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1 #Functions Challenge 34: Head to Head Tic Tac Toe App
2
3 def draw_board(char_list):
4     """Print a game board; either a number board or a tic tac toe board."""
5     print("\n\t\tTic-Tac-Toe")
6     print("\t~~~~~")
7     print("\t|| " + char_list[0] + " || " + char_list[1] + " || " + char_list[2]
8 + " ||")
9     print("\t~~~~~")
10    print("\t|| " + char_list[3] + " || " + char_list[4] + " || " + char_list[5]
11 + " ||")
12    print("\t~~~~~")
13    print("\t|| " + char_list[6] + " || " + char_list[7] + " || " + char_list[8]
14 + " ||")
15    print("\t~~~~~")
16
17 def get_player_input(player_char, char_list):
18     """Get a players move until it is a valid move on the board with no piece
19 currently there."""
20     while True:
21         #Get user input
22         player_move = int(input(player_char + ": Where would you like to place
23 your piece (1-9): "))
24         #Move is on board
25         if player_move > 0 and player_move < 10:
26             #Move is an empty spot
27             if char_list[player_move - 1] == '_':
28                 return player_move
29             else:
30                 print("That spot has already been chosen. Try again.")
31         else:
32             print("That is not a spot on the board. Try again.")
33
34 def place_char_on_board(player_char, player_move, char_list):
35     """Put a players character at the correct spot on the board."""
36     char_list[player_move - 1] = player_char
37
38 def is_winner(pC, cL):
39     """Return a Bool if the given player is a winner."""
40     return ((cL[0] == pC and cL[1] == pC and cL[2] == pC) or #victory in first row
41            (cL[3] == pC and cL[4] == pC and cL[5] == pC) or #victory in second
42            (cL[6] == pC and cL[7] == pC and cL[8] == pC) or #victory in last row
43            (cL[0] == pC and cL[3] == pC and cL[6] == pC) or #victory in first
44            column
45            (cL[1] == pC and cL[4] == pC and cL[7] == pC) or #victory in second
46            column
47            (cL[2] == pC and cL[5] == pC and cL[8] == pC) or #victory in last
48            column
49            (cL[0] == pC and cL[4] == pC and cL[8] == pC) or #victory in diagonal
50            1
51            (cL[2] == pC and cL[4] == pC and cL[6] == pC)) #victory in diagonal 2
52
53 #The main code
54 #Define variables
55 player_1 = 'X'
56 player_2 = 'O'
57 c_list = ['']*9
58 n_list = ['1', '2', '3', '4', '5', '6', '7', '8', '9']

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55  #Draw the initial state of the game board
56  draw_board(n_list)
57  draw_board(c_list)
58
59  while True:
60      #Player 1 turn
61      #Get the players move
62      move = get_player_input(player_1, c_list)
63      #Put move on board
64      place_char_on_board(player_1, move, c_list)
65      #Re-draw game boards
66      draw_board(n_list)
67      draw_board(c_list)
68      #Check to see if player 1 won
69      if is_winner(player_1, c_list):
70          print("Player 1 wins!")
71          break
72      #Check if there is a tie
73      elif "_" not in c_list:
74          print("The game was a tie!")
75          break
76
77      #Player 2 turn
78      #Get the players move
79      move = get_player_input(player_2, c_list)
80      #Put move on board
81      place_char_on_board(player_2, move, c_list)
82      #Re-draw game boards
83      draw_board(n_list)
84      draw_board(c_list)
85      #Check to see if player 1 won
86      if is_winner(player_2, c_list):
87          print("Player 2 wins!")
88          break

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