11/22 Exp:- Tic Tac Toe game.

Aim: To implement tic tac toe game using min max algorithm.

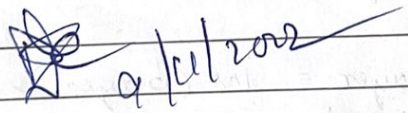
Code:

```
def Const Board(board):
    print("Current State of Board : \n\n");
    for i in range (0,9):
        if ((i>0) and (i%3)==0):
            print("\n");
        if (board[i]==0):
            print("_ ", end=" ");
        if (board[i]==1):
            print("0 ", end=" ");
        if (board[i]==-1):
            print("X ", end=" ");
    print("\n\n");

def User1Turn(board):
    pos = int(pos);
    if (board[pos-1]!=0):
        print("Wrong Move!! ");
        exit(0);
    board[pos-1] = -1;

def User2Turn(board):
    pos = input("Enter 0's position from [1-9]
                : ");
    if (board[pos-1]!=0):
        print(0);
        exit(0);
    board[pos-1] = 1;

def minmax(board, player):
    x = analyze board(board);
```

```
if if(x! =0):
        return (x* player);
    pos = -1;
    value = -2;
    for i in range (0,9):
        if (board[i] == 0):
            board[i] = player;
            score = -minimax ( board,
            (player * -1));

            if ( score > value):
                value = score;
                pos = i;
            board[i] = 0;

    if (pos == -1):
        return 0;
    return value;


def compTurn(board):
    pos = -1;
    value = -2;
    for( i in range (0,9):
        if (board[i] == 0):
            board[i] = 1;
            score = -minimax (board, -1);
            board[i] = 0;
            if(score > value):
                value = score;
                pos = i;

    board[pos] = 1;
```

```
def analyzeboard(board):
    cb = [[0,1,2],[3,4,5],[6,7,8],[0,3,6],
[1,4,7],[2,5,8],[0,4,8],[2,4,6]];

    for i in range(0,8):
        if(board[cb[i][0]] != 0 and
            board[cb[i][0]] == board[cb[i][1]]
and
            board[cb[i][0]] == board[cb[i][2]]):
            return board[cb[i][2]];
    return 0;

def main():
    choice = input("Enter 1 for single player, 2
                for multiplayer : ");
    choice = int(choice);
    board[0,0,0,0,0,0,0,0,0];
    if(choice == 1):
        print("Computer : O  vs.  You : X");
        player = input("Enter to play 1(st) or 2(nd)
                                : ");
        player = int(player);
        for i in range(0,9):
            if(analyzeboard(board) == 0):
                break;
            if((i+player)%2 == 0):
                compTurn(board);
            else:
                constBoard(board);
                User1Turn(board);

    else:
        for i in range(0,9):
            if(analyzeboard(board) != 0):
                break;
```

```
if ((i)%2 == 0):
    const Board(board);
    User1Turn(board);
else:
    const Board(board);
    User2Turn(board);

x = analyzeboard(board);
if (x==0):
    const Board(board);
    print("Draw!!!")
if (x==-1):
    const Board(board);
    print("X wins!!! Y lose!!!")
if (x==1):
    const Board(board);
    print("X loose!!! O wins!!!")

main()
```



classmate
Date
Page

Tic Tac Toe o/p:

Enter position between 1-9 : 1

X - -
O - -
- - -

Enter position between 1-9 : 2

X X -
O - O
- - -

Enter position between 1-9 : 3

X X X
O - O
- O -

X is the winner!

14/12/22

State space tree: