Analysis and Design Research of Public Sports Information Processing System

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Abstract. Public sports service, is to achieve and maintain social public or community sports public interests, safeguard the rights and interests of sports to achieve the goal, to the public sector as the core, on the basis of statutory duties, the use of public power, through a variety of ways and means, the general term for different forms of public sports goods for public conduct carrier them. Public sports service has four basic characteristics, such as public welfare, universality, basic and culture, and it has also become a public sports service. The public sports need is the source of the public sports service supply, and directly affects other links in the public sports service system. Public sports need are generally related to public interests and demands in social life, and sports need to be spillover, which is related to the direct or indirect benefits of the state and society. In this context, with the continuous improvement of the level of sports informatization, the public sports information management system has been applied more widely in school sports, competitive sports and social sports. From a single system to file system / server mode based on the client / server based (Client Server C/S) model of the system to the system based on the browser / server, management information system and various forms of service in sports management. This article follows the software engineering method, according to the actual needs of the management of public sports resources management business, expounds the system requirements analysis, system design, system implementation, and the whole system development process. The system takes VS as the development tool and ASP.NET as the development technology.

1. Background and Significance of the Design
Public sports service, is to achieve and maintain social public or community sports public interests, safeguard the rights and interests of sports to achieve the goal, to the public sector as the core, on the basis of statutory duties, the use of public power, through a variety of ways and means, the general term for different forms of public sports goods for public conduct carrier them. This system mainly refers to the decision-making, leading bodies and executive bodies of the public sports services at all levels of the party committees and governments, and all the government departments at or above the county level have a variety of specialized and non-specialized sports organizations. Such as the party committees and governments at all levels is the decision-making leadership Department of public sports service, responsible for major public sports service policy formulation, the main public sports resources, coordination of supervision and administration of public sports service departments at all levels of public sports service evaluation and other aspects of the implementation of the main. One is the implementation of public sports services, mainly by all types of institutions to undertake, such as public stadiums, museums, research institutes, etc.. They are not for profit purposes, to carry out various types of public interest and mutual benefit of sports activities of non-governmental social organizations, including sports institutions, sports associations, sports foundation, sports private non enterprise units, without registration or registration of sports organizations, their guidance and arrangement of government sports...
policy next, independently or in conjunction with sports institutions to complete all kinds of public sports service. They are the sports entities which provide various sports services as the main contents, and take profit for the purpose of running independently [1]. That is, enterprises engaged in sports management activities. Sports enterprises can serve as the main body of public sports service. They can supply the market of public sports service according to the principle of "who invests and who benefits" under the permission of the national policy. Therefore, modern society regards sport as the basic right of every member of society. Sports are a sign of social development and progress of human civilization. The level of sports development is an important manifestation of a country's comprehensive national strength and social civilization. To meet the needs of public sports service object, establish and gradually improve the public sports service system is an important part of building a harmonious society, is to protect the people's sports right, an important link to maintain a harmonious relationship between people and people. The public sports need is the source of the public sports service supply, and directly affects other links in the public sports service system. Public sports need are generally related to public interests and demands in social life, and sports need to be spillover, which is related to the direct or indirect benefits of the state and society. If necessary, the citizens of the fitness of representative countries or regions of the sports competition victory and honor needs, these needs to continuously improve the overall level of national sports, inspire national spirit, enhance national cohesion, and shaping the national good national image and enhance the national reputation, expanding international influence, so as to promote the national politics, foreign affairs, economy and other aspects of the cause of comprehensive coordinated development, play a significant role and value. With the rapid development of China's society and economy and the improvement of people's living standard, the mass sports demand motivation, form and content have undergone significant changes, more and more sports become an indispensable part of people's daily life. The content, level, structure and mode of public sports demand will change correspondingly [2]. The study is mainly based on the wide application of sports educational information resources sharing as the premise, with the construction of public sports education resource rich as the main content, the construction of regional public sports digital teaching resources sharing platform as the goal. In view of this, the research on the application of public sports information education resources and the related evaluation mechanism in China is still in its initial, spontaneous and decentralized state. Based on the above understanding, from the promotion of public sports information is of an urgent need for the reform of school PE education, after careful argumentation, we determined this topic, hope that through this research, the formation of good operation mechanism, and in practice, and constantly improve its evaluation mechanism, the maximum effective sharing of resources and resource quality development education, to cultivate innovative talents of sports service. Based on the analysis of the system requirements, determine the system function module, starting from each subsystem, detailed design of the system; the concept of database structure design, and according to the concept of data structure of database logical structure. Firstly, public sports information management system research background, research significance, domestic and foreign related research status, the main contents and methods are described, in addition to the relevant technology of information system are introduced, especially the C/S and B/S mode is discussed, and introduced the working principle, two the model of hierarchical structure and their characteristics, analyzes the advantages and disadvantages of the two modes. In addition, in the management information system has an important position in the database technology, respectively from the database, database management systems and database systems in three areas were introduced in detail. This is the sports information system needs analysis, including the main function of the system design objectives, design principles and model of information management and information status for sports information system and the system of the total demand for paper, through the introduction and analysis of this part, have a systematic understanding of the design of public sports information management system to realize the function of the target. The third part is the summary of the design of public sports information management system, introduces the design from the sports information management system structure, function structure and basic system, and in this part of the information management system of the sports competition management system, training management subsystem, basic information query subsystem
and system database design the four part makes a detailed analysis of the current situation of the development of public sports in China in the diagram as shown in figure 1. With the development of network application system, the limitations of traditional C/S mode application system constantly exposed, and the advantages of B/S mode have decided it replaced the possibility of C/S to a certain extent, the application of B/S model in the sports management information system is more and more widely, so it is necessary to analyze and compare C/S and B/S. C/S mode, that is, client plus server mode, is a developing model which has appeared earlier and has a wide range of applications. It is divided into two layers: client layer and server layer. The server layer is responsible for the processing and maintenance of the background data, and the client layer is responsible for completing the foreground display and the interaction with the user. B/S mode, that is, browse through server mode, is an improved structure of C/S mode with the development of Internet and Java technology. It is divided into three layers, namely client layer, application (WEB server) layer and data storage layer [3]. The client is a Web browser, it is responsible for the display and interaction, the application server is located on the Web server Web server application with extended function, its task is to accept the user's request, the implementation of the expansion of application program and the database of the corresponding connection, put forward data processing application to the database server through SQL, and then the database the server data processing results submitted to the Web server, the Web server sends back to the client.

