

The Design of Java-based LAN Chat System

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Abstract: Following the high speed of world economic development, more and more people cannot have enough time to chat or talk face to face to each other, so the instant chat systems had been invented, people can use these systems to chat with other people in everywhere and anytime. For example, QQ and WeChat are pretty popular in China, they are also the lasted technology in this field. The functions of its which can support people to solve many problems in life, work and study are abundant and convenient. This topic is based on Java network programming, using Eclipse and My SQL(SQLite) as main development tool and database. This system employs C/S design mode, divided into two ports, Client and Server that can save data simply and reduce communication overhead of system, because of these, the system can achieve sending messages instantly. The users can use the Client to finish the functions of register, logging in friends management, sending messages and so on. The managers can use the Server to accomplish the functions of accounts management sending messages to appointed users coercing user to log out and so on.

Keywords: Chat; Java; Users; Managers

1. Introduction

As mentioned above, Netcom Communications plays an extremely important role in today's information and high-speed society. In general, most people only use it as a tool to contact relatives and friends, but in fact, its function has been expanded to many companies [1-3]. Enterprises also need it. Many enterprises will design and use proprietary local area network chat system to facilitate enterprise management and business negotiation. This kind of chat system usually needs to build an internal local area network, which is a centralized chat system based on Socket. In order to save and facilitate the research, the system adopts another mode: C / S, which can achieve the effect by building the server and the client, which is not only convenient to view the information. It is also convenient for management [4-8].

2 Requirements Analysis

2.1. Client function

2.1.1. Registration

After the user clicks on the registration and enters the interface, fills in the nickname, password, location, personality signature and avatar, the system sends its editing and translation to the server record, and if successfully registered, the system gives a id (similar to the QQ number). At the same time, most of them are random numbers, but the system is not easy to save and demonstrate [9-12]. The system will provide a fixed sequence of id, and record the id to the client database at the same time, so as to facilitate the next login.

2.1.2. Login

After the user registers again, enter id (usually not using nicknames, because nicknames are not usually set to unique) and password click login, a connection to the server will be established, and a server will retrieve whether the id matches password, If successful, jump to the main interface, if not (the main reasons for failure are: password error, user "blocked" by the server), prompt for related failure.

2.1.3. Chat

When the user successfully logs in and enters the main interface, the recent chat object will be displayed on the left, and the friend bar can be opened at the bottom of the seat. After selecting the object you want to chat with, the chat box will pop up on the right side of the main interface. The chat box displays the chat record under the local machine (the system cannot display the cloud chat record). At the same time, there is an input box below the chat box, and the user input information is received by the server and translated into binary and sent to the corresponding id user. Note, The system uses a local server, if the target user is not online, it cannot be sent successfully. If the target user is online, the prompt is received and the cancellation is received on the left side of the main interface Interest.

2.1.4. Sending documents

The system can send a file, but the file is not too large, especially when the file is displayed, a computer is usual-

ly used to act as a client and a server side at the same time, the sending of an excessive file will be extremely easy to cause the system not to respond, and when the file is sent, The file is to be translated into a byte array form to be temporarily saved to the server database, and when the receiving user determines to receive the file, the corresponding file is retrieved according to the two-party id, and meanwhile, the file is downloaded to the receiving user.

2.1.5. Sending a screenshot

This system supports the sending of a screenshot, where the user A uses a shortcut key (usually two to three components to prevent false contact), the image file is processed by the client computer, the same is translated into byte form, and then the process is as described in the previous section.

2.2. Server-side functionality

Display server status: the server will display the host name, IP address, free memory, startup time, run time, project path and other related server status directly in the main interface.

For online users: server-side users (administrators) can send broadcast information to online users to force of-line.

For all users: server-side users can view and modify the user's status (freeze, thaw).

Console: log4j as the output source, overwrite it can print the log to the console in real time.

Feedback On Comments: the server can receive feedback from the user to the feedback.

Settings: this is the operation that must be done before starting the server, you can set the number of connected clients, connected database id and so on.

3. Basic Theory of System Design

3.1. Principle of instant messaging

The user first registers and logs in, then connects the socket to the client, the server opens a new id (thread) at the same time, and saves the user to the database at the same time. When sending the message, the information is first packaged and sent to the server. The server sends it to the corresponding user according to the received id, that is, C / S mode.

