Sharron Books - Final Documentation

CSCI 4300 Web Programming - Spring 2022

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April 28, 2022

Description: Sharron Books is a library management system and website for a fictional website. It supports a catalog search, book reservation, and administrative tools, among many other features.

Contents

1 Division of Work

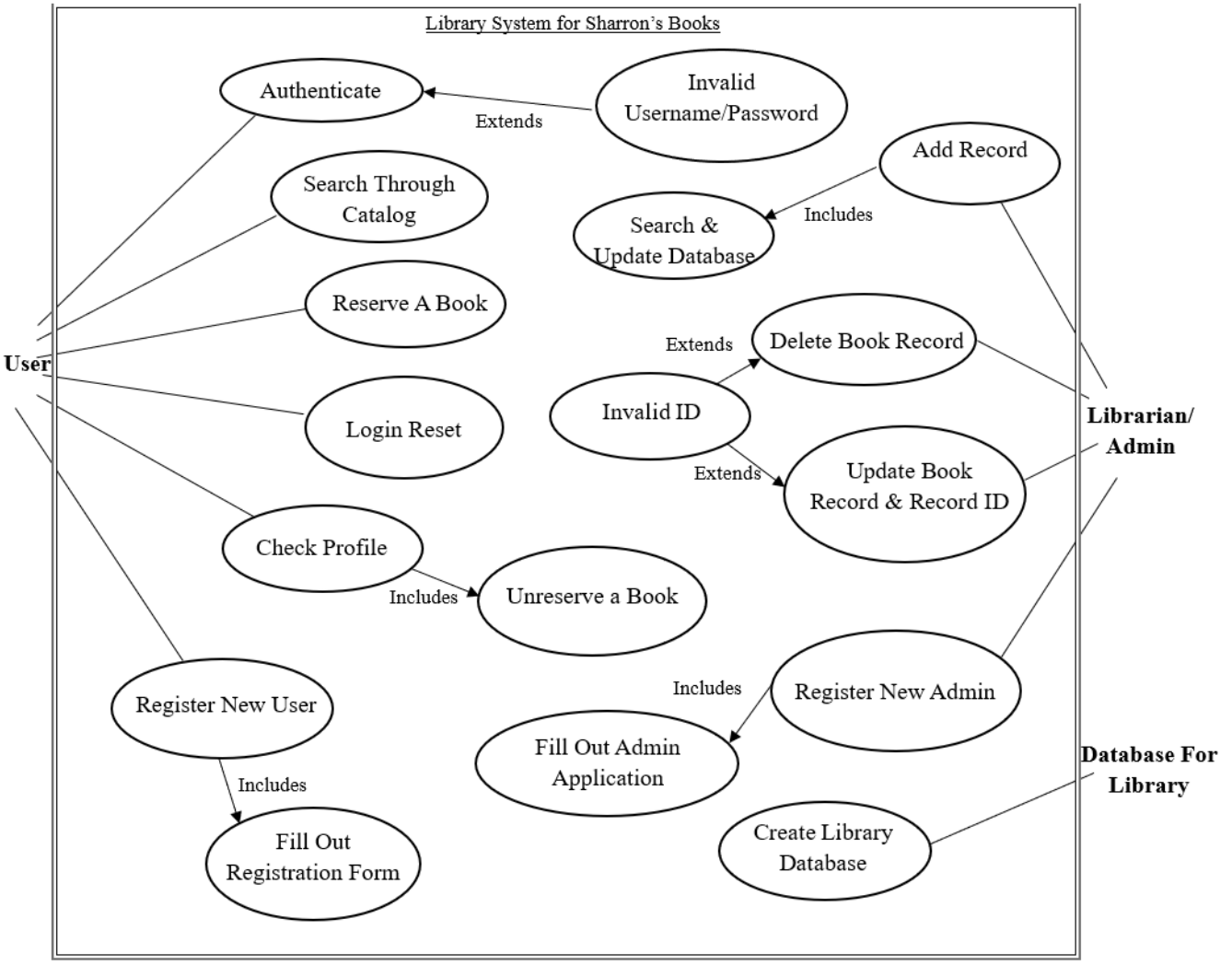
1.1 Coding Subdivision

File	HTML	CSS	PHP/MySQL	Javascript
config	-	-	Drew	-
create-admin-account	Drew	Kylie	Drew	-
create-books-display	Carson	Joseph	Carson	Joseph
create-footer	Kylie	Kylie	Kylie	-
create-home-header	Carson	Kylie	Carson	-
create-hotbar	Carson	Kylie	Carson	-
create-user-account	Carson	Kylie	Drew	-
delete-book	-	-	Carson	-
login-admin	-	-	Drew	-
login	-	-	Drew	-
logout	-	-	Drew	-
pass-reset	-	-	Drew	
sanitize	-	-	Carson	-
start-session	-	-	Carson	-
details	Carson	Kylie	Carson	-
about	Carson	Kylie	-	-
add-entry	Carson	Kylie	Drew	-
catalog	Carson	Kylie	Carson	-
contact	Carson	Kylie	-	-
hours	Carson	Kylie	Carson	-
index	Carson	Kylie, Carson	Carson	Joseph
login-admin-form	Drew	Kylie	-	-
pass-reset-form	Drew	Kylie	Drew	-
cookie-login	-	-	Drew	-
login-form	Drew	Kylie	-	-
profile	Drew	Kylie	Drew	-
profile-admin	Drew	Kylie	Drew	-
reservation	Joseph	Kylie	Joseph	-
reserve	Joseph, Carson	Kylie, Carson	Joseph, Carson	-
unreserve	Joseph, Carson	Kylie, Carson	Joseph	-
shorter-book-description	-	-	-	Joseph

