12.Write the python program for Tic Tac Toe game.

Program:

```
import numpy as np
import random
from time import sleep

def create_board():
	return(np.array([[0, 0, 0],
                                        [0, 0, 0],
                                        [0, 0, 0]]))

def possibilities(board):
	l = []

	for i in range(len(board)):
		for j in range(len(board)):

			if board[i][j] == 0:
				l.append((i, j))
	return(l)

def random_place(board, player):
	selection = possibilities(board)
	current_loc = random.choice(selection)
	board[current_loc] = player
	return(board)

def row_win(board, player):
	for x in range(len(board)):
		win = True

		for y in range(len(board)):
			if board[x, y] != player:
				win = False
				continue

		if win == True:
			return(win)
	return(win)
```

```
def col_win(board, player):
        for x in range(len(board)):
                win = True

                for y in range(len(board)):
                        if board[y][x] != player:
                                win = False
                                continue

                if win == True:
                        return(win)
        return(win)

def diag_win(board, player):
        win = True
        y = 0
        for x in range(len(board)):
                if board[x, x] != player:
                        win = False
        if win:
                return win
        win = True
        if win:
                for x in range(len(board)):
                        y = len(board) - 1 - x
                        if board[x, y] != player:
                                win = False
        return win

def evaluate(board):
        winner = 0

        for player in [1, 2]:
                if (row_win(board, player) or
                        col_win(board,player) or
                        diag_win(board,player)):

                        winner = player

        if np.all(board != 0) and winner == 0:
```

```
                winner = -1
        return winner

def play_game():
        board, winner, counter = create_board(), 0, 1
        print(board)
        sleep(2)

        while winner == 0:
                for player in [1, 2]:
                        board = random_place(board, player)
                        print("Board after " + str(counter) + " move")
                        print(board)
                        sleep(2)
                        counter += 1
                        winner = evaluate(board)
                        if winner != 0:
                                break
        return(winner)

# Driver Code
print("Winner is: " + str(play_game()))
```