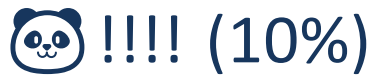


Assignment 3: Create a Panda-Chat



Start Date: 4th March 2025

Submission Deadline: 19th March 2025 (11.59 PM)

Submission Medium: D2L

Background

In this assignment, you will develop a client-server chat application using Python's socket programming capabilities. The chatroom is themed around pandas 🐼, and all interactions must incorporate panda-related fun, such as emojis, puns, or facts. Your task is to implement both the server and client programs to enable real-time communication among connected users.

Objective

The objective is to create a server-client chat application utilizing socket programming in Python. The application should offer the following functionalities:

1. Server Functions:

- Accept multiple client connections simultaneously.
- Broadcast messages to all connected clients, adding random panda-themed decorations.
- Handle special commands like '@bamboo', '@grove', and '@leaves'.

2. Client Functions:

- Allow users to connect to the server and set or assign a unique panda name.
- Send chat messages and use special commands.
- Gracefully disconnect from the chat.

Technical Requirements

1. The server and client must be implemented using Python's `socket` module.
2. The server must handle multiple clients using threading.
3. Messages should be broadcast with a panda-themed flair (e.g., emojis or puns).
4. The client must handle commands (`@bamboo`, `@grove`, `@leaves`) as described.
5. Code should handle errors gracefully, such as client disconnections or invalid inputs.

Grading Distribution

1. Server Functionality (10 points):

- Handles multiple clients and broadcasts messages correctly + Demo: (5 points).
- Implements special commands as specified + Demo: (5 points).

2. Client Functionality (10 points):

- Connects to the server and handles input/output correctly + Demo: (5 points).
- Implements graceful disconnection and command handling + Demo: (5 points).

3. Code Quality and Documentation (8 points):

- Code Modularity: 3 points
- Code Comments and Readability: 2 points
- Documentation: 3 points

4. Creativity (2 points):

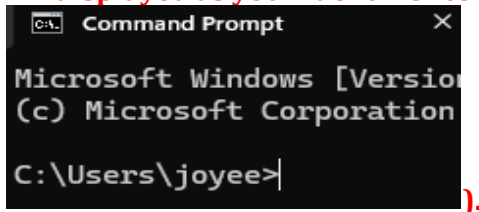
- Adds fun panda-themed features beyond the basic requirements (e.g., ASCII art, GUI, etc.).
- Type your text

Submission Guidelines

1. Code Submission: Submit the complete source code for the server and client with appropriate comments in D2L.
2. Demo Submission: Submit a screen recording in D2L.
3. Documentation: Submit a README file in D2L explaining how to compile and run the program, example inputs and outputs, and assumptions/design decisions.
4. Server Log File: Submit a sample log file generated during the program's execution in D2L.

Deliverables

1. Fully functional server and client applications (.py).
2. A short report (README) detailing your implementation, challenges faced, and any extra features added.
3. A video demo of the panda chat room in action in Gradescope **(Your code should be executed in the command prompt, ensuring that your computer name is displayed as your identifier to verify that the work is genuinely yours:**



Special Commands Functionalities :

- @bamboo : This command sends a random panda-related fact to the user who triggered the command.
- @grove : This command provides the user with a list of all currently connected users' names (or panda names).
- @leaves : This command allows the user to exit the chat room gracefully.

You can generate the fun facts stored in a list :

```
# Panda facts and emojis (feel free to add more)
PANDA_EMOJIS = ["", "", "", "", ""]
PANDA_FACTS = [
    "Pandas spend around 14 hours a day eating bamboo! ",
    "Baby pandas are born pink and weigh only about 100 grams! ",
    "A group of pandas is called an embarrassment! ",
    "Pandas can swim and are excellent tree climbers! ",
    "There are only about 1,800 giant pandas left in the wild. ",
    #you can add more if you want!!!
]
```