In [8]:

```
def display_board(board):

    print('  |    |')

    print('' + board[7] + ' | ' + board[8] + ' | ' + board[9])
    print('  |    |')
    print('' + board[4] + ' | ' + board[5] + ' | ' + board[6])
    print('  |    |')
    print('' + board[1] +' | ' + board[2] + ' | ' + board[3])
```

In [9]:

```
test_board = []
display_board(test_board)
```

```
  |    |


---------------------------------------------------------------------------
IndexError                                Traceback (most recent call last)
<ipython-input-9-190ad450708e> in <module>
      1 test_board = []
----> 2 display_board(test_board)

<ipython-input-8-93e87e86d2cd> in display_board(board)
      3     print('  |    |')
      4
----> 5     print('' + board[7] + ' | ' + board[8] + ' | ' + board[9])
      6     print('  |    |')
      7     print('' + board[4] + ' | ' + board[5] + ' | ' + board[6])

IndexError: list index out of range
```

In [10]:

```
board = ["-", "-", "-",
         "-", "-", "-",
         "-", "-", "-"]


game_still_going = True


winner = None

current_player = "X"



def play_game():


  display_board()


  while game_still_going:


    handle_turn(current_player)


    check_if_game_over()


    flip_player()


  if winner == "X" or winner == "O":
    print(winner + " won.")
  elif winner == None:
```

```
    print("Tie.")


def display_board():
  print("\n")
  print(board[0] + " | " + board[1] + " | " + board[2] + "     1 | 2 | 3")
  print(board[3] + " | " + board[4] + " | " + board[5] + "     4 | 5 | 6")
  print(board[6] + " | " + board[7] + " | " + board[8] + "     7 | 8 | 9")
  print("\n")



def handle_turn(player):


  print(player + "'s turn.")
  position = input("Choose a position from 1-9: ")


  valid = False
  while not valid:


    while position not in ["1", "2", "3", "4", "5", "6", "7", "8", "9"]:
      position = input("Choose a position from 1-9: ")


    position = int(position) - 1


    if board[position] == "-":
      valid = True
    else:
      print("You can't go there. Go again.")


  board[position] = player


  display_board()


def check_if_game_over():
  check_for_winner()
  check_for_tie()



def check_for_winner():

  global winner

  row_winner = check_rows()
  column_winner = check_columns()
  diagonal_winner = check_diagonals()

  if row_winner:
    winner = row_winner
  elif column_winner:
    winner = column_winner
  elif diagonal_winner:
    winner = diagonal_winner
  else:
    winner = None



def check_rows():

  global game_still_going

  row_1 = board[0] == board[1] == board[2] != "-"
  row_2 = board[3] == board[4] == board[5] != "-"
  row_3 = board[6] == board[7] == board[8] != "-"

  if row_1 or row_2 or row_3:
    game_still_going = False
```

```
  if row_1:
    return board[0]
  elif row_2:
    return board[3]
  elif row_3:
    return board[6]

  else:
    return None



def check_columns():

  global game_still_going

  column_1 = board[0] == board[3] == board[6] != "-"
  column_2 = board[1] == board[4] == board[7] != "-"
  column_3 = board[2] == board[5] == board[8] != "-"

  if column_1 or column_2 or column_3:
    game_still_going = False

  if column_1:
    return board[0]
  elif column_2:
    return board[1]
  elif column_3:
    return board[2]

  else:
    return None


def check_diagonals():

  global game_still_going

  diagonal_1 = board[0] == board[4] == board[8] != "-"
  diagonal_2 = board[2] == board[4] == board[6] != "-"

  if diagonal_1 or diagonal_2:
    game_still_going = False

  if diagonal_1:
    return board[0]
  elif diagonal_2:
    return board[2]

  else:
    return None



def check_for_tie():

  global game_still_going

  if "-" not in board:
    game_still_going = False
    return True

  else:
    return False



def flip_player():

  global current_player

  if current_player == "X":
    current_player = "O"

  elif current_player == "O":
    current_player = "X"
```

```
    current_player = "X"


play_game()
```

```
- | - | -     1 | 2 | 3
- | - | -     4 | 5 | 6
- | - | -     7 | 8 | 9


X's turn.
Choose a position from 1-9: 6


- | - | -     1 | 2 | 3
- | - | X     4 | 5 | 6
- | - | -     7 | 8 | 9


O's turn.
Choose a position from 1-9: 1


O | - | -     1 | 2 | 3
- | - | X     4 | 5 | 6
- | - | -     7 | 8 | 9


X's turn.
Choose a position from 1-9: 5


O | - | -     1 | 2 | 3
- | X | X     4 | 5 | 6
- | - | -     7 | 8 | 9


O's turn.
Choose a position from 1-9: 2


O | O | -     1 | 2 | 3
- | X | X     4 | 5 | 6
- | - | -     7 | 8 | 9


X's turn.
Choose a position from 1-9: 4


O | O | -     1 | 2 | 3
X | X | X     4 | 5 | 6
- | - | -     7 | 8 | 9


X won.


In [ ]:
```