

Application Design and Implementation of Nail Platform in University Mobile Office

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Abstract: The construction of digital campus network based on nail platform is widely used in mobile office. This paper introduces the application design and implementation method of the nail platform construction in a university. This paper introduces in detail user interface design, function design, database design, etc., and finally realizes several typical application scenarios in mobile office in universities, including message push, file sharing, schedule, etc. The research results of this paper provide a valuable reference for the promotion and application of mobile office in universities. This paper introduces the specific application methods of digital campus network in educational administration management, notification and communication, homework and study management, examination management, daily management and security, and emphasizes the advantages and benefits they bring to education. At the same time, the challenges and problems of digital campus network will be discussed, as well as the direction and challenges of the future digital campus network. Practice has proved that through the flexible application of the nail platform, the efficiency of educational administration management, students' learning experience and campus management level can be significantly improved.

Keywords: Digital Campus Network Mobile Office; Nail Platform; Design of Campus Network

1. Introduction

By introducing the design and realization of the application of digital campus network construction based on nail platform in mobile office, this paper shows the role and influence of digital campus network in education, so as

to think about how to better apply and promote the development of digital campus network, so as to improve the quality and effect of education. In the digital era, the digital campus network will continue to be an important driving force of educational innovation and reform, and it is necessary for us to actively seize the opportunity, meet the challenge, and jointly explore a new chapter in the future of education. [1]

2. Overall Design of Campus Network Construction of University Nail Platform

The digital campus network construction architecture based on the nail platform can realize the functions of information management, online teaching, learning interaction, data storage and sharing on campus, and improve the efficiency of education and teaching and management efficiency. The specific construction architecture needs to be determined according to the size, needs and resources of the school, and also considers the network bandwidth, security and privacy protection. Therefore, an adequate budget and planning are needed.

The mobile campus integrated service application based on the platform includes the native application and self-built micro application, including the native application, including OA approval and intelligent form filling. Self-built micro applications, including mobile OA, reservation system, my class schedule, class evaluation system, one-card query system. Figure 1. Function module diagram of mobile campus integrated service application based on Dingding platform.

The mobile campus integrated service application based on the nail platform adopts B / S architecture. The data layer uses the MySQL database to store self-built microapplication data, reads the basic information data of teachers and students from the Oracle database, and uses the Druid connection pool to manage the database

connection to save the resource overhead when creating connections. [2] Use the Redis secondary cache between the business layer and the data layer to avoid frequent database query operations and improve the response speed. The business layer mainly uses the Java language to write the back-end business logic code, and uses the SSM framework and SpringBoot to quickly build the back-end of the system. Use the Kafka message queue

between the front and rear ends to improve the throughput and reliability of the system. The display layer mainly uses the H5 page for display and interaction, and the Vue framework and the Vue-based ElementUI framework are applied to make the front segment development more efficient, beautiful and robust. Figure 2. Architecture diagram of the mobile campus integrated service application system based on the Nail Platform.

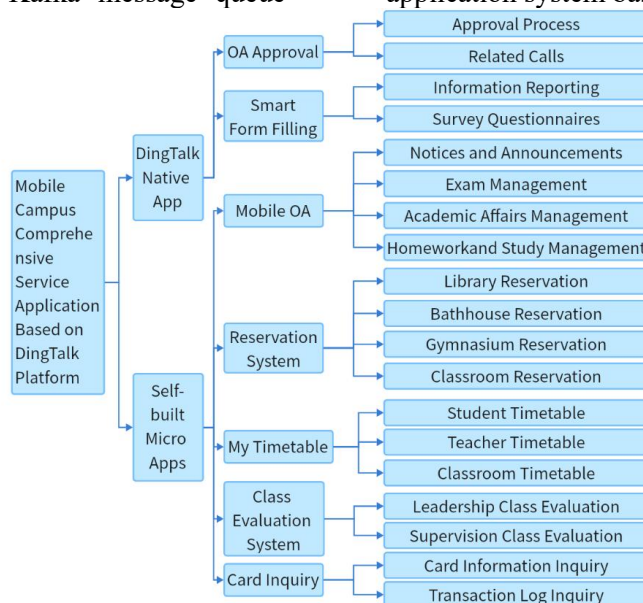


Figure 1. Function Module Diagram of Integrated Service Application of Nail Mobile Campus

