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A Platform for College Students' Independent Life under the Control of the Epidemic Campus

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Abstract: After the normalization of the new crown epidemic, the control of university campuses has become increasingly strict, and in the case of not being able to go out of the campus, how to use information technology to help students establish a healthy and positive atmosphere of life on campus, and the "two mistakes" of learning and life are urgent problems to be solved under the control of the epidemic campus. In view of the needs of college students, this paper designed and developed the independent life platform of college students, carried out system planning, system analysis and system design, and realized the functions of campus life, part-time work on campus, learning world, club dating, encyclopedia, second-hand market, on-campus activities, on-campus catering, leisure shopping, etc. In the environment of epidemic closure, students' on-campus life and learning can be integrated management, enrich students' campus life through information sharing, help regulate students' emotions, and do a good job in fighting the epidemic together.

1. Introduction

The acceptance and dependence of college students on various information platforms are generally very strong, but the application software of life service on the market is mixed, and it is aimed at the needs of college students, there are few application software to provide information and study life for the benefit of college students. In addition to the new pneumonia epidemic, the university student’s life style has also had the change, the closure situation makes the student may be by the existing life style change perplexity. So the situation for the control of the situation of college students for the Group of autonomous life platform APP also gestated.

2. System Planning

The purpose of the independent life platform for college students is to serve the daily life of college students under the control of the epidemic. The system has a user login function, and different users have different permissions, which can improve the security and reliability of data.

The system adopts the JSP language and SQL Server database to develop by means of a combination of compact structure, fast operation and simple operation, which can help the school administrators and other staff to publish various types of information conveniently, safely and efficiently, and at the same time is more conducive to the exchange and sharing of information among students.

3. System Analysis

3.1. Feasibility Analysis

3.1.1. Economic Viability

Under the normalization of the epidemic, the awareness of campus epidemic prevention management has gradually spread, and with the needs of happy life and mental health during the closure of the student group, the student independent life system has become an indispensable management platform, and the campus administrator can easily use the system. This system can provide great convenience for students to live and learn in the school, and does not need to spend a lot of money and energy on the maintenance of the system in the later stage, which can greatly improve the efficiency of campus management, all expenses are not large, and reduce personnel consumption, reduce work costs, and improve work efficiency, so it is economically feasible.

3.1.2. Technical Feasibility

Due to the feasibility of system implementation, the use of today's more advanced JSP technology to achieve the development and design of the platform, making writing easier and more efficient, and there are many advantages, such as having powerful components, with a concise development environment, etc. The storage portion of this system data will be implemented using SQL Server. Take a structured approach to system analysis and design. This shows the technical feasibility of this system.

3.1.3. Social Viability

Nowadays, society has entered the era of efficient Internet, students are no longer unfamiliar with the operation of computers, the system is simple and easy to use, and can be effectively disseminated under the role of the Internet, so that the independent life platform of college students can be continuously optimized in a direction and with goals to meet the needs of student life and learning during campus control. So that during the school closure period, student management to an efficient and standardized management model, to help relieve students' boredom, improve students' user experience, the use of information means to enrich the campus life, with social feasibility.

3.2. System Development Methods and Techniques

3.2.1. Software Engineering Methods

A software from the beginning of the plan, to the end of the abandonment, is called the software life cycle. In general, the software survival week includes three periods: planning, development, and operation, and each period can be divided into several smaller stages. The main tasks of the planning period are to analyze user requirements, analyze the main objectives of the new system and the feasibility of developing it. During the development period, it is necessary to complete the design and realize two major tasks specifically. Specifically, it is divided into requirements analysis,

outline design, detailed design, coding, and testing. Coding and testing are the last two phases of the software development period. The running period is the last period of the software life cycle, and the work of software personnel in this period is mainly to do a good job in software maintenance.

The independent life platform for college students is realized in accordance with the guiding ideology of software engineering, and adopts a structured method for systematic analysis and design.

3.2.2. JSP

JSP (Java Server Pages) have gradually dominated the server-side Java technology market, and Java developers generally believe that these technologies are relatively easier to learn, also because JSPs cover many of the features of Java technology and they are able to introduce the "write once, run anywhere" paradigm into web applications. Proven approaches to developing high-quality, reusable, and easy-to-maintain web applications are known as best practices. If used effectively according to best practices, servlets and JSP pages will help separate representation from content.

