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Personal Health Information Service Platform Based on Vue.js+SpringBoot

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Abstract: *With the development of society and the improvement of people's living standards, people pay more and more attention to health problems, and people pay more and more attention to personal health problems. In the past, people needed to go to and from the hospital frequently in order to understand or evaluate their health status. For people with chronic diseases or family genetic history, they need regular physical examination to understand their health problems, but the personal health indicators and physical examination files that people pay attention to are lack of systematic storage and records. Based on this, this paper designs and implements a personal health information service system based on the concept of "active health". The front end of the system uses the Vue.js progressive framework, and the back end is built by the SpringBoot framework, using MySQL database for data storage. The system covers the core functions of physical examination file management, sports course management, healthy diet management and user management. Through the practice and research of this paper, it not only has a certain value for the effective recording and management of personal health indicators, but also has a certain value for alleviating the occupation of social medical resources and building a harmonious society with the concept of health.*

Keywords: *Personal health information; Vue.js framework; SpringBoot framework; MySQL database*

1. Introduction

In modern society, personal health management has become one of the quality of life pursued by more and more people[1]. However, the traditional personal health information management has many shortcomings, such as frequent trips to medical institutions, cumbersome manual registration, incomplete information records, low efficiency of query and management, which can not meet the needs of modern medical services[2]. Therefore, developing a safe, accurate and efficient personal health information service platform has become an urgent problem to be solved.

Vue.js is a progressive front-end framework[3]. The component-based development concept makes the code structure clearer and easier to maintain. At the same time, it provides a wealth of Vue instructions and can also be friendly integrated with other third-party libraries and frameworks. As an extension of the spring framework, the SpringBoot framework greatly simplifies the construction and development process of spring applications through a set of preset default configurations[4]. This paper designs and implements a personal health information service and management system based on Vue.js framework and SpringBoot framework. The system can realize the comprehensive management of personal health-related information, including the core functions of physical examination file management, exercise course management, healthy diet management, commonly used drugs management, diet and exercise plan, and also support user authority control to ensure the safety and reliability of system data. Through the research and practice of this paper, it aims to provide effective information technology solutions for personal health information management, and make contributions to alleviating the occupation of social medical resources and building a harmonious society with the concept of health.

2. Design the system

The personal health information service platform adopts the front-end and back-end separation mode, and the front-end uses vue.js framework to build a responsive user interface, providing smooth interactive experience and good visual effect; The back-end is implemented using the SpringBoot framework, which is mainly responsible for data processing, business logic and API interface design. The system uses MySQL database to store core data such as user information, health records and indicator information.

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The overall architecture supports horizontal expansion, has high availability and scalability, meets the needs of efficient management of personal health information, and provides users with convenient services such as health file query and healthy diet and exercise plan. The system architecture is shown in Figure 1.

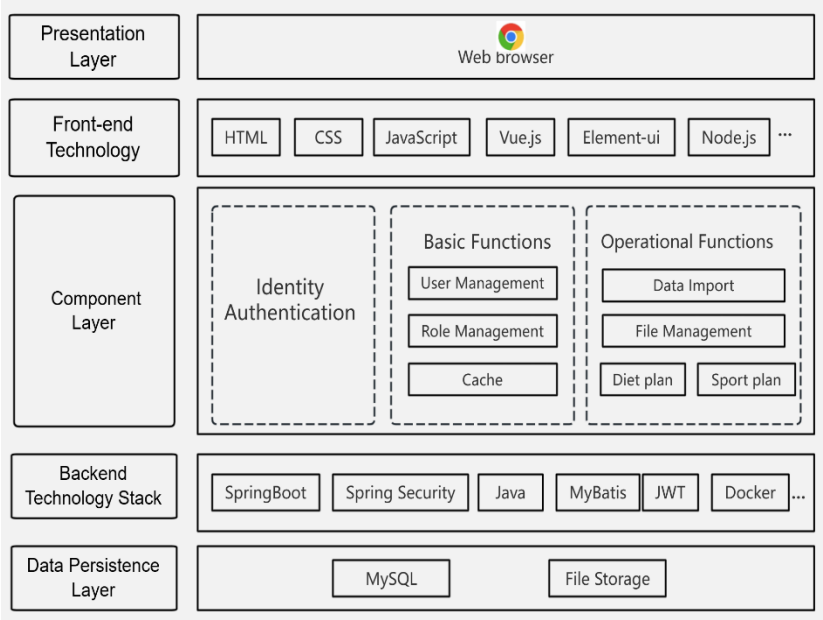

Figure 1: Overall system architecture diagram.

2.1. System architecture design

(1) Presentation Layer: the presentation layer is mainly the user interface of the system. Administrators or experts can access the system by using mainstream browsers such as chrome on the client. The presentation layer is responsible for displaying the data of the server, receiving user input and sending the request to the front end.

