LAPORAN

PRAKTIKUM ALGORITMA DAN STRUKTUR DATA

“ Merancang Permainan Tic-Tac-Toe Menggunakan Python”

Disusun oleh :

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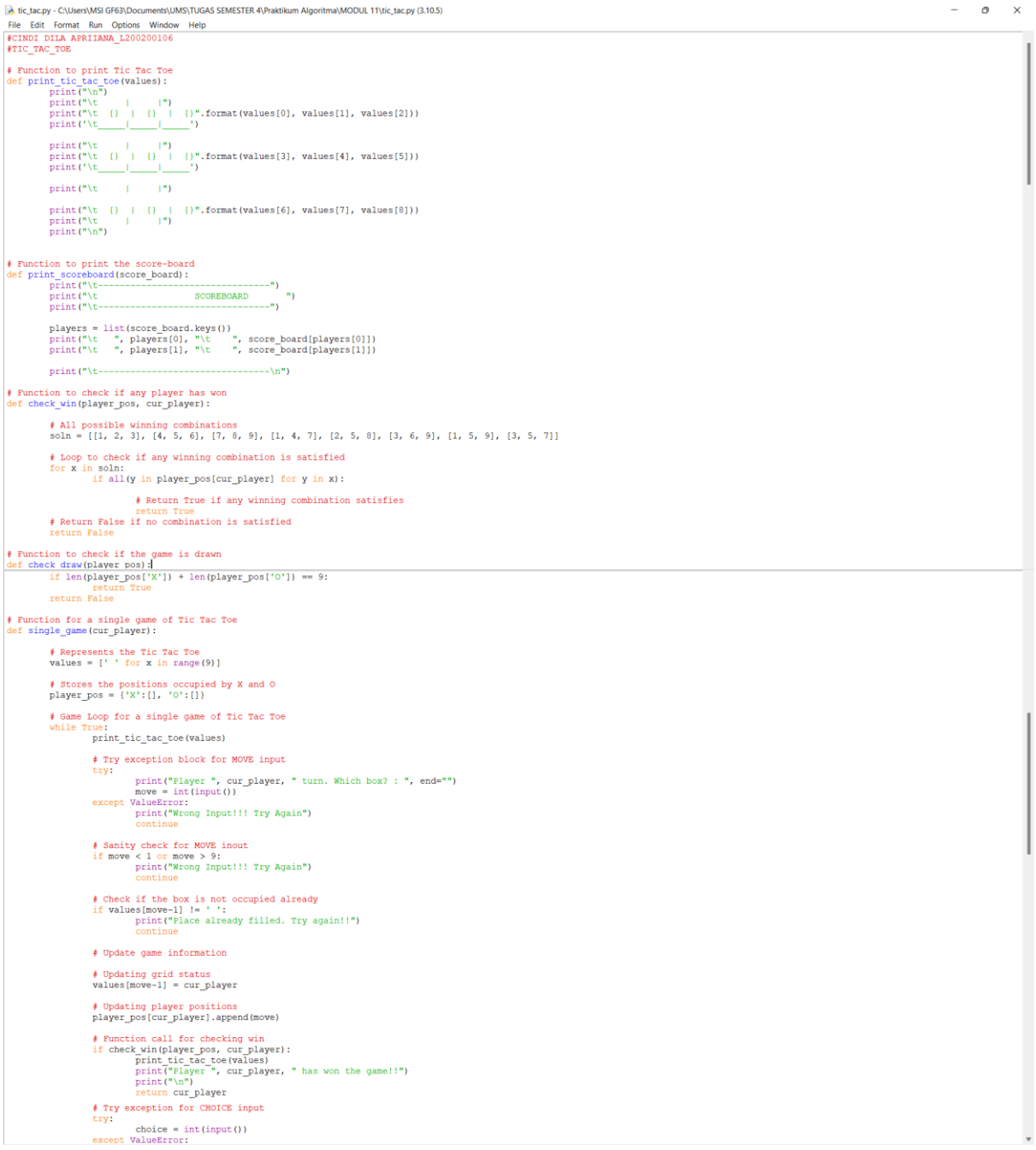
TUGAS

1. Gabungkan keseluruhan kode program diatas, dan kemudian jalankan. Teliti baris demi baris kode program untuk menghindari adanya kesalahan dalam penulisan.


tic_tac.py - C:\Users\MSI GF63\Documents\UMS\TUGAS SEMESTER 4\Praktikum Algoritma\MODUL 11\tic_tac.py (3.10.5)

