Lab 1:Tic Tac Toe

Input:

print("USN: 1BM22CS332")

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():

if (board[1] == board[2] == board[3] != ' ' or

board[4] == board[5] == board[6] != ' ' or

board[7] == board[8] == board[9] != ' ' or

board[1] == board[5] == board[9] != ' ' or

board[3] == board[5] == board[7] != ' ' or

board[1] == board[4] == board[7] != ' ' or

board[2] == board[5] == board[8] != ' ' or

board[3] == board[6] == board[9] != ' '):

return True

return False

def checkMoveForWin(move):

if (board[1] == board[2] == board[3] == move or

board[4] == board[5] == board[6] == move or

board[7] == board[8] == board[9] == move or

board[1] == board[5] == board[9] == move or

board[3] == board[5] == board[7] == move or

board[1] == board[4] == board[7] == move or

board[2] == board[5] == board[8] == move or

board[3] == board[6] == board[9] == move):

return True

return False

def checkDraw():

return all(space != ' ' for space in board.values())

def insertLetter(letter, position):

if spaceFree(position):

board[position] = letter

printBoard(board)

if checkDraw():

print('Draw!')

return "Game Over"

elif checkWin():

if letter == 'X':

print('Bot wins!')

return "Game Over"

else:

print('You win!')

return "Game Over"

else:

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

position = int(input('Enter new position: '))

insertLetter(letter, position)

player = 'O'

bot = 'X'

def playerMove():

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

return insertLetter(player, position)

def compMove():

bestScore = -1000

bestMove = 0

for key in board.keys():

if board[key] == ' ':

board[key] = bot

score = minimax(board, False)

board[key] = ' '

if score > bestScore:

bestScore = score

bestMove = key

result = insertLetter(bot, bestMove)

if result == "Game Over":

return "Game Over"

def minimax(board, isMaximizing):

if checkMoveForWin(bot):

return 1

elif checkMoveForWin(player):

return -1

elif checkDraw():

return 0

if isMaximizing:

bestScore = -1000

for key in board.keys():

if board[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 board[key] == ' ':

board[key] = player

score = minimax(board, True)

board[key] = ' '

bestScore = min(score, bestScore)

return bestScore

while True:

if compMove() == "Game Over":

break

if playerMove() == "Game Over":

Break

Output:

