

### Question - 1

[ARRAY 2D] Tic Tac Toe !

Let's play Tic Tac Toe!!



<https://playtictactoe.org/>

The Tic Tac Toe game is between 2 players : player A and player B

Game is performed on a grid of 3 columns and 3 rows

**The first player with a complete row or column or diagonal win the game**

Example 1:

A A A

B B A

B B B

*Here A wins because the first row is full of A*

Example 2:

A A B

A B A

B B B

*Here B wins because one diagonal row is full of B*

#### INPUTS:

The array 2D with players result as input :

A A B

A B A

B B B

#### OUTPUT:

- If A win, print : "A WON"
- If B win, print : "B WON"
- If no winner , print "NO WINNER"

B WON

To perform this exercise you need first to code 4 functions!!!!

Function	<code>signOnRow</code>
Parameters	<ul style="list-style-type: none"> <li>• grid (an array 2D)</li> <li>• rowIndex (integer)</li> <li>• sign (string)</li> </ul>
Return value	This function will return True if the ROW at the given rowIndex is composed ONLY of the given sign
Examples	<p>For instance if the grid is :</p> <pre> A A A B B A B B B </pre> <p><code>signOnRow</code> (grid, 0, "A") will return True because the first row contains ONLY "A"</p> <p><code>signOnRow</code> (grid, 1, "A") will return False because the second row does NOT contains ONLY "A"</p>

Function	<code>signOnColumn</code>
Parameters	<ul style="list-style-type: none"> <li>• grid (an array 2D)</li> <li>• columnIndex (integer)</li> <li>• sign (string)</li> </ul>
Return value	This function will return True if the COLUMN at the given columnIndex is composed ONLY of the given sign
Examples	<p>For instance if the grid is :</p> <pre> B A A B B A B B B </pre> <p><code>signOnColumn</code> (grid, 0, "B") will return True because the first column contains ONLY "B"</p> <p><code>signOnColumn</code> (grid, 1, "B") will return True because the second column does NOT contain ONLY "B"</p>

Function	<code>signOnDiagonal</code>
Parameters	<ul style="list-style-type: none"> <li>• grid (an array 2D)</li> <li>• sign (string)</li> </ul>
Return value	<p>This function will return True if a DIAGONAL is composed ONLY of the given sign</p> <p>Warning : there are 2 diagonals (ascending / descending)</p>
Exam	For instance if the grid is :

ples	<p>B A A</p> <p>A B A</p> <p>A B B</p> <p>signOnDiagonal (grid, "B") will return True because the descending diagonal is composed only of B</p>
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Func tion	signWon
Para mete rs	<ul style="list-style-type: none"> <li>• grid (an array 2D)</li> <li>• sign (string)</li> </ul>
Retur n value	<p>This function will return True if the given sign has WON</p> <p>It true if :</p> <ul style="list-style-type: none"> <li>• one of the 2 diagonal is composed of this sign</li> <li>• or if 1 of the 3 rows is composed of this sign</li> <li>• or if 1 of the 3 columns is composed of this</li> </ul>
Exam ples	<p>For instance if the grid is :</p> <p>B A A</p> <p>A B A</p> <p>A B B</p> <p>signWon (grid, "B") will return True because we found a diagonal of B</p>