Lab 02 - Functions
Instructions:

- In the game Connect 4, two players take turns dropping colored discs down columns of a **6×7** grid, aiming to connect four discs in a row—horizontally, vertically, or diagonally. The grid can be represented as a string of length 42, where players' discs and empty spaces are denoted by the characters `'O'`, `'X'`, and `'*'`, respectively. For example, an empty board is shown on the left.

	0	1	2	3	4	5	6
0	*	*	*	*	*	*	*
1	*	*	*	*	*	*	*
2	*	*	*	*	*	*	*
3	*	*	*	*	*	*	*
4	*	*	*	*	*	*	*
5	*	*	*	*	*	*	*

Empty Board Display

	0	1	2	3	4	5	6
0	0	1	2	3	4	5	6
1	7	8	9	10	11	12	13
2	14	15	16	17	18	19	20
3	21	22	23	24	25	26	27
4	28	29	30	31	32	33	34
5	35	36	37	38	39	40	41

String Indices Correlation

with the indices of the string elements on the right. Your objective is to define a few functions necessary to create the Connect 4 game using the above information in a cpp file named '`Game.h`'

- Your program can only include the libraries *iostream*, *string*, and *cctype*.

- Each function must include pseudocode as a comment above it to receive any credit.

- Your submissions must be submitted to the GitHub repository in the **Lab02** directory.

- Cheating of any kind is prohibited and will not be tolerated.

- **Violating or failing to follow any of the rules above will result in an automatic zero (0) for the lab.**

Grading

Task	Maximum Points	Points Earned
1	1	
2	2	
3	2	
Total	5	

Note: solutions will be provided for tasks colored blue only.

Task 1

- Define the Boolean function named `HasMove()` that takes a constant string reference parameter. It returns true if the grid (the parameter) contains a blank character; otherwise, it returns false.

Task 2

- Define the Boolean function named `ColumnWin()` that takes a constant string reference parameter. It returns true if the grid (the parameter) has a winner in a column; otherwise, it returns false.

Task 3

- Define the Boolean function named `Populate()` that takes a string reference parameter, character parameter, and an integer parameter, respectively. If the column index (the integer parameter) is valid [between 0 and 6, inclusively] and the column has space, it adds the disc (the character parameter) to the grid (the string parameter) and returns true; otherwise, it returns false.

Extra Credit

- Create a cpp file named 'Extra.cpp' that defines the Boolean function named `DiagonalWin()` that takes a constant string reference parameter. It returns true if the grid (the parameter) has a winner in a diagonal; otherwise, it returns false.