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## This work was done by Kemal Osmanovic (student number is c0013667. Study at Sheffield hallam University and this is for my python assignment. Completed and last modified on 18/02/2021.

from random import randint #allows to use the randint functionality from the random library. By importing just a specific feature, makes the code more efficient.

Player_Score = 0 # global pre-set variable for the player score (Set to 0)
Computer_Score = 0 # global pre-set variable for the Computers score (Set to 0)
def main(Player_Score, Computer_Score):#put the whole main block of code in a function called main. While passing through the global variables
    board = [] #creates an empty array called "board"
    for x in range(6): #appends the board array with "O"'s
        board.append(["O"] * 6)

    def print_board(board): #print board function which prints the current state of the board
        for row in board:
            print((" ").join(row))

    print("Let's play Battleship!")
    print_board(board) #function to print the board called

    def random_row(board): # function called random_row defined which generates a random number for the row coordinate for the battleship
        return randint(0, len(board) - 1)
    def random_col(board): # function called random_col defined which generates a random number for the column coordinate for the battleship
        return randint(0, len(board[0]) - 1)
    def playagain(): #function called playagain defined to be ran when the player loses or wins the game to see if the user would like to play again
        play_again = 0 # placeholder in order for while loop to actually work
        Play = str(input("Would you like to play again?")) # input for user to enter if they would like to play or not
        Play = Play.lower() #converts the input into lower case
        while play_again == 0: # while loop to be executed after the line above
            if Play == 'n': # if statement for when play is equal to 'n'
                  Player_Name = str(input("What's your name? : ")) # #input for the users name which is stored into a variable called Player_Name
                  print("The computer scored",Computer_Score) # ouputs the computers score with a meaningful message
                  print(Player_Name,"scored",Player_Score) # ouputs the users score with a meaningful message
                  play_again = 1 #edit the placeholder so that it equals to 1 instead of 0 meaning while condition hasn't been met
                  exit() #exit function to exit out of the running program
            elif Play == 'y': # elif statement for when play is equal to 'y'
                print("new game started")
                main(Player_Score, Computer_Score) #calles the main function to replay the entire game which resets the battleships coordinates and continues passing through the updated player and computer score
            else:
                Play = str(input("invalid input? would you like to play again?: ")) #menaingful message if an invalid input is entered
                Play = Play.lower() #converts the string input to lower case
    def Test_Mode(): #function defined for the testmode of the game
        tmplaceholder = 0 # test mode place holder in order for while loop to actually work
        Test_Mode = str(input("Would you like to play in test mode first? (Please answer with 'y' or 'n'): ")) #Test_Mode string input for user to enter game test mode or not
        Test_Mode = Test_Mode.upper() # converts Test_Mode string to upper case
        while tmplaceholder == 0: # while condition tmplaceholder is equal to 0 the following code will be executed
            if Test_Mode == 'Y': #if statement for the following code to be executed if Test_Mode is equal to 'Y'
                print("The X and Y coordinates of the batteleship are: ", ship_row, ship_col) #outputs the coordinates of the row and column of the battleship
                tmplaceholder = 1 # breaks out the function since the while condition is no longer met by setting the new value of tmplaceholder to 1
            elif Test_Mode == 'N': #elif statement for the following code to be executed if Test_Mode is equal to 'N'
                print("Test mode hasn't been activated!") #output for the user to tell them that test mode has not been activated
                tmplaceholder = 1  # breaks out the function since the while condition is no longer met by setting the new value of tmplaceholder to 1
            else:
                Test_Mode = str(input("Invalid input!! Would you like to play in test mode first? (Please answer with 'y' or 'n'): ")) #Asks user for input since an invalid input was entered
                Test_Mode = Test_Mode.upper() #converts the input to upper case

    ship_row = random_row(board) # creates a random coordinate for the number of the row and stores it in a variable called "ship_row"
    ship_col = random_col(board) # creates a random coordinate for the number of the column and stores it in a variable called "ship_col"

    Test_Mode() #calls the Test_Mode function



    for turn in range(9): # for loop to run the following code 10 times for the players turn
        print("Turn", turn) # outputs the current turn number
        guess = input("Guess Row and column seperated by a comma please :").split(",") #User input which takes two values as one, seperated by a comma using the split function
        guess_row = int(guess[0]) - 1 # stores the first index of the guess value that was split and subtracts the value by one to make sure the coordinates match up
        guess_col = int(guess[1]) - 1 # stores the second index of the guess value that was split and subtracts the value by one to make sure the coordinates match up

        if guess_row == ship_row and guess_col == ship_col: # if statement that runs the following code if the guess row and column is the same value as the ship column and row
            print("Congratulations! You sunk my battleship!")
            Player_Score = Player_Score +1 # adds 1 to the current value of the player score as they managed to sink the ship
            board[guess_row][guess_col] = "*" # outputs the board whilst marking the battleships location using an asterisk
            print_board(board) #calls the print board function to output the current state of the board
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            playagain() # calls the playagain function to ask if the user wants to play the game again
            break #breaks out of the loop
        else:
            if (guess_row < 0 or guess_row > 5) or (guess_col < 0 or guess_col > 5):  # if statement that runs the following code if the guess row and column is lass than 0 or more than 5
                print("Oops, that's not even in the ocean.")
            elif(board[guess_row][guess_col] == "X"): # checks if guess has already been guessed before and outputs meaningful message
                print("You guessed that one already.")
            else:
                print("You missed my battleship!")
                board[guess_row][guess_col] = "X" #changes the guessed location to an 'X' to store a previous guess
        if turn == 8: # if statement to run the following code if the turn number is equal to 8
            Computer_Score =+1 #adds 1 to the current computer score
            print("Game Over")
            playagain() # calls the playagain function to ask if the user wants to play the game again

        turn =+ 1 #adds 1 to the value of turn to count as each turn is made
        print_board(board) #calls the print board function to output the current state of the board

main(Player_Score, Computer_Score) #runs the whole code again and continues supplying the main function with the updated values of the player and computer score
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