

## Research Article

# Design and Research of Intelligent Educational Administration Management System Based on Mobile Edge Computing Internet

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Educational administration management is the primary link in the teaching management of colleges and universities. Mobile edge computing can create a carrier-class service environment with high performance, low latency, and high bandwidth and accelerate the rapid download of various contents, services, and applications in the network, which greatly promotes the upgrade of the educational administration system. Using educational administration management system to manage educational administration can promote the teaching work of colleges and universities better. This paper aims to design and develop a set of educational management information systems, using mobile edge computing (MEC) technology to combine the IT service environment and cloud computing technology at the edge of the network to improve the computing and performance of the edge network. Storage capacity reduces network operation and service delivery delay, improves user service quality experience, and helps universities improve the efficiency of educational administration management. This paper first discusses the implementation mode and related technologies of educational administration management system, then discussing the demand analysis of each functional module of the system; in the nonfunctional demand analysis part, the system needs to meet the security and performance. According to the function modules included in the system, using the way of running interface screenshot, implementation code, and flowchart, the paper analyzes the realization process of the function module and also completes the function test of the function module, as well as the performance test of the whole system. The experimental results show that the rule 4 of teaching level evaluation data mining reveals that the support degree of excellent teaching effect is 18% and the confidence degree is 53% in the age of 50–60. Rule 5 shows that the degree of support is 16% and the degree of confidence is 52%. Rule 10 shows that the degree of support for excellent teaching effect is 22% and the confidence level is 71%. The high confidence level of backbone teachers aged 50–60 indicates that the old teachers are more experienced and popular with students, while the young teachers under 30 need to focus on training to help young teachers improve their professional level. From the above data, it can be seen that through the application of mobile edge technology the educational administration system is more efficient in processing and analyzing data in terms of teacher management and teaching level, which once again shows the impact of this network technology on the construction and development of educational administration systems highly feasible.

## 1. Introduction

The progress of information technology has a significant impact on the administrative work of colleges and universities. MEC technology can provide a virtual local area network for campus hotspots and high-capacity scenarios. Through business localization and local distribution technology, it can achieve efficient office and internal communication within the campus, thereby providing users with low-cost, high-experience local connections and local

business access ability. Through the latest technology tools, it promotes the development of student management towards the direction of networking and digitalization and gradually develops into the consensus of various colleges and universities. Digital campus is the use of computer technology, network technology, communication technology, and scientific and standardized management to integrate and comprehensively digitize all information resources related to teaching, scientific research, management, and life services on the campus to form a unified user management, unified

resource management, and unified authority control. At this stage, some colleges and universities in our country have started and strengthened the development of digital campus, vigorously built campus network, improved the hardware equipment required by digital campus, and actively promoted the improvement of the level of educational administration management by introducing or self-developed forms of configuration of educational administration management information system. The current level of digital construction of university educational administration system is still at a relatively low stage. Traditional university educational administration system deals with multifaceted and multiangle data, and the planning system constructed is often chaotic, which is inconvenient for information management. The development of educational administration management information system in colleges and universities has a far-reaching impact on the development of various activities in colleges and universities, which is conducive to promoting the informatization and efficiency of educational administration management, assisting leaders to make decisions, and enabling teachers and students to obtain more comprehensive information related to teaching and scientific research, so as to reduce the burden of administrative workers and effectively improve high efficiency.

With the rapid development of Internet, the expansion of information restricts the effect of learning. Xiao Jun designed a personalized recommendation system for educational video based on collaborative filtering recommendation technology. The design of the system is mainly based on collaborative technology and content analysis technology. The system can not only improve the teaching effect, but also improve students' learning autonomy and make students study efficiently. The system has been applied to the lifelong learning network and achieved remarkable results [1]. Abdulrauf Tosho describes a research related to the conceptual design model, which aims at the design of teaching interface to improve the utilization rate of courseware. It is found that most of the existing courseware applications focus on the needs of a certain goal and most of the courseware contributes too little to the learners. In addition, as a part of usability strategy, using structure, layout, and navigation to improve courseware teaching interface is also a problem for developers. The purpose of this study is to establish an optional teaching interface, which is called courseware teaching interface design (iid4c), as a part of the usability strategy of inclusive education system, for reference of developers and using comparative analysis technology to determine the elements of the model. Finally, the study found that iid4c model is useful for information access and is helpful for the design of teaching courseware. The future work is to evaluate the proposed model among disabled and nondisabled learners [2]. Roman Yavich, in the framework of prescriptive theory, uses the discipline design method to build a conceptual model of a set of student training methods in the saturated environment of information and communication. This enables them to allocate the stages of designing student training methods when using virtual education environments. The results of this paper reflect the general methods of teacher activity design,

including the design of training methods based on the consideration of the main structural components of educational technology. Through the investigation of the characteristics and opportunities of the virtual education environment, we can make clear the rich nature of the training method system and the mechanism of self-adjustment and self-improvement under the education information environment and make a conclusion that it is impossible to create the modern education process without the virtual education environment [3]. These three scholars have discussed the closeness of the connection between the network and teaching from different angles. Some people have constructed a new conceptual model of teaching according to the current problems, making full use of virtual technology, etc. However, their research is not comprehensively enough. However, there are still shortcomings in the selection of technology applications, and the processing of data needs to be strengthened.

