ISSN: 1813-4890

Design and Implementation of Home-School Interaction System in Universities Based on Android System

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Abstract

Higher vocational colleges attach importance to the cultivation of comprehensive abilities of college students, highlighting the comprehensive development of morality, intelligence, physique, beauty, and labor in the training process. Comprehensive student education must be based on the combination of school, family, and society. How to conduct effective home-school interaction is of great significance to the cultivation of students in higher vocational colleges, and it can also promote the promotion and application of the home-school interaction collaborative education model in colleges and universities. Based on this, this paper designs and implements a college home-school interaction system based on Android system. The system adopts a C/S architecture, using a front and rear end separation mode. The back-end is realized by Bmob cloud server, and the front-end is realized by XBanner framework.

Keywords

College home-school interaction, Front and rear end separation technology, Android, XBanner, Bmob.

1. Introduction

The revitalization of the nation lies in education, and the purpose of education is to cultivate talents. Vocational colleges focus on cultivating the comprehensive abilities of college students, highlighting the comprehensive development of morality, intelligence, physical fitness, aesthetics, and labor in the training process. Comprehensive student education must be established on the basis of a combination of school, family, and society. At present, many universities' home-school interaction work mainly relies on telephone and WeChat parent group communication. Telephone one-on-one communication can achieve precise dialogue and efficient interaction. However, in recent years, universities have expanded enrollment and the number of students has been increasing year by year, making this method inadequate. The popular WeChat parent group has significantly improved communication efficiency, but it also faces problems such as parents passively accepting information and interacting less, and being unable to engage in targeted communication with teachers[1-3].

In order to carry out effective home-school interaction and promote the promotion and application of the home-school interaction collaborative education model in universities, many universities have started the construction of home-school interaction platforms. The home-school interaction platform adopted by Suzhou University uses a C/S software architecture, relies on the Android operating system, uses Java language, and implements the design of the client and server sides of the home-school interaction system based on JaveEE technology[4]. The home-school interaction system of Ludong University uses Java language, Android App Inventor as the development environment, SAE's Sina virtual server, and MySQL as the backend database to develop a home-school interaction system suitable for school student management work[5]. Based on this, this article designs and implements an Android

ISSN: 1813-4890

based home-school interaction system for universities. The system adopts a C/S architecture, using a front-end and back-end separation mode. The backend is implemented using a Bmob cloud server[6], and the front-end is implemented using the XBanner framework.

2. Demand Analysis

Teachers and parents of students are integral parts of the system's users. Among them, teachers have the highest authority to manage the information of all students' parents and students, including querying students' course grades and comprehensive test scores, adding student punishments, and sending school notices. All of these will be sent to the parent end through a chat robot. If teachers need to contact parents, they can add friends or create group chats through the address book module; Parents can add teachers to inquire about students' recent status. The main functions of teachers and students' parents are shown in Figures 1 and 2.

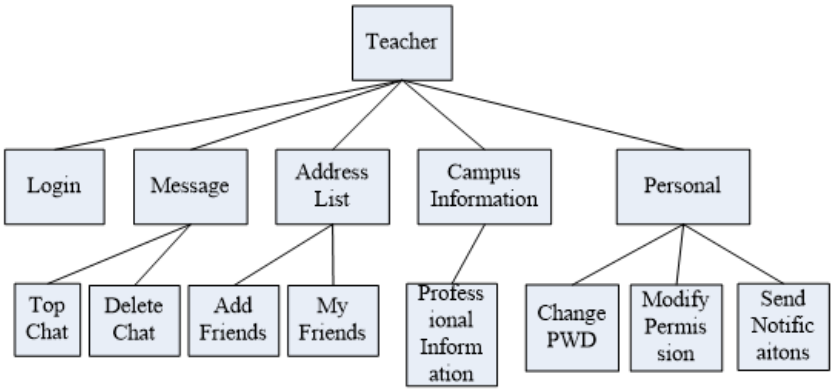

Fig. 1 The function module diagram of teacher

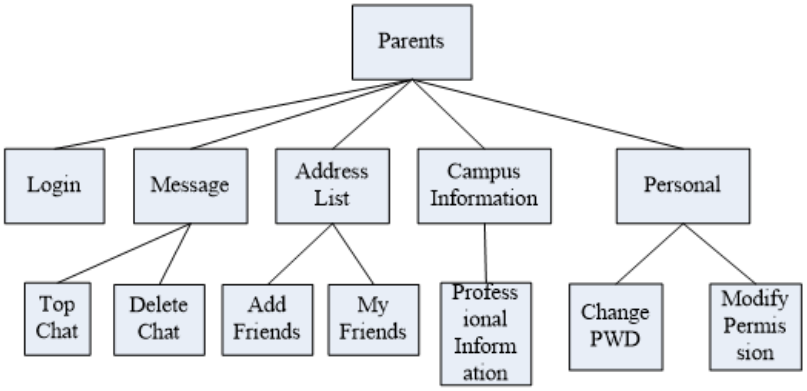

Fig. 2 The function module diagram of parents

3. System Design

3.1. Functional Design.

This system is mainly divided into four functional modules: message management module, which includes displaying message lists, setting whether to top and delete chats, and chat pages between users; The address book management module mainly displays the address book list, my new friends and my group chat, and the management of adding friends or group chat; The school information module displays the current situation and professional information of the school through a rotating map; My module is divided into parent role and teacher role, where parents can modify passwords and permissions. Based on the parent role, teachers have added functions to send school notices, comprehensive test score notices, and disciplinary

ISSN: 1813-4890

notices. After the above analysis and functional module design, the system structure is shown in Figure 3.