3.2.3. SQL Server

SQL Server Database is a data storage product carefully developed by Microsoft Corporation. It is particularly helpful for BiShi, and with it we can break through the limitations of time and space to manage and manage a large amount of data at once. The integration services of SQL Server are also much more improved than the previous generation, and the basic functions of querying, retrieving data, and analyzing operations have become smoother, while the data will be stored on the server for the first time, because it does not control the specific location where the data is stored.

SQL Server databases are characterized by the following:

(1) The security and stability of data storage have been greatly improved compared with the previous version, and the operational stability of the program has been improved by nearly 35%.

(2) SQL Server can reduce the time cost and material cost of software design by a lot, helping developers reduce unnecessary consumption.

(3) SQL Server is a comprehensive data storage platform that provides intelligent data storage services for data storage.

3.3. Requirements Analysis

The functional requirements of the independent life platform for college students mainly come from information publishers and managers. Users will need to register all kinds of information input system, by the system automatic classification and storage, at any time can be consulted and modified. Managers can use this system to manage information, and the front page dynamically displays various types of information according to the content of the database. Under normal circumstances, ordinary users can only browse and query all kinds of information, while registered users can directly register iinformation in aaddition to specific information. Therefore, the permissions of ordinary users, registered users and managers should be clearly distinguished to prevent data loss and data errors caused by operation errors during operation, so this needs to be considered when designing modules.

3.3.1. System Process Flow

Therefore, the functions of the system are: all kinds of information registration input processing (with input, cancellation, confirmation, modification, deletion and other functions), information query processing, information report statistics processing and other functions. The basic design of

the system is designed according to the requirements of the system planning, and its processing flow is shown in Figure 1.

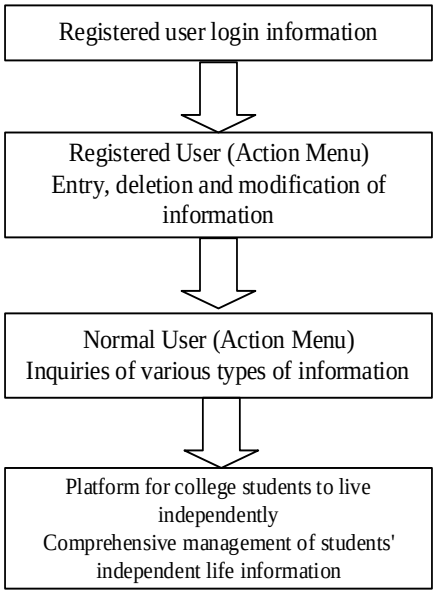

Figure 1. System process flow

3.3.2. Introduction of the Functions of Each Module

The information registration module, which mainly implements the registered user, immediately registers the specific information (such as address, contact information, etc.).

The information query module is mainly to query the information and understand the information situation.

The information report statistics module is mainly the statistics of the administrator on the current information release, which is convenient for management and archiving.

The user management module is convenient for administrators to understand the current registered user situation.

3.4. Business Process Analysis

Under the control of the epidemic campus, the independent life platform of college students draws business process diagrams in the process of development in order to be able to sort out the existing business processing processes in the system and reduce the unnecessary business processes in the original system. The system business process is shown in Figure 2.

