

# GUI-BASED CHAT-1

## COMPUTER NETWORKING

**Time:** 60 mins

### Introduction

In this class, the student/s will create a GUI feature for the login of chat app.

### New Commands Introduced

- |                                                      |                                                                                                                                          |
|------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| • <code>from tkinter import *</code>                 | Imports the tkinter library which contains modules required to create graphical user interface (GUI).                                    |
| • <code>Tk</code>                                    | The class which contains the attributes, properties, and methods to create a GUI.                                                        |
| • <code>title("")</code>                             | Changes the title of the window.                                                                                                         |
| • <code>resizeable(width=False, height=False)</code> | Restricts the window from being resizable.                                                                                               |
| • <code>configure(width=, height=, bg=)</code>       | Sets the properties of the window.                                                                                                       |
| • <code>window.mainloop()</code>                     | Runs the event loop and listens for user interactions                                                                                    |
| • <code>widgetname=widgetclass(options)</code>       | Creates a new widget with the specified widget class and configuration given in the options and assigns it to the variable "widgetname." |
| • <code>widgetname.place(relx=, rely=)</code>        | Places the widget on the window at the specified relative position.                                                                      |
| • <code>widgetname.focus()</code>                    | Sets the cursor on the widget to indicate where the input should go.                                                                     |
| • <code>command=lambda: function(parameter)</code>   | Calls the function and passes the parameters, commonly used with the Button, Menubutton, and OptionMenu widgets.                         |

### Vocabulary

- **GUI** graphical user interface is a type of user interface that allows users to interact with a computer or software using graphical elements such as windows, icons, buttons, and menus, as opposed to a text-based or command-line interface.
- **Widgets** are (GUI) elements or components, such as buttons, text boxes, and labels, that enable user interaction and provide a visual representation of data and controls in software applications.

- An **application window** is a visual interface that displays the content and functionality of a software program, allowing users to interact with the application.

## Learning Objectives

Student/s should be able to:

- **Recall** how to create a class which inherits the properties and method of another class.
- **Explain** the use of tkinter library in creating a GUI in python.
- **Demonstrate** the creation of a login window and addition of widgets to it.

## Activities

### 1. Class Narrative: (3 mins)

- Brief the student/s that they would make chatting visually attractive by creating a GUI for the chat app.

### 2. Concept Introduction Activity: (4 mins)

- Let the student/s undertake the explore-activity to observe the login screen of the chat app.
- Introduce the elements on the login window.
- Inform that tkinter module is used to create GUI for the desktop apps.
- Using the slides, explain that the student/s will learn:
  - to create the application window
  - to add widgets to the window
  - to connect to chatroom

### 3. Activity 1: Create the Application Window (14 mins)

#### Teacher Activity: (7 mins)

- Explain the steps to create a GUI using tkinter.
- Explain that the Tkinter library contains modules required to create GUI.
  - These modules contain attributes, methods, and properties required to create the main window and manage the GUI components.
  - Of the many modules Tk module will be used to create the GUI for the login screen.
  - A class named GUI will be created inheriting the properties and methods from the Tk module.
- Demonstrate how to create the application window.

#### Student Activity: (7 mins)

- Guide the student/s to create and initialize the window, set its features and listen for user interactions.

#### 4. Activity 2: Add Widgets to the Window (12 mins)

**Teacher Activity:** (6 mins) .

- Recall the elements on the application window and inform that they are called widgets in Tkinter.
- Explain the relative positioning and sizing used to create and place a widget.
- Demonstrate how to add widgets to the window.

**Student Activity:** (6 mins)

- Guide the student/s to create widgets, place it and set the cursor focus on the textbox.

#### 5. Activity 3: Connect to the Chatroom (12 mins)

**Teacher Activity:** (6 mins)

- Ask the student/s the use of a button, in this activity it connects to the chatroom.
- Explain how to call a function and pass parameters when a button is pressed.
- Demonstrate how to connect to the chatroom.

**Student Activity:** (6 mins)

- Guide the students to connect to the server, login to the chatroom and display the chat .

#### 6. Introduce the Post class project: (2 min)

- Enhance the user interface of the quiz app by creating a GUI for login.

#### 7. Test and Summarize the class learnings: (5 mins)

- Check for understanding through quizzes and summarize learning after respective activities.
- Summarize the overall class learning towards the end of the class.

#### 8. Additional activities:

- Encourage the student/s to add a clear button.
- Encourage the student/s to experiment with colors and content positioning to achieve the layout displayed.

#### 9. State the Next Class Objective: (1 min)

- In the next class, student/s will learn to add GUI feature to the chatroom.

