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# 基于 ASP.NET 的某实验室设备信息管理系统的设计与实现

Design And Implementation Of

Laboratory Equipment Management System Base On .NET

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## 摘要

随着高校招生规模的不断扩大,教育相关基础设施必须配套跟进,作为高校教育教学不可缺少的实验室也不例外,但正是不断的规划建设和投入使用的实验室带有一个新的问题,就是实验室设备如何高效率的发挥作用,使之更好的服务教育教学。随着计算机技术在教育管理领域的不断深入和广泛使用,建立一套与实验室设备管理工作特点相适应的信息化管理系统成为可能。

本文所讨论的设备管理系统是在实地考察调研广西某高校对实验室仪器、设备、耗材等管理的功能需求情况、相关业务流程情况后,结合计算机工程理论,利用计算机、计算机网络技术,以解决实验室设备管理问题为目标,设计实现了一个实验室设备基础数据管理、使用管理、维护维修管理、设备运行状态统计等功能的实验室设备管理系统。

本文主要完成了如下几个方面的工作。一是根据此研究课题的国内外研究背景情况,结合本校的应用需要实际,国内外教育产业信息化方向,分析此课题研究的意义和相关内容。二是研究讨论实验室设备管理系统将会用到的系统开发的相关理论和技术,如 MVC 设计模式、ASP.NET 开发语言、B/S 软件开发架构、Jquery 前端开发技术等。三运用 UML 图示方式对实验室设备管理系统所需要的功能点、设备管理相关的主要业务的逻辑处理流程情况进行详细的分析。四是对系统的软件架构、物理架构、逻辑架构等进行设计,对主要模块的流程、内容等进行详细阐述。系统的对软件的数据结构进行了设计。五是运用前文讨论的相关技术,根据系统的需求分析、架构设计情况,对系统进行详细设计实现,并对系统进行相关测试,保证系统满足设计要求。

本文所实现的实验室设备管理系统实现了实验室设备基础数据维护、设备运行维护、设备借入归还、设备报废、设备运行数据报表等强大功能,满足了学校领导、实验室管理中心负责人、归口管理部门负责人及管理员等各个功能角色的管理需要,操作便捷、安全可靠,提高了工作效率,促进了学校教育管理信息化进程。

**关键词:** 实验设备; 管理信息系统

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## ABSTRACT

With the continuous expansion of college enrollment, education-related infrastructure must complete follow-up. There is no exception for the indispensable college education laboratories. But it is the laboratory, constantly planning and construction and commission that has a new problem on how to play the role of laboratory equipment efficiently and make it a better service education. With the deepening of computer technology and widely used in the field of education and management, it is possible to establish a set of laboratory equipment management to adapt to the characteristics of information management systems.

Equipment management system discussed in this thesis is based on investigating the fieldwork research laboratory instruments, equipment, supplies and other management functions demand, and the relevant business processes of A university in Guangxi. It combined with computer software engineering theory, the use of a computer, computer network technology to solve the problem for laboratory equipment management objectives. And it designed and implemented an universities laboratory equipment basic system including laboratory equipment data management, use and management, maintenance, maintenance management, operating status and statistics functions.

This thesis mainly completed the following aspects of the work. First, according to domestic and international background of this research study, it combined with the actual needs of the university's application and the direction of domestic and foreign education industry information, analyzing the significance of this research and related content. Second, research and discussion of laboratory equipment management system will be used for the development of the theory and technology systems, such as the MVC design pattern, ASP.NET language development, B/S software framework development, JQuery front-end development technologies. Third, using UML features graphic images of the laboratory equipment management system, logical processing of the equipment related to the management of the main business carried out a detailed analysis. Fourth, design of the software architecture of the

system, the physical structure, and logical architecture design, etc. And it expounded the main module processes, content and other elaborate. System software data structure is designed. Fifth, the use of related technologies discussed earlier, according to the system requirements analysis, architecture design, the detailed design and implementation of the system, and the system related to testing to ensure that the system meets the design requirements.

In this thesis, the realization of laboratory equipment management system to achieve the basic data of laboratory equipment maintenance, equipment operation and maintenance, equipment borrowed restitution, equipment obsolescence, and powerful equipment operating data reports, etc. This system meets the school leaders, Center for laboratory management, centralized each functional role management department heads and administrators and other management needs. It is easy operation, safe and reliable, improve work efficiency, and promote school education management information process.

**Key Words:** Laboratory Equipment; Equipment Management System

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