Software Requirements Specification

for

Evidență bibliotecă

Version 1.0 approved

Prepared by Alexandru-Teodor Atanase

Radu-Toader Dumitriu

May 28, 2023

Table of Contents

Revision History

Name	Date	Reason For Changes	Version

1. Introduction

1.1 Purpose

The purpose of this project is to develop a graphical interface for managing books in a library, with the ability to lend books to users. The project aims to provide a user-friendly platform for administrators (librarians) and users (subscribers) to efficiently manage and access library resources. The overall purpose of the project is to streamline the library management process, improve user experience, and enhance the efficiency of book lending operations. By providing an intuitive interface and comprehensive features, the project aims to facilitate effective communication and seamless coordination between administrators and users in a library setting.

1.2 Document Conventions

This document follows the IEEE standard formatting for software development. The standard defines a regular formatting this document follows including writing to be done in third-person, passive voice as well as readable and grammatically correct text.

1.3 Intended Audience and Reading Suggestions

The document is intended for the following types of readers:

1. Developers: This document provides detailed information about the requirements and functionalities of the library application. Developers will refer to this document to understand the technical specifications and implementation details.
2. Project Managers: Project managers will use this document to gain an overall understanding of the project scope, goals, and requirements. It will help them in planning and coordinating the development process.
3. Marketing Staff: Marketing staff may refer to this document to understand the key features and benefits of the library application. It will assist them in promoting the application to potential users and stakeholders.
4. Users: Users, including librarians and library patrons, will benefit from this document as it outlines the functionalities and user interfaces of the library application. It will help them understand how to interact with the application and utilize its features.

1.4 Product Scope

The software being specified is a library management system that aims to provide an efficient and user-friendly interface for managing books and facilitating the borrowing process. The purpose of the software is to automate and streamline various library operations, including book cataloging, user management, book borrowing, and administrative tasks.

1.5 References

N/A

2. Overall Description

2.1 Product Perspective

The library management system is designed to be a standalone software application that operates independently. It provides a comprehensive solution for managing library operations and does not rely on or interact with any other external systems. The system will be developed as a self-contained product, capable of running on a variety of platforms.
The library management system will integrate with an underlying database management system to store and retrieve data related to books, users, loans, and other relevant information. The database will serve as the backend for the system, ensuring efficient data storage and retrieval.
While the library management system is designed to operate independently, it should be noted that it can be integrated with other existing systems within the library environment, such as authentication systems or external book databases, to enhance functionality and data synchronization.
The system will provide interfaces for both administrators and library users. Administrators will have access to features and functionalities that allow them to manage the library's book inventory, user accounts, loans, and administrative tasks. Library users will have access to features that enable them to search for books, view availability, request loans, and manage their personal accounts.
It is important to note that the library management system is not intended to replace or override any existing library policies or procedures. Instead, it aims to support and streamline those policies and procedures by providing a digital platform for efficient management and access to library resources.
The development of the library management system will be guided by industry-standard software engineering practices, ensuring scalability, maintainability, and robustness of the software. Regular updates and maintenance will be provided to address any issues and incorporate new features based on user feedback and evolving library requirements.
Overall, the library management system is positioned as a reliable and user-centric solution that enhances the efficiency, accessibility, and management of library resources, contributing to a seamless library experience for both administrators and users.

2.2 Product Functions

The library management system offers a range of functions to support efficient library operations and enhance the user experience. These functions include:

1. Book Management:
   - Add new books to the library inventory
   - Modify book information such as title, author, genre, and availability
   - Delete books from the library inventory
   - Search and retrieve books based on various criteria such as title, author, or genre
2. User Management:
   - Create user accounts for library patrons
   - Modify user information such as name, contact details, and membership status
3. Loan Management:
   - Enable users to request book loans
   - Approve and process loan requests by administrators

4. Wishlist Management:
    - Allow users to create and manage their personal book wishlists
    - Add books to the wishlist for future reference
    - Remove books from the wishlist when desired

These functions collectively aim to streamline library operations, enhance user engagement, and ensure the smooth management of library resources. The library management system offers a comprehensive set of features to meet the diverse needs of both administrators and library users.

2.3 User Classes and Characteristics

The library management system caters to different user classes, each with specific characteristics and roles within the system. Understanding the user classes helps in designing features and functionalities that meet their unique requirements. The main user classes and their characteristics are:

1. Administrators:
    - Role: Library staff responsible for system administration and management.
    - Characteristics:
        - Have full access to system functionalities and data.
        - Can perform administrative tasks such as adding, modifying, and deleting books.
        - Approve loan requests and manage user accounts.
2. Librarians:
    - Role: Library staff responsible for day-to-day library operations.
    - Characteristics:
        - Manage loan requests, issue books, and handle returns.
3. Users/Readers:
    - Role: Library patrons and members.
    - Characteristics:
        - Create individual accounts to access library services.
        - Search and browse books in the library catalog.
        - Request book loans and manage loaned books.
        - Create and manage personal wishlists.

