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1BM19CS401

TIC TAC TOE – (COMPUTER VS COMPUTER)

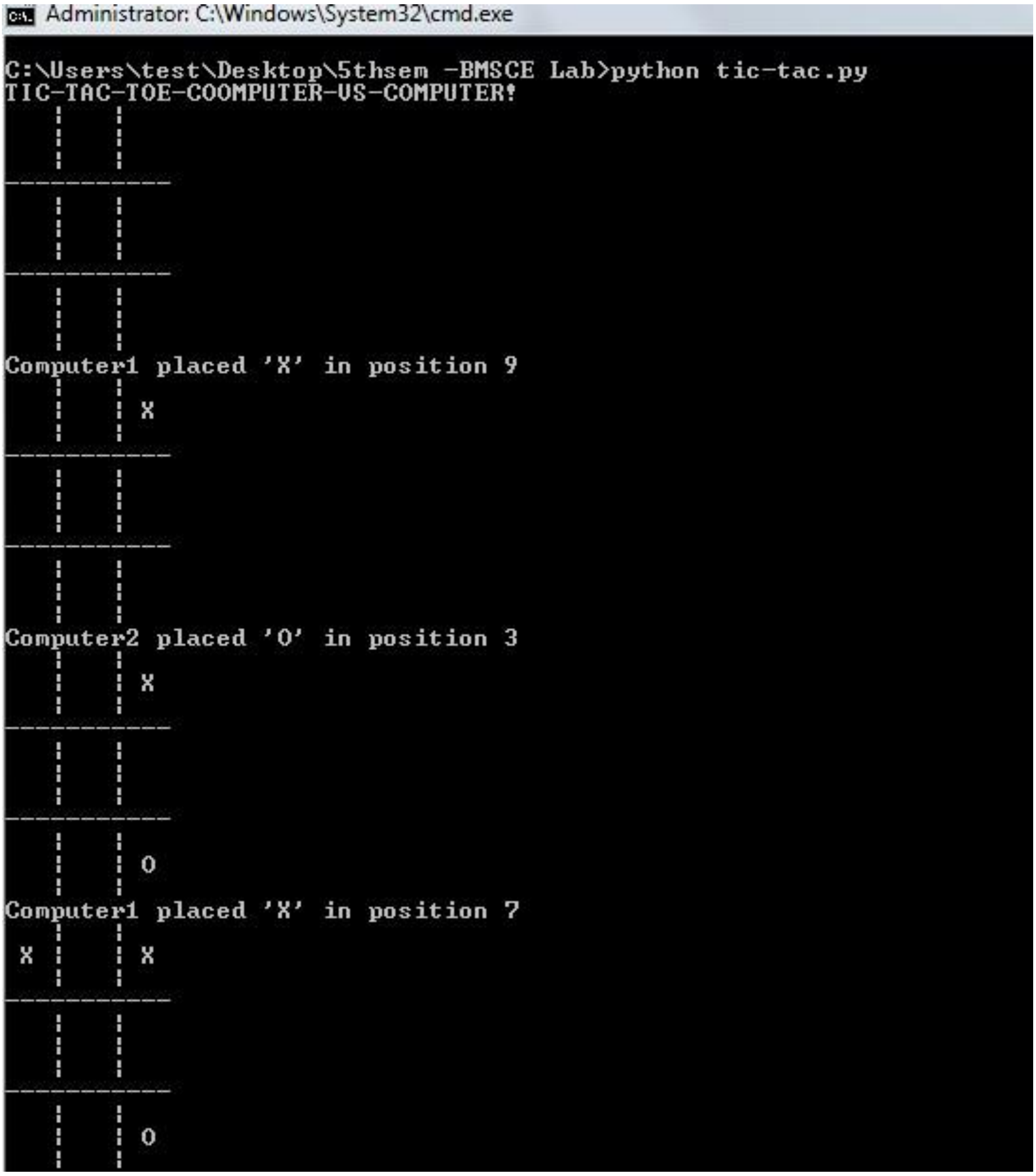
```
# PROGRAM

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

def displayBoard():

   print('   |   |')

   print(f' {board[7]} | {board[8]} | {board[9]}')

   print('   |   |')

   print('-----------')

   print('   |   |')

   print(f' {board[4]} | {board[5]} | {board[6]}')

   print('   |   |')

   print('-----------')

   print('   |   |')

   print(f' {board[1]} | {board[2]} | {board[3]}')

   print('   |   |')


def makeMove(letter, pos):

   global board

   board[pos] = letter


def isFree(pos):

   return board[pos] == ' '
```

```
def notFull(board):
    return board.count(' ') > 1

def isWinner(board, ch):
    return ((board[7] == ch and board[8] == ch and board[9] == ch) or
    (board[4] == ch and board[5] == ch and board[6] == ch) or
    (board[1] == ch and board[2] == ch and board[3] == ch) or
    (board[7] == ch and board[4] == ch and board[1] == ch) or
    (board[8] == ch and board[5] == ch and board[2] == ch) or
    (board[9] == ch and board[6] == ch and board[3] == ch) or
    (board[7] == ch and board[5] == ch and board[3] == ch) or
    (board[9] == ch and board[5] == ch and board[1] == ch))


def compMove():