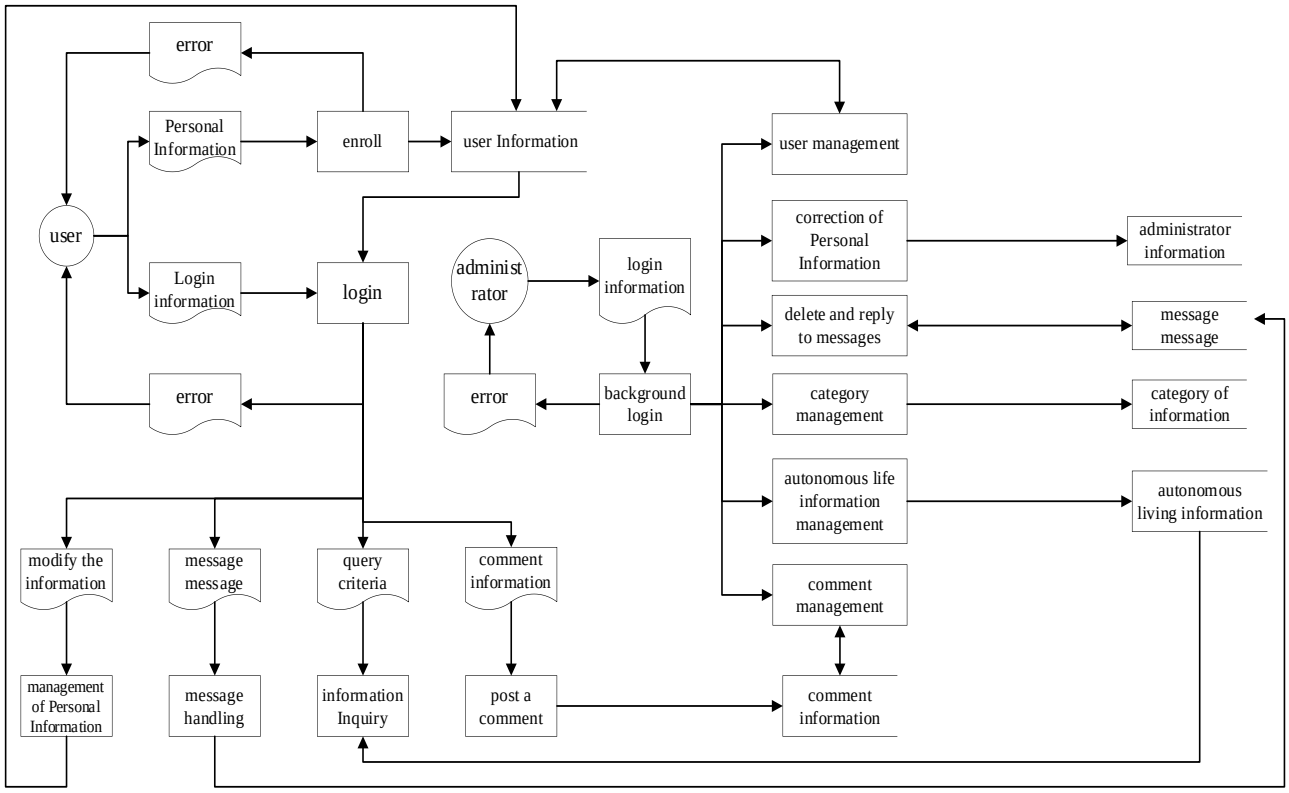

Figure 2. System business process diagram

3.5. Data Flow Analysis

3.5.1. Top-level Diagram of Data Flow Diagram

The top-level data flow chart is a general layer, mainly the management of the university students' independent life platform and the user's data flow. The data that can be used by this layer is stored as a table of the system, and the data flow involved is browsing information, comment information, etc., as shown in Figure 3.