![Figure 1. Schematic diagram of current development of public sports](image)

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2. Requirement analysis of public sports information processing system

Demand analysis, also known as the software requirements of system demand analysis or demand analysis project, staff development is through research and in-depth analysis, accurate understanding of user and item function, performance, reliability and other specific requirements, the user needs to express the non-formal requirements definition complete, so as to determine what the system must do. Process. Requirement analysis is an important activity in software planning stage, but also is an important part of the software life cycle, the stage is the analysis system to realize what "in function, instead of considering how to achieve". The purpose of the analysis is to treat the user software development put forward "requirements" or "need" for collation and analysis, confirmed the formation of complete and clear description and specification documents, determine the software needs to realize what functions, what kind of work completed. In addition, some of the non-functional requirements of software (such as software performance, reliability, and response time and scalability constraints), software design, software and other relationship are running the target software requirement analysis. After the feasibility analysis of the system, we fully consider the requirements that the system should have from the user's needs: 1, the system should have a strong security guarantee. Because the system is to complete the management of the database, so the security of the system is the most important [4]. 2, the user interface to friendly, easy to operate. Because the system is oriented to the public physical education teachers in the teaching work, they are not engaged in computing professionals, their cultural
level and operation ability are very different, so for them also requires only the use of computers can be. In order to ensure the versatility of the system, the interface of the system must be friendly and easy to operate. 3, scalability, because the system does not require data in the database initialization, for this user useful, but only to be able to complete the user’s subsequent operations. In addition, with the expansion of enrollment of physical education in recent years, the sports information management system requirements will continue to expand and increase, so we must fully take into account the system functions in the design. However, because each school attaches great importance to the level of different, there are a lot of public sports information resources and web video library update in the backward situation, the realization of public physical education resources sharing among schools of public is less and less. Facing the needs of physical education in public schools, it is urgent to develop public sports resources sharing application platform system, so that all the public can realize the exchange of resources, reduce redundant construction, and promote public sports informatization. The integrity of the public sports resources sharing system and the nature of the unit application platform tasks vary through the summary and the task system can be divided into several functional modules, each part has a specific function, is divided into 5 smaller parts of the 3 big parts, namely management module the learning module, the administrator module. Small modules are sports online learning, public sports world, sports teaching, communication world, and administrator system. System design, make use of the technology, the operator does not use the network environment has special requirements. It is convenient for all kinds of operators to complete or partially automate the information. System design specifications, clear, summed up years of web design experience and skills, as much as possible in line with user habits, consistent with practical applications [5]. The system level is clear, which is convenient for managers to use relevant information. Through many years of practical work experience, the system structure is reasonable and conforms to the grass-roots workers habits. Hierarchical design is reasonable, so that the use of simple operations can be inquiries, calls, statistics, and the required information. The design of software engineering system need to give full consideration to the needs and requirements of the future, need to take into account the requirements of system construction, design concise, to facilitate system requirements, and other automatic system interface, which is convenient for system expansion. In the software programming process on the performance of system access should be fully considered, should pay attention to issues related to the safety and stability of the system, security system uses encryption algorithm and server operating environment. Feasibility analysis focuses on the possibility of the technical, economic and operational organization of the computer system in place of the current management system, as well as the possible effect after the implementation of the new system. The feasibility is a key step of system development; it is based on the system requirements, the development of technology and methods, developers, considering the funds needed to assess for the development of this system is in line with the actual. Public sports information processing system requirements analysis case diagram, as shown in figure 2.

