Luke Scott

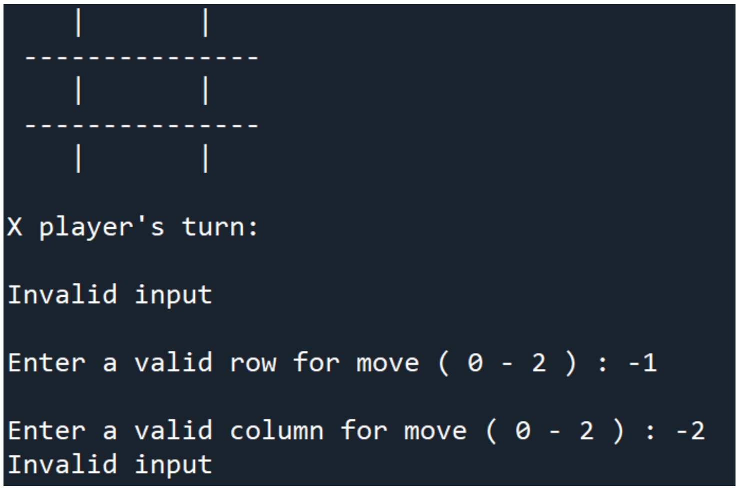
COSC 311

Homework 2

Dr. Wang

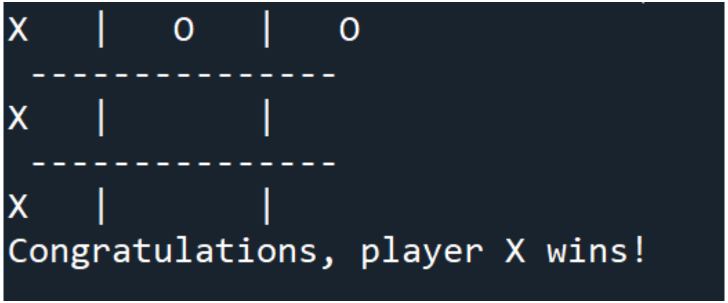
Tic Tac Toe

1)



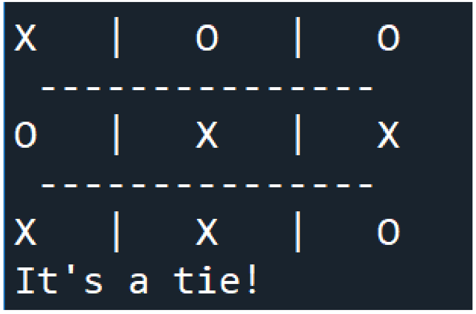
```
   |     |
 ---------------
   |     |
 ---------------
   |     |

X player's turn:

Invalid input

Enter a valid row for move ( 0 - 2 ) : -1

Enter a valid column for move ( 0 - 2 ) : -2
Invalid input
```

2)



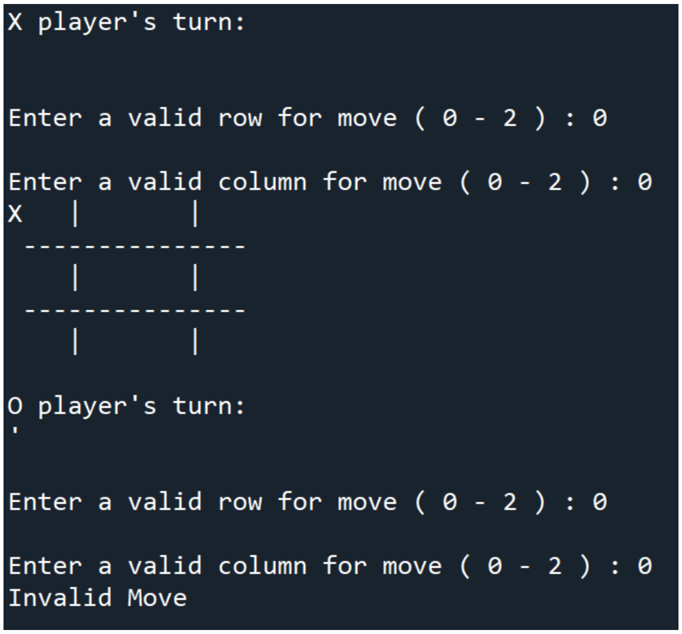
```
X   |   O   |   O
 ---------------
X   |       |
 ---------------
X   |       |
Congratulations, player X wins!
```