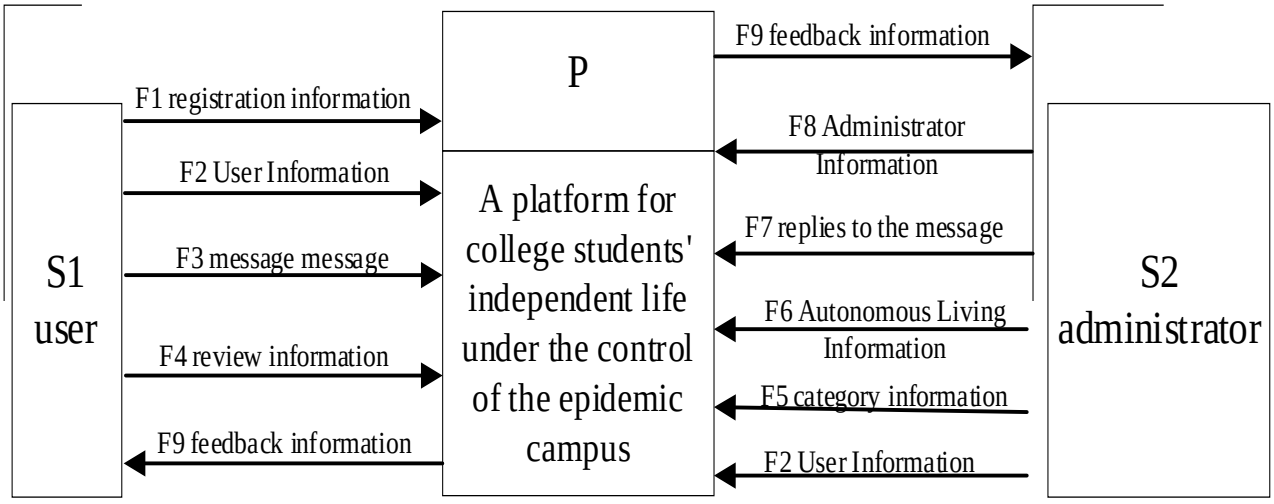

Figure 3. Top-level diagram of the data flow

3.5.2. Data Flow Diagram Layer Diagram

The first-layer data flow chart is a detailed division of the zero layer, which divides the entire college students' independent life platform into registration login processing, search query processing, browsing/commenting/question processing, autonomous life information processing, category management processing, traffic statistics processing, etc. The specific layer of data flow chart is shown in Figure 4.

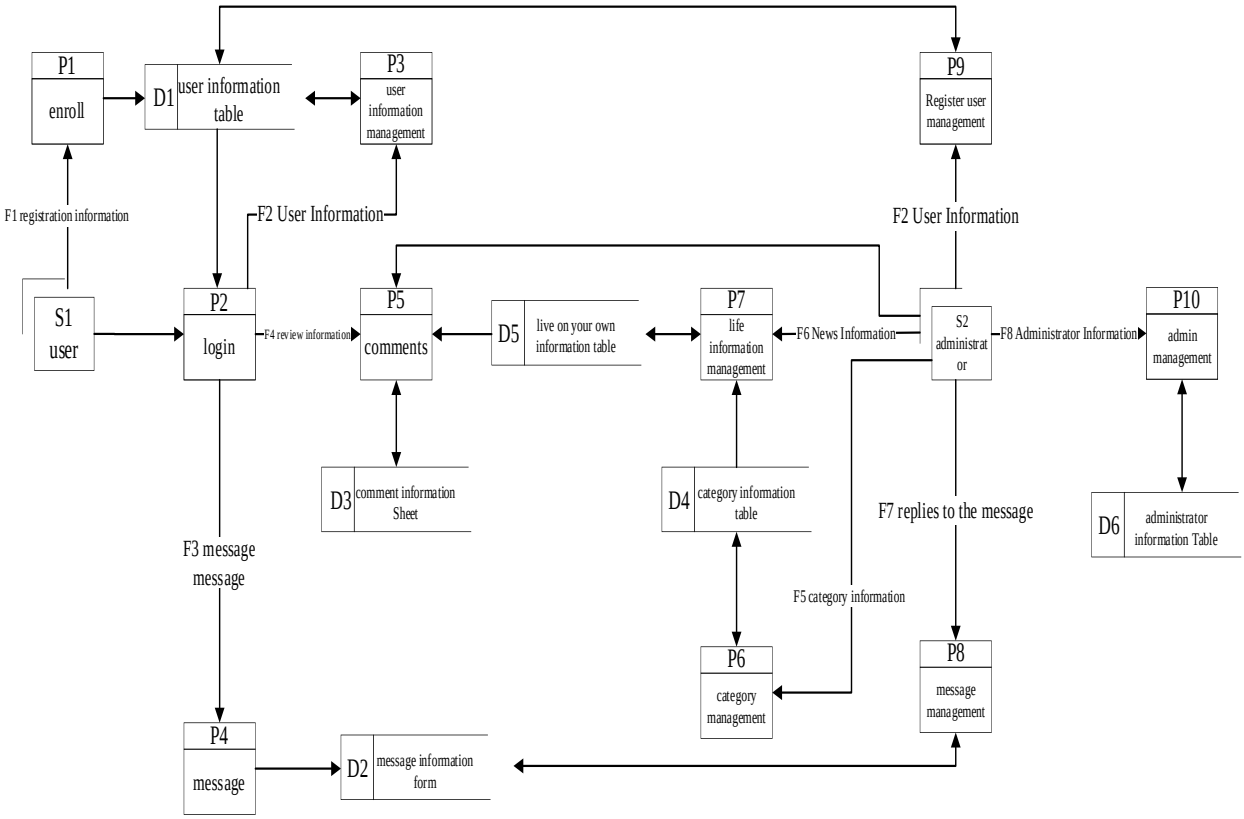

Figure 4. Data flow diagram layer diagram

4. System Design

4.1. Overall Structural Design

Under the control of the epidemic campus, the level of college students' independent life platform is divided into several aspects: user interface, data buffering, database, output, etc.

