

System Design Documentation

Library System

Introduction:

The System design document was made on basis of Requirements documentation, so all requirements of customer was considered. However, some changes concerning design of developed Library Management system can be brought after studying by client of Design Documentation. Main goal of Design Document is description of design and database architecture(ERD).

Purpose:

The purpose of System Design Document is to explain how the Library DBMS will be built and to ensure that the Library Circulation Desk DBMS meets the requirements specified as part of the MIS 6326.001 project requirements documentation. Additionally, the System Design Document gives a high-level description of the system architecture, including ER diagram, design decisions and assumptions.

System Overview:

Library Management System will allow to perform all necessary procedures for librarians and patrons including book loans, books checking in and fines management using the database concepts, oracle apex technology, basic and advanced SQL knowledge gathered from the curriculum to effectively resolve the challenges to which the library was exposed.

Library Management System will also provide all necessary services for databases such as creating, deleting, updating and searching information. Patrons will be able to access to the library site (web-based) through the Internet or through the library's LAN-connected computers, scattered throughout the library for sending request, receiving information about status of the books. The design of product interface is supported by Oracle Application Express which is a cloud-based architecture to get data from database which results in better performance of the application. User interfaces will be ergonomically designed and easy-to-use.

System Architecture

Library management system has two main components:

- Database for storing different types of data such as users, books etc. managed by an Oracle Application Express.
- User Interface Engine (by means of this server user interact with database through the web) provided by Oracle Application express

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Architectural Strategies

- All data (books, borrowers, fines, book loans) will be stored in a database (SQL server will be used for storing data);
- User Interface Engine will provide interactions of Library management system with user through Internet by using Apex Oracle;
- All components of Library management system can be modified easily so it is possible to extend developing system in future;
- Interfaces in system is not very complex so there is no need some special technical skill for work with its.
- In the borrower management UI the ID for each borrower will be manually created instead of auto generation. So the librarian have to sort the ID column and then add the borrower
- Administrator will have all necessary functions and instructions for controlling database
- For librarian system provide additional functions and interfaces such as: detailed information about all Borrowers, detailed information about books and information's about the fines that stored in database. Also librarian status allows him to modify this information.

Hardware:

The Library application is based on widely used hardware architecture and can be used in any computer with the following configuration:

- **Operating System:** Windows7 or higher
- **Processor :** Intel Pentium 4 or higher
- **RAM :** 2GB or higher
- **Network:** wireless/wired network connection.

Software:

- MS Windows 95/98/2000/NT/XP/10
- AWS server database for creating tables, loading data into APEX etc.
- Any browser for opening the application on APEX via URL (<http://ec2-18-219-60-86.us-east-2.compute.amazonaws.com:8080/ords>)

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Database Entity Relationship diagram:

library Database ERD