This paper first discusses the overall structure design of the system, including the design of the main function modules, the overall structure chart and the main workflow of the system, the detailed design of the system database, and the overall design of the data mining process of the achievements. Secondly, it discusses the process of mining the teaching level evaluation data to obtain useful information in the mobile educational administration management system. The function test, performance test, usability test, and security test are implemented in the mobile educational administration management system. Adopt B/s and C/s model structure to reduce costs while maximizing benefits and use J2EE technology multilayer model to extend the service architecture; JSP technology provides multiple efficient operation servers for the multiple models in this article. All work arrangements are to create an intelligent educational administration management system.

## 2. The Proposed Method

*2.1. Implementation Mode of Educational Administration Management System.* Mode structure C/s and B/s: C/S structure is client/server structure, which can reduce the communication cost of the system [4]. However, the C/S mode requires the support of the corresponding client of the user host, so the software in this mode needs to develop the corresponding software according to different operating systems, which increases the development cost. At the same time, with the acceleration of software update, the cost of maintaining the software also increases accordingly [5, 6]. Therefore, the whole system adopts the B/S (browser/server) mode, which is convenient and efficient in management software.

B/S structure is browser and server structure. It is different from the C/S structure, it does not need the user host to install the corresponding client software, and users only need a browser to browse and operate the working interface [7]. Browser almost does not need to implement transaction logic, mostly by the server-side implementation, forming the so-called three-tier architecture. This can reduce the development cost and the overall cost [8].

According to the above introduction and analysis, the construction of campus network adopts B/S structure, which can realize the system relatively and simply and reduce the development cost [9]. It can access the database in many ways and protect the security of the data through the authority control. This is also an important reason for using B/S mode [10, 11].

Advantages of B/S mode are given as follows:

- (1) The B/S mode turns the client into a browser, through which the user can access the server.
- (2) B/S mode can be directly placed on the WAN, which is suitable for frequent interaction occasions and easy to be accepted by users.
- (3) B/S mode only needs to upgrade the server and adapt the browser [12].
- (4) The development of B/S mode has the advantages of strong sharing and convenient business expansion, and the expansion of web pages can increase the function of no service.
- (5) The B/S mode can release information on the network, which is exactly what the educational administration management system needs. The written paper documents can be replaced by the electronic documents, which not only save resources, but also are convenient and fast and improves the office efficiency [13, 14].

## 2.2. Related Technologies

**2.2.1. J2EE Technology.** The full name of J2EE is Java2 Platform Enterprise Edition. Its essence is to provide an application with a Java environment that can run on the server side. It provides the basic framework environment and API for application extension. As J2EE components and service architecture have the same standards and specifications, it provides technical specifications and guidelines for solving the conflicts between various products in the past [15, 16].

J2EE also solves the shortcomings of the past C/s two-tier mode. By layering, the business logic and interface display are separated, making the software have better scalability [17, 18]. At present, J2EE is mainly a typical four-tier model, and the system is developed according to the four-tier structure [19], as shown in Figure 1.

**2.2.2. Servlet Technology.** The client is actually a browser, which does not need to be developed. JSP technology and Servlet technology are needed in the network layer. Let us introduce Servlet technology [20]. The full name of Servlet is Java Servlet, which is a server-side program written in Java. Its essence is the Java program running on the server [21, 22]. Servlet is written in Java, so it has powerful functions. It can not only process the client's request, but also return the response. Because of the combination of these two aspects, it is very suitable to use Servlet in B/S mode [23, 24]. In general, it has the advantages of good portability,

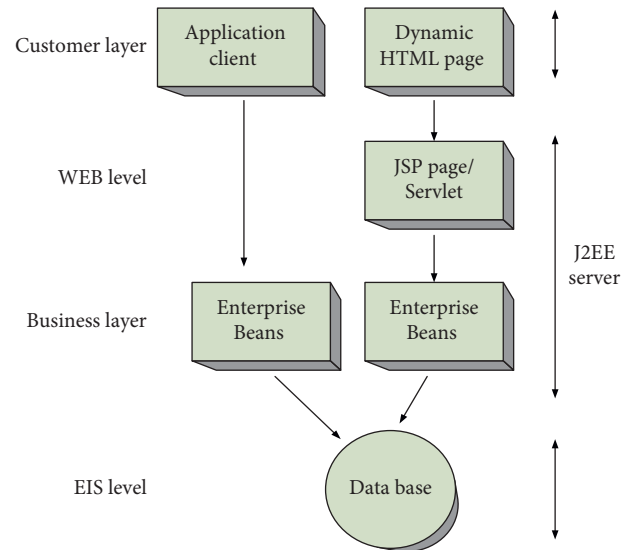


FIGURE 1: J2EE's four-layer structure.

powerful function, good security, simplicity, high efficiency, and durability [25, 26].