    possibleMoves = [x for x, letter in enumerate(board) if letter == ' ' and x != 0]
    move = 0

    for let in ['O','X']:
        for i in possibleMoves:
            boardCopy = board[:]
            boardCopy[i] = let
            if isWinner(boardCopy, let):
                move = i
                return move
```

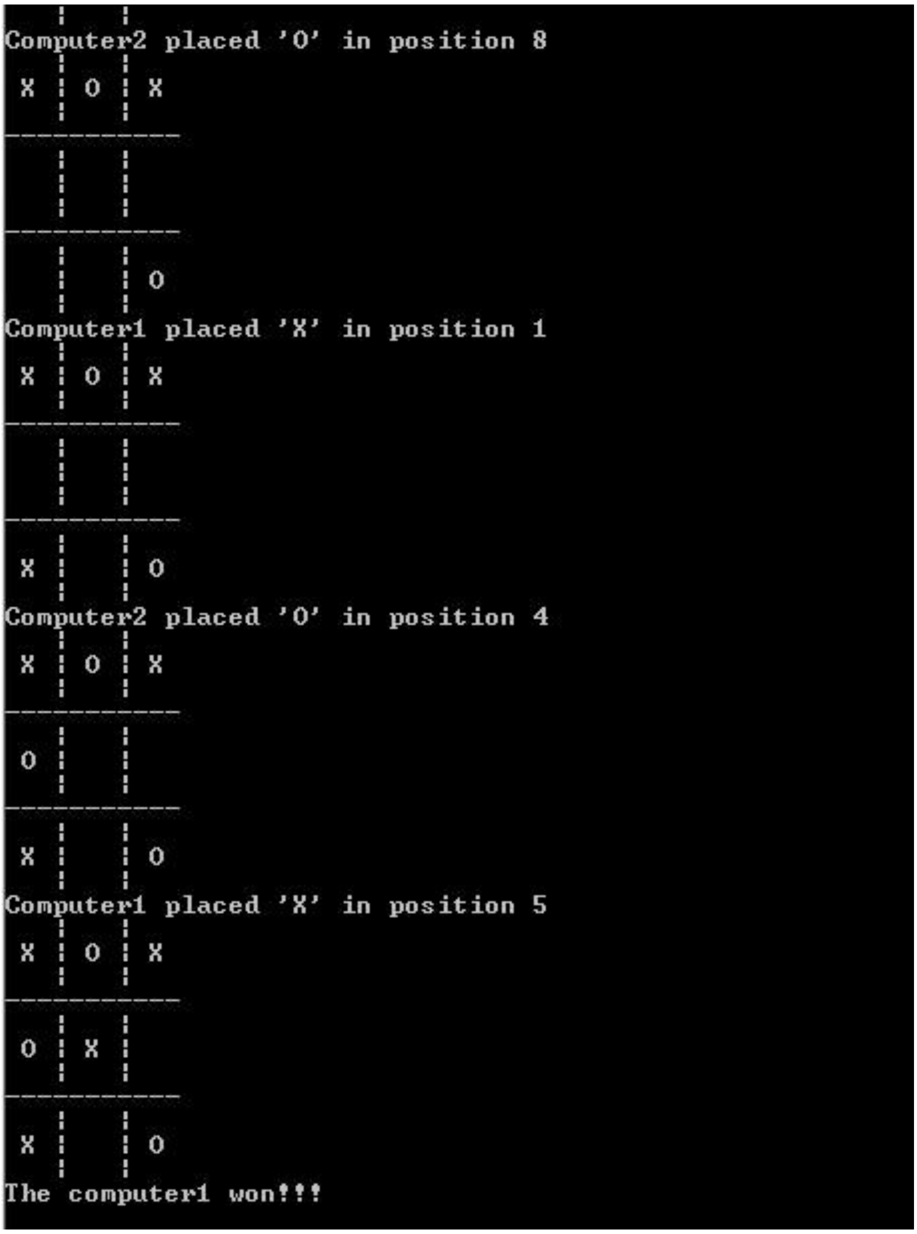
```
import random

# Corners
cornersOpen = []
for i in possibleMoves:
    if i in [1,3,7,9]:
        cornersOpen.append(i)
if cornersOpen:
    move = random.sample(cornersOpen, 1)[0]
    return move

# Center
if 5 in possibleMoves:
    move = 5
    return move

# Edge
edgesOpen = []
for i in possibleMoves:
    if i in [2,4,6,8]:
        edgesOpen.append(i)

if edgesOpen:
    move = random.sample(edgesOpen, 1)[0]

return move
```

```
def main():
    print('TIC-TAC-TOE-COOMPUTER-VS-COMPUTER!')
    displayBoard()

    while notFull(board):
        move = compMove()
        if not move:
            print('Tie!')
        else:
            makeMove('X', move)
            print(f'Computer1 placed \'X\' in position {move}')
            displayBoard()

        if isWinner(board, 'X'):
            print('The computer1 won!!!')
            break

        move = compMove()
        if not move:
            print('Tie')
        else:
            makeMove('O', move)
