

Practical 7
Name: Aaron Rocque
Batch: A2
Roll No: 31
Subject: AI Lab

Code:

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import os
import time

board = [' ',' ',' ',' ',' ',' ',' ',' ',' ',' ',' ',' ',' ',' ',' ',' ']
Player = 1
flag = 1
previous = 0

#Flags for the game
Win = 1
Draw = -1
Running = 0

Game = Running
Mark = 'X'

#This Function Draws Game Board
def DrawBoard():
    print(" %c | %c | %c " % (board[1],board[2],board[3]))
    print("____|____|____")
    print(" %c | %c | %c " % (board[4],board[5],board[6]))
    print("____|____|____")
    print(" %c | %c | %c " % (board[7],board[8],board[9]))
    print("   |   |   ")

#This Function Checks position is empty or not
def CheckPosition(x):
    if(board[x] == ' '):
        return True
    else:
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        return False

#This Function Checks player has won or not
def CheckWin():
    global Game
    #Horizontal winning condition
    if(board[1] == board[2] and board[2] == board[3] and board[1] != ' '):
        Game = Win
    elif(board[4] == board[5] and board[5] == board[6] and board[4] != ' '):
        Game = Win
    elif(board[7] == board[8] and board[8] == board[9] and board[7] != ' '):
        Game = Win
    #Vertical Winning Condition
    elif(board[1] == board[4] and board[4] == board[7] and board[1] != ' '):
        Game = Win
    elif(board[2] == board[5] and board[5] == board[8] and board[2] != ' '):
        Game = Win
    elif(board[3] == board[6] and board[6] == board[9] and board[3] != ' '):
        Game = Win
    #Diagonal Winning Condition
    elif(board[1] == board[5] and board[5] == board[9] and board[5] != ' '):
        Game = Win
    elif(board[3] == board[5] and board[5] == board[7] and board[5] != ' '):
        Game = Win
    #Match Tie or Draw Condition
    elif(board[1] != ' ' and board[2] != ' ' and board[3] != ' ' and board[4] !=
' ' and board[5] != ' ' and board[6] != ' ' and board[7] != ' ' and board[8] != '
' and board[9] != ' '):
        Game = Draw
    else:
        Game = Running

def IntelligentComputer():
    global Player
    global flag
    global previous
    flag = 0
    if(CheckPosition(5)):
        print("Player 2's chance")
        Mark = 'O'
        board[5] = Mark
        CheckWin()
        DrawBoard()
        DumbHuman()
        if(CheckPosition(1) and (CheckPosition(3) or CheckPosition(7))):

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    print("Player 2's chance")
    Mark = 'O'
    board[1] = Mark
    CheckWin()
    DrawBoard()
    DumbHuman()
    if(CheckPosition(3)):
        print("Player 2's chance")
        Mark = 'O'
        board[3] = Mark
        CheckWin()
        DrawBoard()
        DumbHuman()
    elif(CheckPosition(7)):
        print("Player 2's chance")
        Mark = 'O'
        board[7] = Mark
        CheckWin()
        DrawBoard()
        DumbHuman()
elif(CheckPosition(3) and CheckPosition(7)):
    print("Player 2's chance")
    Mark = 'O'
    board[3] = Mark
    CheckWin()
    DrawBoard()
    DumbHuman()
    if(CheckPosition(7)):
        print("Player 2's chance")
        Mark = 'O'
        board[7] = Mark
        CheckWin()
        DrawBoard()
        DumbHuman()
#if other positions are already ocupied, then no need to check for 1
elif(CheckPosition(1) and (CheckPosition(3) or CheckPosition(7))):
    print("Player 2's chance")
    Mark = 'O'
    board[1] = Mark
    CheckWin()
    DrawBoard()
    DumbHuman()
    if(CheckPosition(7)):
        print("Player 2's chance")
        Mark = 'O'

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board[7] = Mark
CheckWin()
DrawBoard()
DumbHuman()
if(CheckPosition(3)):
    print("Player 2's chance")
    Mark = 'O'
    board[3] = Mark
    CheckWin()
    DrawBoard()
    DumbHuman()
elif(CheckPosition(9)):
    print("Player 2's chance")
    Mark = 'O'
    board[9] = Mark
    CheckWin()
    DrawBoard()
    DumbHuman()
if(CheckPosition(3)):
    print("Player 2's chance")
    Mark = 'O'
    board[3] = Mark
    CheckWin()
    DrawBoard()
    DumbHuman()
    if(CheckPosition(9)):
        print("Player 2's chance")
        Mark = 'O'
        board[9] = Mark
        CheckWin()
        DrawBoard()
        DumbHuman()

elif(CheckPosition(3) and (CheckPosition(7) or CheckPosition(1))):
    print("Player 2's chance")
    Mark = 'O'
    board[3] = Mark
    CheckWin()
    DrawBoard()
    DumbHuman()
    if(CheckPosition(7)):
        print("Player 2's chance")
        Mark = 'O'
        board[7] = Mark
        CheckWin()