![Figure 2. Schematic diagram of function and structure of the system](image-url)
3. System core technology design
J2EE is a set of technology architecture which is completely different from traditional application development. It contains many components, which can simplify and standardize the development and deployment of application system, so as to improve the portability, security and reuse value. J2EE is a set of core technical specifications and guidelines, which contains various components, service architecture and technical level, common standards and specifications are made between different platforms, all based on the J2EE architecture, there is a good compatibility between enterprises to solve the past the back-end information products are not compatible with each other, inside or outside the enterprise to communicate the dilemma. The difference between the J2EE component and the standard Java class is that it is assembled in a J2EE application, has a fixed format and follows the J2EE specification and is managed by the J2EE server. The J2EE specification is defined as J2EE components: the client application and the applet is running on the client components; Java Servlet and Java Server Pages (JSP) is a Web component running on the server; Enterprise Java Bean (EJB) component is a business component running on the server. Based on the component, structure J2EE is independent of the platform makes the preparation of the J2EE program is very simple, because the business logic is encapsulated into reusable components, and provides the background service of J2EE server in the form of a container for all component types. Because you don't have to develop this kind of service yourself, you can concentrate on solving the business problems at hand. When the client activates a method in the enterprise bean, the container is involved in a management transaction. Because there are container managed transactions, there is no need to code the boundaries of the transaction in enterprise bean. Code that requires control of distributed transactions can be very complex. You simply declare the transaction attributes of enterprise bean in the layout description file without writing and debugging complex code [6]. The container will read the file and handle the transaction for this enterprise bean for you. JNDI Lookup (JNDI) services provide a unified interface to multiple names and directory services within an enterprise, so that application components can access name and directory services. The Web container manages the execution of JSP pages and Servlet components in all J2EE applications. The Web components and their containers run on the J2EE server. The application client container manages the execution of the application client components in all of the J2EE applications. The application client and their containers are running on the J2EE server. The Applet container is a combination of the web browser and the Java plug-in running on the client machine. J2EE uses a multi-tier distributed application model, where logic is divided into components by function, and each application component is distributed over different machines according to their layers. In fact, sun J2EE design of the original intention was to address the two layer model (client/server) of the drawbacks in the traditional mode, the client is bloated play too much role, in this mode, the first deployment time is relatively easy, but difficult to upgrade or improve the extensibility and is not ideal. Often based on a proprietary protocol, usually in a database protocol. It makes it difficult to reuse business logic and interface logic. Now, J2EE's multi-tier enterprise application model divides the different layers of the two layered model into many layers. One of the reasons why J2EE won wide attention is EJB. Which provides a framework for the development and implementation of distributed business logic, which significantly simplifies the scalable and highly complex enterprise application development. EJB specification defines the EJB component where and when and how they interact. Container is responsible for the provision of public services, such as directory services, transaction management, security, and resource pooling and fault tolerance. But it is worth noting here is the only path EJB does not implement J2EE. It is because of the openness of J2EE, makes all the vendors in a parallel way and EJB to achieve the same the purpose of the. The J2EE platform consists of a set of services (SERVICES), application programming interface (APIs) protocol and structure, the development of its multi-tier application based on WEB provides a support function. In this article I will explain 13 core supporting technologies of J2EE: JDBC, JNDI, EJBS, RMI, JSP, JAVA, SERVLETS, XML, JMS, JAVA, IDL, JTS, JTA, JAVA, MAIL and JAF, and will also describe the use of these techniques in where and when. Of course, I would like to introduce how these different technologies interact. In addition, in order to let you better feel the real application of J2EE, I will be in the WEBLOGIC application server (from BEA SYSTEMS, a widely used product)
environment and how these technologies, J2EE framework structure diagram is shown in figure 3. In many cases, the only service provided by the server is the database service. In this solution, the client program is responsible for data access, business logic, and display results in a suitable style, pop-up preset user interfaces, and accept user input. CLIENT/SERVER structures are often easier to deploy at first, but difficult to upgrade or improve, and are often based on proprietary protocols (usually some sort of database protocol). It makes it difficult to reuse business logic and interface logic. More importantly, in the WEB era, two tier applications usually do not exhibit very good scalability, and therefore difficult to adapt to the requirements of INTERNET. Part of the reason for SUN's design of J2EE was the need to address the defects of the two layered structure. Thus, J2EE defines a set of standards to simplify the development of enterprise applications on the N tier. It defines a set of standardized components and provides complete services for these components. J2EE also automatically handles a lot of implementation details for applications, such as security, multithreading, and so on. Developing N layer applications with J2EE includes dividing the different layers in the two layered structure into many layers.

