The Design and Implementation of Library Information Management System

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Abstract—Under the circumstances of information developing, the digital library which provides knowledge exchange, share and long-term preservation functions and services, as the main implementer of interoperability of heterogeneous resources and services under the network environment, has semantic interoperability function, which is not only driven by objective environment and objective trend, but also one of the functions for its own survival development. Since the unordered flood of information on the Internet increases, the heterogeneous information system under the distributed environment emerges in endless, at the same time, the requirements for information service quality of users constantly improve, semantic interoperability must become the core functions of digital library. Through literature research, summary and personal practice, this paper attempts to completely and systematically comb the concept and technology of semantic interoperation of digital library.

KeyWords-Information management, Information system, Mobile library services, Database

I. INTRODUCTION

Along with the development of the computer technology, multimedia technology and modern communication technology (including the network technology), countries around the world support the construction of the digital information, so as to set off a round of the wave of information digitization. In the process of the construction of digital information, the library is a very important part, especially the digital information of the libraries of colleges and universities. With its huge amount of information storage, interactive and use frequency, libraries of colleges and universities make teaching implementation, scientific research and technological achievements connect with each other. The university libraries become the center of the concentration, processing and innovation of information. Therefore, to promote digital informatization construction of university libraries has become a very important research content.

The development of library digital information management has experienced such a process: at first, people implement digital information management to library business management, later, people carry out systematic and network management to each business process of the library and set up large-scale resources sharing system which takes individual bibliography online query as the main body. After entering the 21st century, library information and digital management makes full use of the computer network technology and information technology, and gradually achieves the information management of entities literature of different carriers and all-round online query function.Computer information and digital management system of libraries is to transfer the traditional manual operation into computer automation operation. That is to say, we put the gathering, collection, distribution, query and conventional business management of library books and periodicals and audio-visual materials to computers and carry out efficient and accurate digital library resources information management the resource of libraries.

Therefore, developing a library information management system which can assume enormous resources visits and can flexibly adapt business process change is very important.

II. RESEARCH AND DEVELOPMENT STATUS OF MOBILE LIBRARY SERVICES

It is found from domestic public library and university library's network investigation and literature research that

the overall rate and quality of the mobile library service are relatively low: the library of Beijing Institute of Technology first launched the mobile library services in 2003, besides which, there are only a small number of libraries which can provide such service. Most of this kind of libraries are located in developed regions with relatively single service mode and content and most of the libraries provide basic books borrowing service for readers by text messages.

Looking from the service content, the mobile library services in public libraries of our country are mainly concentrated in books retrieval, books borrowing, library news and lectures, reference and consulting and other basic services; while the services, such as e-books, audio and video resource services are only slightly involved in only a few public libraries. By contrast, the public libraries in the United States provide much richer mobile library service content. Besides the basic services provided by the mobile library service of the public libraries of our country, the public libraries of the United States also focus on the content of the service for utility class. For example, most mobile library services of the public libraries of the United States provide the Google Map guidance of the concrete location of the library and the working time, contact, FAQ and other practical services, as well as the database retrieval, e-books, video and audio download and other high-end services, and personalized services such as family health care, medical treatment, lease, etc. which are needed in readers' daily life.

III. MOBILE PHONE LIBRARY DATABASE DESIGN

On the basis of the functional requirements of the system, based on the atomicity, uniqueness and the principle of reducing redundancy, the system plans and designs the following data tables:

System basic configuration table: To store some basic configuration information which are needed in the operation and interface rendering of the system, such as system's name, logo image path, library integrated system types, library integrated system server address, etc.;

The administrator information table: To storage ID, password, privilege, status and other information of backend administrators;

User information table: To story account, password, binding mobile phone number, registration time and other information of users;

Custom type table: To storage the type information of information services which can be subscribed by users. To list a table for this kind of information is to reduce system redundancy and to provide convenient for type expansion;

Custom table: To store user ID and the corresponding relation of user custom content;

Announcement type table: To store the type information of guide announcement;

Announcement information table: Guide announcement and system lecture information of system;

Literature information table: To store literature related information which is for reading online and downloading;

Feedback information table: To store the feedback information of readers on the system and the library.