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        DrawBoard()
        DumbHuman()
        if(CheckPosition(9)):
            print("Player 2's chance")
            Mark = 'O'
            board[9] = Mark
            CheckWin()
            DrawBoard()
            DumbHuman()
        elif(CheckPosition(3)):
            print("Player 2's chance")
            Mark = 'O'
            board[3] = Mark
            CheckWin()
            DrawBoard()
            DumbHuman()
    if(CheckPosition(9)):
        print("Player 2's chance")
        Mark = 'O'
        board[9] = Mark
        CheckWin()
        DrawBoard()
        DumbHuman()
    if(CheckPosition(1)):
        print("Player 2's chance")
        Mark = 'O'
        board[1] = Mark
        CheckWin()
        DrawBoard()
        DumbHuman()

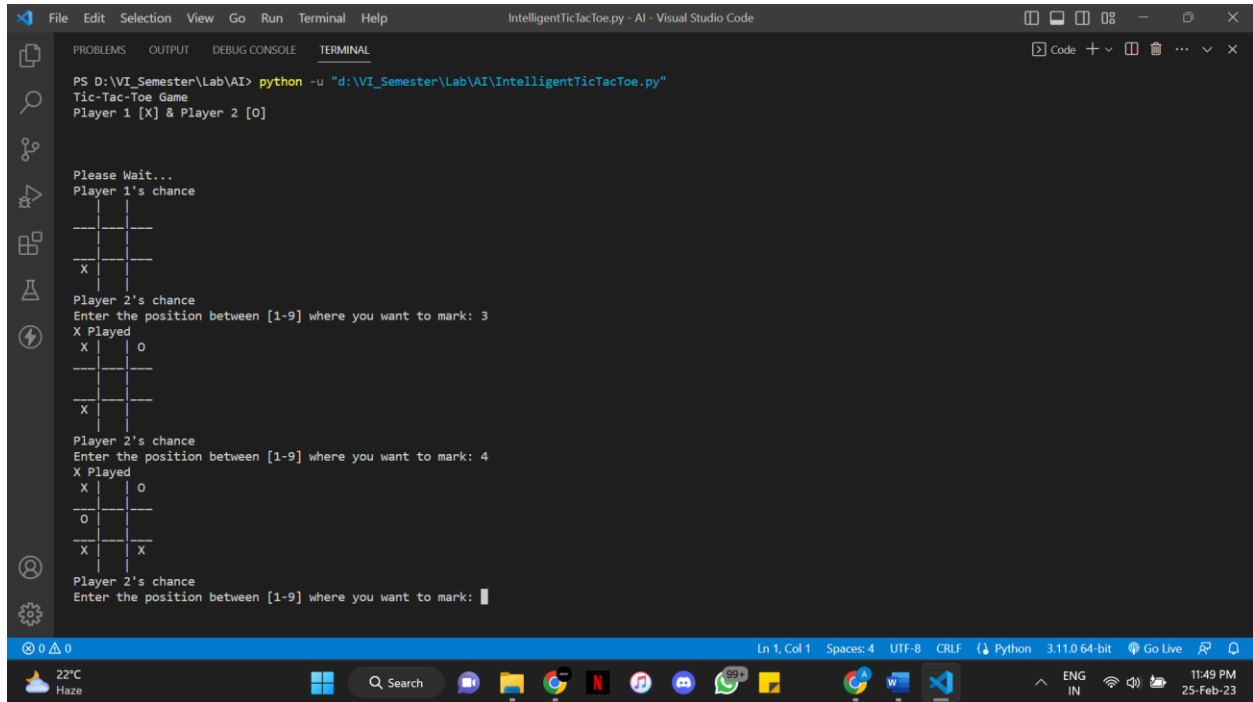
def DumbHuman():
    print("Player 1's chance")
    global Player
    global flag
    global previous
    choice = int(input("Enter the position between [1-9] where you want to mark:
"))
    if(CheckPosition(choice)):
        Mark = 'X'
        board[choice] = Mark
        Player += 1
        CheckWin()
        if(flag == 1):
            IntelligentComputer()

```

