TIC TAC TOE GAME

IMPLEMENTATION

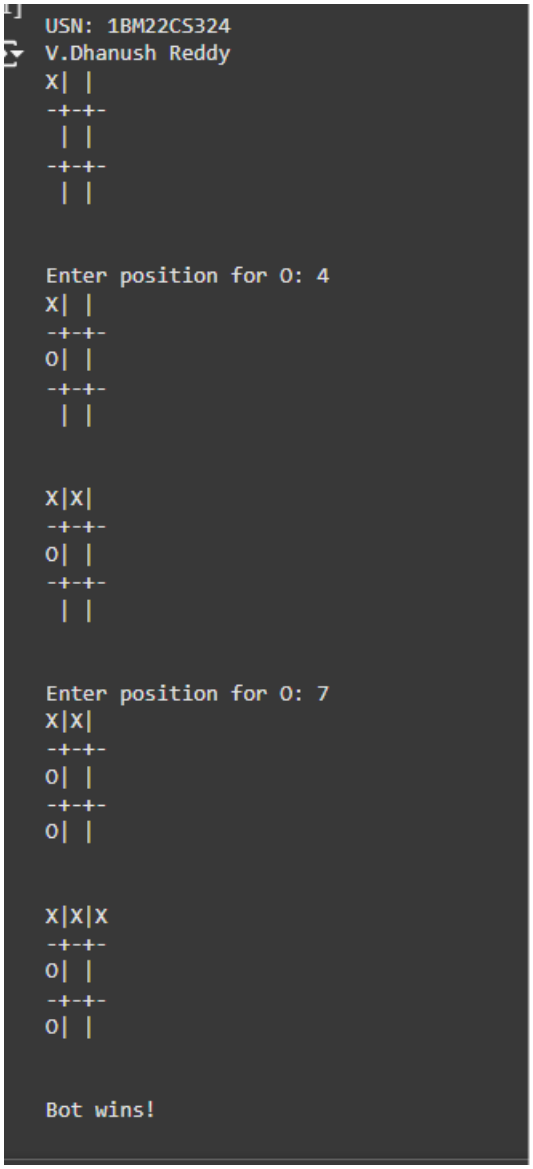
```
print("USN: 1BM22CS324")
print("V.Dhanush Reddy")


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:


USN: 1BM22CS324
V.Dhanush Reddy
X| |
-+-+-
| |
-+-+-
| |
Enter position for O: 4
X| |
-+-+-
O| |
-+-+-
| |
X|X|
-+-+-
O| |
-+-+-
| |
Enter position for O: 7
X|X|
-+-+-
O| |
-+-+-
O| |
X|X|X
-+-+-
O| |
-+-+-
O| |
Bot wins!

OBSERVATION: