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LIBRARY SOFTWARE MANAGEMENT

R.Regan[1]
Assistant Professor
Department of Computer Science and Engg,
University College of Engg,kakuppam,
Villupuram 605103.

S.Vinothkanna[2],M.Ra
mkumar[3],
A.Lakshmanakumar[4],
M.Krishnaraj[5],
Department of Computer Science and Engg,
University College of Engg,kakuppam,
Villupuram 605103.

Abstract— Library Software management is used for monitoring and controlling the transactions in a library.The "Library Software Management" is developed in PHP.which mainly focuses on basic operations in a library like adding new member, new books, and updating new information, searching books and members and facility to borrow and return books.."Library Software Management" is a web application with Android application

Keywords-library manegement system; use case Analysis; database optimization ;performance test

I. INTRODUCTION

The biggest characteristics of the department library is a highly professional books collection that provides a convenient conditions for teachers and students to access information.But with largely increasing number of the library's books, the traditional manual operation management is very low efficiency.Therefore, it is necessary for teachers and students of the university to use the modern managemental technical of books,and also is an important part of the school of information construction.The development of computer technology not only providereliablebasisforthebooksmanagementautomation,but also greatly improve the quality\\ of the service for readers so that the reader can find their needed booksconveniently[1].

Based on the above mentioned, the system employs the three-layerarchitecture,choosestheUMLtoestablishthesystem demand model, and applies JSP technique to build system front deskinterface.ThebackenddatabaseusesSQLServer2005and Log4j log.In addition, for the convenience of theusers feedback the information as soon as possible, the system attaches to the message boardSub-module.

II. RESEARCHSTATUS

At present, the library management system is usually based on two-layer architecture of the client/server mode, namely the C/Sstructure,ithasthedisadvantageoflongdevelopmentcycle, taking up the clients more resources, and is difficult to system installandmaintain[2].Incontrast,thethree-layerarchitectureof the C/S model not only simplifies the client,but also simplifies the development and maintenance of the system. In addition, because the core of modern library management system has a workflow of adopting, editing, flowing and inspection, so thatit can construct with the administrators and readersas theobjectofthethree-layersofstructuremodel,andputthecore workflow in the business logic layer to centralism processing, suchlavatoryisbenifitforsystemdevelopmentanddeployment, and improve the efficiency of the informationresources.

use-case analysis

The most important part of the analysis phase is the establishment of the use case diagram. The use case diagram stresses the function which users want to get and through which the external users of participants have been able to look into the system function model figure.Through the user view, users are cleartowhattaskinthesystemdesignstageshouldbedone.The whole software implementation is focus on the use-cases of the requirements phase.Through the analysis of the system,it can determine two kinds of system roles and system related use-cases.The reader can inquiry , borrow and return the books.As well as the system administrator can manage the information of books and readers,Lend and return.According to the above analysis, figure1 shows the system overall use casediagram.

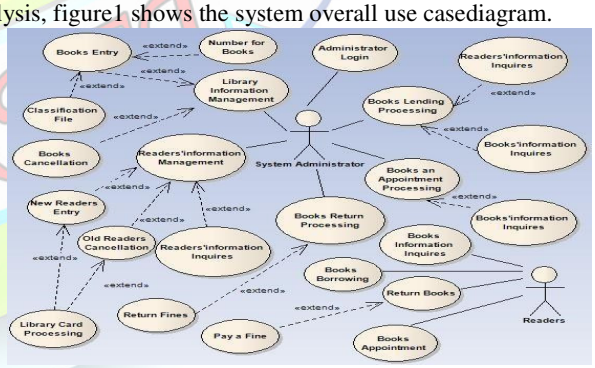

Figure 1. Library Management System use-case diagram

system design System

Architecture

Software system structure is software super-structure, and good software architecture has the leading role in the whole life cycle of the software.The different software architecture in the different levels of the application,has different effects of operation.Therefore, different levels of the software application system choosing the appropriate software system structure has important meaning to improve the efficiency of software development, reduce the software costs, increase the software maintainability[3].

This paper introduces the library management system using the B/S structure of design patterns. In this system,

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the user sends service in the client browser,and after the server receives requests to connect the database and identities verification.Then the server sents data processing applications to the database, the database calls data or files of the database informationintermsoftheuser'srequestofandsubmitsthedata processingoftheresultstothewebserver.Thentheserversends again the page to the client using the HTTP protocol. In this system, the web server layer uses JSP to generate page,the database layer using SQL SERVER2005.

