length`
- `1 <= m, n <= 20`
- `grid` contains only characters `'.'`, `'#'`, `'S'`, `'T'`, or `'B'`.
- There is only one character `'S'`, `'B'`, and `'T'` in the `grid`.