**2.2.3. JSP Technology.** JSP is the abbreviation of JavaServer pages, in fact, it is a simple servlet, and it is a dynamic web page technical standard [27]. It can insert Java language into HTML syntax to make some data judgment or verification [28].

As the current web page development technology, JSP has the following characteristics compared with the static HTML pages in the past:

- (1) Separate the generation and display of content. This can protect the code, and at the same time HTML pages can easily adapt to most browsers.
- (2) Strong portability: because many platforms support Java, JSP can run on almost any platform.
- (3) Use JavaBean technology to write every object or business component, and then JSP page can use this object or business component repeatedly.
- (4) Precompiling is the first time that JSP pages are accessed by users; they need to compile and save the compiled results. After that, when they visit again, they can run the saved compiled results directly instead of precompiling, which can greatly improve the access speed.

**2.2.4. MVC Mode.** The full name of MVC is model view controller. It is a three-layer software design model. The application of the MVC pattern in the design of the educational administration system serves as a small skill to propose solutions to specific problems in order to increase the code reuse rate and reduce the degree of coupling. The data information is planned into range categories through hierarchical levels, which is more specific and more clear. The execution process of data input, processing, and output

in program development is handled in a separate way. MVC design pattern is actually to decompose the problem through layers and develop and solve the problem independently. Simplify complex problems and reduce development difficulties and complexity.

The architecture and design of the educational administration integrated management platform completely follow the MVC mode, and Java technology is widely used in the actual development.

**Model:** the core of MVC accepts the data of view request and returns the final processing result. In order to make full use of the existing components, the business model is further divided from the perspective of application technology, but it cannot be used as the framework of application design model. The model in MVC design pattern includes not only business model, but also function model and data model. A model can be reused by multiple views, which improves the efficiency of development and reduces the repetition rate of code.

**View:** it is responsible for providing user interface (UI) to the user. It is a model that hosts the information required by the display controller. The model needs to be transformed and presented to the user. In traditional web applications, view is an interface composed of HTML, and the design is relatively simple. In today's web applications, view design is more and more complex. One function corresponds to multiple views, through which data is collected and captured. In ASP. Net MVC, view is passed to its controller and modified content to HTML through the model object of state register. Business process processing is done by model.

**Control:** the user receives the request, associates and activates the model and view, and completes the user's request together. When the request initiator is activated and triggered, the controller does not operate. Its job is to receive the request and select which model to call to process the request and determine which view to use to display the returned data.

The three-tier structure model of MVC design model, the main functions and relations of view, and controller are shown in Figure 2.

**2.2.5. JavaBean Technology.** JavaBean is to implement the software component model in Java language. In the program, these models are all a class. These classes comply with the JavaBean standard and have a unified specification. Standard JavaBean components can be compared with classes, and then these classes can be constructed and applied. Using this technology can make the code easy to maintain, use, and write, also can realize code reuse, and enhance code transmission.

**2.2.6. Mobile Edge Computing Technology.** Mobile edge computing technology provides smart and cloud computing capabilities for wireless access networks by deploying servers on the wireless access side. Among them, the virtualized infrastructure is based on physical resources such as computing and storage of general-purpose servers. It provides a flexible and efficient platform environment for multiple

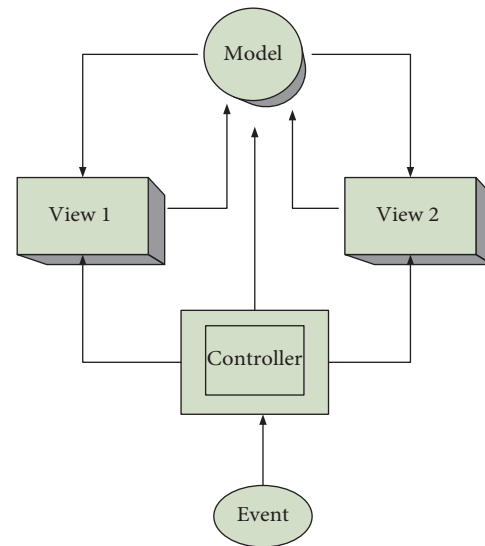


FIGURE 2: Schematic diagram of MVC model.