A. System Function ModuleDesign

During the structural design of the system, it uses the topdown,from the abstract to the concrete specification method [5],which divides the complex system into each simple standalone module by the function.Shown in Figure 1,the following system module, as follows:

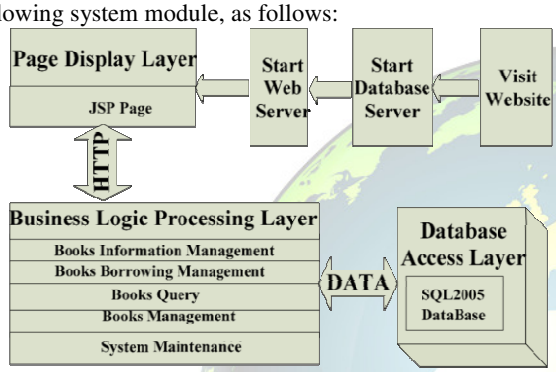

Figure 1. System Architecture Design

Each module of the system are described below:

1) The user managementmodule:

the user of the library management system is divided into three categories, First it is the average consumer who need not toverifytoaccessthesystembytheclientbrowser.Seconditis special users who can use the system to borrow books. Third it is the system administrator who has the permission to release information, manage the system privileges,and also add users, examine,verify,and set uppermissions[2].

2) The column managementmodule:

The module is used to update the books' information on the webpageandavarietyofcolumncontent.Userscanalsobrowse the content according to their ownneeds.

3) The basic information managementmodule:

it mainly refers to update the basic information of theweb page, such as links,etc.

4) Back-stage managementmodule:

The module can manage users' information,update books' information,and restore the feedback messages by background administrator.

stored procedures relating to borrowing are as follows:

a) The bookList of storedprocedures:

The process returns all books' information to users.

b) The BookmaxBidget of storedprocedures:

Through this stored procedures, it can get the largest system Book ID in the book table of the system , so that it candeterminethevaluethatthenextaddingbooksshouldbe given , namely the ID value + 1. The advantage of this way is that we can easily control table ID. In the stored procedures, it is needed to specify the output of the parameters (@maxBID is the output parameters),and the system identifies it with outputparameters. The core codes are asfollows:

```
CREATE PROCEDURE BookMaxBIDGet
@maxBIDint OUTPUT
AS
Select @maxBID=max(BID) from book
```

c) A group of stored procedures faced thelibrarian:

BookModifystoraged procedures: the process updates the list of the books;

BookAddstoraged procedures: the process is responsible for inserting the new books' information into the book's table

Book_NotinLib_Checkstoraged procedures: this process will return the book registration,which is responsible for inspecting and controling whether the books' Id is input correctly.If the books' Id is existing in the table of BookInform and the book of statement information is not in the library, we think the book is outof circulation, that is to say the books' return operation can be performed. In other words, it means that registration is allowed to be operated, and there is no mistake. The core codes are asfollows:

```
CREATE PROCDURE Book_NOTINLib_Check
@ IBID INT
AS SELECT * FROM [dbo].[BorrowInform]
WHERE BorrowInform.IBID=@IBID AND
IState=0
```

d) ReaderBorrowHis stored procedures:

This process is responsible to provide readers with his return of all books.The rule is that users of borrowing information sheet are the current users,and the status of users' books is returned.

2) The design of databaseTriggers:

a) The realization of login module trigger's maincodes are afollow

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A. The Optimization of theDatabase

1) The design of the database storedprocedures:

Tofacilitatetheoperationofthedatabase,wedefineaset of stored procedures, which can implement to easily query, add, update and delete information in the table. And a setof

A. Function test

According to the functions and procedures of library management system, we adopt the Black-box testing" to achieve the functional test, including the system books management,libraryregistration,the return of the books registration, book evaluation, feedback,the system maintenance and other functions. In the testing process, we improve where the record does not meet the functional , and make it more in line with the actual needs of the library management system.

B. Structuretest

For the structure of the programs and codes,we do a detailed test through The White-Box testing,which is based ontheJavastandardcodingstructuretowrite.Then,weadjust thecoderedundancyandcorrectwherethetestingcodeisnot neat and the level of detail of comments. By testing, we find many problems further more, such as the messy and not standardized code writing and so on. Then we correct those mistake through the structure test and make the program more reasonable andclear.

III SUMMARY

University faculty library information technology and modern management plays an important role in the constructionofhomesandthedepartmentofresourcesharing platform.Students can not only easily access to the rich resource of expertise in the profession,but also play a very important role to keep abreast of the professional developments. However, due to the university hospital, lackingofstaffdevelopment,maintenanceandmanagement, the library can not be fully utilized, and also limit the role of library.

Thus, in this paper we design a Library Management System based on Web services , using the three-tierdynamic website production technology,and database optimization techniques to maximize the performance of the system.The system has the functions of adding , deleting, modifying books and readers; remote access to book an appointment, queries loan period, renewals and password change functionality. After the initial test,it is basically reached the desiredresults.ACKNOWLEDGMENT

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