Display System Based on Wireless Transmission Storage Database
Xue-fei WU, Zhi WENG*, Run-jing ZHOU, Hui-yu ZHU and Zhen ZHAO
College of Electronic Information Engineering, Inner Mongolia University, Hohhot 010021, China
*Corresponding author

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Abstract. In order to monitor the physical condition and position of the elderly and improve the efficiency of the hospital, a system based on measuring body temperature, heart rate pulse and position is designed. The obtained data was transmitted to the computer through ZigBee and stored in the database. The data was written into the MySQL database and stored. Through the configuration of the master-slave server, the data was shared among different servers. In addition, websites, APPs, and micro-pages were created, and the data was displayed thereon. This system measures body temperature, heart rate pulse, position, and establishes a dedicated database for the ward. And this system can display the collected data.

Introduction
With the rapid development of science and technology and the popularity of big data, more and more systems have begun to develop applications based on big data. This article describes the data that will store collected body temperature, heart rate pulse, and location information in a database. A custodian can create a database of his or her own and the guardian can check the physical condition and location of the ward at any time. If the ward's physical condition is problematic, the data in the database can be analyzed in a timely manner. At the same time, when the ward is lost in the room, it can also check the ward's final indoor location through the database to provide a basis for finding the ward. This system can be used in the life of the elderly and in hospital systems. In the elderly's life, some elderly people with poor physical conditions can use this system to monitor their physical conditions in real time. The system can also find the location of the elderly when the system provides family members with data on their physical condition. In the hospital system, because the number of doctors or nurses is far less than the number of patients. This system can save doctors or nurses to personally measure the time of body temperature and pulse and improve work efficiency.

Design of the Overall System
Based on systems that measure body temperature, heart rate pulse, and position. ZigBee, a wireless communication technology that is flexible and diversified in terms of networking and secure and reliable in data transmission, transfers data to the local receiving end of the computer [1]. The local receiver receives the data by configuring the communication receiver. After the received data is split, the data is stored in the local MySQL database. Then the MySQL database is converted to an SQLite database and displayed on the website interface. The website uses Python to build a Django project. Then the data in the SQLite database is imported into the interface.
We use VB to establish a receiver for communication. The interface consists of various controls. The text type controls are used to store the split data display.

**Design of the System Software**

**Visual Basic and MySQL Database**

Because VB provides a good interface design capabilities and data acquisition and storage functions, VB can be widely used in different fields \[2\]. Visual Basic 6.0 has MSCOMM controls for serial communication \[3\]. The MSCOMM control provides full-featured serial data transmission and reception \[4\]. Data sharing based on the MySQL database is a technology that must be mastered by analysts in the era of big data \[5\]. The MySQL database can be based on Windows and Linux systems. This article is based on the application of Windows system.

First, after using the VB controls to set up the communication interface, create a database connection, access objects, database connection string variables, SQL statement variables, buffer as a string, array "a" as a string variable, and array "b" as a string variable. Then, we configure the serial number. Open the serial port. Set 9600 baud rate, no parity, 8 data bits, 1 stop bit. Serial read string length is 36. If the receiving register reaches 36 characters, it will start receiving data. Finally, clear the buffer for sending and clear the buffer for receiving.

When the database is configured for configuration, use "connectionstring = "Provider=MSDASQL.1;Persist Security Info=False;" & "User ID=root; Data Source=mydb;Initial Catalog=bookshop"" to set the location of the database connection and wait for the connection to the database. To allow the rate of received data to be within a controllable range, we set 6 seconds to write data to the database once.