## U.S. Standards:

CSTA: 2-AP-11, 2-AP-12, 2-AP-13, 2-AP-14, 2-AP-19

Links Table		
Activity	Activity Name	Link
Class Presentation	GUI-Based Chat-1	<a href="https://s3-whjr-curriculum-uploads.whjr.online/33a2adb2-a57a-4a4e-b492-257e8a4218d2.html">https://s3-whjr-curriculum-uploads.whjr.online/33a2adb2-a57a-4a4e-b492-257e8a4218d2.html</a>
Explore Activity	GUI-Based Chat-1	<a href="https://github.com/Tynker-Computer-Networks/TNK-M14-C111-SAS-BP">https://github.com/Tynker-Computer-Networks/TNK-M14-C111-SAS-BP</a>
Teacher Activity 1	Create the Application Window	<a href="https://github.com/Tynker-Computer-Networks/TNK-M14-C111-TAS-BP">https://github.com/Tynker-Computer-Networks/TNK-M14-C111-TAS-BP</a>
Teacher Reference: Teacher Activity 1 Solution	Create the Application Window	<a href="https://github.com/Tynker-Computer-Networks/TNK-M14-C111-TAS">https://github.com/Tynker-Computer-Networks/TNK-M14-C111-TAS</a>
Student Activity 1	Create the Application Window	<a href="https://github.com/Tynker-Computer-Networks/TNK-M14-C111-SAS-BP">https://github.com/Tynker-Computer-Networks/TNK-M14-C111-SAS-BP</a>
Teacher Reference: Student Activity 1 Solution	Create the Application Window	<a href="https://github.com/Tynker-Computer-Networks/TNK-M14-C111-SAS">https://github.com/Tynker-Computer-Networks/TNK-M14-C111-SAS</a>
Teacher Activity 2	Add Widget to the Window	<a href="https://github.com/Tynker-Computer-Networks/TNK-M14-C111-TAS-BP">https://github.com/Tynker-Computer-Networks/TNK-M14-C111-TAS-BP</a>
Teacher Reference: Teacher Activity 2 Solution	Add Widget to the Window	<a href="https://github.com/Tynker-Computer-Networks/TNK-M14-C111-TAS">https://github.com/Tynker-Computer-Networks/TNK-M14-C111-TAS</a>
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Teacher Activity 3	Connect to the chat App	<a href="https://github.com/Tynker-Computer-Networks/TNK-M14-C111-TAS-BP">https://github.com/Tynker-Computer-Networks/TNK-M14-C111-TAS-BP</a>
Teacher Reference: Teacher Activity 3 Solution	Connect to the chat App	<a href="https://github.com/Tynker-Computer-Networks/TNK-M14-C111-TAS">https://github.com/Tynker-Computer-Networks/TNK-M14-C111-TAS</a>
Student Activity 3	Connect to the chat App	<a href="https://github.com/Tynker-Computer-Networks/TNK-M14-C111-SAS-BP">https://github.com/Tynker-Computer-Networks/TNK-M14-C111-SAS-BP</a>
Teacher Reference: Student Activity 3 Solution	Connect to the chat App	<a href="https://github.com/Tynker-Computer-Networks/TNK-M14-C111-SAS">https://github.com/Tynker-Computer-Networks/TNK-M14-C111-SAS</a>
Student's Additional Activity 1	Add a Clear Button	<a href="https://github.com/Tynker-Computer-Networks/TNK-M14-C111-SAS-BP">https://github.com/Tynker-Computer-Networks/TNK-M14-C111-SAS-BP</a>

Teacher Reference: Student's Additional Activity 1 Solution	Add a Clear Button	<a href="https://github.com/Tynker-Computer-Networks/TNK-M14-C111-SAS">https://github.com/Tynker-Computer-Networks/TNK-M14-C111-SAS</a>
Student's Additional Activity 2	Rearrange the Widget	<a href="https://github.com/Tynker-Computer-Networks/TNK-M14-C111-SAS-BP">https://github.com/Tynker-Computer-Networks/TNK-M14-C111-SAS-BP</a>
Teacher Reference: Student's Additional Activity 2 Solution	Rearrange the Widget	<a href="https://github.com/Tynker-Computer-Networks/TNK-M14-C111-SAS">https://github.com/Tynker-Computer-Networks/TNK-M14-C111-SAS</a>
Post Class Project	Quiz App-3	<a href="https://github.com/Tynker-Computer-Networks/TNK-M14-C111-PCP-BP">https://github.com/Tynker-Computer-Networks/TNK-M14-C111-PCP-BP</a>
Teacher Reference: Post Class Project Solution	Quiz App-3	<a href="https://github.com/Tynker-Computer-Networks/TNK-M14-C111-PCP">https://github.com/Tynker-Computer-Networks/TNK-M14-C111-PCP</a>