3.2. Swing technology

Swing technology is an extension technology based on Eclipse development tools. The main function is to simplify the code through pre-designed windows, buttons and other basic components, so that programmers can directly pull and splice the technology. The system will use this technology as the interface design between the client and the server, which can be viewed by the editor more intuitively and build a more beautiful interface.

3.3. Background for the construction of the system

Eclipse is the main development tool. Swing technology is used as the interface design technology of client (Client) and server (Server), and the server uses My SQL (SQLite) as database to save data.

4. System Design

4.1. System function

The system can be divided into the following five functional modules: registration, login, chat, file pictures, server management, more detailed client shortcut keys, add friends, view history and so on; Server side display server information, configuration server, user operation, send broadcast and so on.

The following figure shows the functional module schematics.

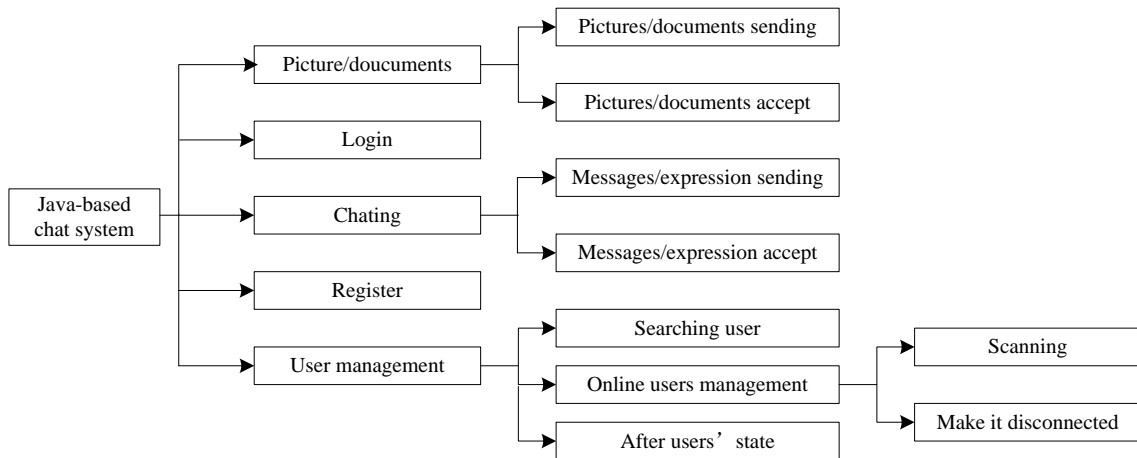


Figure 1. Schematic diagram of system function

4.2. Database design

There are the following main kinds of data saved by the system in the database:
 User (id, nickname, password, gender, location, personal-ity signature, avatar, account status)

Group chat (group chat id, group name, creation time, internal member id, announcement, etc.)
 The table below is the primary classification of database storage data

Table 1. User table (client table)

Name	Code	Annotation	Data type
Account(ID)	ID	Account system creates a new identity	Int(20)
(Name)	Name	Name	Varchar(60)
(Pass word)	Paw	Password	Varchar(60)
(Sex)	Sex	Gender	Tiny int(1)
(Area)	Area	Region	Varchar(200)
(Signature)	Signature	Personal signature	Varchar(255)
(State)	State	0 offline 1 online 2 freezing	Int(1)
(Heading)	Heading	Head image	Medium blob
(Full text_index)	Full text_index		Varchar(255)

5. Concluding Remarks

This topic, based on Java chat design, using C / S development mode, using Eclipse tools, swing technology, mybatis, Socket, JDBC and other technologies, using dual database, the client uses SQLite, server to use MySQL, After using Swing technology and Socket technology, the communication is easier to complete, and the separate use of database between the client and the server also reduces the burden, so it is easier to complete a beautiful and functional system. The system does not use a network server, using a local. The system adopts the method of the local server, so long as more than one computer is connected to the server or the corresponding local area network, and the client of the system is installed at the same time, The communication can be achieved, most of which is for the chat system inside the company's enterprise.

The system has the advantages of simple frame, various functions, convenient operation, smooth operation, and is convenient to understand, and realizes more than eighty percent of the functions required by a communication tool, and is in line with the requirements of the enterprise and the public for a local area network chatting system.

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