User interface level: the closest level to the user, displayed to the user in a graphical interface, convenient for the user to carry out basic operations, the user can enter data here, modify the data, delete the data, set the optional standards, set the query conditions, etc. All user input to the system operates at this level.

Data buffering hierarchy: In this hierarchy, changes made by users are not committed to the database, but are saved in a temporary buffer. At this time, all operations are operated by the system itself, including adding information in the data buffer, modifying information, deleting information, etc., including performing the optional process and judging the legitimacy of query conditions. At this level, the system mainly performs all the work before the database is submitted, ensuring the legitimacy and accuracy of the submitted data and minimizing database errors.

Database layer: The main operations are performed in the database, the main work is: storing the buffer data into the database, executing query statements, etc. Because the data is buffer-checked, illegal operations in the database can be greatly reduced, data errors can be reduced, and abnormal cases during queries can be greatly reduced.

Output layer: In this level, there is no need to perform database operations and user input operations, the main work of this level is to display the results to the user, including query results, charts, error messages, prompt information, etc.

4.2. Database Design

4.2.1. Conceptual Design

Conceptual design is an indispensable part of the system design of college students' independent life platform. This analysis and design is carried out to clarify the various entities in the system and the properties to which they belong, and to better distinguish the connections between the things involved in the system. The total E-R diagram of the system is shown in Figure 5.

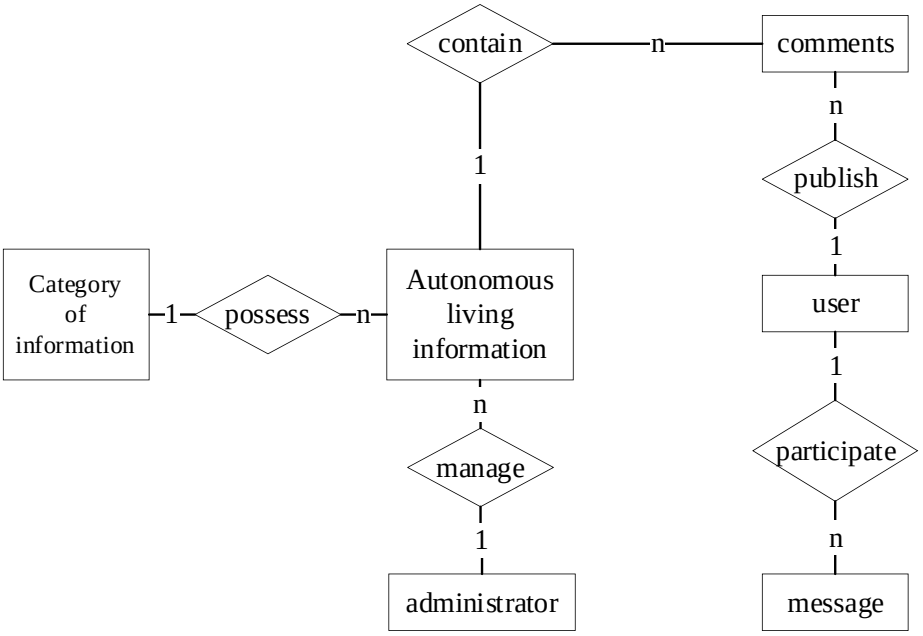

Figure 5. Total system E-R diagram

4.2.2. Logical Design

When designing the database logic of the platform for the independent life of college students, the entities, attributes and connections in the E-R diagram that have been drawn are converted into corresponding relationship patterns, and the main foreign keys of the system are determined according to the requirements (the underscore is the main key, and the double underscore is the foreign key).

