Python Course 2023 - Assignment

Torkil Thomsen

Python Assignemnt 5

Added comments are in bold or cursive to increase the understanding of the problems.

To reduce the possibility of software assistance or other helping tools, the assignment must be completed only with the tools from chapter 1 to 7.

Exercise 7.10 & 7.11 Challenge Project: Tic-Tac-Toe with player against the computer (Page 277)

Part 1 and 2 are related to 7.10 and 7.11, but part 3 is an added logic

Part 1. Write a script to play two dimensional Tic-Tac-Toe between two human players who alternate entering their moves on the same computer. Use a 3-by-3 two dimensional array. Each player indicates their moves by entering a pair of numbers representing the row and colmun indices of the square in whichthey want to place their mark, either an "X" or an "O". When the first player moves, place an "X" in the specified square. When the second player moves, place an "O" in the specified Square. Each move must be to an empty square. After each move, determine whether the game has been won and whether it's a draw.

Part 2. Modify your script from the previous exercise so that the computer makes the moves for one of the players. Also, allow the player to specify whether he or she wants to go first or second.

To keep your code, it's ideal to create a menu to play against a player or the computer. The computer should be simple and do random actions.

Part 3. Modify your script to handle single digits for the movements of the players.

It is obligatory to use numpy as it's the tool taught in this chapter. Before coding it's vital to understand the necessary tools to complete this assignment to make your code more clearly written. This will be discussed during lectures. An example of the game can be seen below 1:

```
Welcome to Tic Tac Toe!
The rules are simple, get 3 of your marks aligned up either in a row, column or diagonal manner to win the game.
Would you like to play a game of Tic Tac Toe? (Y/N): Y

Below board indicates how to choose your position.
   |   |      1 | 2 | 3
-----------   -----------
   |   |      4 | 5 | 6
-----------   -----------
   |   |      7 | 8 | 9
Please enter 1 or 2, whether you want to go first or second: 1
Which position would you like to choose? 1

 X |   |      1 | 2 | 3
-----------   -----------
   |   |      4 | 5 | 6
-----------   -----------
   |   |      7 | 8 | 9

cpu moves:
 X |   |      1 | 2 | 3
-----------   -----------
   | O |      4 | 5 | 6
-----------   -----------
   |   |      7 | 8 | 9

Which position would you like to choose? 2

 X | X |      1 | 2 | 3
-----------   -----------
   | O |      4 | 5 | 6
-----------   -----------
   |   |      7 | 8 | 9

cpu moves:
 X | X |      1 | 2 | 3
-----------   -----------
 O | O |      4 | 5 | 6
-----------   -----------
   |   |      7 | 8 | 9

Which position would you like to choose?
```

Figure 1: Example of game play