applications to run independently for the application layer. The software functional entities can be used to achieve business localization and close-range processing; mobile edge the platform is responsible for processing the basic functions required by mobile edge applications, including domain name, routing rule management and control, data distribution, wireless network information management, network self-organization management, big data analysis, network acceleration, and business registration functions, of which local distribution is business. The prerequisite for application localization and short-distance deployment is one of the most basic functions of the mobile edge computing platform, so that the wireless network has the ability of transmitting with low latency and high bandwidth. Short-distance deployment is to give full play to the low-latency advantages of mobile edge computing technology. Because the distance to the user is closer, user requests no longer need to travel through a long transmission network to reach the remote core network to be processed but are processed by the local MEC server. Part of the traffic is offloaded, processed directly, and responded to the user, so the communication delay will be greatly reduced.

**2.3. Demand Analysis.** Requirement analysis is to understand what functions users want to achieve through software. Requirement analysis needs to understand the user's requirements in detail, which has the function of decision-making, direction, and strategy. The educational administration management system is mainly to complete the needs of the school educational administration work, including the setting of courses, the storage, and management of basic information such as student status, the admission of students' scores, and the management of teachers' basic information, which requires a detailed and comprehensive demand analysis of the school educational administration management process and the design of a good management platform. This section mainly introduces the design

principles, data flow, functional requirements, and non-functional requirements of the system.

*2.3.1. Design Principles.* The educational administration management system is based on the digital campus. In the process of design and development, it needs to follow certain design principles, not only to meet the basic principles of software design, but also to meet the needs of educational administration management, which is the basic requirement of completing the system development with quality and quantity. The following are the design principles followed by the system design:

- (1) Based on the overall planning, the system is based on the process of educational administration management and the specific functions are implemented step by step.
- (2) The design structure of the system is simple and easy to maintain; Java programming is used to reduce the difficulty and facilitate future maintenance and update.
- (3) The system divides users into administrators, teachers, and students, which makes it more convenient to add, delete, modify, and check educational information within their respective authority. So, it is easy to operate and access.
- (4) Security: the system ensures the security and reliability of data through identity authentication, authority management, and other measures to ensure the normal and reliable operation of the system.

*2.3.2. Main Workflow of the System.* The workflow of each user using the function module is as follows:

- (1) Score entry: this function is a teacher function. After logging in the system through the mobile intelligent terminal, the teacher can choose to enter the score entry page, enter the name of the class, the course name, and the teaching time to start the score entry.
- (2) Schedule query: this function is shared by teachers and students. After the teachers or students log in to the system, select schedule query, enter the query interface, enter the class name to be queried, and enter the class schedule. In case of special circumstances, teachers can view the class schedule through this function and obtain the free time of the class according to the schedule display. In addition, teachers can also query the individual schedule according to the work number.
- (3) Classroom inquiry and reservation: this function is a teacher function. After the teacher logs in to the system, he/she selects the classroom inquiry and reservation, enters the inquiry interface, enters the use time, and selects the classroom type, and then he/she will view the relevant information of the idle classroom, including the classroom name and the

number of seats. The teacher selects the required classroom according to the number of required classes and the nature of the course. When booking the classroom, the teacher enters the name of the teacher, the name of the class, the time of class, and the name of the course and selects the reservation. The reservation information will be submitted to the server.

- (4) Course transfer application: this is the function of teachers. After the teacher has reserved the classroom, select the class adjustment application to enter the class adjustment application interface and select the class adjustment type, including two types of options, class adjustment and arrangement due to curriculum design, then enter the name of the teacher, the name of the teaching class, and the name of the course, and finally select the class adjustment scheme. There are two kinds of course adjustment schemes. One is that the teacher adjusts the time and place of class: input the original week, day of week, and time of class, adjust the week, day of week, and the name of the scheduled classroom, and then submit the application for class adjustment; the other is that the teacher adjusts the teaching without changing the time and place of class: input the week, day of week, time of class, and the name of the substitute teacher and then submit the application for class adjustment. Because the front part of the application content is the same, the system design will display two kinds of course adjustment schemes in the same page.
- (5) User management: this function is an administrator function. After the administrator logs in to the background system, he/she selects and enters the user management page. For three different types of users, the administrator can add, delete, or modify users by category and assign permissions and modify passwords to users.
- (6) Course management: this function is an administrator function. The administrator can log in to the system and enter the curriculum management interface to create course information, add and modify courses, classify courses, and complete course arrangement.
- (7) Classroom management: this function is an administrator function. After the administrator logs in to the system, he/she will enter the classroom management interface. Classroom management includes three submodules, input classroom, classroom classification, and classroom reservation management. The administrator can enter the classroom classification module to classify the existing classrooms according to the two categories of used and free; mark the arranged and scheduled classrooms as used and other free classrooms for teachers to query and book. The administrator can enter the classroom reservation management

module to count, mark, and delete the reservation information.

