Milestone Project 1: Walkthrough Steps Workbook

Below is a set of steps for you to follow to try to create the Tic Tac Toe Milestone Project game!

Some suggested tools before you get started:

To take input from a user:

```
player1 = input("Please pick a marker 'X' or 'O'")
```

Note that input() takes in a string. If you need an integer value, use

```
position = int(input('Please enter a number'))
```

To clear the screen between moves:

```
from IPython.display import clear_output
clear_output()
```

Note that clear_output() will only work in jupyter. To clear the screen in other IDEs, consider:

```
print('\n'*100)
```

This scrolls the previous board up out of view. Now on to the program!

Step 1: Write a function that can print out a board. Set up your board as a list, where each index 1-9 corresponds with a number on a number pad, so you get a 3 by 3 board representation.

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

def display_board(board):

    pass
```

TEST Step 1: run your function on a test version of the board list, and make adjustments as necessary

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

Step 2: Write a function that can take in a player input and assign their marker as 'X' or 'O'. Think about using *while* loops to continually ask until you get a correct answer.

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

    pass
```

TEST Step 2: run the function to make sure it returns the desired output

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

Step 3: Write a function that takes in the board list object, a marker ('X' or 'O'), and a desired position (number 1-9) and assigns it to the board.

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

    pass
```

TEST Step 3: run the place marker function using test parameters and display the modified board

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

Step 4: Write a function that takes in a board and a mark (X or O) and then checks to see if that mark has won.

In [ ]:
```
def win_check(board, mark):

    pass
```

TEST Step 4: run the win_check function against our test_board - it should return True

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

Step 5: Write a function that uses the random module to randomly decide which player goes first. You may want to lookup random.randint() Return a string of which player went first.

In [ ]:
```
import random

def choose_first():
    pass
```

Step 6: Write a function that returns a boolean indicating whether a space on the board is freely available.

In [ ]:
```
def space_check(board, position):

    pass
```

Step 7: Write a function that checks if the board is full and returns a boolean value. True if full, False otherwise.

In [ ]:
```
def full_board_check(board):

    pass
```

Step 8: Write a function that asks for a player's next position (as a number 1-9) and then uses the function from step 6 to check if it's a free position. If it is, then return the position for later use.

In [ ]:
```
def player_choice(board):

    pass
```

Step 9: Write a function that asks the player if they want to play again and returns a boolean True if they do want to play again.

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

    pass
```

Step 10: Here comes the hard part! Use while loops and the functions you've made to run the game!

In [ ]:
```
print('Welcome to Tic Tac Toe!')

#while True:
    # Set the game up here
    #pass

    #while game_on:
        #Player 1 Turn


        # Player2's turn.

            #pass

    #if not replay():
        #break
```

Good Job!