Considering the data table and its planning structure, the result of database needs analysis can design all kinds of entities to satisfy the system requirements and to find out their relationship. The entities programmed by this database contain system based information entity, administrator entity, user entity, user customization entity, announcements entity, etc. According to parts of entities, the relationship between entities can be planned out, which is shown in Fig .1.
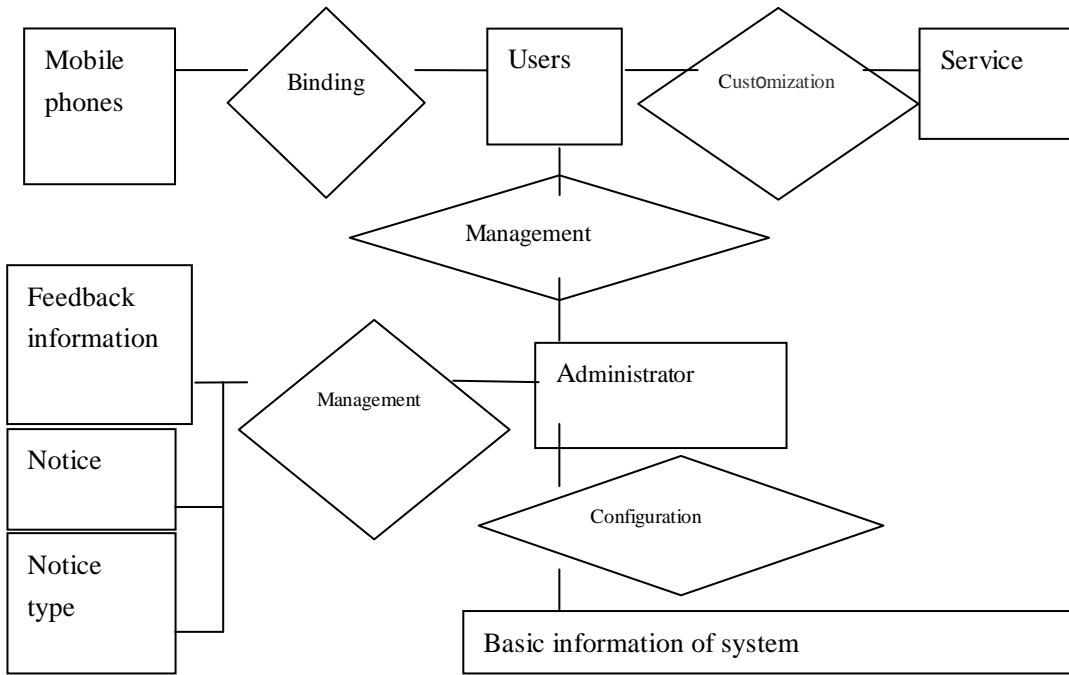
Figure 1. System part E-R figure

IV. GENERAL STRUCTURE OF LIBRARY INFORMATION MANAGEMENT SYSTEM

Drawing process of the system logic structure is actually the process to decompose, analyze and design the system function module, which is to make a reasonable change from data flow diagram to system logic structure diagram. System logic structure diagram can directly show the structure of the system. The logic structure diagram of the library information management system of Dongying Vocational College is shown in Fig .2.
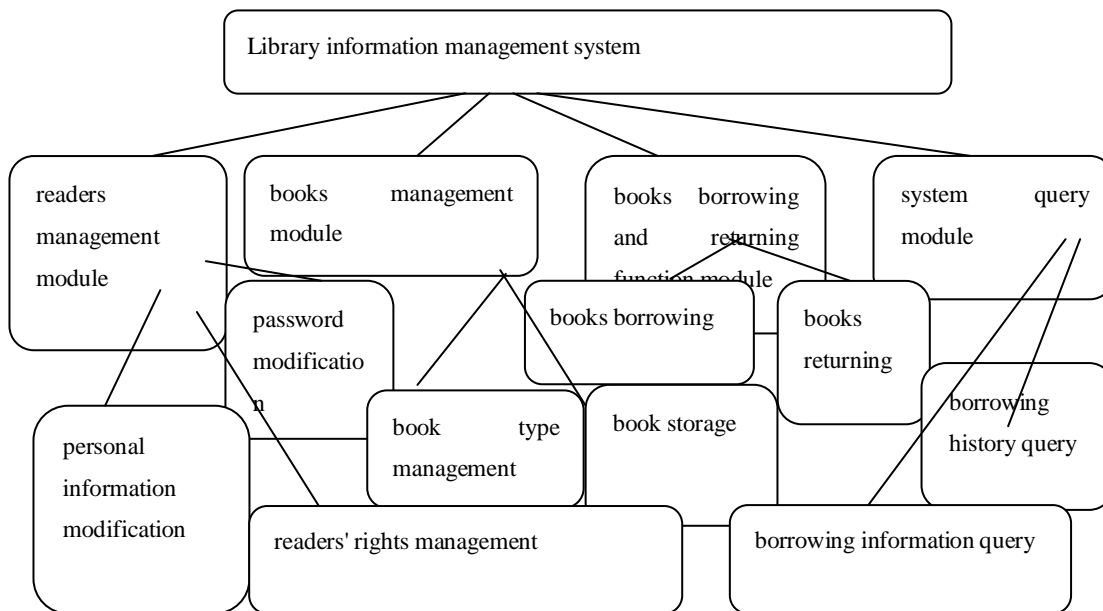

Figure 2. Library information management system logic structure

According to the demand analysis conclusion and the design principles that "low coupling and high cohesion", the library information management system is divided into the following main function modules, readers management function module, books management function module, books borrowing and returning function module, system query function module, etc.

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V. CONCLUSION

Library information management system develops in MyEdipse environment, which is based on J2EE platform and uses JSP web programming languages and related framework technology and MySQL database. Tomcat server software completes the library information management system based on browser server mode. Library information management system basically realizes the expected functions. The main functions of the system include new book storage function, books borrowing function, books returning function, book type management function, borrowing rights management function, readers' rights management function, books query function, borrowing information query function, borrowing history query function, personal information modification function, password modification function, etc.

This paper plans to establish a mobile phone library system of colleges and universities which has nothing to do with the mobile terminal or platform based on the investigation of the demands of readers of libraries of colleges and universities, and then designs and implements a mobile phone library system which can integrate with a variety of library integrated systems to make mobile terminal users can use through WAP website, Web App and Native App.

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