Team ORCHID

Library Database Project Requirements Specifications

Version 1.2

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Introduction

This document outlines the requirements and specifications for developing a user-friendly database system tailored for managing library operations effectively.

Project Overview

The Library Database Project aims to simplify data management and improve daily operations for a single library. This system helps librarians easily track inventory, manage user accounts, keep records of borrowed items, and create useful reports. Library staff and visitors will have appropriate access based on their roles, ensuring easy and organized interactions with the library's resources.

Scope

This database is designed for a single library, handling its catalog, user accounts, and loan history. It is not intended for multi-branch systems but provides essential features to support daily operations. The system enables structured and accessible interactions for all users, from staff to guests.

Stakeholders

This section describes the various entities with interest in our project and who will be using the final product.

Administrators

Administrators are the primary stakeholders. These are the active librarians holding a salaried position, and the active duty of maintaining inventory and documentation before they are registered into the database.

Library Guests

Library guests are visitors who do not have a registered account but still interact with the system. They can browse the catalog, check book availability, and learn about library services. If they wish to borrow or reserve items, they must create an account under the appropriate category.

Library Members

Library members are registered users who actively borrow and reserve items. They interact with the system to manage their loans, update their information, and access the library catalog.

Requirements

This section covers the functional and nonfunctional requirements of the project, as well as the data entities of the database.

Functional Requirements

The requirements listed below are features for the minimum viable product, as outlined by stakeholders and the project team.

Account Access

A library card holder can use their library card to log into their account, allowing them to view their account information and perform actions based on their account type.

Account Types

An end user may have one of several account types that give them access to different actions. These types are outlined below with their permissions.

All accounts may:

- Borrow, reserve and return items
- Generate a report of their own information, including previous loans
- Update user-submitted information (i.e. contact information, address)
- View their account information
- View the library catalog

Staff – Library employees. Staff accounts may:

- View other user account information
- Catalog new items and manage existing ones
- Query on user accounts
- Generate large-scale reports of the library database

Adult – Those of legal majority. Adult accounts may:

- Access their own account information

- Access account information of dependents associated with their account under the age of 13
    - After their dependent reaches age 13, they may only view the dependents account charges
- Pay charges on their own or any dependents account

Student – Those of legal minority, associated with an adult account as their dependent. Student accounts may:

- Change their account type to adult once they reach the age of legal majority

Data Entry and Management

The database must allow for new items to be cataloged as well as management of existing items via an interface only accessible to staff accounts.

Reports

Any account may create a report of their account, including any items currently on loan to them and their loan history.

A staff account may execute a report that will deliver information on a group of items or user accounts to retrieve pertinent information, such as loan history and current outstanding charges. This report will be in a user-friendly and readable format.

Queries

Any account may perform item lookup quickly and easily via a user-friendly interface, i.e. a search bar with additional filtering capabilities.

A staff account may query on other non-staff user accounts.

User Interface

The user interface for the library will be a simple website that allows users to easily view their account information and browse the library catalog.

Data Entities

This section describes the different data entities in the database and their attributes.

Accounts

Account entities contain information about a single user. Accounts will have multiple specializations. Each account specialization and their attributes are listed below:

- Student accounts will have an extra parent attribute to relate students to their respective parent accounts.

- Staff will have an extra rank attribute that will denote the employee's role.

All accounts will have an account ID, name (split into first, last, and middle initial), contact information, account type, account status, address, and date of birth.

Contributors

Contributor entities contain information about an author, music artist, or other such creator of a work in the database. Multiple contributors may be attributed to a single item.

- Contributors should have a first and last name.

Items

Items are the objects that the library may loan out. Items will have multiple specializations. Attributes will vary depending on item type:

- Books and digital media items should include author/creator, ISBN, publication year, and genre.
- Magazines should include issue number and publication date.

Items should feature title, description, total quantity, available quantity, and number of reservations regardless of their type.

Items may also have certain attributes depending on other factors:

- Items such as rare books or latest issues of magazines may have borrowing restrictions.

Loans

Loans describe an item that is, or was, in the possession of an account holder.

- Loans should contain a single item ID and account ID, the loan out date, a due date, and the date of return.

Reservations

Reservations describe an item that can only be loaned out by a certain account holder.

- Attributes include item ID, account ID, reservation date, reservation end date.

Picklists

Picklists are items that that describe controlled vocabulary fields. There will be several picklists in the database, including account type, contribution role, genre, item type, and rating.

- Attributes for all picklists only consist of ID and name.

Non-Functional Requirements

Non-functional requirements are requirements that are not required for a bare-minimum viable product. While these will be developed after the initial product, they are still necessary for a well-made product.

Account Restriction

Staff may decide to restrict an account if the owner has damaged, lost, or refused to return library items. A restricted account will be prevented from borrowing or reserving items.

Security

The database should have protection against SQL injection attacks and prevent unauthorized updates to the database.

Audit Logs

The database should have audit logs to record any changes made to items or accounts.

Hardware and Software Requirements

This section specifies the requirements for running and viewing the database.

Hardware

The database should be accessible from any device that can use a modern internet browser.

The library database must be hosted on a server capable of running a MariaDB database.

Software

To view the library database, the end user must only need to open an internet browser, such as Firefox, Chrome, or Safari.

Developers should only need access to a browser and the phpMyAdmin dashboard to manage the database.