17/01/23

LAB - 2

TIC-TAC TOE GAME

```
board = [' ' for x in range(10)]

def insertLetter(letter, pos):
    board[pos] = letter

def spaceIsFree(pos):
    return board[pos] == ' '

def printBoard(board):
    print('   |   |')
    print(' ' + board[1] + ' | ' + board[2] + ' | ' + board[3])
    print('   |   |')
    print('-----')
    print('   |   |')
    print(' ' + board[4] + ' | ' + board[5] + ' | ' + board[6])
    print("   |   |")
    print('-----')
    print('   |   |')
    print(" " + board[7] + ' | ' + board[8] + ' | ' + board[9])
    print('   |   |')

def isWinner(bo, le)
    return (bo[7] == le and bo[8] == le and
            bo[9] == le) or (bo[4] == le and
            bo[5] == le and bo[6] == le) or
           (bo[1] == le and bo[2] == le and bo[3] == le)
           or (bo[1] == le and bo[4] == le and bo[7] == le)
          or (bo[2] == le and bo[5] == le and bo[8] == le)
          or (bo[3] == le and bo[6] == le and bo[9] == le)
          or (bo[1] == le and bo[5] == le and bo[9] == le)
          or (bo[3] == le and bo[5] == le and bo[7] == le)
```

```
def playerMove():
    run = True
    while run:
        move = int(input("Select a position to place"))
        if move > 0 and move < 10:
            if spaceIsFree(move):
                run = False