- (8) Notice management: administrators can add, publish, and delete announcements after entering the announcement management function interface.
- (9) Performance management: teachers input students' scores into the database according to the subjects and class names they teach; administrators add, delete and modify the scores, and manage the scores of each student according to the class; that is to say, connect and query the scores of each subject in the class according to the student number and name to generate a new class score table. The administrator makes statistics and analysis on the scores of each subject, and the score table can be directly called by the score association rule mining subsystem. The first stage of association rule mining must find all high-frequency item groups of student performance divided by subject and class from the original data collection. Use the high-frequency k-item group in the previous step to generate rules and perform calculations, sorting, and classification under the threshold of the minimum reliability condition.
- (10) Student status management: the administrator manages the student's student status information, including inputting the basic information of the student's student status, changing the student's student status information, modifying the student status of the transferred majors, and deleting the student status information of the students who have left school or dropped out of school.

### 3. Experiments

**3.1. Database Design.** In the conceptual structure design stage, this paper uses the total E-R diagram of the system to describe the relationship between the entities involved in the database. It is represented by an ellipse in the E-R diagram, and entities with the same attributes have the same characteristics and properties. The entity name and its attribute name set are used to abstract and characterize similar entities and use undirected edges to connect them with corresponding entities; for example, the student's name, student ID, and gender are all attributes. If it is a multivalued attribute, put a solid ellipse outside the ellipse. In the logical structure design stage, this paper transforms the E-R diagram into a relational model and finally designs the table structure of the database. Based on the theory of conceptual structure design of database, this paper analyzes the demand of educational administration management system and abstracts the entity of this mobile educational administration management system, which mainly includes users, departments, classes, students, teachers, courses, grades, classrooms, announcements, and class transfer applications. After induction and analysis, E-R model related to administrators and E-R model related to students are, respectively, obtained. E-R model related to administrators is shown in Figure 3.

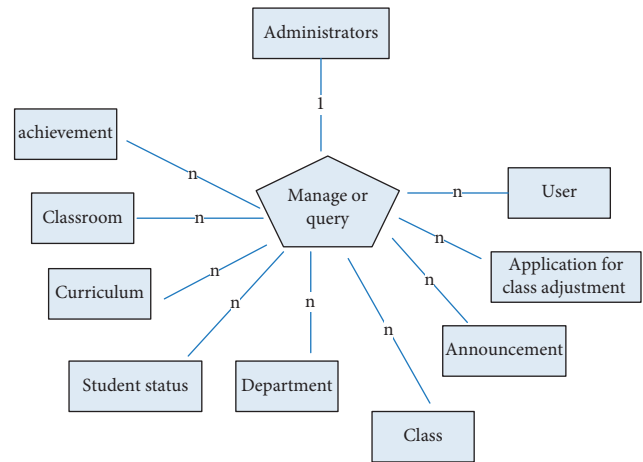


FIGURE 3: Administrator related E-R model.

The following E-R model related to teachers and students is shown in Figure 4.

The detailed database structure design is shown in Tables 1 and 2.

**3.2. System Test.** Before the mobile educational administration management system is put into use, it needs to test the system performance according to a variety of test indicators to check whether the system can operate normally. Because of the use of HTML5, CSS3, jQuery, and other popular but not very mature front-end development technologies, the openness required by HTML5 technology is not up to standard, and the standards of related technologies are not yet mature; CSS3 needs to be drawn and cut from the beginning to achieve, and the follow-up workload is large; jQuery is based on the data cache module to manage events, and the style operation module is used to obtain calculations style or set inline style. The system may produce many unexpected problems in the use process, so we must test the system functions in multiple directions and find out the system defects as much as possible. The main focus of the test of the educational administration management system based on the mobile Internet is whether the system can work well in different browser environments. The purpose of this system test is to verify whether the system meets the user's requirements and complies with the system design requirements, including development test, integration test, and acceptance test. System test is to test the usability, operation efficiency, and data integrity of the system by using test tools according to the test process. The system test includes function test, performance test, usability test, and security test.

### 4. Discussion

#### 4.1. Design and Implementation

**4.1.1. Design and Implementation of Login and Verification Module.** In this design, the system security measures are taken to encrypt the user's login password. After the client is encrypted, the input login password needs to be compared



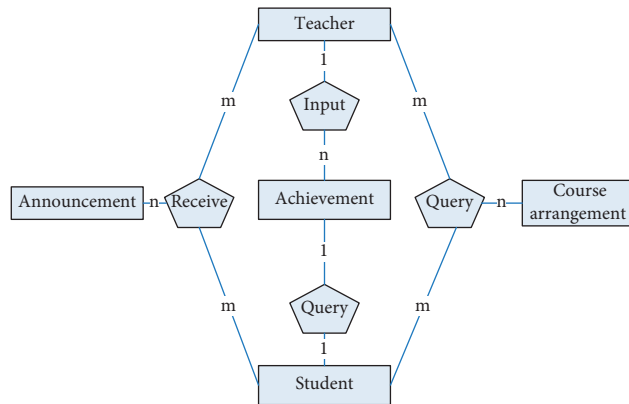


FIGURE 4: E-R model related to teachers and students.