File Edit Format Run Options Window Help

```
#CINDI DILA APRIANA_L200200106
#TIC_TAC_TOE

# Function to print Tic Tac Toe
def print_tic_tac_toe(values):
        print("\n")
        print("\t     |     |")
        print("\t  {}  |  {}  |  {}".format(values[0], values[1], values[2]))
        print('\t_____|_____|_____')

        print("\t     |     |")
        print("\t  {}  |  {}  |  {}".format(values[3], values[4], values[5]))
        print('\t_____|_____|_____')

        print("\t     |     |")

        print("\t  {}  |  {}  |  {}".format(values[6], values[7], values[8]))
        print("\t     |     |")
        print("\n")


# Function to print the score-board
def print_scoreboard(score_board):
        print("\t--------------------------------")
        print("\t            SCOREBOARD          ")
        print("\t--------------------------------")

        players = list(score_board.keys())
        print("\t   ", players[0], "\t    ", score_board[players[0]])
        print("\t   ", players[1], "\t    ", score_board[players[1]])

        print("\t--------------------------------\n")

# Function to check if any player has won
def check_win(player_pos, cur_player):

        # All possible winning combinations
        soln = [[1, 2, 3], [4, 5, 6], [7, 8, 9], [1, 4, 7], [2, 5, 8], [3, 6, 9], [1, 5, 9], [3, 5, 7]]

        # Loop to check if any winning combination is satisfied
        for x in soln:
                if all(y in player_pos[cur_player] for y in x):

                        # Return True if any winning combination satisfies
                        return True
        # Return False if no combination is satisfied
        return False

# Function to check if the game is drawn
def check_draw(player_pos):
        if len(player_pos['X']) + len(player_pos['O']) == 9:
                return True
        return False

# Function for a single game of Tic Tac Toe
def single_game(cur_player):

        # Represents the Tic Tac Toe
        values = [' ' for x in range(9)]

        # Stores the positions occupied by X and O
        player_pos = {'X':[], 'O':[]}

        # Game Loop for a single game of Tic Tac Toe
        while True:
                print_tic_tac_toe(values)

                # Try exception block for MOVE input
                try:
                        print("Player ", cur_player, " turn. Which box? : ", end="")
                        move = int(input())
                except ValueError:
                        print("Wrong Input!!! Try Again")
                        continue

                # Sanity check for MOVE inout
                if move < 1 or move > 9:
                        print("Wrong Input!!! Try Again")
                        continue

                # Check if the box is not occupied already
                if values[move-1] != ' ':
                        print("Place already filled. Try again!!")
                        continue

                # Update game information

                # Updating grid status
                values[move-1] = cur_player

                # Updating player positions
                player_pos[cur_player].append(move)

                # Function call for checking win
                if check_win(player_pos, cur_player):
                        print_tic_tac_toe(values)
                        print("Player ", cur_player, " has won the game!!")
                        print("\n")
                        return cur_player

                # Try exception for CHOICE input
                try:
                        choice = int(input())
                except ValueError:
```

```
            print("Wrong Input!!! Try Again\n")
            continue

        # Conditions for player choice
        if choice == 1:
            player_choice['X'] = cur_player
            if cur_player == player1:
                player_choice['O'] = player2
            else:
                player_choice['O'] = player1

        elif choice == 2:
            player_choice['O'] = cur_player
            if cur_player == player1:
                player_choice['X'] = player2
            else:
                player_choice['X'] = player1

        elif choice == 3:
            print("Final Scores")
            print_scoreboard(score_board)
            break

        else:
            print("Wrong Choice!!!! Try Again\n")

        # Stores the winner in a single game of Tic Tac Toe
        winner = single_game(options[choice-1])

        # Edits the scoreboard according to the winner
        if winner != 'D' :
            player_won = player_choice[winner]
            score_board[player_won] = score_board[player_won] + 1

        print_scoreboard(score_board)
        # Switch player who chooses X or O
        if cur_player == player1:
            cur_player = player2
        else:
            cur_player = player1
```

Ln: 150 Col: 20

2. Mainkan dengan rekan anda dalam beberapa tahapan, periksa dan cocokan dengan setiap Langkah pada tahapan pemrograman!

```
*IDLE Shell 3.10.5*
File  Edit  Shell  Debug  Options  Window  Help
Python 3.10.5 (tags/v3.10.5:f377153, Jun  6 2022, 16:14:13) [MSC v.1929 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>> = RESTART: C:\Users\MSI GF63\Documents\UMS\TUGAS SEMESTER 4\Praktikum Algoritma\MODUL 11\tic_tac.py
Player 1
Enter the name : Cindi


Player 2
Enter the name : Nicky


        ---------------------------------
                SCOREBOARD
        ---------------------------------
            Cindi           0
            Nicky           0
        ---------------------------------

Turn to choose for Cindi
Enter 1 for X
Enter 2 for O
Enter 3 to Quit
1

             |     |
             |     |
        _____|_____|_____
             |     |
             |     |
        _____|_____|_____
             |     |
             |     |


Player  X  turn. Which box? : 5

             |     |
             |     |
        _____|_____|_____
             |     |
             |  X  |
        _____|_____|_____
             |     |
             |     |


Player  O  turn. Which box? : 4

             |     |
             |     |
        _____|_____|_____
             |     |
          O  |  X  |
        _____|_____|_____
             |     |
             |     |


Player  X  turn. Which box? : 3

             |     |
             |     |  X
        _____|_____|_____
             |     |
          O  |  X  |
        _____|_____|_____
             |     |
             |     |


Player  O  turn. Which box? : 1

          O  |     |  X
        _____|_____|_____
             |     |
          O  |  X  |
        _____|_____|_____
             |     |
             |     |
```

```
Player  X  turn. Which box? : 7


         |     |
      O  |     |  X
    _____|_____|_____
         |     |
      O  |  X  |
    _____|_____|_____
         |     |
      X  |     |
         |     |


Player  X  has won the game!!

    ---------------------------------
              SCOREBOARD
    ---------------------------------
       Cindi            1
       Nicky            0
    ---------------------------------

Turn to choose for Nicky
Enter 1 for X
Enter 2 for O
Enter 3 to Quit
```