Then it starts to write a function that displays the received data and assigns the characters in the receiving register. Including latitude and longitude, heart rate pulse, and body temperature are given to the buffer. Add the value of the buffer to the list box to display it. The string format is "longitude and latitude space pulse rate bpm temperature". Split the buffer according to the statement "a = Split(buffer, " ") "with a space as the first split point. The data in front of the space is the GPS data a(0) and the data after the space is the heartbeat and body temperature data a(1). According to the statement "b = Split(a(1), "bpm")", bpm is used as the second split point to split a(1). The data in front of bpm is heartbeat and data b(0). The data behind bpm is body temperature, data b(1). After the data is split, the heartbeat data is displayed on text, the body temperature data is displayed on
After splitting the data and displaying it, we begin to write data to the database, according to the statement:

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sql = "INSERT INTO 'bookshop'.apipatient ('ID', 'Created', 'Name', 'Heart', 'Temp', 'Gps')VALUES (NULL, " & Trim(Text2.Text) & " ', " & Trim(Text3.Text) & " ', " & Trim(Text4.Text) & " ', " & Trim(Text5.Text) & " ', " & Trim(Text6.Text) & ")");"
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Insert the value of Text1.Text into the ID column. Insert the value of Text2.Text into the Created column. Insert the value of Text3.Text into the Name column. Insert the value of Text4.Text into the Heart column. Insert the value of Text5.Text into the Temp column. Insert the value of Text6.Text into the GPS column. Data storage is completed and data has been stored in the database.

SQLite Database

The compact SQLite database has a strong portability. Because SQLite has a rich feature library, it can provide more features in the development process. SQLite database is the premise of website interaction. We display data such as body temperature, heart rate, and GPS on the website page. This data is placed in the SQLite database. The page calls the data and interacts with the web page code.

Data Sharing

After the data is stored in the database, data transmission of different servers' databases is started. In terms of data sharing, we found two methods in the process of research. The first method is master-slave server configuration. Set up a MySQL database master-slave relationship. The other server's database is synchronized with the local server's primary database. The setting of the function is reflected in the MySQL configuration file. MySQL configuration file (usually my.ini):

Set up each server. After the setting is completed, it is necessary to make sure that the firewall of the master and slave is indeed turned off. It is better to allow the master and slave to ping each other.
Configure one master and the other slave mode. Use the "show slave status/G" command to view the log status screen. See Figure 5 and Figure 6.

![Master server status view diagram.](image)

Figure 5. Master server status view diagram.

![Slave server status view diagram.](image)

Figure 6. Slave server status view diagram.

"Slave_IO_Running: Yes; Slave_SQL_Running: Yes;" appears in the interface. These two sentences indicate that the master and slave servers are connected successfully.

The second method is to rent a cloud database on the cloud server. We can directly write the collected data to the cloud database.

**Python Website**

This website uses the Python language to build a Django framework. Python provides a standard library for website processing. It hides most of the details and has a rapid development speed [7]. The overall architecture of the website is divided into foreground and background. The front desk refers to the web pages, interfaces, and designs that are displayed to netizens after we enter the website. In the standard suite of web front-end design: Html is a control of some web pages; Css is the code to beautify these controls (cascading style sheets); Javascript is a script language that enhances expressiveness, it can make a lot of dynamic and interactive effect [8]. The back office is where the administrator can change data on the site. The background requires a dedicated administrator account and password to log in. The background is built using the Django framework. Ajax is used for asynchronous communication between the foreground and background of the website. Ajax is the communication channel for data exchange between foreground and background. After the foreground and background data exchange, the content of the website will change accordingly. Updates certain parts of the webpage without reloading the entire webpage.
APP and Micro Page

After entering the APP application software to display a picture, it will jump to the already established website for data viewing within the APP. After the micro page is created, the corresponding two-dimensional code is generated. By scanning the two-dimensional code, you can display the overall function introduction of the system. After entering the information, you can enter the built site to view the data.

Summary

The system is designed to collect location information, body temperature and heart rate pulse data. Then we store the data in the database. At the same time, the data can be displayed on websites, mobile apps and micro-pages. The guardian can check the ward's physical condition and position in time. At the same time, if the ward is lost in the room, the location of the ward's last disappearance can be recorded. This kind of system design will be a good application in the life of the elderly or in the hospital system.

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References


