

## Lab -1

classmate

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TIC TAC TOE :-

```
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):  
    if (board[pos] == ''):  
        return True  
    else:  
        return False
```

```
def checkWin():  
    if (board[1] == b[2] and b[1] == b[3] and  
        b[1] != ''):  
        return True  
    elif (board[4] == b[5] and b[4] == b[6] and b[4] != ''):  
        return True  
    elif (b[7] == b[8] and b[7] == b[9] and b[7] != ''):  
        return True  
    elif (b[1] == b[5] and b[1] == b[9] and b[1] != ''):  
        return True  
    elif (b[3] == b[5] and b[3] == b[7] and b[3] != ''):  
        return True  
    elif (b[1] == b[4] and b[1] == b[7] and b[1] != ''):  
        return True
```

```

elif (b[2] == b[5] and b[2] == b[8] and b[2] != ' '):
    @ return True.
else:
    return False.

```

```

def checkmove forwin(move):
    if (b[1] == b[2] and b[1] == b[3] and b[1] == move):
        return True
    elif (b[4] == b[5] and b[4] == b[6] and b[4] == move):
        return True
    elif (b[7] == b[8] and b[7] == b[9] and b[7] == move):
        return True
    elif (b[1] == b[5] and b[3] == b[7] and b[3] == move):
        return True
    elif (b[3] == b[5] and b[3] == b[7] and b[3] == move):
        return True
    elif (b[2] == b[5] and b[2] == b[8] and b[2] == move):
        return True
    else:
        return False.

```

```

def checkDraw():

```

```

    for key in board.keys():
        if (board[key] == ' '):
            return False
    return True.

```

```

def insertLetter(letter, position):
    if (spacefree(position)):
        board[position] = letter
        printBoard(board)
        if (checkDraw()):
            print('Draw!')

```

```
elif (checkwin()):
```

```
    if (letter == 'x'):
```

```
        print('Bot wins!')
```

```
    else:
```

```
        print('you win!')
```

```
    return
```

```
else:
```

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

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

```
    insertLetter(letter, position)
```

```
    return
```

```
player = 'o'
```

```
bot = 'x'
```

```
def playermove():
```

```
    position = int(input('Enter position for o:'))
```

```
    insertLetter(player, position)
```

```
    return
```

```
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
```

```
    insertLetter(bot, bestMove)
```

```
    return
```

```
def minimax(board, ismaxing):  
    if (checkmoveforwin(bot)):  
        return 1  
    elif (checkmoveforwin(player)):  
        return -1  
    elif (checkdraw()):  
        return 0
```

```
if ismaxing:  
    bestScore = -1000
```

```
for key in board.keys():  
    if board[key] == '':  
        board[key] = bot  
        score = minimax(board, False)  
        board[key] = ''  
        if (score > bestScore):  
            bestScore = score  
    return bestScore
```

```
else:
```

```
    bestScore = 1000
```

```
while not checkwin():  
    compmove()  
    playermove()
```

09.10 ✓