



Interactive Management System for College Students' Health Based on Mobile Devices

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Abstract. In order to meet the large demand of college students in mental health management, an interactive management system for college students' mental health based on mobile devices is proposed. The system is developed based on Android platform, and realizes data interaction and information management through network transmission and background. According to the common psychological problems of young college students, the system has designed different ways of interaction, which has improved the user experience. After testing and analysis, the system has the advantages of low hardware cost, high development efficiency and strong program expansibility, and has good use value and research significance.

Keywords: mobile terminal · College students' health · management system

1 Introduction

With the continuous improvement of living standards, middle-aged and elderly people now pay more and more attention to their own health, but young people, especially college students, pay little attention to their own health. However, due to various factors, such as lack of exercise, irregular diet, frequent viewing of mobile phones and other bad habits, the physical condition of college students is not optimistic [1]. Although many universities have established systems about students' health, there are two obvious shortcomings: 1. Students don't understand the contents of the system, and they won't reflect their current situation to the school in time, which leads to the slow update of the system, even not updated all the year round, the content is seriously lagging behind, and the reference value is not great [2]. 2. The system has a certain warning function for students who know that they have serious diseases. However, for other possible diseases, such as weight change and neck pain, which may lead to hypertension, blood sugar and cervical spondylosis, the system can't remind students of these chronic changes in time. This paper aims at this situation to build a college student health file system [3]. The system can add students' health information in addition to the school, and students can also add their own health information in the system and update it at any time, and can know their physical condition by comparing some health data values, so as to achieve the role of vigilance and early warning [4].

2 Analysis and Research on the Interactive Management System of College Students' Mental Health Based on Mobile Terminal

2.1 Feasibility Analysis

Research shows that negative emotions such as anxiety and depression are common among college students, and depression is more common among senior students. The mental health problems of college students are related to many factors such as gender, nationality and major, and the prevalence rate of mental diseases is increasing year by year. Mental health has become a challenge that contemporary college students have to face, but it is difficult for colleges and universities to equip students with enough psychological counseling teachers because of the enrollment expansion and the uncoordinated ratio of teachers and students [5]. Therefore, it is necessary to explore a system suitable for the mental health management of college students in China in combination with the current actual situation in China. College students are easy to accept new things, and the popularity of smart phones is high. Designing a mental health management system based on mobile terminal can make schools and society better understand students' mental health. Android operating system has good compatibility and low development cost, so the system has good social value and practical significance [6].

2.2 System Requirements Analysis

The interactive management system of college students' mental health based on mobile terminal needs to meet various needs of different users, so it needs to have certain completeness in function. In order to ensure the privacy of users, the system needs strong information security. Users need to use their real names to complete the registration of the system and set a password that meets the requirements of the system [7]. The whole system also needs to include background connection system, mental health evaluation system, knowledge inquiry system, online consultation system, psychological counseling reservation system and data upload module. The terminal App needs to quickly transfer the user's operation data to the back-end server and back it up in the SQL database. The algorithm program in the server can analyze the characteristics according to the data in SQL to judge the user's mental health state. At the back end, it is also necessary to develop an information management interface based on the mobile terminal, which is convenient for administrators to maintain and update data [8].

3 System Design

3.1 Overall System Architecture

The interactive management system of college students' mental health based on the mobile terminal interacts with users with the help of the Android operating system, uses wireless network or WiFi signal to realize data transmission, and sends the operation results of users on the software to the interactive database. Then the data processing platform processes and analyzes the received data, and the processed data will be transmitted to the mobile App and the production database for backup respectively. The overall structure of the system is shown in Fig. 1 [9].

Table 1. System functional structure

User management	User login
	Add users
	User query
	Modify password
Knowledge base	Knowledge base structure
	Knowledge base maintenance
	Knowledge search
Information tracking	Psychological barometer
	Tracking time
	Early warning degree
	Psychological whisper
	online consultation
	Mail processing
System maintenance	System safety
	Database maintenance
	web page maintenance

4 System Development Environment and Implementation

4.1 Development Environment

The interactive management system of college students' mental health proposed in this paper is developed by Java, and the development environment is built by Eclipse and JDK10. The development steps are as follows:

- (1) Install JDK10 development kit;
- (2) Configure environment variables for JDK and import the information needed for development into Eclipse;
- (3) Install the Android SDK and the corresponding App development kit;
- (4) Combine Android SDK with Eclipse and install Developer Tools plugin;
- (5) Test the development environment.

The development environment of the interactive management system of college students' mental health based on the mobile terminal of this system is shown in Table 2.

4.2 System Security Problem Solution

Users' mental health-related data is highly private, so it is necessary to set up a strong information security authentication mechanism to protect users' data from being leaked. In communication, this system adopts two-way authentication mechanism, that is, only authenticated users and authenticated mobile phone software can communicate with

Table 2. Development environment of the system

Components	Version
Operating system	Window sXP, Win7
Database	SQL Server 2008 R2 Chinese version
web server	Tomcat6.0 server
Java environment	JDK1.6
Hibernate	Hibernate 3.3
Struts	Struts 2.1
Spring	Spring 3.0
JSP	2.0
Exploitation environment	My Eclipse 8.6

the back-end server [16]. Asymmetric encryption algorithm is used in the two-way authentication process, and symmetric encryption algorithm is used in the back-end server to encrypt and protect the user's private information. Only the users and mobile phone software who have passed the two-way authentication can decrypt and see the private information data. In the aspect of user login authentication, biometric features such as face and fingerprint recognition and multi-factor authentication with user name and password are adopted to strengthen the security of user login [17–21].

5 Conclusion

This paper proposes a mobile-based interactive management system for college students' mental health. The system is developed based on Android, which reduces the use threshold of college students. The system uses pictures, audio and other ways that are easily accepted by college students to interact, which improves the user experience. The system uses modular development mode, and constructs a mental health evaluation system, an online consultation system, a psychological counseling reservation system, etc., and has good expansibility. In order to strengthen the integrity of data transmission, a data transmission algorithm is designed at the transmitter, which improves the data transmission ability under weak signal conditions. In addition, the system uses two-way authentication technology, which greatly improves the security of data. The test shows that the system proposed in this paper has good use value and research significance.

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