(2) Front-end Technology: the front end part uses the mainstream framework Vue.js, which has a simple and intuitive API to help developers get started quickly and build dynamic interactive front-end pages. Vue.js framework combines with Element-ui component library for modular user interface design, realizes dynamic display and data binding of pages through vue.js, provides responsive user interaction experience, and uses Axios tools to send HTTP requests to the rear end for crud operation of data.

(3) Component Layer: the business component layer is the core layer of the system, including identity authentication, authentication, user management, role management, cache, log, data import, file management, diet plan, exercise plan and other functional modules.

(4) Backend Technology Stack: the back-end technology stack uses the SpringBoot framework. Spring, as the mainstream framework in the Java field, has a huge community and rich plug-ins and documentation support. SpringBoot provides close integration with Spring Security, which can quickly realize user identity authentication, authority control and other security mechanisms, and provide enterprise level security for applications. This paper uses Java as the development language, MyBatis as the persistence layer framework, Docker for container deployment, and Spring Security for security management to realize the effective management of components and the optimization of dependency injection.

(5) Data Persistence Layer: the data persistence layer uses MySQL database to store structured data, and file storage is used to save imported files and other unstructured data. Mybatis is responsible for mapping database tables to back-end objects to simplify and optimize database operations.

2.2. System function design

(1) User management module. Including viewing basic user information, modifying user status, resetting password, deleting user and other operations. The administrator can also analyze user data to understand user behavior and preferences, so as to better operate the pharmacy.

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(2) Physical examination record management module. Be responsible for recording and storing the user's height, weight, physical examination time, physical examination report and other contents. The administrator can view, add, modify, delete and other operations on the management of physical examination records as required, so that users can understand their physical condition and provide the next physical examination reminder service.

(3) Drug information module. It mainly provides users with operations such as viewing the recent medication plan and the photos, functions, ingredients and detailed introduction of drugs. The administrator can understand users' medication habits and better record and promote drugs according to needs.

(4) Diet planning module. Both the administrator and the user can view the information such as the recipe matching uploaded by the user, the user's healthy recipe collection, and the user's healthy recipe message. The administrator can timely push the appropriate healthy recipe according to the user's needs, and urge the user to pay attention to the healthy diet.

(5) Exercise plan and tutorial module. In addition to viewing sports tutorials, collecting sports tutorials and interactive messages, users can also record the photos, calories consumed and precautions in the current sports plan. Administrators can reasonably provide users with reasonable fitness plans and tutorials.

(6) Announcement information management module. Users can view the recently released push announcements about personal health, including the title, content, release time, user comments, etc. the administrator can add, edit, delete and publish the announcement information.

(7) Feedback management module. Including medication, diet and exercise plan, evaluation and suggestions of exercise course, etc. Administrators can handle user feedback in time, solve user problems and improve user satisfaction.

2.3. Design of database

In the database design of personal health information service platform, a number of data tables were constructed, including user information table, physical examination record, drug information table, exercise plan table, health recipe table, sports tutorial collection table, announcement table, login log table and forum table. The user information table is shown in Table 1, and the physical examination record table is shown in Table 2. Together with other data tables, it forms the main body of the system data and provides support for the comprehensive recording and management of personal health service platform data.

Table 1: User Information Database.

Field Name	Data Type	Length	Primary/Foreign Key	Allow Null Values	Default Value	Explain
user_id	INT	255	Primary Key	No		User ID, self increasing primary key
user_name	VARCHAR	50		No		User name
password	VARCHAR	255		No		Password
email	VARCHAR	255		Yes		Email
phone_num	VARCHAR	20		Yes		Phone number
created_date	DATETIME	25		No		Creation date
role	CHAR	2		No	1	Role (1: Administrator; 2: Regular user)
status	CHAR	1		No	0	Status (0: normal; 1: disabled
nickname	VARCHAR	20		Yes		Nickname
description	TEXT	20		Yes		Describe
avatar_url	VARCHAR	255		No		Avatar URL

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Table 2: Physical Examination Record.

Field Name	Data Type	Length	Primary/Foreign Key	Allow Null Values	Default Value	Explain
record_id	INT	255	Primary Key	No		Record ID, self increasing primary key
user_name	VARCHAR	50		No		User name
height	VARCHAR	10		No		Current height
weight	VARCHAR	10		No		Current weight
photo_url	VARCHAR	255		No		Photo_url
health_status	CHAR	1		No	0	Status (0: normal; 1: disabled)
created_date	DATETIME	25		No		creation date

3. Design the system

As shown in Figure 2, after logging in, users can select functions such as physical examination records, exercise tutorials, diet and health on the home page, which is convenient for users to record and find relevant information.