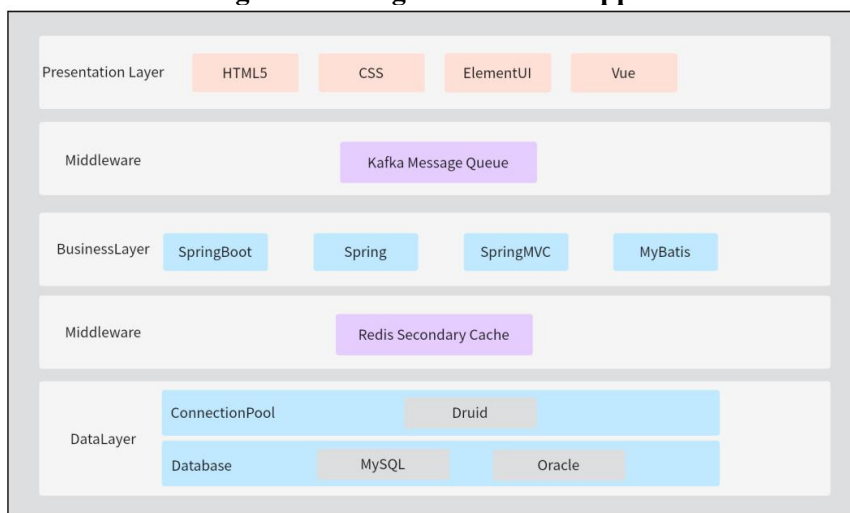


Figure 2. Architecture Diagram of the Nail Mobile Campus Integrated Service Application System

3. Design and implementation of the key technologies of the system

3.1. Interface design

The interface design of the mobile office application of the nail platform should be designed according to the needs of the

university staff and students. The interface design should be concise, clear navigation, ICONS and icons are easy to understand, the search bar provides fast search, personalization to improve user satisfaction, and adapt to a variety of devices to provide a better user experience. The following is an example of the

interface as shown in Figure 3-8.

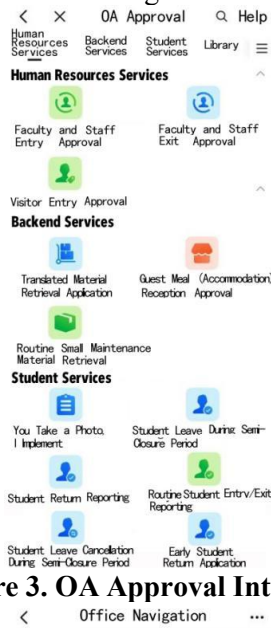


Figure 3. OA Approval Interface

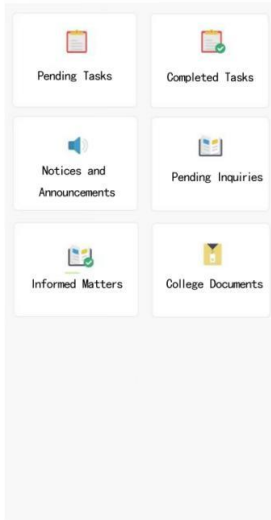


Figure 4. Office Navigation Interface

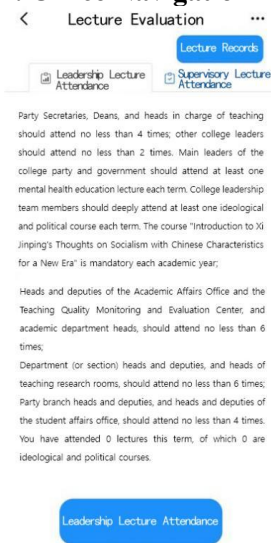


Figure 5. Class Evaluation Interface



Figure 6. Library Reservation Interface

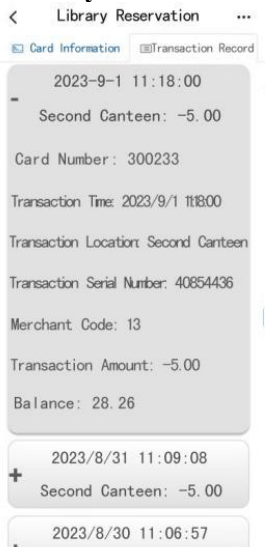


Figure 7. One-card Query Interface

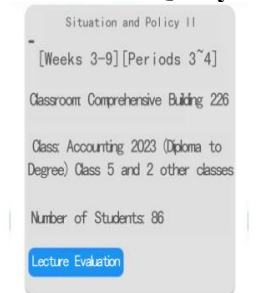


Figure 8. Flexible Query Interface

The work of OA in colleges and universities can provide support and assistance for educational administration, notification and communication, homework and study management, examination management and other aspects, and help colleges and universities improve management efficiency and teaching quality. It can also be used for the

daily management of colleges and universities, such as administrative affairs application and approval, meeting management, document sharing, etc. Through digitalization, the efficiency and convenience of the work of colleges and universities should be improved, and the coordination and cooperation of all aspects within colleges and universities should be promoted. [3]

