In [126]:
```
from IPython.display import clear_output

def display_board(board):
          print(board[7]+"|"+board[8]+"|"+board[9])

          print(board[4]+"|"+board[5]+"|"+board[6])

          print(board[1]+"|"+board[2]+"|"+board[3])
```

In [127]:
```
test_board = ['#',' ',' ',' ',' ',' ',' ',' ',' ',' ']
display_board(test_board)
```

```
 | |
 | |
 | |
```

In [128]:
```
def player_input():
    marker=""
    while marker!="X" and  marker!="O":
        marker=input("player1,Choose X or O:")
    player1=marker
    if marker=="X":
        player2="O"
        print("player2 is O")
    else:
        player2="X"
        print("player2 is X")
    return (player1,player2)
```

In [129]:
```
player_input()
```

```
player1,Choose X or O:x
player1,Choose X or O:X
player2 is O
```

Out[129]:
```
('X', 'O')
```

In [ ]:
```
#the board is "" empty and player 1 to put x in some pos in the board
def place_marker(board, marker, position):
    board[position]=marker
```

In [ ]:
```
test_board = ['#','X','O','X','O','X','O','X','O','X']
```

In [ ]:
```
place_marker(test_board,'$',8)
display_board(test_board)
```

In [ ]:
```
def win_check(board, mark):
    return ((board[7] == mark and board[8] == mark and board[9] == mark)
or # across the top
    (board[4] == mark and board[5] == mark and board[6] == mark) or # ac
ross the middle
    (board[1] == mark and board[2] == mark and board[3] == mark) or # ac
ross the bottom
    (board[7] == mark and board[4] == mark and board[1] == mark) or # do
wn the middle
    (board[8] == mark and board[5] == mark and board[2] == mark) or # do
wn the middle
    (board[9] == mark and board[6] == mark and board[3] == mark) or # do
wn the right side
    (board[7] == mark and board[5] == mark and board[3] == mark) or # di
agonal
    (board[9] == mark and board[5] == mark and board[1] == mark)) # diag
onal
```

In [ ]:
```
display_board(test_board)
win_check(test_board,'X')
```

In [ ]:
```
import random
def choose_first():
    choose=random.randint(0,1)
    if choose == 0:
        return "player1"
    else:
        return "player2"
```

In [ ]:
```
choose_first()
```

In [ ]:
```
def space_check(board, position):
    if board[position]==" ":
        return True
    else:
        return False
```

In [ ]:
```
display_board(test_board)
space_check(test_board,4)
```

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

In [ ]:
```
display_board(test_board)
full_board_check(test_board)
```

In [ ]:
```
def player_choice(board):
    position=0
    while position not in [1,2,3,4,5,6,7,8,9] or not space_check(board,p
osition):
        position=int(input("In which position you want to insert next(1-
9):"))
    return position
```

In [ ]:
```
player_choice(test_board)
```

In [134]:
```
def replay():
    replay=input("Do you want to play again?,Enter yes or no:")
    return replay=="yes"
```

In [135]:
```
replay()
```

```
Do you want to play again?,Enter yes or no:yes
```

Out[135]:
```
True
```

In [ ]:
```
print("Welcome to tic tac toe!!")
while True:
    the_board=[" "]*10
    player1_marker,player2_marker=player_input()
    turn=choose_first()
    print(turn+" will go first")
    play_game=input("Ready to play? Yes or No")
    if play_game=="yes":
        game_on=True
    else:
        game_on=False
#pass
#gameplay
    while game_on:
        if turn=="player1":
            display_board(the_board)
            #display the board
            position=player_choice(the_board)
            #choose the position
            place_marker(the_board, player1_marker, position)
            #place the marker on the pos
            if win_check(the_board,player1_marker):
                display_board(the_board)
                print("PLAYER 1 HAS WONN!!!")
                game_on=False
            else:
                #check if they won or tie
                #if the board is full and none has won its a tie
                if full_board_check(the_board):
                    display_board(the_board)
                    print("ITS A TIE")
                    game_on=False
                else:
                    turn="player2"
        else:
            display_board(the_board)
            #display the board
            position=player_choice(the_board)
            #choose the position
            place_marker(the_board, player2_marker, position)
        #place the marker on the pos
            if win_check(the_board,player2_marker):
                display_board(the_board)
                print("PLAYER 2 HAS WONN!!!")
                game_on=False
            else:
                #check if they won or tie
                #if the board is full and none has won its a tie
                if full_board_check(the_board):
                    display_board(the_board)
                    print("ITS A TIE")
                    game_on=False
                    #if no tie or win then its next players turn
                else:
                    turn="player1"
    if not replay():
        break
```

```
Welcome to tic tac toe!!
player1,Choose X or O:X
player2 is O
player1 will go first
Ready to play? Yes or Noyes
 | |
 | |
 | |
In which position you want to insert next(1-9):1
 | |
 | |
X| |
In which position you want to insert next(1-9):5
 | |
 |O|
X| |
In which position you want to insert next(1-9):2
 | |
 |O|
X|X|
In which position you want to insert next(1-9):3
 | |
 |O|
X|X|O
In which position you want to insert next(1-9):7
X| |
 |O|
X|X|O
In which position you want to insert next(1-9):4
X| |
O|O|
X|X|O
In which position you want to insert next(1-9):6
X| |
O|O|X
X|X|O
In which position you want to insert next(1-9):8
X|O|
O|O|X
X|X|O
In which position you want to insert next(1-9):9
X|O|X
```