

Chat Server with Pickle

Background

You are tasked with implementing and testing a simple chat server using Python. The chat server should be able to accept connections from clients, receive messages, and log the details of these messages. The messages are serialized using the pickle module and the server should deserialize these messages upon receipt.

Problem Description

Your task is to implement the following:

- A Message class to represent messages sent by clients.
- A main function to set up and run the chat server.

Message Class

Implement the Message class with the following specifications:

Attributes:

 username (string): The username of the client sending the message.

 text (string): The content of the message.

 timestamp (datetime): The timestamp of when the message was created.

Methods:

 __init__(self, username, text, timestamp): Constructor to initialize the attributes.

 deserialize(serialized_message): A static method to deserialize a serialized message using pickle.

Chat Server

Implement the main function to set up and run the chat server:

- Create a TCP/IP socket.
- Bind the socket to localhost on port 12345.
- Listen for incoming connections.
- Use select to handle multiple sockets.
- Accept new connections and add them to the list of monitored sockets.
- Receive data from clients, deserialize it using the Message class, and log the message details.
- Handle exceptions and close sockets when errors occur.

Logging

The server should log the following events using the logging module:

- When the server starts and is listening on the specified port.
- When a new connection is accepted.
- When a message is received, log the username, text, and timestamp.

Output (without unit test)

```
INFO:__main__:Server is listening on port 12345
INFO:__main__:Accepted new connection from ('127.0.0.1',
51388)
INFO:__main__:Received message:
INFO:__main__:Username: andi
INFO:__main__:Text: hello
INFO:__main__:Timestamp: 2024-06-03 04:55:15.566471
```

Output (with unit test)

```
test attribute passed: Received message: found in log messages
test attribute passed: Username: Alice found in log messages
test attribute passed: Text: Hello, World! found in log
messages
```