3.2. System Design and Implementation: Take the Design of the Nail Appointment System as an Example

3.2.1 The system implementation includes the following key steps

1) Demand analysis: clarify the functional requirements of the nail reservation system, including reservation objects (such as library seats, bath location, etc.), reservation time period, and the limit of reservation number, etc. At the same time, it also needs to consider the user role, authority management, notification and reminder requirements of the reservation system.

2) System architecture design: design the overall architecture of the nail reservation system, including the front end and back end system module division. The front-end module is responsible for user interaction and interface display, while the back-end module is responsible for business logic and data processing.

3) Database design: design the structure of the database according to the requirements of the reservation system. Including the table of appointment object, user information and appointment record. Ensure that the database design meets the requirements for data storage and queries.

4) User interface design: design the user interface according to the requirements and system architecture. It includes the list of appointment objects, filling and submission of appointment form, inquiry and management of appointment records, etc. Ensure that the user interface is friendly, intuitive, and consider a responsive design to accommodate the different devices.

5) Functional module design:

-User management: including user registration, login, permission management and other functions, to ensure that only authorized users can make appointments. Since our school develops based on the nail platform, all

teachers and students have been in the internal organizational structure, so this module integrates nail identity authentication, without secondary registration and secondary login for teachers and students. [4]

Appointment management: including the display of the reservation object, the filling in of the appointment form, the selection of the appointment time period, and the limit of the number of reservations, etc. And can be real-time update according to the real-time reservation situation.

-Notification and reminder: According to the user's reservation record, send relevant notices and reminders, such as the confirmation message of successful reservation, the reminder of reservation cancellation, etc.

-Appointment record query and management: Users can query their own reservation records and cancel the booked records.

6) Technical implementation:

-Front-end development: using HTML, CSS and JavaScript technologies, using the Vue framework, to achieve user interface display and interaction.

-Back-end development: select the appropriate programming language and framework, such as Java's SSM framework, SpringBoot, etc., to realize the back-end functions of business logic and data interaction.

-Database development: According to the database design, create the corresponding table structure, and use the appropriate database management system, such as MySQL or Oracle, to achieve data storage and query.

-WEB server: Using Tomcat as the application node server, paired with Nginx to handle external requests, to achieve the reverse proxy and load balancing.

7) Test and debugging: to conduct a comprehensive unit test, integration test and system test of the system, to ensure the normal operation of the system functions, and can correctly handle various abnormal situations. The following are some specific application methods that can be implemented in the digital campus network based on the nail platform:

8) Deployment and maintenance:

-Deploy the system to the appropriate server and environment to ensure the stable operation and high availability of the system.

-Configure the security measures of the system, including user identity authentication, data encryption and access control, to ensure the

security of the system.

-Monitor the operation of the system, timely find and solve potential problems, to ensure the performance and stability of the system.

-Regularly maintain and update the system, including software update, database optimization and backup.

-Conduct user feedback and demand collection to improve the functionality and user experience of the system.

The actual process may vary depending on the project requirements and technical choices. For specific projects, they may need to be refined and customized according to the actual situation. In addition, the security and performance of the system should also be given priority to ensure the security of reservation information and the efficient operation of the system.

3.2.2. Summary Data Model

The following is an example of a summary data model for a staple system:

1) User (User):

-id: User ID (primary key) -username: User name

-password: Password-role: User role

2) Appointment object (AppointmentObject):

-id: Appointment object ID (main key) -name: name of the object reservation

-description: Description of reservation object-capacity: Capacity of reservation object

3) Appointment record (AppointmentRecord):

-id: appointment record ID (primary key)

-user_id: reservation user ID (id associated to the User form)

-appointment_object_id: Appointment Object ID (ID associated to the AppointmentObject table)

-Start_time: Appointment start time-end_time: appointment end time

-status: Appointment status (to be confirmed, confirmed, cancelled, etc.)

4) Relationship (Relationships):

-The relationship between the user (User) and the appointment record (AppointmentRecord) is one-to-many, and one user can create multiple appointment records.

