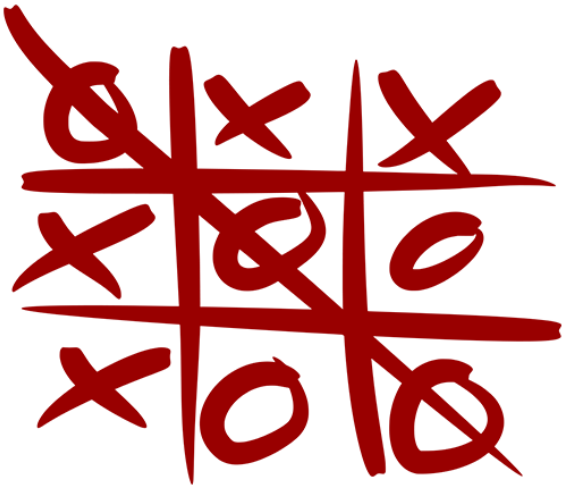
# Tic Tac Toe



In [1]:

```
from IPython.display import clear_output

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

In [2]:

```
board = ["#", "X", "O", "X", "O", "X", "O", "X", "O", "X", "O"]
```

In [3]:

```
display_board(board)
```

```
   X | O | X
---------------
   O | X | O
---------------
   X | O | X
```

In [4]:

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

    while not (marker == "X" or marker == "O"):
        marker = input("Please Enter a Marker X/O for Player 1 : ").upper()

    if marker == "X":
        return ("X", "O")
    else:
        return ("O", "X")
```

In [5]:

```
player_input()
```

```
Please Enter a Marker X/O for Player 1 : x
```

Out[5]:

```
('X', 'O')
```

In [6]:

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

In [7]:

```
place_marker(board, "X", 5)
```

In [8]:

```
display_board(board)
```

```
  X | O | X
---------------
  O | X | O
---------------
  X | O | X
```

In [9]:

```
def win_check(board,marker):
    if ((board[7] == marker and board[8] == marker and board[9] == marker) or
        (board[4] == marker and board[5] == marker and board[6] == marker) or
        (board[1] == marker and board[2] == marker and board[3] == marker) or
        (board[7] == marker and board[4] == marker and board[1] == marker) or
        (board[8] == marker and board[5] == marker and board[2] == marker) or
        (board[9] == marker and board[6] == marker and board[3] == marker) or
        (board[7] == marker and board[5] == marker and board[3] == marker) or
        (board[9] == marker and board[5] == marker and board[1] == marker)):
        return True
    else:
        return False
```

In [10]:

```
win_check(board,"X")
```

Out[10]:

```
True
```

In [11]:

```
win_check(board,"O")
```

Out[11]:

```
False
```

In [12]:

```
import random

def choose_first():
    num = random.randint(0,1)

    if num == 1:
        return "Player 1"
    else:
        return "Player 2"
```

In [13]:

```
choose_first()
```

Out[13]:

```
'Player 2'
```

In [14]:

```
board = ["#", "X", "O", "O", "O", "X", " ", "X", " ", "X", "O"]
```

In [15]:

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

In [16]:

```
space_check(board,6)
```

Out[16]:

```
True
```

In [17]:

```
def full_board_check(board):
    isFull = True
    for i in board:
        if i == ' ':
            isFull = False
    return isFull
```

In [18]:

```
full_board_check(board)
```

Out[18]:

```
False
```

In [19]:

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

In [20]:

```
full_board_check(board)
```

Out[20]:

```
False
```

In [21]:

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

    while not position in [1,2,3,4,5,6,7,8,9] or not space_check(board,positio
        position = int(input("Please Enter next Position : "))
    return position
```

In [22]:

```
players_choice(board)
```

```
Please Enter next Position : 6
```

Out[22]:

```
6
```

In [23]:

```
def replay():
    return input ("Do you want to play again (Y/N) : ").lower().startswith('y'
```

In [24]:

```
replay()
```

```
Do you want to play again (Y/N) : y
```

Out[24]:

```
True
```

In [26]:

```
while True:
    board = [' ']*10

    player1_marker, player2_marker = player_input()
    turn = choose_first()

    print(turn + " Will Play First")

    play_game = input("Are you Ready to Play the Game Y/N").lower().startswith

    if play_game:
        game_on = True
    else:
        game_on = False

    while game_on:
        if turn == "Player 1":
            display_board(board)
            position = players_choice(board)
            place_marker(board,player1_marker,position)

            if win_check(board,player1_marker):
                display_board(board)
                print("Player 1 WON the Game !!! Congratulations ")
                game_on = False
            else:
                if full_board_check(board):
                    display_board(board)
                    print("The Game is Draw, Better Luck Next Time !!!")
                    break
                else:
                    turn = "Player 2"
        else:
            display_board(board)
            position = players_choice(board)
            place_marker(board,player2_marker,position)

            if win_check(board,player2_marker):
                display_board(board)
                print("Player 2 WON the Game !!! Congratulations")
                game_on = False
            else:
                if full_board_check(board):
                    display_board(board)
                    print("The Game is Draw, Better Luck Next Time !!!")
                    break
                else:
                    turn = "Player 1"

    if not replay():
        break
```

```
   O | O | X
---------------
     | X |
---------------
   X |   |
Player 1 WON the Game !!! Congratulations
Do you want to play again (Y/N) : n
```