            print(f'Computer2 placed \'O\' in position {move}')
            displayBoard()
        if isWinner(board, 'O'):
            print('The omputer2 won!!!')
            break

    if not notFull(board):
        print('Game tied')

main()
```

OUTPUT



```
C:\Users\test\Desktop\5thsem -BMSCE Lab>python tic-tac.py
TIC-TAC-TOE-COOMPUTER-VS-COMPUTER!
   |   |
   |   |
   |   |
-----------
   |   |
   |   |
   |   |
-----------
   |   |
   |   |
   |   |
Computer1 placed 'X' in position 9
   |   |
   |   | X
   |   |
-----------
   |   |
   |   |
   |   |
-----------
   |   |
   |   |
   |   |
Computer2 placed 'O' in position 3
   |   |
   |   | X
   |   |
-----------
   |   |
   |   |
   |   |
-----------
   |   |
   |   | O
   |   |
Computer1 placed 'X' in position 7
   |   |
 X |   | X
   |   |
-----------
   |   |
   |   |
   |   |
-----------
   |   |
   |   | O
   |   |
```



```
   |   |
Computer2 placed 'O' in position 8
 X | O | X
-----------
   |   |
-----------
   |   | O
Computer1 placed 'X' in position 1
 X | O | X
-----------
   |   |
-----------
 X |   | O
Computer2 placed 'O' in position 4
 X | O | X
-----------
 O |   |
-----------
 X |   | O
Computer1 placed 'X' in position 5
 X | O | X
-----------
 O | X |
-----------
 X |   | O
The computer1 won!!!
```