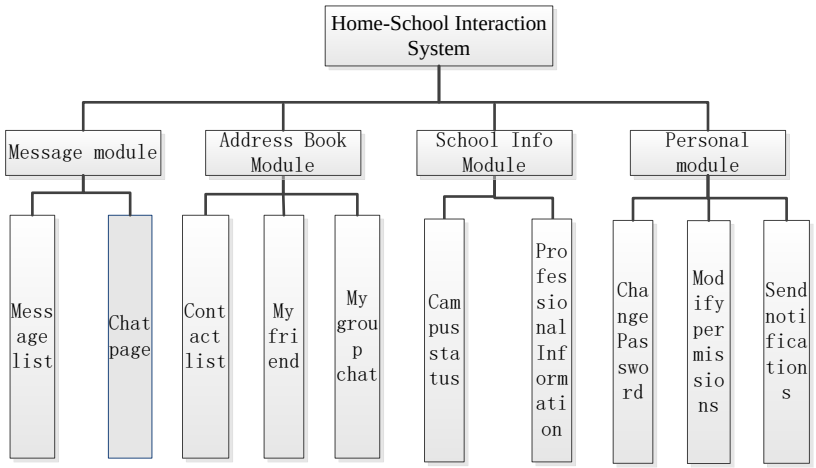

Fig. 3 The function module diagram of home-school interaction system

3.2. Database Design.

The data in the database is the information source of the system. Without the database user, there is no useful information in the system. The design of the database not only determines whether the acquisition and processing of information is feasible, but also has a huge impact on the stability of the system, the integrity of functions, and even the subsequent coding efficiency. Therefore, reasonable database design is a very important work.

This system uses a MySQL database for data storage, including tables for users, students, parents, grades, majors, notifications, penalties, and more.

3.3. Architecture Design.

The system is designed with a technical architecture around the front and rear end separation mode. The system adopts a front-end and back-end separation mode, and the backend is implemented using a Bmob cloud server. JSON format data is provided through an interface. The front-end obtains JSON format data through Ajax asynchronous technology, and is implemented using the XBanner framework.

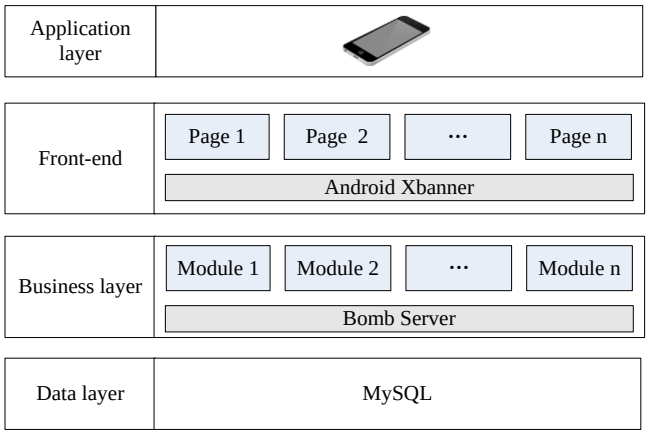

Fig. 4 The architecture design diagram of home-school interaction system

4. System Implementation

This system involves many pages, and the following will explain several key pages. Firstly, initialize the application by loading Tencent Cloud IM SDK and Bmob SDK. The main interface is mainly presented in the framework of Fragment+RadioGroup. Users can click the

ISSN: 1813-4890

RadioButton button below to switch pages. All Fragment pages are managed uniformly through FragmentManager, and the contextual environment is obtained through the get Support Fragment Manager() method; In the chat page, users click on the view layer's smart service button, and the control layer identifies whether the user is a parent by obtaining permissions. If so, a dialog box is displayed through showDialog(), and methods such as queryTzClass() are called to check if there are any notifications belonging to them in the model class. If so, they are displayed; The campus information module references the Xbanner framework in the view layer, uses the RecycleView component to form the rotation image, loads the image into the list through the control layer, and then uses loadImage() to load it into the Xbanner framework.

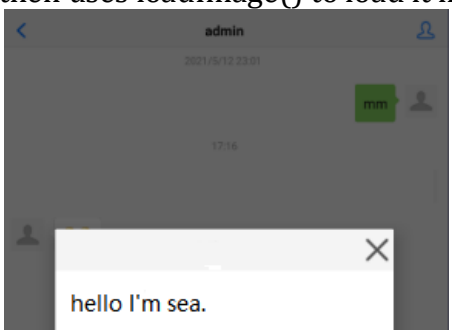

Fig. 5 The chat page

5. Conclusion

With the development of the new generation of information technology, more and more industries are using information technology to improve their competitiveness. The system is implemented using front-end and back-end separation technology. The backend uses a Bomb server, and the front-end uses the Android Xbanner framework to implement a university home school interaction system. The design and implementation of this system basically meet the basic needs of teachers and parents, effectively improving the communication efficiency of teachers, allowing parents to timely understand student dynamics, fully paying attention to individual students, and enabling more parents and schools to communicate more effectively, comprehensively, and scientifically, achieving the goal of collaborative education between parents and schools.

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