Java Assignment 4

This assignment is about implementing a chat server.

You are given the following files:
- EchoServer.java (in package paradis.assignment4),
- Client.java (in package paradis.assignment4).

You can implement your chat server by modifying EchoServer, and test your chat server with Client.

The zip file JavaAssignment4Code.zip includes the files above, and can be downloaded from iLearn.

Basic task (grade C/D/E/F)

Create a program ChatServer.java (in package paradis.assignment4) that works as follows:

1) a multiple number of clients should be able to connect to the chat server;

2) the first message from each connected client should be its identity "name";

3) all messages the chat server receives should be sent to all clients (including the client that originally sent the message);

4) all messages sent from the chat server should have a prefix "name: ", where "name" is the identity of the client who originally sent the message;

5) an appropriate data structure should be used to hold some kind of references to all connected clients, in such a way that no locking is needed when updating or iterating over the data structure;

6) the chat server should all the time in parallel listen to incoming messages from all connected clients;

7) the chat server should be thread safe.

Advanced task (grade A/B/C/D/E/F)

Additional requirements on the ChatServer for higher grades:

8) all outgoing messages from the chat server should be sent in parallel to all clients;

9) the code of the chat server should not include any locks;

10) the solution should guarantee that all messages to all clients are sent in the same order as the chat server received them;

11) the solution should be thread safe;

12) the solution should be as performant as possible.

Submission

Your submission should be a **single file** called **ChatServer.java**. Your solution should be submitted to the appropriate place in iLearn2.

If you want to create new classes then use inner classes so your complete solution only consists of one file as specified above.

To be able to get grade A or B you should submit your solution before the first deadline.

Good luck!