The library management system caters to these user classes by offering specific functionalities and access levels based on their roles and responsibilities. By considering the unique characteristics of each user class, the system can provide a personalized and tailored experience to meet their needs.

2.4 Operating Environment

The library management system is designed to be highly compatible with various operating environments. It is developed using the .NET framework, ensuring cross-platform compatibility. Users on different operating systems such as Windows, Mac, and Linux should be able to run the software seamlessly.

Here are the key points regarding the operating environment:

- Platform Compatibility: The library management system is designed to work on multiple platforms, including Windows, Mac, and Linux.

- .NET Framework: Users are required to have a compatible version of the .NET Framework installed on their system. The specific version required will be mentioned in the system requirements documentation.

2.5 Design and Implementation Constraints

Since Hero is being designed and implemented in a single semester as a project for Programming Engineering, it is possible that time is the most limiting factor in this development cycle. This time constraint may require this team to scale back the project from its currently proposed scope. Another factor that constrained us were the problems we encountered during the project (database connection, CORS error), factors that made us rethink the problem and redo the UI (at first we wanted to we make the web application).

2.6 User Documentation

The interface is easy and intuitive to use, so there are no user tutorials. If the data is entered incorrectly, some warnings will appear, and the user will know what was wrong.

2.7 Assumptions and Dependencies

This section outlines the assumptions made during the development of the library management system and the dependencies it relies upon. These assumptions and dependencies are important considerations for the successful implementation and functioning of the system.

3. External Interface Requirements

3.1 User Interfaces

The library management system includes various user interfaces that facilitate interaction with the system. These interfaces are designed to provide a user-friendly and intuitive experience for different types of users. The following are the key user interfaces:

1. Log In:
    - Purpose: Allows users (administrators and library patrons) to authenticate themselves and access the system.
    - Features: Input fields for username and password, a login button
2. Register:
    - Purpose: Enables new users to create an account in the library management system.
    - Features: Input fields for personal information (name, email, address, etc.), a username and password field, and a registration button.
3. Admin Dashboard:
    - Purpose: Provides administrators with a centralized interface to manage and administer the library system.
    - Features: Overview of system statistics, options to add/update/delete books, manage users, approve loan requests, generate reports, and other administrative tasks.
4. User Dashboard:
    - Purpose: Offers library patrons a personalized interface to access and manage their account and library-related activities.
    - Features: Overview of borrowed books, wishlist management, book search and availability, loan request submission
5. Add Book Interface:
    - Purpose: Allows administrators to add new books to the library collection.
    - Features: Input fields for book details (ISBN, title, author, category, etc.), quantity, and an "Add" button to save the book information.
6. Modify Book Interface:
    - Purpose: Enables administrators to update existing book information in the library collection.
    - Features: Selectable list of available books, editable fields for book details, quantity, and a "Save" button to update the changes.

3.2 Hardware Interfaces

Hardware Interfaces will include a mouse, the keyboard, and the display monitor. There is not much heavy hardware needed to run the game other than a simple computer and a monitor. The mouse left click will allow the user to interact with certain objects. The keyboard is used for mainly writing some informations.

3.3 Software Interfaces

In order to run the application, the user will need to open the application downloaded on his computer.

3.4 Communications Interfaces

In order for a user to start the application he doesn't need nothing more then a computer, a mouse and a keyboard.

4. System Features

Our system features are covered in-depth in separate appendices for scenarios and a class diagram.

5. Other Nonfunctional Requirements

5.1 Performance Requirements

Minimum Hardware Requirements:
Processor: Intel Core i3 or equivalent
RAM: 4 GB
Storage: 100 MB free disk space
Display: 1280x800 resolution or higher

5.2 Safety Requirements

1) Error Handling: The application should have appropriate error handling mechanisms to gracefully handle and report errors to users. This includes displaying user-friendly error messages and preventing crashes or unexpected behaviors that could compromise user safety.
2) User Privacy: The library application should prioritize user privacy and protect personal information. It should adhere to relevant data protection regulations and guidelines to prevent unauthorized access or misuse of user data.

5.3 Security Requirements

1. User Authentication: Users should be required to authenticate themselves before accessing any sensitive information or performing privileged actions. This can be achieved through username/password authentication or other secure authentication mechanisms.
2. Role-Based Access Control: The application should enforce role-based access control to restrict access to specific features and functionalities based on user roles. For example, administrators may have access to administrative actions like adding or modifying books, while regular users have limited access.
3. Password Security: User passwords should be stored securely using hashing and salting techniques to prevent unauthorized access to user accounts even if the database is compromised.

