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RESEARCH ARTICLE

INFORMATION MANAGEMENT SYSTEM OF SPORTS GYMNASIUM IN COLLEGES AND UNIVERSITIES

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ABSTRACT

To improve the efficiency of the management of college stadiums and gymnasiums, an information management system for college gymnasium was developed. In the information management system of university gymnasium, the integration of management functions was realized, including employee management, customer management, site management, cost management and system management. The system integrated all these functions in the system and realized the transmission and sharing of data and information. The system also optimized the overall process of the college gymnasium information management system and realized the goal of the open management of the daily information of the college gymnasium. Moreover, the system could make use of its open interface to integrate the management system with other colleges and universities. The research showed that the information management system of university gymnasium improved the efficiency of the management of sports stadium and gymnasium. In a word, it has practical application value in the management of college gymnasium.

KEYWORDS

colleges and universities, stadiums and gymnasiums, information management, management system.

1. INTRODUCTION

The construction of the gymnasium in colleges and universities is also an important part of the university hardware construction. In order to manage the gymnasium in colleges and universities, a lot of gymnasiums in colleges and universities have established the gymnasium management information system. But many of these information systems are stand-alone, which can't meet the demand for appointments and use of university sites [1]. Because the single version of the gymnasium management system cannot be accessed through the network and it cannot be transmitted and shared between the information management system and other information management systems. And the development of the traditional university gymnasium management system is mostly based on the process, so the independence of the developed management system modules is poor, and it is difficult to upgrade and reuse.

In order to meet the needs of the development of college gymnasiums and to better practice the important content of the development of socialist science, colleges and universities need to effectively comb the contents of the existing gymnasium management and upgrade them by using the network technology. In the meanwhile, it is necessary to train the managers and update the office hardware and equipment, so as to construct a scientific and effective modern gymnasium management information system.

2. BACKGROUND INFORMATION

In foreign countries, the beginning management information system is not too developed, but a single machine version. With the rapid development of the Internet, we have to use new Internet technology to build a new system. This has realized the information construction of many enterprises and institutions, and it has practical significance especially for the large-scale and cross-regional scope enterprises. In addition, it makes it possible to coordinate information processing and distributed processing and related systems. There are many works on the management of universities in China. In the book of "College Student Management Office Automation System", it puts forward the contents of the office automation aiming at the student management, and makes a detailed analysis, design, development and introduction to implementation and steps of the university student management system. It has important reference significance to the administration of the university, the management of students and the study of office automation [2]. In China, there are many relevant literature and summarization in the construction of university information. It can find the trend of information development in China, that is, unification, integration and intelligence [3].

3. METHODOLOGY

3.1 Analysis of system overall demand

The main goal of developing the network management information system of university gymnasium is to make use of this system to realize the management of operation information in university gymnasium, so as to achieve paperless office, improve the efficiency of the gymnasium administrator and reduce the error rate. There are many types of users in the network management information system of the university gymnasium, and each user's own rights are different. The main function of the system is to make each user personalize when the management is used.

First of all, the system should have its own aim to meet the different needs of different users, that is to say, it should have personalized functions. Secondly, the network management information system of the university gymnasium needs to cover the various angles and various aspects of the gymnasium management. The different administrative users' rights are different, and the functions they can use in the system are different and they need to be designed and realized separately. Moreover, we need to have a general process when dealing with problems. Finally, the system needs to realize the demand of open management. The overall architecture diagram of the system is shown in Figure 1.

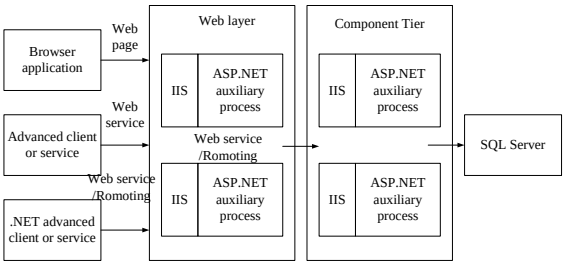

Figure 1: Overall architecture diagram of the system

3.2 System overall design

The overall design of the system is the first step of the system design, and its main task is to transform the use case diagram obtained in the requirement analysis stage into the main module of the system [4]. This is the process of modularized complex system contents according to function. We need to separate modules and express the relationship and hierarchy between modules clearly [5]. Therefore, according to the needs analysis of the system, we build the overall structure of the information management system of university gymnasium. Its functional structure diagram is shown in Figure 2.

