

A Mobile Client Design Based on Android Power Communication Monitoring System

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Abstract: In this paper, design of electric power communication monitoring system of mobile phone APP, to realize the client some function based on the Android platform, this system development using the Java programming language, the Android studio platform to develop, make use of the Android SDK and Android JDK on its Android development environment setup, and use the embedded database SQLite to implement the construction of the database and the connection, data query and stored. This paper completes the user login and registration module, the current alarm information display function module, real-time data statistics function module and other functional modules. Users can use the client to monitor and query the data, and the corresponding alarm information data statistics and display in the way of line chart, so that the information results can be more intuitive display.

Keywords: Power communication monitoring; Mobile client; Data query

1. INTRODUCTION TO KEY TECHNOLOGIES

(1)SQLite

SQLite is a microdatabase, a database management system that is contained in a relatively small C library and adheres to an ACID relationship. It is a public domain project established by D.RichardHipp^[1,2]. The design goal is embedded, and is currently used in many embedded devices, it occupies very low resources, in embedded devices, may only need hundreds of K of memory.

In addition, it can be combined with many programming languages, such as C#, PHP, Java, etc and its processing speed is slower than that of SQLite^[3] compared with Mysql, PostgreSQL and other famous open source database management systems.PostgreSQL.

(2)MPchart

MPchart has many advantages. First of all, it is relatively simple to use, and arbitrary ICONS can be defined in the layout file. By FindViewById(), data can be added to the chart^[4,5]. There is a better mechanism for handling event conflicts, and the chart can be placed in many places, such as listview; High flexibility, can be customized, according to your personal needs to transform; Finally, images can be displayed in the form of animation^[6].

(3) Native development of Android

Native Android development is actually a third-party mobile application based on the local operating system of smart phones and written and run with native programs. When developing native apps, it is necessary to select different App development languages for different operating systems of smart phones. For example, android App is Java development language, IOS App is objective-c language, and Windows Phone App development is C# language. As for the android native development I choose, I need to be familiar with the Java language to implement various functions.

2. SYSTEM OVERVIEW DESIGN

The brief design of the system plays a very important role in the design of the power communication monitoring system. This section completes the design of each functional module of the mobile phone APP of the power communication monitoring system. The overall structure of the mobile phone APP of the power communication monitoring system is shown in Figure 2-1.

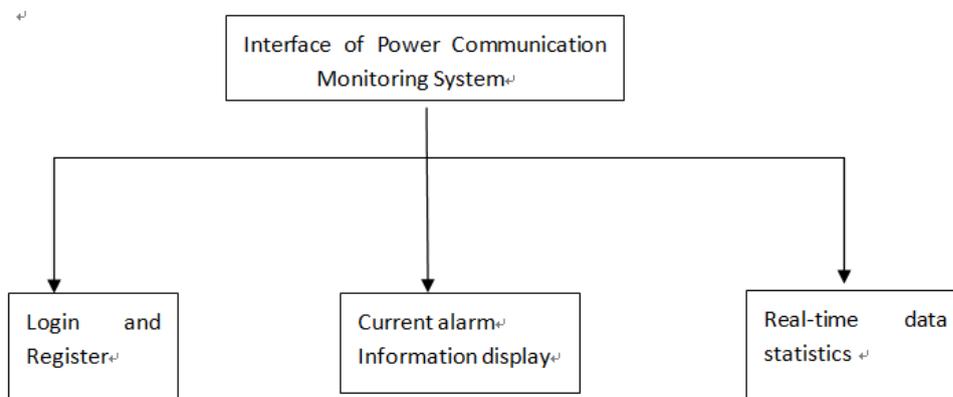


Figure2-1 System overall structure diagram

2.1 System function module design

The first part to be explained is the client part of the power communication monitoring system:

- (1) Login. The employee enters the employee number and password. If the password is correct, the user can jump to the welcome screen for successful login. After clicking, the user enters the system.
- (2) Registration. Users who log in for the first time should register. The interface will jump to the input registration interface, in which you can input the employee number, password and other information. After registration, the information will be submitted, and then it will be saved in the database, and the user will be prompted to register successfully.
- (3) Volume alarm information display interface. In this page, the pulley menu will be displayed, and the spinner selected according to the region. Employees will screen different data information according to different regions.
- (4) Display interface of channel alarm information. The information display of the interface is similar to that of the volume alarm information display interface, and different data information can be displayed in the table according to different regions, different stations and the time you want to choose.

