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AI - Lab - test - 1

Program : Tic - tac - toe , 2 agent (computer v/s computer)

Pseudo code :

```
import random #Library.
#set up the board/table
table = [ ] * 9   #positions.
#set up winning positions: All possible combinations.
pos = [[0, 1, 2], [0, 3, 6], [2, 4, 6], [0, 4, 8], [1, 4, 7],
       [3, 4, 5], [2, 5, 8], [6, 7, 8]]
#display the board :
def dispfunc ( ):
    print (board[0], end = " ")
    print ( board[1], end=" ")
    print (board [2], end = " ")
    .
    .
    .
```

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```
#check if the position is empty.
def check(pos):
    if(board[pos]==" "):
        return 1
    else: 0

#win check
def checkWin(player):
    for x in winningPos:
        if board[x[0]] = board[x[1]] and
            board[x[1]] = board[x[2]] and
                board[x[0]]!= " ":

            print(player + " has won the game")
            return 0
    for i in board:
        if i == " ":
            return 1

print("Its a Draw match")
```

```
# check player/computer 2 win
def algowin:
    m = -1
    for y in winpos:
        if (board[y[0]]==player and board[y[1]]==player)
            and check(y[2])==1:
                m = y[2]
                break
        elif (board[y[1]]==player and board[y[2]]==player)
            and check(y[0])==1:
                m = y[0]
                break
        elif (board[y[0]]==player and board[y[2]]==player
            and check(y[1])==1:
                m = y[1]
                break
    return m

# to halt/stop a player):
    n = -1
# same function as above.
```

trying to win:

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```
def try(player):
    n = -1
    for x in winPos:
        if (board[x[0]] == player and check[x[2]] == 1)
            if check(x[2] == 1):
                n = x[2]
                break
            elif check(x[1] == 1):
                n = x[1]
                break
    elif board x 1 = player, check x[0] == 1 &
        check(x[2] = 1):
            if check x[0] = 1
                n = x[2]
                break
    elif board[x[2]] = player, cx[0] == 1, c[x1] = 1:
            if check(x[0] = 1)
                n = x[0]
                break
            elif check(x[1] = 1):
                n = x[1]
                break
```

```
# Assigning random positions
def randpos():
    while(1):
        n = random.randint(0, 8)
        if check(n) == 1
        return n;

# Insert positions: [def play(x, y)]
    m = algoWin(x)
    if m == -1
        m = stopplay(y)
    if m == -1:
        m = algoTrywin(x)
    if m == -1:
        m = randpos()
    print("Inserted at ");
    print(m)
    board[m] = xc

def display():
    board.display()
    flag = 1
```

```
while(flag):
    print("Computer 1 playing")
    algoplay("X","O")
    boardDisplay()
if checkwin(X==1):
    flag=0:

if __name__ == "__main__":
    play()
```