                insertLetter('x', move)
        else:
            print("Enter a number within the range")

~~def compMove():~~

            else:
                print("Space is already occupied")

def compMove():
    posMoves = [x for x, letter in enumerate(boar
                    if letter == ' ' and x != 0)
    move = 0
    for let in ['0', 'x']:
        for i in posMoves:
            boardCopy = board[:]
            boardCopy[i] = let
            if isWinner(boarcopy, let):
                return i
        return None

    ~~winning-move = isWinn~~
    for i in posMoves:
        if i in [1,3,7,9]:
            ~~cornersOpen~~.append(i)
            return random.random(corners)
```

```
if ~~ten~~ 5 in possibleMoves:
    move=5
    return move

edges = list(set(posMoves) & set [2,4,6,8])
if edges:
    return random.random (edges)
```

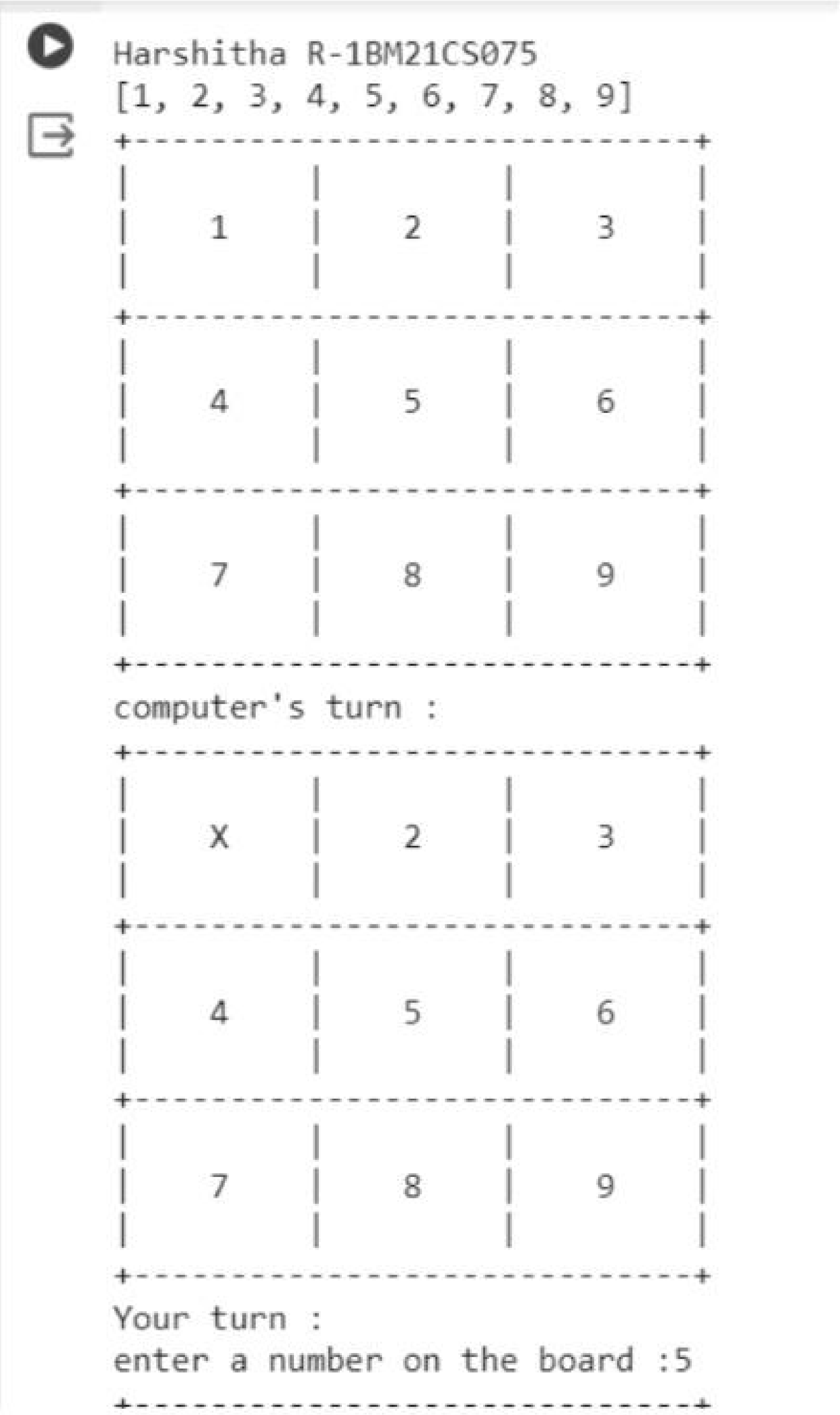
Algorithm:

Player Move:

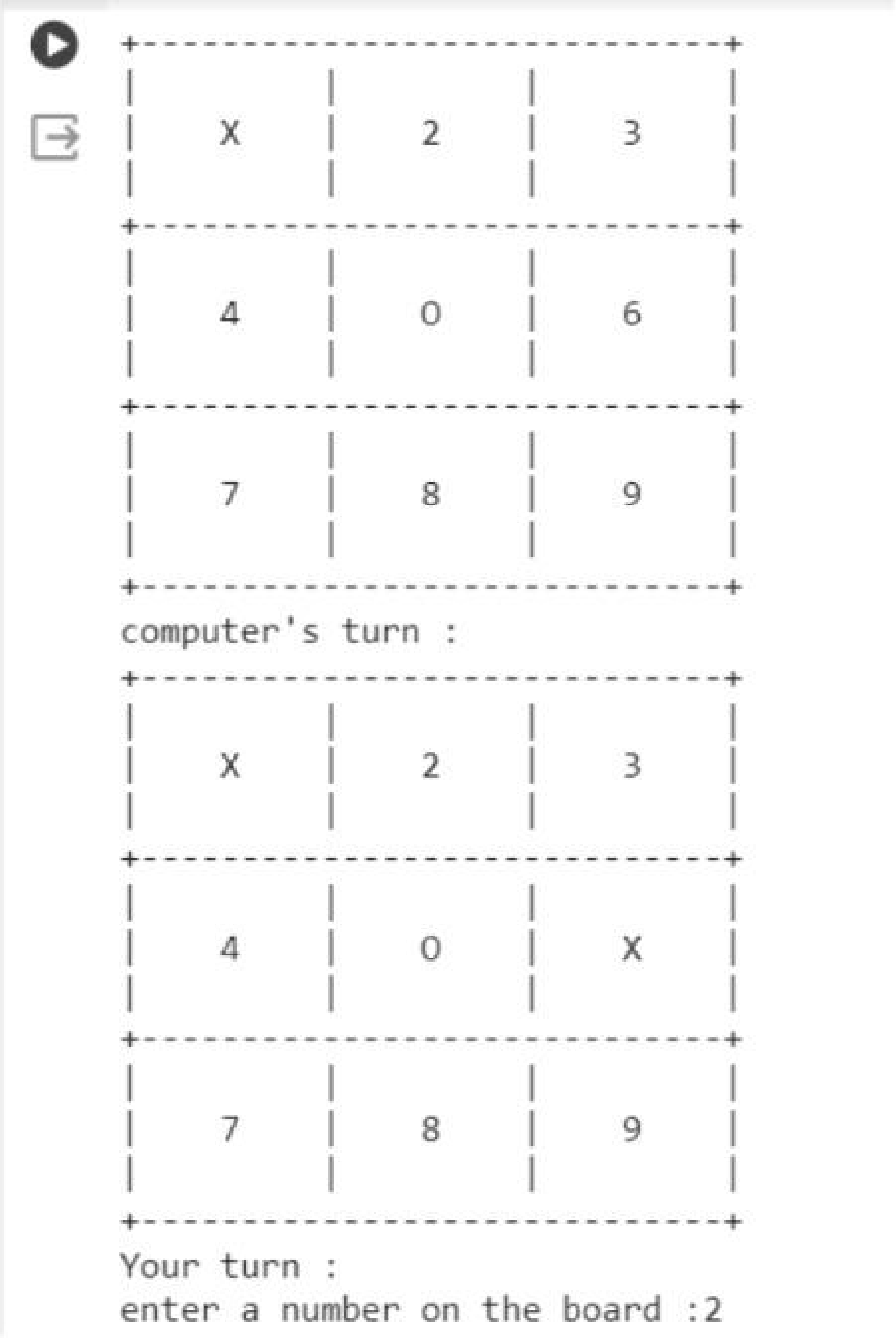
1. Set run to 'True' and enter the loop.
2. While run is True:
   - Take move input from user
   - If move is in range of 1 to 10, check if the space is free:
     - If the space is free, x is inserted
     - If the space is not free, player is asked to enter another number.
   - The loop continues until run=True.

Computer Move:

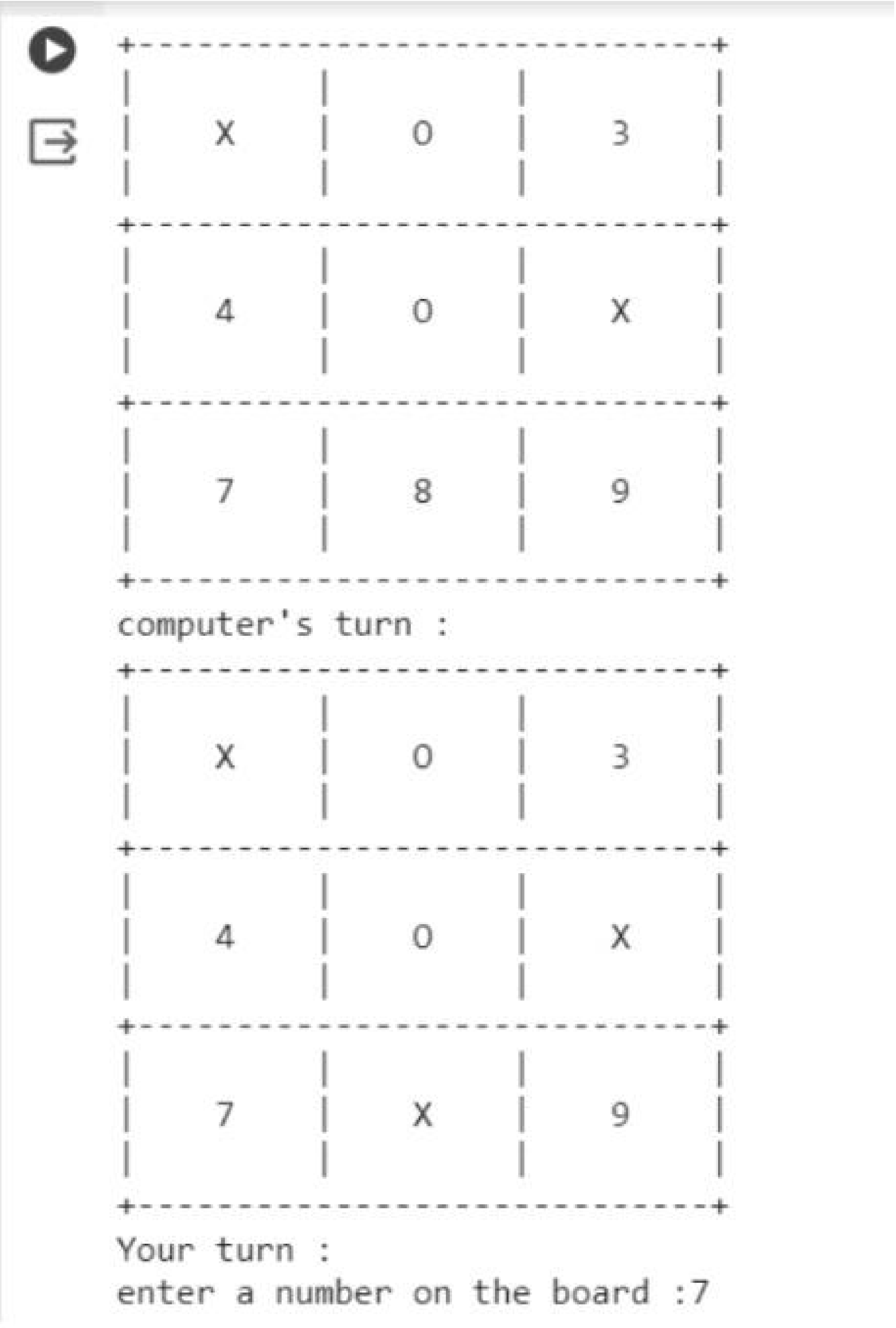
1. Create a list of possible moves consisting of empty spaces in the board.
2. For each move of computer:
   - For each possivble move, create a board copy and check if it is a winning move.
   - If there is no possible moves:
     - Check if empty corners are there and generate a random number among them
     - Check if '5' position is free. Place 'O' there
     - ~~Check~~ If above two condition dount satisfy check for remaining empty positions [2,4,6,8] and generate a random number to place 'O'



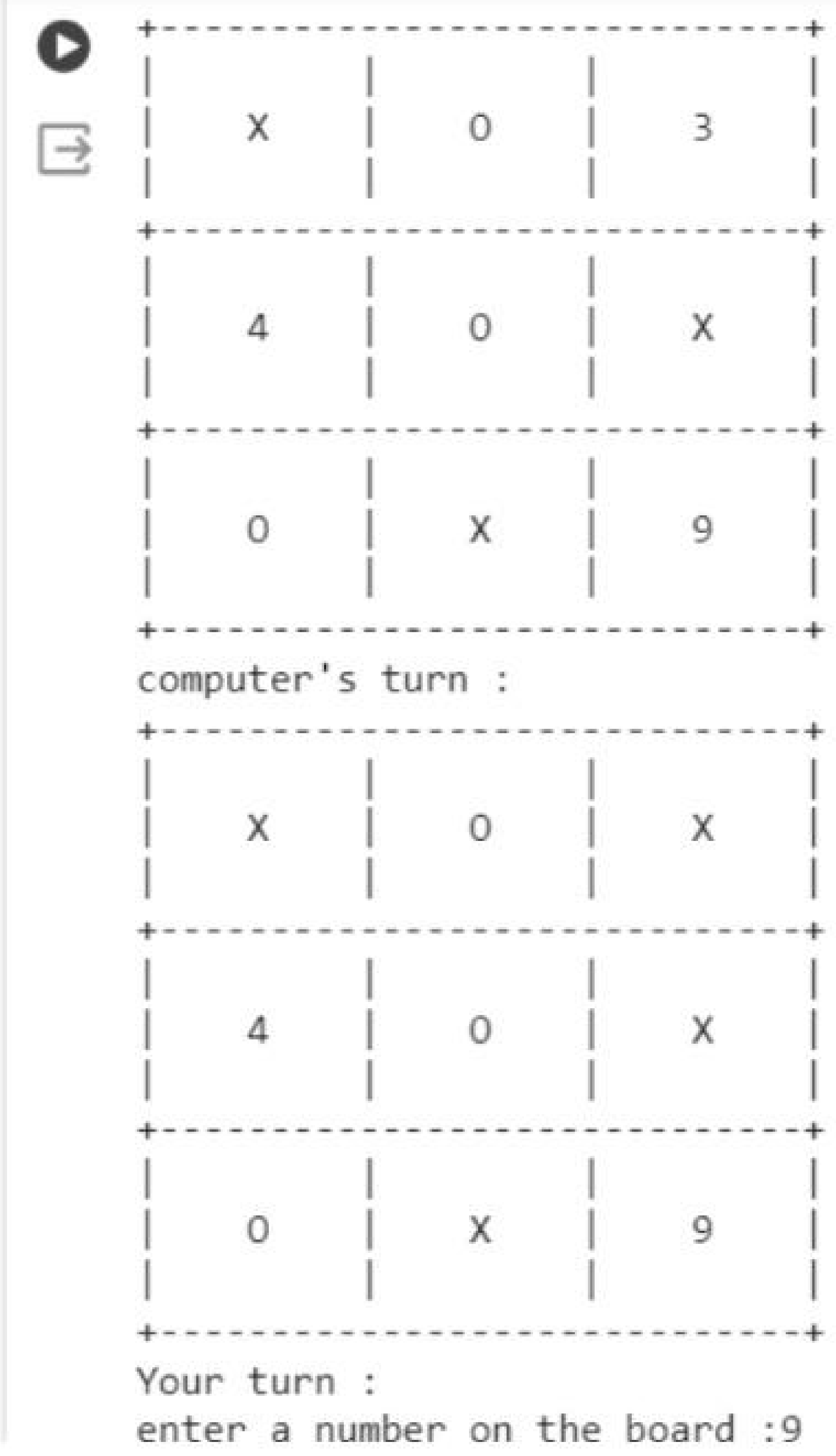
```
Harshitha R-1BM21CS075
[1, 2, 3, 4, 5, 6, 7, 8, 9]
+-------------------------------+
|         |         |         |
|    1    |    2    |    3    |
|         |         |         |
+-------------------------------+
|         |         |         |
|    4    |    5    |    6    |
|         |         |         |
+-------------------------------+
|         |         |         |
|    7    |    8    |    9    |
|         |         |         |
+-------------------------------+
computer's turn :
+-------------------------------+
|         |         |         |
|    X    |    2    |    3    |
|         |         |         |
+-------------------------------+
|         |         |         |
|    4    |    5    |    6    |