![Figure 3. Schematic diagram of J2EE frame structure](image)

4. Design and implementation of the system

The overall function of the system is as follows: the administrator manages the basic information of all users uniformly. The administrator login system, you can add new users, modify user information of the user or delete old, has to find a specific user basic information: game world of the unified management of all public sports management personnel, including personal resume, education level, profession, teaching and so on in recent years[7]. After the public sports management system, you can change your mail list, check the personal home page also has to modify the function to modify user basic information of old, refine their personal information; physical education mainly for sports teachers to set up a class of sports elective courses, information technology project requirements, demand, sports venues and student performance management, FAQ sports online explain a series of functions; a series of functions of physical education learning mainly for students of sports elective, result inquiry, online testing, online homework, teachers submitted extracurricular physical exercise, online teaching correcting cases query basic information; students world unified management of all students. After the student login system, you can change your address book information, set up their personal information. System public page includes 5 files: global.asa file, ADO constant page file, adovbs.inc, page style definition file style.inc, permission check file identify.asp and error prompt page error.asp. For global.asa files, you can define functions for the start and end events of application and session objects. In this file, the string of the database connection is stored in the application ("DSN") object. Thus, when each site starts, the data connection string application ("DSN") is assigned. In sports, some points are 100 percent, such as basic knowledge of physical education, learning attitude, etc., and some scores are non percentile, such as swimming, 100 meters, etc.. They will be divided into two categories, non system system, this system requires conversion of hundreds of scores points without conversion. In this system is divided according to gender, grade, the project (100 meter run performance is as small as possible, while the swimming
performance is better) to choose the size of each fraction, and the corresponding numerical value. Sequential query is one of the most commonly used algorithms in programming. It is assumed that the value of X exists from the N integers, and the most primitive method is to look up from start to finish. Suppose you want to find the value of X from n integers, the most primitive way is to look up from start to finish, and this search method is called sequential search. This method is inefficient. If you want to find the required data from the 1000 data, and the data is exactly the last one, you need to take data and compare the data 1000 times. The average number of hits and comparisons of N data is n/2 times. Bisearch speed has improved, but is only applicable to Sipai ordered sequence. The basic idea is to first retrieve a data from the middle to see if it is the required data, and if not, then the P judges which data to find is on the middle side of the number. Database design is mainly for the logical design of data, the data will be organized according to certain classification, grouping system and logic level, which is user oriented. Personnel management function is that when the administrator log on the system, you can use the system of all users management, including adding new users, delete users, modify user information and query users. The schematic diagram of the system login interface is shown in figure 4.

![Schematic diagram of system login interface](image)

**Figure 4.** Schematic diagram of system login interface

### 5. Conclusion and Prospect
Public physical education resources sharing system is to adapt to the changing needs of strategic development and related business functions, is an important part of the platform system of public physical education resources sharing, its construction is of great significance. The platform system of public physical education resources sharing, shared library by constructing decision subject, breaking the "information island", establish an information sharing mechanism, optimize the structure of information resources, the depth of integration of basic information, through the application of the deepening of the relevant departments to vigorously promote the sharing of information, to achieve timely interaction and the depth of the development of information resources. And through the decision-making process and the model of science, function and administrator information management, teacher management, grid settlement, world sports learning, provide accurate basis for decision-making, scientific information, thereby promoting the enterprise decision support. The platform system has been related to the expert review of public physical education resources sharing, put forward many valuable comments and suggestions, the main function is relatively perfect, shortcomings in the interface is not very friendly, but relatively less attractive.

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