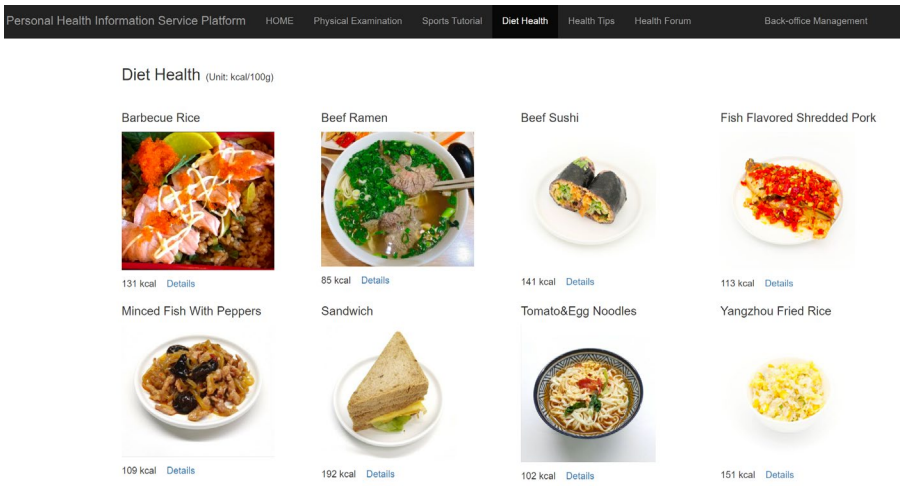

Figure 2: System home page and diet health interface.

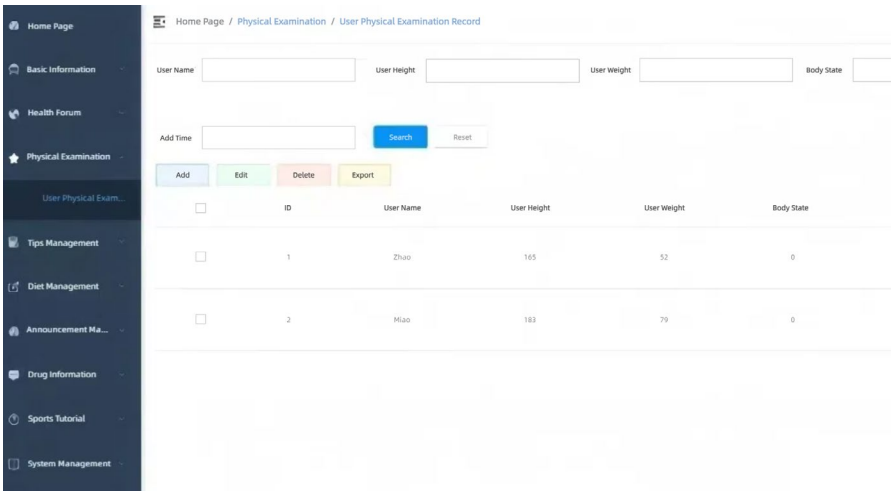

Figure 3: Physical examination record management interface

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As shown in Figure 3, the user's physical examination record management includes adding, editing and deleting physical examination records, recording the basic information of the physical examinee and the results, time, physical condition, medication, etc. of the physical examination record, which is convenient for the administrator to manage and maintain personal health index information.

As shown in Figure 4, announcement management includes adding, editing and deleting announcement information, viewing announcement information table and user browsing times, so as to provide and push better personal health services to users.

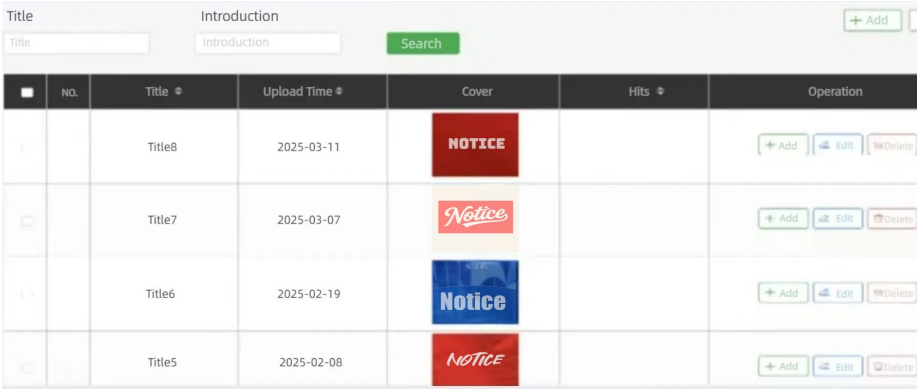

Figure 4: Announcement management interface.

4. Conclusion

The personal health information service platform designed in this paper provides an efficient, stable and safe information management tool for user health management. The system uses Vue.js, SpringBoot framework and MySQL database to realize the functions of personal health information input, query, statistics and analysis, and provides flexible rights management and log functions to ensure the efficiency and security of the system.

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