TABLE 1: Class table.

Field name	Field meaning	Data type	Data type	Null or not	Is it the primary key?
Bjbh	Class number	Char	16	No	Yes
Bjmc	Class name	Varchar	16	No	
Xbbh	Department serial number	Char	16	No	
Rs	Number	Char	2	Yes	

TABLE 2: Score.

Field name	Field meaning	Data type	Data type	Null or not	Is it the primary key?
Xh	Student ID	Char	16	No	Yes
Kcbh	Course number	Char	10	No	Yes
Pscj	Usual performance	Float	4	No	
Sjcj	Practical achievements	Float	4	No	
Qmcj	Final exam	Float	4	No	
Zpcj	Total mark	Float	4	No	
Bz	Remarks	Float	4	No	
Dj	Grade	Float	6	Yes	

with the secondary encryption password stored in the server before normal access to the system. In fact, the user’s use of the system is not different from the original, but it really enhances the security performance of the system. In this way, it also means that two levels need to be passed before the visit on the one hand for the user and on the other hand for the system. First, the user’s identity is determined, and then the database is checked.

After the user enters the user name (user account) and password and verification code on the login page, the server first determines whether the verification code is correct and then determines whether there is a value matching the user’s input account in the database user table. If there is a user account in the database, the system will compare the password field corresponding to the account with the secondary encryption submitted in the form (twice via the client and server MD5 encrypted) password. If the comparison is consistent, you can successfully enter the user operation page corresponding to the type of user account entered; otherwise, it will stay on the login and verification page. The effect of the system login page is shown in Figure 5.

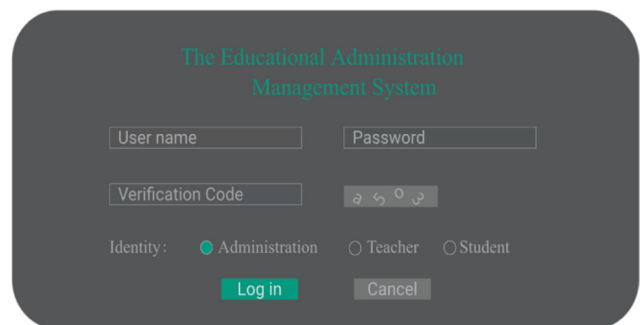


FIGURE 5: Rendering of system login page.

4.1.2. *Design and Implementation of Student Status Management Module.* For the management of student status after leaving school or leaving school, this graduation design sets different query conditions for student status information according to the two situations of leaving school. The student status information of leaving school can be deleted by selectively inputting grade to query all student status information; and the student status information of

individual dropping out can be queried by inputting student number to query relevant student status. The information is then deleted. The interface of query management is shown in Figure 6.

*4.1.3. Design and Implementation of Announcement Management Module.* After the administrator enters the page of creating the announcement, the system can set the time of creating and publishing the announcement through the new attribute date time marked by HTML5 < input >. In the drop-down list, the identity of the publisher can be selected. After entering the title and the content of the announcement, the creation of the announcement is completed. The Modify button in the page plays the role of resetting the content of the announcement. Click the Publish button to publish the announcement to teachers and students. The page effect of creating an announcement is shown in Figure 7.

The key technology to realize the notification management is to send the page. The application of this function is embodied in adding a multilayer background image to an element. The filtered data is scaled by a specified multiple, a simple block is split into multiple columns, and the number of columns, column widths, and blank spaces between columns is realized through corresponding attributes. The application of this attribute has greatly improved the problem of multilayer layout in the past in the face of multilayer design. This system calls the class SMS interface provided by CSS3 to realize the sending function. The main functions include the following: mobileinfo service is used to realize the session connection with the mobile client. CSS3's API calls sendsms (string telnumber. Stringmsg), a function of public void type, to send page information. The function setstratus() of type public void is used to record the sending status; 0 is failed; 1 is sent successfully.

*4.2. Implementation of Data Mining for Teaching Level Evaluation.* The average score of basic computer score is extracted from the student score table of the mobile educational administration management system database as the data voucher to evaluate the teaching effect of teachers. The teaching effect of teachers is divided according to the average score of basic computer score: 0 for below 60 scores, 1 for between 60 and 70 scores, 2 for between 70 and 80 scores, and 3 for above 80 scores. The teaching effect, together with the data extracted from the teacher table, the teacher number age, professional title, and education background, is connected into the teaching effect information table, and the relationship between the teaching effect of computer basic courses and the professional title and education background of teachers is found out from the teaching effect information table through association rule mining. Table 3 shows some teaching effect information.

