M03S02 [Pointers and Functions]: Exercise 04

CS110: Computing Lab
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M03S02E04: Palindromic Traces

Given a 2D grid of dimensions $M \times N$, with each cell consisting of an uppercase alphabet. Write a program to compute all palindromic traces from source cell located at (0,0) to the destination cell located at $(M - 1, N - 1)$. That is, while traversing from source to the destination cell, the sequence of encountered characters should form a Palindrome while each step in traverse should either be a move to rightside cell or bottomside cell.

Input Format:
In the first line, 2D grid size (number of rows and number of columns) are given.
In the second line, alphabet character of each cell is given in row major form.

Output Format:
In each line, a plaindromic trace is displayed.

Constraints:

$$1 \leq M, N \leq 7$$

NOTE: Student must use pointer(s) and function(s) to solve this exercise

Example 1:

Input:
3 4
A A A B B A A A A B B A

Output:
ABAABA
AAAAAA
AAAAAA

Explanation:
Palindromic trace 'ABAABA': $(0, 0) -> (1, 0) -> (1, 1) -> (1, 2) -> (2, 2) -> (2, 3)$

Palindromic trace 'AAAAAA': $(0,0) -> (0,1) -> (1,1) -> (1,2) -> (1,3) -> (2,3)$
Palindromic trace 'AAAAAA': $(0,0) -> (0,1) -> (0,2) -> (1,2) -> (1,3) -> (2,3)$