In the design of customer management function, the system information for each customer is established and the initial basic information is input. The most important information is the name of the customer, the type of the customer, the industry of the customer and so on [6]. When the relevant information of customers is changed, customers can login to modify the system. If the customer's name changes, we need to reconfigure the customer's information to ensure the integrity and consistency of the data in the subsequent project management. When a customer no longer becomes a member of a sports team, we need to stop the registration of the customer in the system and set the customer into a failure state. When a failed customer needs to be activated again, we only need to change the customer status to take effect. The system administrator in the system can login to the system to view customer information, including the basic information of customers and the specific consumption of customers in the stadium.

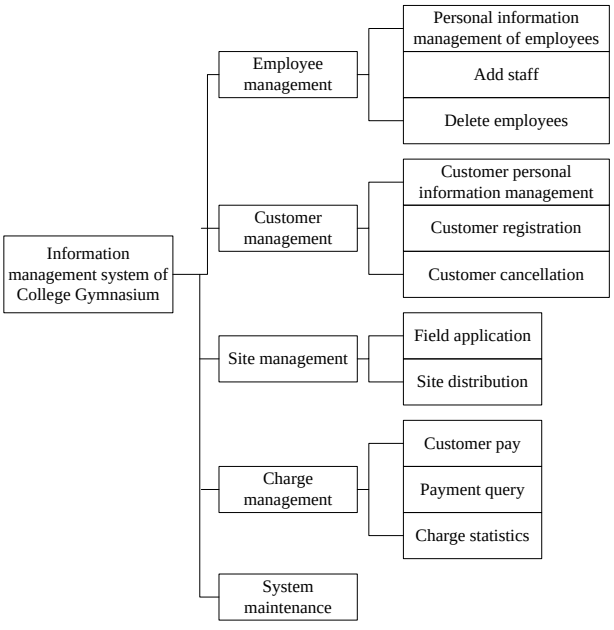

Figure 2: Overall structure diagram of the system

In the design of field management function, the site management mainly includes the customer's application for the site and the staffs' classification of the sports field.

The fees management is mainly the university stadium to manage the fees of customers' used site. The main contents are customer payment, payment enquiry and charging statistics. The way the customer pays the fee can be divided into two kinds. One is that the customer will have a certain amount in the card. Every time he consumes in the university gymnasium, it can be deducted by the amount of the card in advance. The other is users that do not register the card, and every time they go to the gym, they use cash to directly pay the fee. The payment statistics is mainly the staffs of the university gymnasium, who conduct daily statistics of the operation of the sports gymnasium, that is, the daily flow statistics.

3.3 Design of system database

The design of the database is an important part of the system design, and the quality of a system database design is very important, because it is the key to the development of a successful system [7]. The design of related entity relation diagram is actually the design of logic of database, and the ER diagram is its abbreviation [8]. According to the requirement analysis of the system and the functionality of the system, the E-R diagram is shown in Figure 3.

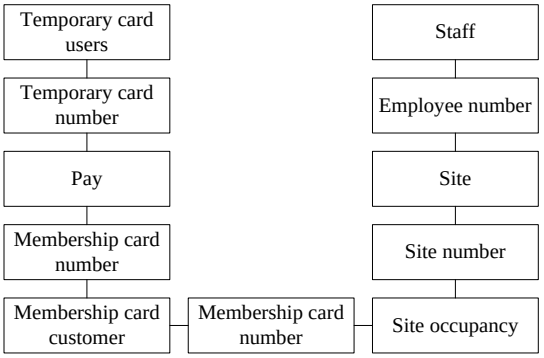

Figure 3: Database entity relation diagram

4. RESULTS AND DISCUSSION

The system structure of .Net-based university gymnasium information management system is more advanced and easy to realize and manage, so we chose the MVC three-tier architecture. It is the architecture mode of model, view and controller, which can better realize the business logic between the systems and the independence between display and storage, and facilitate the upgrading, maintenance and reuse of the system.