According to the data in Table 4, age was divided into four groups: A1 for 23–29, A2 for 30–35, A3 for 36–50, and A4 for 50–60. Teaching effect is divided into four groups: teaching effect 3 is X1, teaching effect 2 is X2, teaching effect 1 is X3, and teaching effect 0 is X4. Title: Z1 teaching assistant,

Z2 lecturer, Z3 associate professor, and Z4 professor; education background: E1 undergraduate and E2 graduate. Part of the information after data conversion to Boolean is shown in Figure 8.

As shown in Table 5, Apriori algorithm is a frequent itemset algorithm for mining association rules, and it is the most influential algorithm for mining frequent itemsets of Boolean association rules. Using layer-by-layer search and iteration method, the core idea is to mine frequent itemsets through two stages: candidate set generation and plot downward closed detection. Its core is a recursive algorithm based on the two-stage frequency set idea. After the data preparation, the association rules in apriori algorithm can be used to mine the relationship among teachers' age, professional title, education background, and classroom teaching effect for the selected teaching effect information with excellent teaching effect (teaching effect grade 3). When the minimum support is 10% and the minimum confidence is 40%, the association rules as shown in Figure 9 are generated.

Rule 4 shows that, in the age group of 50–60 years old, the support degree of excellent teaching effect is 18% and the confidence degree is 53%. Rule 5 shows that the degree of support is 16% and the degree of confidence is 52%. Rule 10 shows that the degree of support for excellent teaching effect is 22% and the confidence level is 71%.

From the above rules, it can be concluded that, for subjects with excellent teaching effect, the relationship between teaching effect and age, professional title, and education background is as follows: young and middle-aged teachers in the 30–50 age group have relatively high degree of support and confidence in teaching effect, indicating that they have relatively rich classroom teaching experience. The high confidence level of backbone teachers aged 50–60 indicates that the old teachers are more experienced and popular with students, while the young teachers under 30 need to focus on training to help young teachers improve their professional level. Teachers with professorship and associate professorship as well as teachers with higher educational background generally have higher teaching level. Teachers with lower educational background and professional title still need further study in order to improve their knowledge structure and professional ability.

*4.3. System Test.* (1) Function test of student subsystem.

The actual results in the function test case table (Table 6) of student subsystem show that the function of student subsystem is normal. In the test for the timetable query, the process of inputting the information and clicking the query was carried out, which can accurately and quickly display the page; when the score is inquired, the timetable can be displayed accordingly; the entire query process has no errors, freezes, or delays phenomenon.

(2) Connection speed test: the mobile educational administration management system mainly runs through the mobile terminal in the wireless network, and the data transmission speed will directly affect



## Leaving School Management

Student ID  Grade

Student ID	Grade	Full name	Gender	Department name	Professional name	Class number

FIGURE 6: Departure management interface.

## Grate Notice

Time  Publish

Title

Content:

FIGURE 7: Effect of creating announcement page.

TABLE 3: Some teaching effect information.

Teacher number	Age	Title	Education	Teaching effectiveness
10001	34	Lecturer	Graduate student	2
10002	45	Associate professor	Graduate student	2
10003	27	Assistant	Undergraduate	1
10004	29	Assistant	Graduate student	1
10005	50	Professor	Undergraduate	3
10006	25	Assistant	Graduate student	0

. . . . .

TABLE 4: Boolean type data information table.

A1	A2	A3	A4	Z1	Z2	Z3	Z4	E1	E2	X1	X2	X3	X4
0	1	0	0	0	1	0	0	0	1	0	1	0	0
0	0	1	0	0	0	1	0	1	0	0	1	0	0
1	0	0	0	1	0	0	0	0	1	0	0	1	0
1	0	0	0	1	0	0	0	0	1	0	0	1	0
0	0	0	1	0	0	0	1	1	0	1	0	0	0
1	0	0	0	1	0	0	0	1	0	0	0	0	1

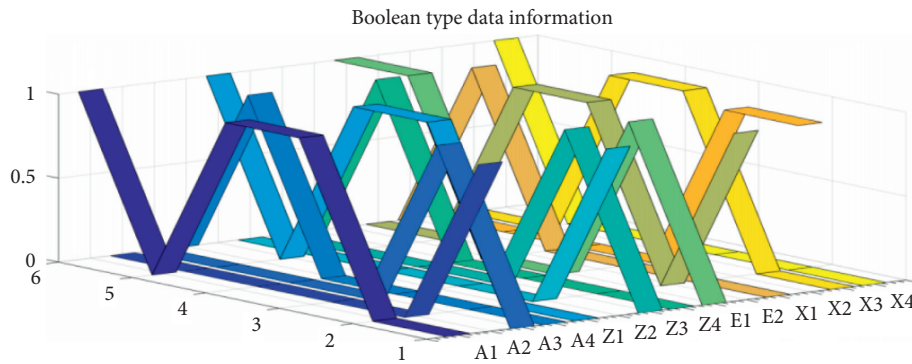


FIGURE 8: Boolean type data information.