Administrator (Administrator ID, Username, Password)

User (user ID, username, password, name, gender, phone number)

Information category (category ID, category name)

Autonomous life information (information ID, category ID, administrator ID, title, content, picture, publish time, author, number of reads, headline attribute, slide attribute, hotspot attribute

Comments (comment ID, message ID, user ID, content, publish date

Message (message ID, user ID, content, release time, reply)

4.2.3. Physical Design

(1) The administrator information table stores all the basic information of the administrator in the system. The table structure is shown in Table 1.

Table 1. Administrator information

Column Name	Data Type	Length	Allow Null	Primary Key	Description
userId	Int	11	NO	YES	Administrator ID
userName	Varchar	20	NO	NO	The user name
Password	Varchar	20	NO	NO	Password

(2) The user information table is used to record all registered user information. The table structure is shown in Table 2.

Table 2. User information

Column Name	Data Type	Length	Allow Null	Primary Key	Description
user_id	Int	11	NO	YES	Administrator ID
user_name	Varchar	50	NO	NO	The user name
user_pw	varchar	50	NO	NO	Password
user_realname	varchar	100	NO	NO	Name
user_sex	int	1	NO	YES	Gender
user_tel	varchar	30	NO	NO	Phone

(3) The classification information entered by the administrator is recorded in the autonomous life information category table, and the administrator can quickly query the name of the information category corresponding to the information category ID according to the information information category ID. The table structure is shown in Table 3.

Table 3. Information category

Column Name	Data Type	Length	Allow Null	Primary Key	Description
newsTypeId	int	11	NO	YES	Category ID
typeName	varchar	20	NO	NO	Category name

(4) The comment information table records all the comment information left by the user in the system. The table structure is shown in Table 4.

Table 4. Comment information

Column Name	Data Type	Length	Allow Null	Primary Key	Description
commentId	int	11	NO	YES	Comment ID
newsId	int	11	NO	NO	News ID
content	varchar	200	NO	NO	Content
user_id	varchar	40	NO	NO	User ID
commentDate	datetime		NO	NO	Publish time

(5) All message messages are stored in the message information table. The table structure is shown in Table 5.

Table 5. Message information

Column Name	Data Type	Length	Allow Null	Primary Key	Description
id	int	11	NO	YES	Message number
Leave_message	text		NO	NO	Content
user_id	int	11	NO	NO	User ID
shijian	datetime		NO	NO	Publish time
replay_message	text		NO	NO	Reply

(6) The news information table records all the news data released in the system. The table

structure is shown in Table 6.

Table 6. Autonomous living information

Column Name	Data Type	Length	Allow Null	Primary Key	Description
newsId	Int	11	NO	YES	News ID
title	varchar	40	NO	NO	Title
content	Text		NO	NO	Content
publishDate	datetime		NO	NO	Publish time
author	varchar	20	NO	NO	Author
typeId	Int	11	NO	NO	Category ID
click	Int	11	NO	NO	Number of reads
isHead	Int	4	NO	NO	Headline properties
isImage	Int	4	NO	NO	Slide properties
imageName	varchar	20	NO	NO	Image
isHot	Int	4	NO	NO	Hotspot properties

5. System Implementation and Testing

The system is designed to function as intended, using JSP and SQL Server databases. System testing is mainly carried out from the following aspects.

5.1. Basic Data for Testing

In the process of data testing, mainly according to the critical value of some data, from the data type, data range, data length and other aspects of consideration, a series of test cases are listed, focusing on testing some dangerous data and edge data, as far as possible to achieve the reliability of the system. There are many test cases for each situation, both normal and abnormal. From the user's point of view, possible operation errors and data entry errors have also been tested in a series of tests.

5.2. Testing of the System

In the process of testing the entire process of the system, the user's simulation operation is carried out for the main process of the system. For each functional module of the system, according to the flow chart of the function, each operation is analyzed, and various possible situations are obtained, and the different treatment of various situations is tested, including normal situations and error handling. All kinds of errors, whether common errors or possible errors, are tested accordingly.

6. Conclusions

In this paper, the platform for college students' independent life under the control of the epidemic campus is analyzed in detail, the business process diagram, data flow diagram and database design are analyzed, and the implementation and function of the platform are tested. With this platform, it can effectively help students who cannot get out of the campus to quickly adapt to campus life under the control of the epidemic, soothe their emotions, and learn and live happily.

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