5.4 Software Quality Attributes

1. Reliability: The library application should consistently perform its intended functions without failures or errors. It should handle unexpected situations gracefully and recover from errors to provide a reliable user experience.
2. Performance: The application should be responsive and perform efficiently, even with a large number of users and data. It should minimize response times for user interactions, such as searching for books, borrowing or returning books, and loading user information.

5.5 Business Rules

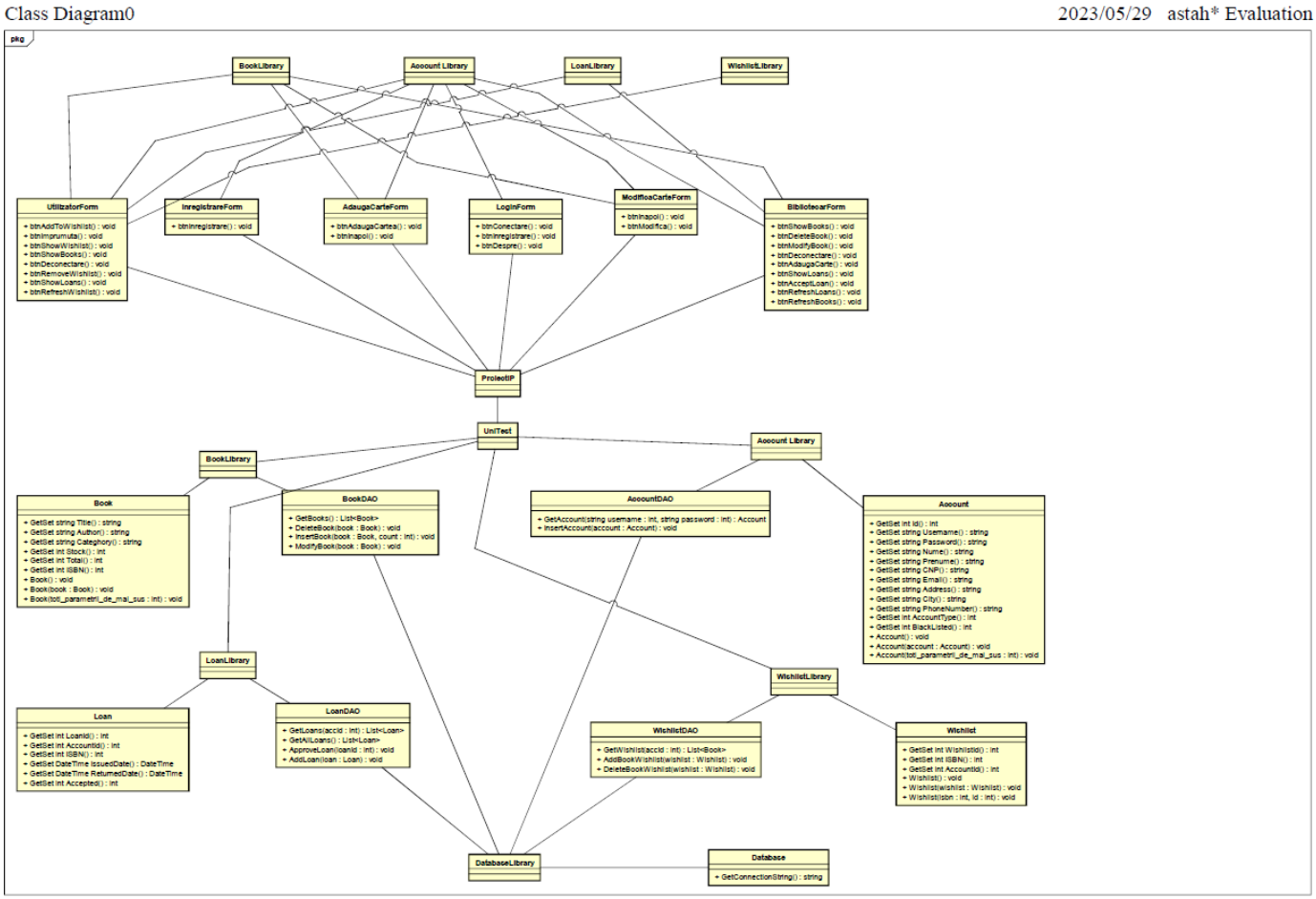
It is the policy of the development team to follow all codes of conduct established by the University.

6. Other Requirements

Appendix A: Glossary

N/A

Appendix B: Analysis Models



Appendix C: To Be Determined List

N/A