ABSTRACT: To make people understand the information in time, using mobile phones to send instructions "bluetooth" to GPRS module, receives the echo of the message content for the bluetooth module address and light information. The scheme comprehensive utilization of the Internet of things (GPRS and bluetooth wireless sensor technology, this system has simple structure, low cost, and expected results have been achieved in the laboratory, to realize mobile data query.

KEYWORDS: GPRS technology; Bluetooth technology; Mobile data query system; API function.

1 INTRODUCTION

Mobile data query system is designed for the convenience of mobile phone of useful information management, using GPRS technology combined with bluetooth technology, system simulation mobile phones to send instructions to GPRS module, bluetooth node temperature, to illustrate the feasibility and effectiveness of the system function realization.

2 BLUETOOTH TECHNOLOGY OVERVIEW

2.1 Bluetooth technology introduction

Bluetooth technology is a short-range wireless communication technology, the use of "Bluetooth" technology, can effectively simplify the handheld computers, laptops and mobile phones and other mobile communication terminal equipment for communication between, also can successfully simplify communications between these devices and the Internet, which makes the modern communication equipment and data transmission between the Internet become more efficiently, work in universal 2.4 GHz ISM frequencies, do not need to apply for the permit; (4) can also support data, audio, video signal; (5) adopts the FM modulation method, reduce the complexity of equipment.

2.2 Introduction to the serial port bluetooth module

The system design and configuration of the bluetooth module supports UART and USB, SPI, PCM, SPDIF interface, and support the SPP bluetooth serial port protocol, has low cost, small volume, low power consumption and high receiving sensitivity advantages, only with a few peripheral components can realize its powerful functions. The module is mainly used for short data wireless transmission field. Can be connected to PC bluetooth devices, can also be data exchange between two modules. Avoid cumbersome cable connection, can directly replace the serial port. The user can through a serial port to communicate with the module. A serial port baud rate support 1200, 2400, 4800, 9600, 14400, 19200, 38400, 57600, 115200, 230400, 460800 and 921600 bps. A serial port the default baud rate to 9600 BPS.

2.3 Introduction to the USB bluetooth module

This system design USES the USB bluetooth module configuration, low cost, small volume, low power consumption, and high sensitivity, etc. Only with a few peripheral components can realize its powerful functions. The module is mainly used for short data wireless transmission field. Can be connected to PC bluetooth devices, can also be data exchange between two modules. Avoid cumbersome cable connection,
convenient operation, powerful function, has the following features: a bluetooth personal LAN, bluetooth serial port function, bluetooth file transfer, information exchange, information synchronization, network access functions, AV, image transmission, bluetooth dial-up service, bluetooth printer, bluetooth man-machine input equipment service, bluetooth headset, bluetooth fax services and support multiple languages.

2.4 The bluetooth API function commonly used

Socket

In order to perform the bluetooth network I/O, a process must be done first thing in the call socket () function, specify the desired type of communication protocol.

The function prototype and functional description of the socket () function as follows:

int socket (int family, int type, int protocol);

Parameters:
family: specifies the expectations of the protocol used;
type: specifies the set of interface types, optional value, see table 2;
protocol: protocol type, is set to 0 select a given family and the type of system default values, or you can choose to set to the value of the listed in table 3

return: returns nonnegative integer on success, it is just like a file descriptor, called a set of interface description words

3 GPRS COMMUNICATION PRINCIPLE

3.1 GPRS communication principle

GPRS General wireless grouping service (General Packet Radio System), is between the second and third generation of a technology that is often referred to as 2.5 G. GPRS is using the same frequency as the GSM and bandwidth, unexpected structure, the wireless standard modulation, frequency hopping rules and the same TDMA frame structure. Therefore, in the GSM system is built on the basis of the GPRS system, for the most part in the GSM system components don't need to change the hardware, just as a software upgrade. With GPRS, user call setup time is greatly shortened, almost can do it "always online". In addition, the amount of data transferred the GPRS is operators rather than connection time as a benchmark to billing, to each user's service cost is lower.

GPRS was developed on the existing GSM system bearing business, a new data supports TCP/IP protocol, can with the packet data network (Internet) directly. GPRS is the original way of exchange (CSD) based on the circuit on the GSM network is introduced into two new network node: GPRS support node (SGSN) and gateway support node (GGSN). SGSN and MSC in the same grade level, and follow up the safe storage unit to realize the function of a single MS and access control, and through the frame relay connected to the base station system. GGSN support exchanged with external packet-switched networks, and through the GPRS based on IP backbone network and connectivity to the SGSN.

GPRS module to send and receive text messages is controlled by AT commands, common AT commands are as follows:

- AT the test connection is correct
- Echo ATE0 / ATE1 closed/open the echo
- The AT + CGMI get vendor information
- The AT + CGMR mobile version number
- The AT + CGSN get phone serial number (IMEI)
- The AT + CIMI get phone IMSI number
- The AT + CSSC acquisition, set the phone of the current character set. Can be set to GSM or UCS2
- The AT + CCLK get set phone clock
- The AT + COPS network operators
- The AT + CSCA message center number
- The AT + CPMS choose SMS storage location.
- Listed AT + CMGL SMS, list the SMS PDU code specified state
- The AT + CMGR read text messages, a specified number of SMS PDU code
- The AT + CMGS send text messages
- The AT + CMGD to delete the specified text
- The AT + CMGF message format. Divided into Text mode and PDU mode
- The AT + CNMI chief set new short message notify computer terminal

3.2 SMS control instruction format

Bluetooth node data obtained through text messages 
Instruction format: bluetooth

3.3 The principle of mobile phone access to bluetooth node

GPRS module connected to the central controller through serial port, the user write access to bluetooth node data's instructions, to messages sent via GPRS module to write programs, write a program to receive SMS after parsing, takes to the temperature of the echo.

4 HARDWARE CONNECTION

RXD1 connected to the central control room TXD1 connection RXD1 central control room.
SMS alarm use API function:

1. **[API format]**: int CCGPRS_MessageRegCallback isterAlarm (void (*) (TEXTMSG * message, void * arg), void * arg);
   **[Function description]**: register message function, used to receive messages
   **[parameters]**: callback is registered callback functions, arg is to save the parameters
   **[return]**: failed to successfully returns 0, return 1;
   **[Using an example]**: CCGPRS_Message_RegisterAlarm (callback, NULL);

2. **[API format]**: int CCGPRS_MessageSend(const char * phone, const char * MSG);
   **[Function description]**: send text messages
   **[reference number]**: phone number, SMS MSG said
   **[return back value]**: returns 0 on success, failure return 1;
   **[Using an example]**: CCGPRS_Message_Send(phoneNumber, warnMessage);

3. **[API format]**: ccbluetooth_get_illum (char * hwaddr, char * value);
   **[Function description]**: for bluetooth network node light information
   **[reference number]**: hwaddr access to hardware address, the value for light values
   **[return back value]**: returns 0 on success, failure return 1;
   **[Using an example]**: ccbluetooth_get_illum (hwaddr, value);

6 CONCLUSION

With the changing of GPRS technology and wireless network technology, mobile information query methods will continue to improve, we should keep up with its development pace, constantly applying new technology to mobile data query system.

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