TABLE 5: Adjusted association rules.

Rule	Age	Title	Education	Support degree (%)	Confidence level (%)
1	23~29			11	41
2	30~35			17	46
3	36~50			17	48
4	50~60			18	53
5		Professor		16	52
6		Associate professor		17	50.5
7		Lecturer		14	46
8		Assistant		11	43.3
9			Undergraduate	14	42
10			Graduate student	22	71

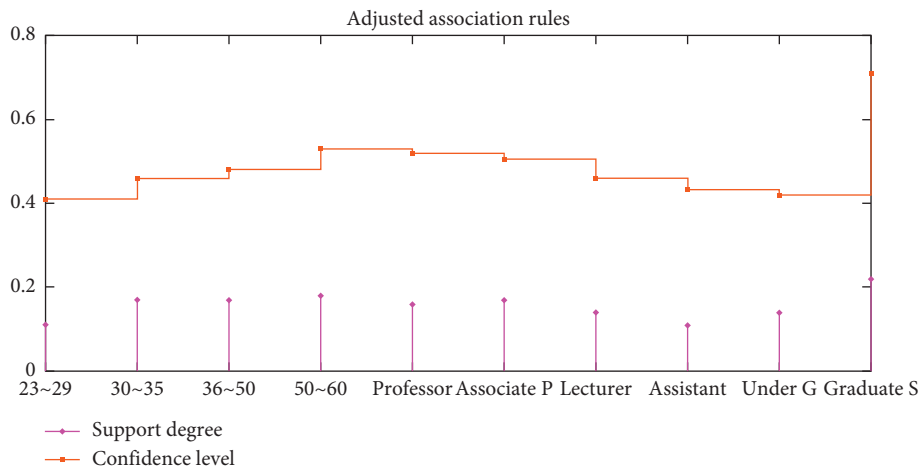


FIGURE 9: Adjusted association rules.

TABLE 6: Student subsystem function test case table.

Test case	Functional module	Test description	Expected results	Actual result
1	Timetable query	Enter the class name, select the academic year and semester, and click query	Class displayed successfully	Meet expectations
2	Score query	Enter the class name and name, select the school year and semester, and click query	Timetable	Meet expectations

the user experience. The mobile educational administration management system has been tested in the 4G mobile communication network and the wireless LAN, respectively, and the response time of the system is normal.

- (3) Navigation test: navigation is the guide of system operation. The design of system navigation is simple and clear. Without training, users can smoothly use the required functions through navigation to bring a good user experience. Through the test of different types of users to navigation links, it is confirmed that the system navigation settings are scientific and all levels of navigation styles are consistent.

## 5. Conclusions

The vigorous development of mobile edge computing has created a good foundation for the wide application of management information system. The management information system based on B/S mode is bound to develop into one of the main branches of information management. To improve and upgrade the traditional system, it is the inevitable choice for colleges and universities to further strengthen the educational administration management. The management system based on B/S mode appears under the condition of high popularity of mobile edge computing and increasingly mature application of database. Compared with the traditional C/S (client/server) mode, it is more perfect and advanced and can well adapt to the new requirements of information management in the Internet era.

This paper studies the demand of educational administration management in colleges and universities and finds that the demand of educational administration management information system currently used in colleges and universities is more, so it is difficult to undertake the implementation of educational administration management. Under the background of the rapid development of information technology, this paper designs and develops a set of educational administration management information systems to help universities improve the efficiency of educational administration. The main work of this paper can be summarized into three aspects: demand analysis, system design, and the system implementation and system test.

This paper first discusses the design and implementation of the login verification module and the implementation of the password encryption storage and separately describes the detailed design and implementation of the administrator subsystem, including the student status management module, the achievement management module, the design

and implementation of the achievement data mining, the announcement management module, and the realization of the paging function; then, it describes the design and implementation of the teacher subsystem, including the classroom query and the implementation of the specific design and implementation of reservation module and CSS3 responsive layout; finally, it describes design and implementation of student subsystem, including the design and implementation of score query module and HTML5 local storage security mechanism.

## Data Availability

This article does not cover data research. No data were used to support this study.

## Conflicts of Interest

The authors declare that they have no conflicts of interest.

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