3)



```
X   |   O   |   O
 ---------------
O   |   X   |   X
 ---------------
X   |   X   |   O
It's a tie!
```

4)



```
X player's turn:


Enter a valid row for move ( 0 - 2 ) : 0

Enter a valid column for move ( 0 - 2 ) : 0
X   |       |
 ---------------
    |       |
 ---------------
    |       |

O player's turn:
'

Enter a valid row for move ( 0 - 2 ) : 0

Enter a valid column for move ( 0 - 2 ) : 0
Invalid Move
```

Source Code :

```
def runGame():
    # Function for printing board
    def printBoard():
        for i in row0:
            print(i, end = ' ')
        print("\n", bar)
        for i in row1:
            print(i, end = ' ')
        print("\n", bar)
        for i in row2:
            print(i, end = ' ')

    # Function for checking winner
    def checkGame():
        winner = ' '

        # Check rows for winner
    if (row0[0] == row0[4] and row0[0] == row0[8] and row0[0] != ' '):
        winner = row0[0]
    if (row1[0] == row1[4] and row1[0] == row1[8] and row1[0] != ' '):
        winner = row1[0]
    if (row2[0] == row2[4] and row2[0] == row2[8] and row2[0] != ' '):
        winner = row2[0]

    # Check columns for winner
    if (row0[0] == row1[0] and row0[0] == row2[0] and row0[0] != ' '):
        winner = row0[0]
    if (row0[4] == row1[4] and row0[4] == row2[4] and row0[4] != ' '):
        winner = row0[4]
    if (row0[8] == row1[8] and row0[8] == row2[8] and row0[8] != ' '):
        winner = row0[8]

    # Check diagonals for winner
    if (row0[0] == row1[4] and row0[0] == row2[8] and row0[0] != ' '):
        winner = row0[0]
    if (row2[0] == row1[4] and row2[0] == row0[8] and row2[0] != ' '):
        winner = row2[0]

    return winner

# Check for valid row/column input
def checkInput(player_input):

    if (player_input < 0 or player_input > 2):
        print("Invalid input")
        return False
    else:
        return True

# Check move to avoid overwriting previous move's
def checkBlock(row, column):

    if (row == 0):
        if (row0[column * 4] != ' '):
            return False
    elif (row == 1):
        if (row1[column * 4] != ' '):
            return False
    elif (row == 2):
        if (row2[column * 4] != ' '):
            return False
    else:
        return True

# Plays move in correct position
def playMove(row, column, player):

    if (row == 0):
        row0[column * 4] = player
    if (row == 1):
        row1[column * 4] = player
    if (row == 2):
        row2[column * 4] = player

# Establish User Interface
row0 = [' ',' ','|',' ',' ',' ','|',' ',' ']
row1 = [' ',' ','|',' ',' ',' ','|',' ',' ']
```

```
row2 = [' ',' ','|',' ',' ',' ',' ','|',' ',' ']
bar = '--------------'


row_input = -1
column_input = -1
# Run the game
for i in range(0,9):

    # Print Board
    printBoard()

    # Check Player Turn
    if (i % 2 == 0):
        print("\n\nX player's turn:\n")
    else:
        print("\n\nO player's turn:\n'")

    # Create inputs for error checking input
    check = False
    while (check == False):
        row_input = int(input("Enter a valid row for move ( 0 - 2 ) : "))
        column_input = int(input("Enter a valid column for move ( 0 - 2 ) : "))
        check = checkBlock(row_input, column_input)
        if (checkInput(row_input) == False or checkInput(column_input) == False):
            print("Invalid Input")
            check = False
        elif (check == False):
            print("Invalid Move")

    # Check Player Turn for successful Move
```

```
        if (i % 2 == 0):
            playMove(row_input, column_input, 'X')
        else:
            playMove(row_input, column_input, 'O')

        # Check for Win
        check_win = checkGame()
        if (check_win != ' '):
            break

    # Print Results
    printBoard()
    if (check_win == ' '):
        print("\nIt's a tie!")
    else:
        print("\nCongratulations, player", check_win, "wins!")

player_play = input("Would you like to play tic tac toe? (enter 'yes' or 'no') ")

while(player_play == 'yes'):
    runGame()
    player_play = input("Would you like to play again? (enter 'yes' or 'no') ")
```