

System Design Exercise: Chat System

From the following description of a simple chat system, you have to write a System Design Document including:

- The subsystem decomposition that identifies the different subsystems of the chat system. For each subsystem, you should describe its purpose, the services it provides, the services it uses and the threads of the subsystem
 - The way subsystems communicate with each other (for instance, HTML forms, RMI, SQL queries)
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The newly developed chat system ICU is supposed to provide most of the basic functionalities of chat systems:

- In order to use the application, a user has to register herself first. Upon registration, a user has to give some personal data (like name and e-mail address), a username and a password
- A registered user can login to the system using her username and password. After a successful login, a user can logout
- After successful login, a user can remove herself from the system, modify her personal data, add or remove other users from her friends-list, chat with users who are on her friends-list, search for other users based on their personal data (e.g., to find friends), and search in her chat histories

In the first version of ICU, chat rooms will not be supported. That is, exactly two users can participate in a chat. However, a user can have multiple chats running at the same time.

ICU should be usable both as a standalone application and a web application. The latter should only provide the functionalities of logging in and out, and chatting with friends.