-The relationship between reservation object (AppointmentObject) and reservation record (AppointmentRecord) is one to many, and one reservation object can have multiple reservation records.

In this ER model, Figure 9 reservation system E-R diagram. The user table (User) stores the user's information, and the reservation object table (AppointmentObject) stores the information of the object that can be reserved. Because the business logic of different reservation objects is not identical, the reservation object is split here, and the reservation record table (AppointmentRecord) stores the user's reservation record. There is a one-to-many relationship between user table and reservation object table, and a one-to-many relationship between user table and reservation record table.

The actual ER model design may be adjusted and expanded according to the specific requirements. For example, more fields can be added to the appointment record table to meet specific business needs, such as appointment notes, number of appointments, and notice table to store notification information related to the appointment to meet the specific functional requirements of the system.

In this data model, the User table (User) stores the user's information, including the user name, password, and role. The appointment object table (AppointmentObject) stores information about the object that can be booked, including the name, description, and capacity of the object. The appointment record form (AppointmentRecord) stores the user's appointment record, including the user ID, the reservation object ID, the start time and end time of the appointment, and the status of the appointment.

Depending on the reality, the data model may need to be adjusted and expanded. For example, you can add more fields to the appointment record table, such as notes, contact information, etc. [5] In addition, other tables can also be established according to the specific requirements, such as notification table, permission table, etc., to meet the functional requirements of the system. This is just an example summary data model, and the actual data model design will be customized according to the specific requirements and system architecture. In the actual design, it is also necessary to consider the field data types, constraints, indexes, as well as the appropriate database management systems, such as MySQL, Oracle, etc., to realize the data storage and query requirements. [6]

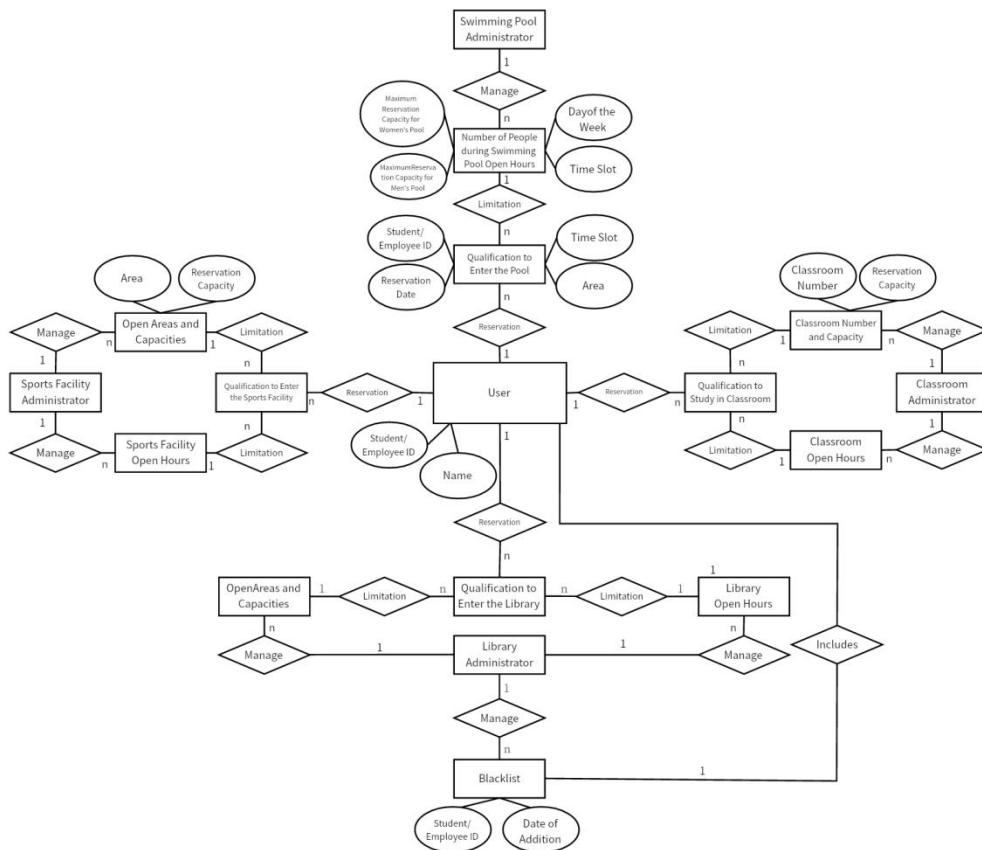


Figure 9. The E-R Diagram of the Reservation System

3.3.3. Model of Staaail System

The following is an example case model of the booking system that describes the basic functions of the system and the interaction between users:

1) User registration and login use cases:

-User registration: Users can fill in information such as user name, password and other information for registration.

