In [1]:

In [2]:

```
test_board = ['#','X','0','X','0','X','0','X','0','X']
display_board(test_board)
```

```
x | 0 | x

0 | x | 0

x | 0 | x
```

In [3]:

```
def player_input():
    marker = ''

while not (marker == 'X' or marker == '0'):
    marker = input('Player 1: Do you want to be X or 0? ').upper()

if marker == 'X':
    return ('X', '0')
else:
    return ('0', 'X')
```

In [4]:

```
player_input()
```

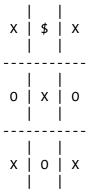
```
Player 1: Do you want to be X or O? X
Out[4]:
('X', '0')
```

```
In [5]:
```

```
def place_marker(board, marker, position):
   board[position] = marker
```

In [6]:

```
place_marker(test_board,'$',8)
display_board(test_board)
```



In [7]:

```
def win_check(board,mark):
    return ((board[7] == mark and board[8] == mark and board[9] == mark) or # across the
    (board[4] == mark and board[5] == mark and board[6] == mark) or # across the middle
    (board[1] == mark and board[2] == mark and board[3] == mark) or # across the bottom
    (board[7] == mark and board[4] == mark and board[1] == mark) or # down the middle
    (board[8] == mark and board[5] == mark and board[2] == mark) or # down the middle
    (board[9] == mark and board[6] == mark and board[3] == mark) or # down the right sid
    (board[7] == mark and board[5] == mark and board[1] == mark) or # diagonal
    (board[9] == mark and board[5] == mark and board[1] == mark)) # diagonal
```

In [8]:

```
win_check(test_board,'X')
```

Out[8]:

True

In [9]:

```
import random

def choose_first():
    if random.randint(0, 1) == 0:
        return 'Player 2'
    else:
        return 'Player 1'
```

```
In [10]:
```

```
def space_check(board, position):
    return board[position] == ' '
```

In [11]:

```
def full_board_check(board):
    for i in range(1,10):
       if space_check(board, i):
           return False
    return True
```

In [12]:

```
def player_choice(board):
    position = 0

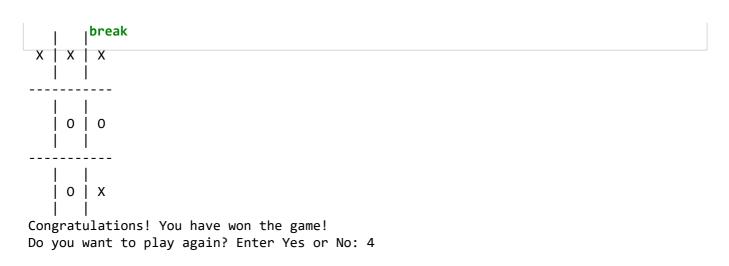
while position not in [1,2,3,4,5,6,7,8,9] or not space_check(board, position):
    position = int(input('Choose your next position: (1-9) '))

return position
```

In [13]:

```
def replay():
    return input('Do you want to play again? Enter Yes or No: ').lower().startswith('y')
```

```
print('Welcome to Tic Tac Toe!')
while True:
    # Reset the board
    theBoard = [' '] * 10
    player1_marker, player2_marker = player_input()
    turn = choose_first()
    print(turn + ' will go first.')
    play_game = input('Are you ready to play? Enter Yes or No.')
    if play_game.lower()[0] == 'y':
        game_on = True
    else:
        game_on = False
    while game_on:
        if turn == 'Player 1':
            # Player1's turn.
            display_board(theBoard)
            position = player_choice(theBoard)
            place_marker(theBoard, player1_marker, position)
            if win_check(theBoard, player1_marker):
                display_board(theBoard)
                print('Congratulations! You have won the game!')
                game_on = False
            else:
                if full_board_check(theBoard):
                    display_board(theBoard)
                    print('The game is a draw!')
                    break
                else:
                    turn = 'Player 2'
        else:
            # Player2's turn.
            display_board(theBoard)
            position = player_choice(theBoard)
            place_marker(theBoard, player2_marker, position)
            if win_check(theBoard, player2_marker):
                display_board(theBoard)
                print('Player 2 has won!')
                game_on = False
            else:
                if full_board_check(theBoard):
                    display_board(theBoard)
                    print('The game is a draw!')
                    break
                else:
                    turn = 'Player 1'
    if not replay():
```



In []: