

Tic Tac Toe GUI Game Documentation

This document explains the Python Tkinter-based Tic Tac Toe GUI game.

1. Purpose

- A two-player Tic Tac Toe game with GUI where players X and O take turns.
- Checks for a winner or draw after every move.
- Highlights winning cells and shows a message box when a player wins.

2. Libraries Used

- tkinter: For GUI interface and button widgets.
- messagebox: For pop-up dialogs displaying the winner.

3. Code Breakdown

a) check_winner()

- Checks all possible winning combinations: rows, columns, diagonals.
- If a combination has the same non-empty symbol, highlights the buttons in green.
- Displays a message box showing the winner and ends the game with root.quit().

b) button_click(index)

- Triggered when a button is clicked.
- Marks the button with current player's symbol if empty and the game is not over.
- Calls check_winner() to see if someone won.
- Switches player turn with toggle_player().

c) toggle_player()

- Switches between player X and O.
- Updates the label at the bottom of the window to show current turn.

d) Tkinter GUI Setup

- root = tk.Tk(): Creates the main application window.

- 9 buttons created using list comprehension for the 3x3 board.
- Buttons are arranged in a 3x3 grid using `button.grid(row=i//3, column=i%3)`.
- Label at the bottom shows the current player's turn.
- `root.mainloop()` starts the GUI event loop.

4. Game Flow

- Player X starts the game.
- Players click on empty buttons alternately.
- The game checks for a winner after each move.
- Winning combination is highlighted and winner is announced.
- Game closes after a win.

5. Key Notes

- `i//3` calculates the row number.
- `i%3` calculates the column number.
- `lambda i=i: button_click(i)` ensures correct button index is passed to the function.