```
print("Tic-Tac-Toe Game")
print("Player 1 [X] & Player 2 [O]\n")
print()
print()
print("Please Wait...")
time.sleep(3)
while(Game == Running):
    #os.system('cls')
    DrawBoard()
    if(Player % 2 != 0):
        DumbHuman();

os.system('cls')
DrawBoard()
if(Game==Draw):
    print("Game Draw")
elif(Game==Win):
    Player -= 1
    if(Player %2 != 0):
        print("Player 1 Won")
    else:
        print("Player 2 Won")
```

Output:



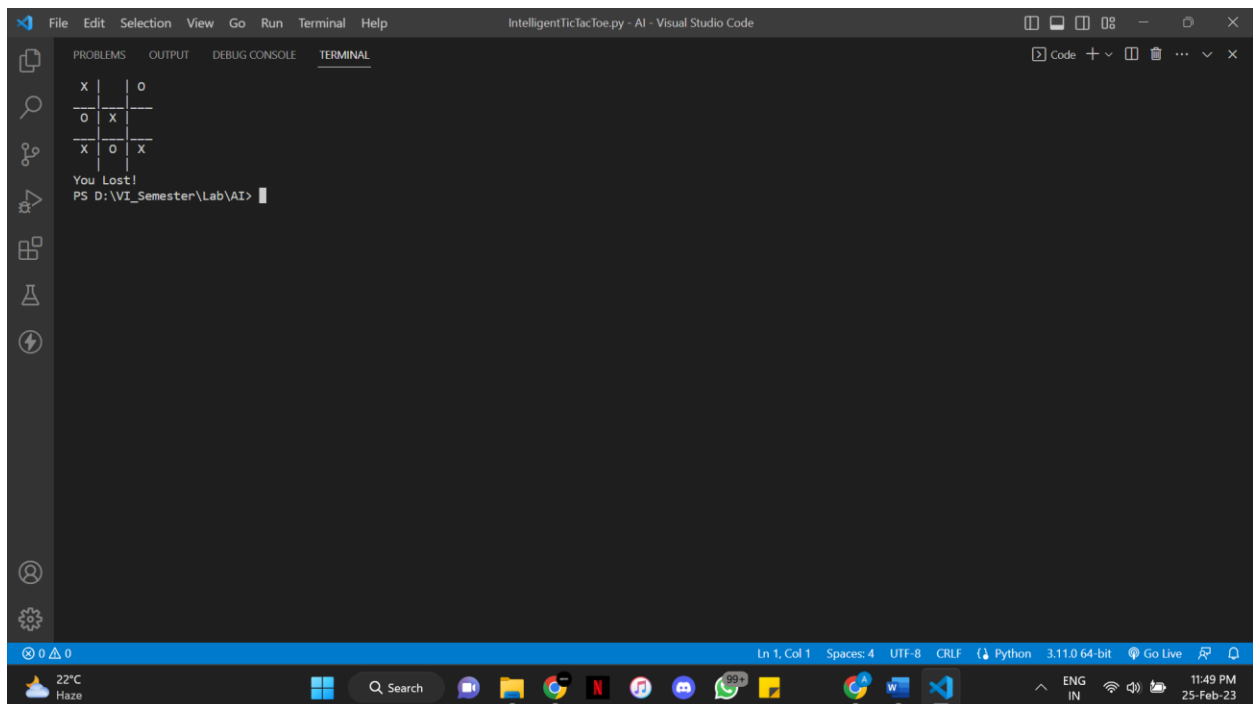
```
PS D:\VI_Semester\Lab\AI> python -u "d:\VI_Semester\Lab\AI\IntelligentTicTacToe.py"
Tic-Tac-Toe Game
Player 1 [X] & Player 2 [O]

Please Wait...
Player 1's chance
  | | 
--|--
X  | | 
  | | 

Player 2's chance
Enter the position between [1-9] where you want to mark: 3
X Played
  | | 
--|--
X  | O 
  | | 

Player 2's chance
Enter the position between [1-9] where you want to mark: 4
X Played
  | | 
--|--
X  | O 
O  | | 
  | | 

Player 2's chance
Enter the position between [1-9] where you want to mark: 
```



```
  | | 
--|--
X  | O 
O  | X 
  | | 
X  | O 
  | | 

You Lost!
PS D:\VI_Semester\Lab\AI> 
```