-User Login: Registered users can log in to the system using a user name and password.

2) Appointment object management use case:

-View the list of reservation objects: Users can view the list of objects that can be booked.

-View the details of reservation objects: Users can click on an object in the list of reservation objects to view the details of the object.

3) Appointment management use case:

-Create an appointment: Users can select the appointment object and the appointment period, and fill in the relevant information to create an appointment.

-View the appointment records: Users can view the appointment records that they have created, including the object, time period, and

status of the appointment.

-Cancel reservation: Users can cancel the reservation created by themselves, and change the reservation status to cancel status.

4) Notification and reminder use cases:

-Notification of appointment success: The system can send the notification of the successful appointment to the user, including the details of the appointment.

-Appointment change reminder: The system can send users a reminder of the appointment change, such as the change of the appointment time period.

-Appointment cancellation reminder: the system can send the appointment cancellation reminder to the user.

The above is a simplified example, and the actual use case model may be more detailed and complex, depending on the specific requirements and functions of the system. The use-case model describes the functions of the system and the operation process of the user, which can serve as the basis for the subsequent system design and development to ensure that the system meets the needs of the user.

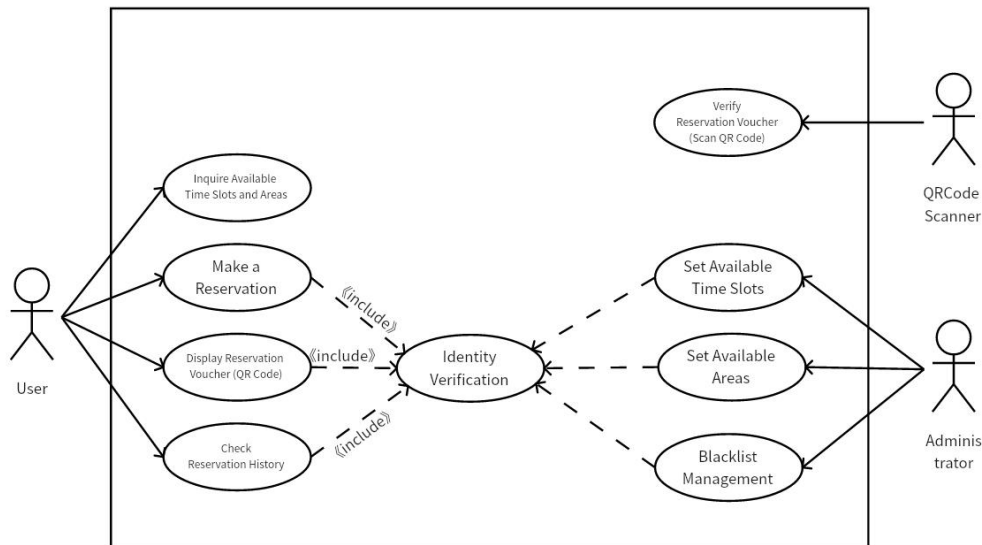


Figure 10. Use Case Diagram of the Reservation System

Use case description, Figure 10 Reservation system use case diagram:

1. Use case name query the available period and area
2. Briefly explain the user query can query the current open number of time, area, can be reserved location.
3. flow of event
 - 3.1. Main event flow

The user sends a "query reservation time period request" to the system — The system returns the query result — After the user chooses the reservation time period, he sends the "query the reservation area and the remaining reservation location request" to the system, and carries the "reservation time period" as the query condition.— The system returns the query result
 - 3.2. Alternative event flow, No.
4. Non-functional requirements without special requirements.
5. The precondition administrator has set the reservation period and reservation area.
6. Post-condition users to make an appointment.
7. Extension point has no.
8. Top priority.

4. Conclusion

The design and implementation of the system involves multiple key steps. During the design process, it needs to be customized according to the actual requirements, and ensure the security, performance and user experience of the system to provide a good experience.

By introducing the nail platform for the campus network construction, we can improve the cooperation and communication ability of teachers and students in the campus, improve the quality and efficiency of teaching, provide efficient and convenient campus services, and strengthen the management and safety of the campus network. However, in order to ensure the smooth use of the platform, relevant

training and promotion are needed, and continuous technical update and maintenance are required to meet the changing needs and technological development of the school.

Acknowledgments

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