|         |         |         |
+-------------------------------+
|         |         |         |
|    7    |    8    |    9    |
|         |         |         |
+-------------------------------+
Your turn :
enter a number on the board :5
+-------------------------------+
```



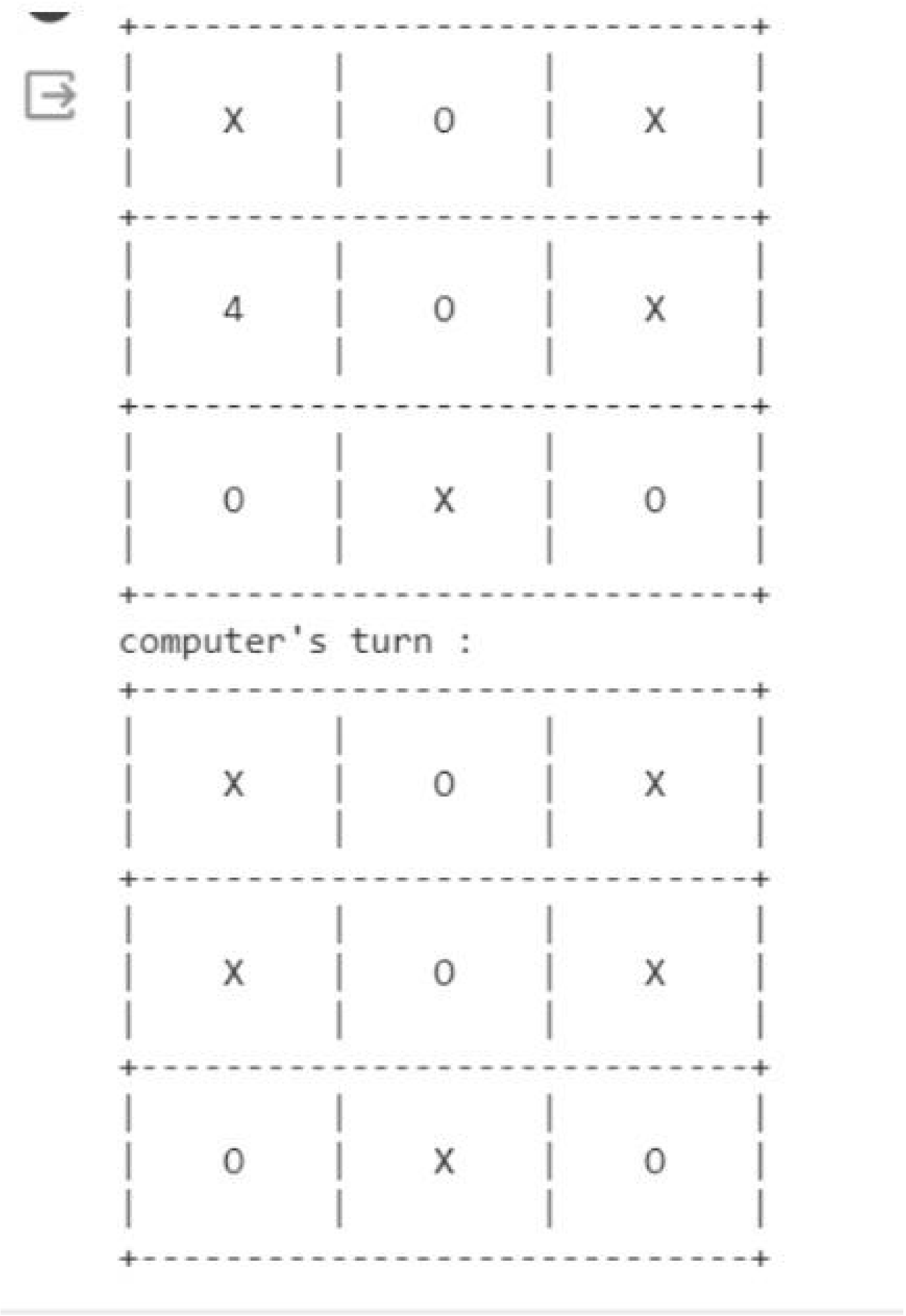
```
+-----------------------------+
|         |         |         |
|    X    |    2    |    3    |
|         |         |         |
+-----------------------------+
|         |         |         |
|    4    |    O    |    6    |
|         |         |         |
+-----------------------------+
|         |         |         |
|    7    |    8    |    9    |
|         |         |         |
+-----------------------------+
computer's turn :
+-----------------------------+
|         |         |         |
|    X    |    2    |    3    |
|         |         |         |
+-----------------------------+
|         |         |         |
|    4    |    O    |    X    |
|         |         |         |
+-----------------------------+
|         |         |         |
|    7    |    8    |    9    |
|         |         |         |
+-----------------------------+
Your turn :
enter a number on the board :2
```



```
+-----------------------------+
|         |         |         |