(5) Real-time alarm data. When querying real-time data, the data information of different quarters can be displayed through the bar graph, and the amount of data information of different quarters can be counted and displayed.

(6) Historical curve data. This function is mainly to summarize the data in the past period of time, and then show it through the line graph, which is very concise and clear to show the data of each time.

2.2 Database design

(1) Requirement design

According to the requirements of the login and registration interface of the power communication monitoring system, the relationship among user information, job number and password is determined, and then the database is built.

(2) Logical design

According to the demand analysis of the power communication monitoring system and the logical design of the database, the following database tables and related descriptions are obtained as follows:

User information table:

The structure and related instructions of the user table are shown in table 2-2.

table2-2 user table

Number	Field name	Field meaning	Type	Width
1	username	User name	string	20
2	password	Password	string	20

3. REALIZATION OF POWER COMMUNICATION MONITORING SYSTEM

3.1 User login and registration function module

The login interface ACTS as the main entry interface for the client. The employee enters the employee number at the employee number. After entering the password, the existing data in the database is checked with the personal information entered by the user. If the information is matched correctly, the user can enter the welcome interface of the power communication monitoring system.

3.2 Current alarm information display function module

Current alarm information display function display interface, mainly divided into two parts to achieve its function. The first part is the volume alarm information inquiry function; The second part is the channel alarm information query function. The main realization process of the interface of quantitative alarm information query is as follows:

- (1)Spinner of select query according to different regions and stations;
- (2)Add corresponding listening function to each query button.

In order to better reflect the function of data query, the flowchart as shown below is drawn.

3.3 Real-time data statistics function module

In the display interface of real-time data statistics function, the current variation of data information is displayed. When employees using this APP want to know the latest real-time data changes, they will draw a bar chart to show it. See figure 3-1

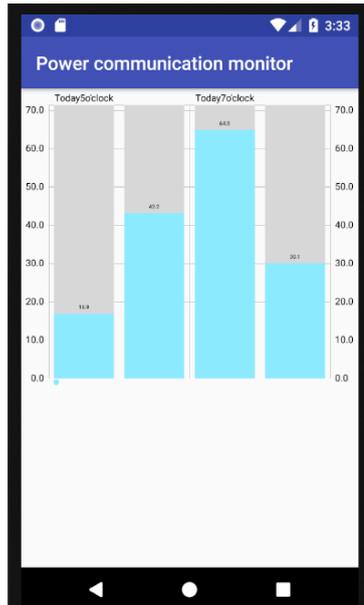


Figure 3-1 Histogram display interface

You can directly enter the real-time data display interface and display it in the form of histogram.

3.4 Function module of historical data display

In the historical data display function interface, is a statistical function for historical data. A statistical summary of the data produced in the past and a graphical presentation of the results. See figure 3-2

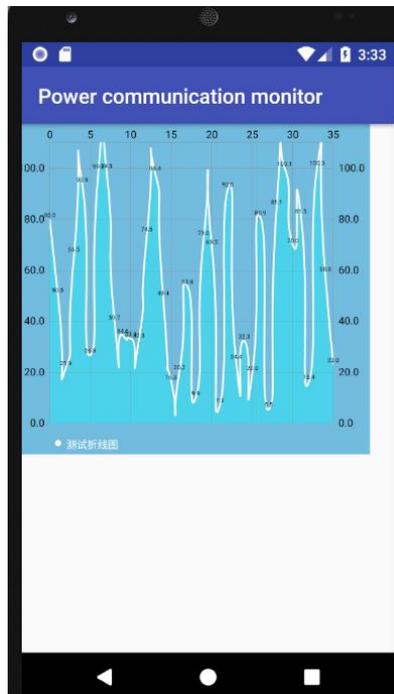


Figure 3-2 Polyline diagram display interface

4. CONCLUSION

With the rapid development of China's economy and the progress of science and technology, people's demand for electric energy is increasing, so a safe and stable power grid is crucial for the rapid development of China's economy . Power enterprises in China's important position, its special power

communication network is more and more complex, so to ensure its safety and stability of the responsibility is also very important. Therefore, traditional manual management is replaced by computer management, which solves the disadvantage of unreasonable personnel arrangement and insufficient manpower. In the rapid development of technology today, the convenience of mobile phone client can meet people's needs.

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