tictactoe

November 9, 2024

[3]:

*# TICTACTOE*

print("Name: Vismay Pawar N", "USN: 1BM22CS291", sep="**\n**")

board = {1: ' ', 2: ' ', 3: ' ',

4: ' ', 5: ' ', 6: ' ',

7: ' ', 8: ' ', 9: ' '}

**def** printBoard(board):

print(board[1] + '|' + board[2] + '|' + board[3]) print('-+-+-')

print(board[4] + '|' + board[5] + '|' + board[6]) print('-+-+-')

print(board[7] + '|' + board[8] + '|' + board[9]) print('**\n**')

**def** spaceFree(pos):

**return** board[pos] == ' '

**def** checkWin():

|  |  |  |  |
| --- | --- | --- | --- |
| win\_conditions = [(1, 2, 3), (4, 5, 6), | (7, 8, 9), | (1, 4, | 7), |
| (2, 5, 8), (3, 6, 9), | (1, 5, 9), | (3, 5, | 7)] |

**for** x, y, z **in** win\_conditions:

**if** board[x] == board[y] == board[z] != ' ':

# return True return False

**def** checkDraw():

**return** all(board[key] != ' ' **for** key **in** board)

**def** insertLetter(letter, position):

**if** spaceFree(position): board[position] = letter printBoard(board)

**if** checkWin(): print(f'**{**letter**}** wins!') **return True**

**elif** checkDraw(): print('Draw!') **return True**

# else:

print('Position taken, please pick a different position.')

# return False

player = 'O' bot = 'X'

**def** playerMove():

position = int(input('Enter position for O: '))

**while not** spaceFree(position):

position = int(input('Position taken. Enter a new position for O: '))

**return** insertLetter(player, position)

**def** compMove(): bestScore = -1000

bestMove = 0

**for** key **in** board.keys():

**if** spaceFree(key): board[key] = bot

score = minimax(board, **False**) board[key] = ' '

**if** score > bestScore: bestScore = score bestMove = key

**return** insertLetter(bot, bestMove)

**def** minimax(board, isMaximizing):

**if** checkWin():

**return** 1 **if not** isMaximizing **else** -1

**elif** checkDraw():

# return 0

**if** isMaximizing: bestScore = -1000

**for** key **in** board.keys():

**if** spaceFree(key): board[key] = bot

score = minimax(board, **False**) board[key] = ' '

bestScore = max(score, bestScore)

**return** bestScore

# else:

bestScore = 1000

**for** key **in** board.keys():

**if** spaceFree(key): board[key] = player

score = minimax(board, **True**) board[key] = ' '

bestScore = min(score, bestScore)

**return** bestScore

printBoard(board) gameOver = **False while not** gameOver:

gameOver = compMove() **or** playerMove()

Name: Vismay pawar N USN: 1BM22CS331

| |

-+-+-

| |

-+-+-

| |

|  |  |  |
| --- | --- | --- |
| X| |  -+-+-  | |  -+-+-  | | |  | |
| Enter X| |  -+-+-  |O|  -+-+-  | | | position for O: | 5 |
| X|X|  -+-+-  |O|  -+-+-  | | |  |  |
| Enter X|X|O  -+-+-  |O| | position for O: | 3 |

-+-+-

| |

X|X|O

-+-+-

|O|

-+-+-

X| |

Enter position for O: 4 X|X|O

-+-+-

O|O|

-+-+-

X| |

X|X|O

-+-+-

O|O|X

-+-+-

X| |

Enter position for O: 8 X|X|O

-+-+-

O|O|X

-+-+-

X|O|

X|X|O

-+-+-

O|O|X

-+-+-

X|O|X Draw!