The gymnasium administrator can manage the registered members. After the administrator logins, there is a member management on the left side of the interface, and the click will go into the membership management interface. There is Action class in the background and the function of the class is to display all the members' information and can seal the information to the data set List, and then display it in the corresponding ASPX page through the Request object. The gym administrator needs to manage the gymnasium. It is necessary to enter the correct information of the gymnasium in the field. If the information is correct, the login button will naturally input the confirmed information when it is clicked. The information input cannot be recorded in the case of incorrect or incomplete information and will give the wrong hint, that is, it will enter the failure. The input field information is checked by the method Onsubmit= "ReturnCheckForm ()" in the Form table, and the input of various forms of data can be carried out by the CheckForm () function. The gymnasium administrator can manage members' booking information for various gymnasiums. Click on "membership reservation management" and jump to the interface of member reservation information. There is Action class in the background and the function of this class is to display information of all member reservations and to be able to seal the information to the data set List.

The main site for the management of college gymnasiums is to manage the occupancy, and the new deletion and modification of the site are included in the site management. The division of the test equivalent classes occupied by the site is shown in Table 1.

Table 1: Results add equivalent class partition table

Input equivalence class	Effective equivalence class	Invalid equivalence class
Site number	1. Site number is not empty.	2. Site number is empty.
Site type	3. Type format is correctly input.	4. Type format is wrong.

The test case of site occupancy module is the test of effective equivalence class, as shown in Table 2.

Table 2: Effective equivalence class test case table

Case	Test data	Expected result	Coverage effective equivalence class	Actual results
TC5	The site number is not empty. Site type: Badminton	Successful preservation	1 and 2	Successful preservation

We design the test cases of result addition module, and invalid equivalence classes are tested, as shown in Table 3.

Table 3: Invalid equivalence class test case table

Cases	Test data	Expected result	Coverage effective equivalence class	Actual results
TC6	The site number is not empty.	Invalid input	2	Hint error
TC7	Site type: 9033	Invalid input	4	Hint error

5. CONCLUSION

This project develops a management information system of gymnasium in colleges and universities and carries out site maintenance and management of gymnasium through the implementation of the system in every university gymnasium. This paper chooses VisualStudio.Net2005 as the development platform to maintain the information management system of the gymnasium, and then chooses C# as the development language. The related systems in this paper can integrate all kinds of management functions. It includes employee management, customer management, site management, cost management and system management. Finally, these functions are integrated into the system, and they can also share and transmit data information. The system gives them different privileges according to the different personalities of the user and optimizes the overall process of the whole system. Moreover, it realizes the goal of the open management of the daily information of the university gymnasium and can make use of its open interface to realize the integration of the management system with other colleges and universities. The research shows that the information management system of university gymnasium has improved the efficiency of the management of sports gymnasium and has practical application value in the management of college gymnasium.

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REFERENCES

[1] Chang, C. J., Kuo, H. C., Chen, C. Y. 2013. Retracted: ergonomic techniques for a mobile e-invoice system: operational requirements of an information management system. Human Factors & Ergonomics in Manufacturing & Service Industries, 23(6), 582–589.

[2] Huang, R., Huang, J., Ju, N. 2013. WebGIS-based information management system for landslides triggered by wenchuan earthquake. Journal of Mountain Science, 65(3), 1507-1517.

[3] Nair, B. G., Horibe, M., Newman, S. F. 2014. Anesthesia information management system-based near real-time decision support to manage intraoperative hypotension and hypertension. Anesthesia & Analgesia, 118(1), 206.

[4] Bouvier, P., Sehaba, K., Lavoué, É. 2014. A trace-based approach to identifying users' engagement and qualifying their engaged-behaviours in interactive systems: application to a social game. User Modeling and User-Adapted Interaction, 24(5), 413-451.

[5] Wang, Y. 2017. Researches on college gymnasium operational management model based on college student's behavioral pattern. Agro Food Industry Hi Tech, 28(1), 3512-3515.

[6] Dawoud, M. A. 2013. The development of integrated water resource information management system in arid regions. Arabian Journal of Geosciences, 6(5), 1601-1612.

[7] Ahmadi, M., Alipour, J., Mohammadi, A. 2015. Development a minimum data set of the information management system for burns. Burns, 41(5), 1092-1099.

[8] Laszlo, A., Bissell, M. J. 2016. Healthcare information management system. Computers in Health Care, 12(2), 279-296.