COS132 Academic Year 2023: **Practical 9**: Syllabus of the Week: **Multi-Dimensional Pointers**

TIC-TAC-TOE

You need:
Knowledge of the Tic-Tac-Toe rules of the game
a two dimensional (**) **pointer** of character type
a two dimensional character **array** with (3 • 3) cells

From the players' perspective, the cells of the game field are numerically identified as follows:

1	2	3
4	5	6
7	8	9

The character for player White is '**w**'
The character for player Black is '**b**'

***Rough Sketch* of the Game's Plan:**

```
game counter is initially 1
game ongoing is initially true ;

WHILE (counter < 10 AND ongoing==true)
| Print "The fields with the following field ID numbers are still free :"
| Call a funtion (to be made by you) which utilizes the **pointer to find and print the free fields ;
|
|       counter is even number ?
|       | Print "Black choose empty field!"  ;
|       | Input integer number from player ;
|       | Call a function (to be made by you)
|         which converts the integer ID into
|         the corresponding two-dimensional
|         pointer position ;
|       |
|       | Via the pointer write 'b' into that field
|       | Call a function (to be made by you)
|         which utilizes the pointer to check
|         whether this latest placement of 'b'
|         results in victory for player Black ;
|       |
|       | Has player Black won ?
|               | Print "Victory for Black"
|               | game ongoing = false ;
|
|       counter is odd number ?
|       | Print "White choose empty field!" ;
|       | Input integer number from player ;
|       | Call a function (to be made by you)
|         which converts the integer ID into
|         the corresponding two-dimensional
|         pointer position ;
|       |
|       | Via the pointer write 'w' into that field
|       | Call a function (to be made by you)
|         which utilizes the pointer to check
|         whether this latest placement of 'w'
|         results in victory for player White ;
|       |
|       | Has player White won ?
|               | Print "Victory for White"
|               | game ongoing = false ;
|               ____________________________________________
| Update game counter = counter + 1 ;
| ______________________________
Print "The game has ended"
______________________
```

Your Task: IMPLEMENT this Tic-Tac-Toe-Game!

And now, **HAPPY CODING :)**