|    X    |    O    |    3    |
|         |         |         |
+-----------------------------+
|         |         |         |
|    4    |    O    |    X    |
|         |         |         |
+-----------------------------+
|         |         |         |
|    7    |    8    |    9    |
|         |         |         |
+-----------------------------+
computer's turn :
+-----------------------------+
|         |         |         |
|    X    |    O    |    3    |
|         |         |         |
+-----------------------------+
|         |         |         |
|    4    |    O    |    X    |
|         |         |         |
+-----------------------------+
|         |         |         |
|    7    |    X    |    9    |
|         |         |         |
+-----------------------------+
Your turn :
enter a number on the board :7
```



```
+-----------------------------+
|         |         |         |
|    X    |    O    |    3    |
|         |         |         |
+-----------------------------+
|         |         |         |
|    4    |    O    |    X    |
|         |         |         |
+-----------------------------+
|         |         |         |
|    O    |    X    |    9    |
|         |         |         |
+-----------------------------+
computer's turn :
+-----------------------------+
|         |         |         |
|    X    |    O    |    X    |
|         |         |         |
+-----------------------------+
|         |         |         |
|    4    |    O    |    X    |
|         |         |         |
+-----------------------------+
|         |         |         |
|    O    |    X    |    9    |
|         |         |         |
+-----------------------------+
Your turn :
enter a number on the board :9
```



```
+-----------------------------+
|         |         |         |
|    X    |    O    |    X    |
|         |         |         |
+-----------------------------+
|         |         |         |
|    4    |    O    |    X    |
|         |         |         |
+-----------------------------+
|         |         |         |
|    O    |    X    |    O    |
|         |         |         |
+-----------------------------+
computer's turn :
+-----------------------------+
|         |         |         |
|    X    |    O    |    X    |
|         |         |         |
+-----------------------------+
|         |         |         |
|    X    |    O    |    X    |
|         |         |         |
+-----------------------------+
|         |         |         |
|    O    |    X    |    O    |
|         |         |         |
+-----------------------------+
```