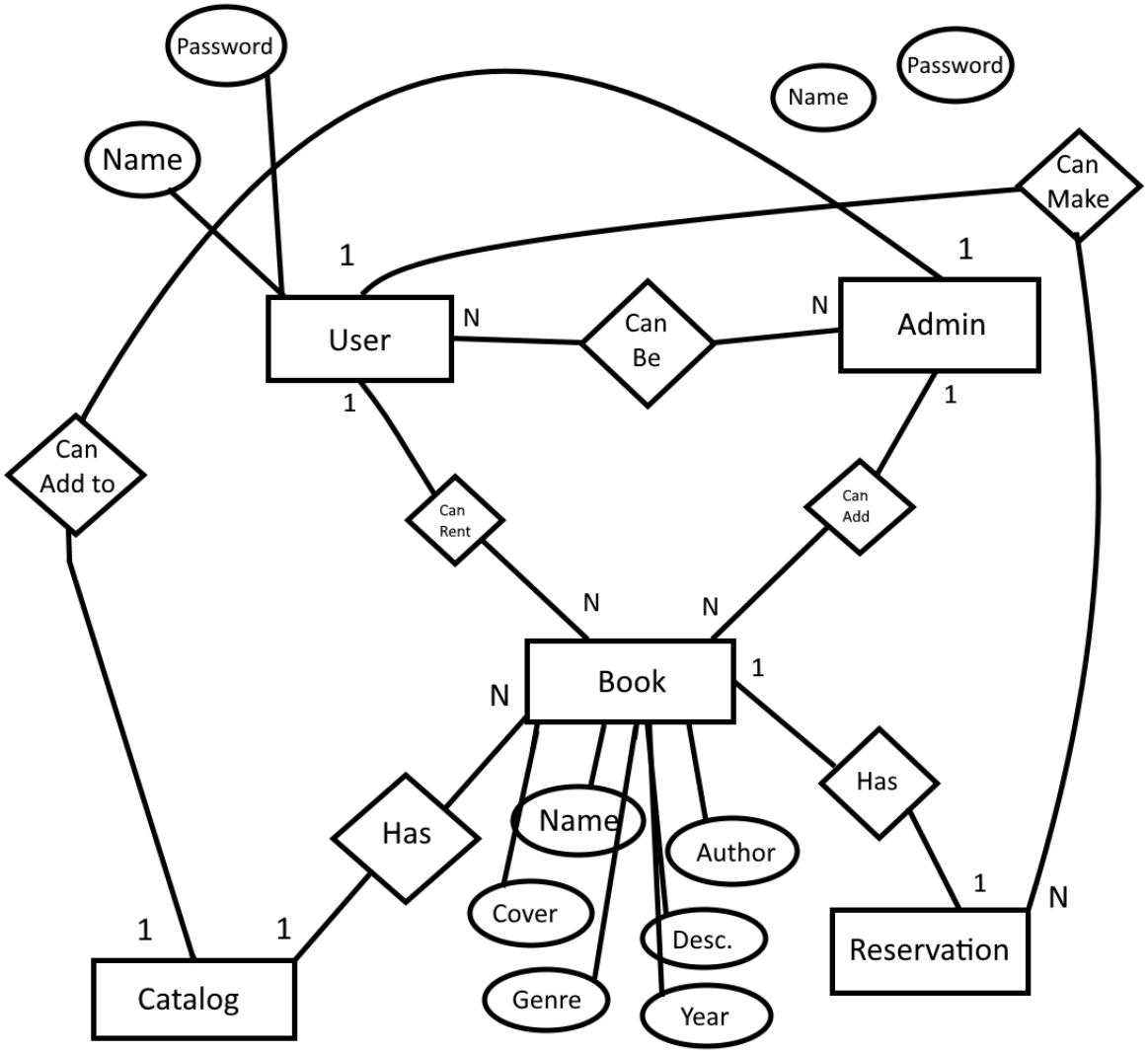
1.2 Documentation Subdivision

Document	Author
README	Carson
Division of Work	Carson
Use-Case Diagram	Joseph
ER-Diagram	Kylie
Navigational Chart	Joseph
CRUD Matrix	Carson
User Guide	Carson

2 Use-Case Diagram



3 ER-Diagram


Password
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Desc.
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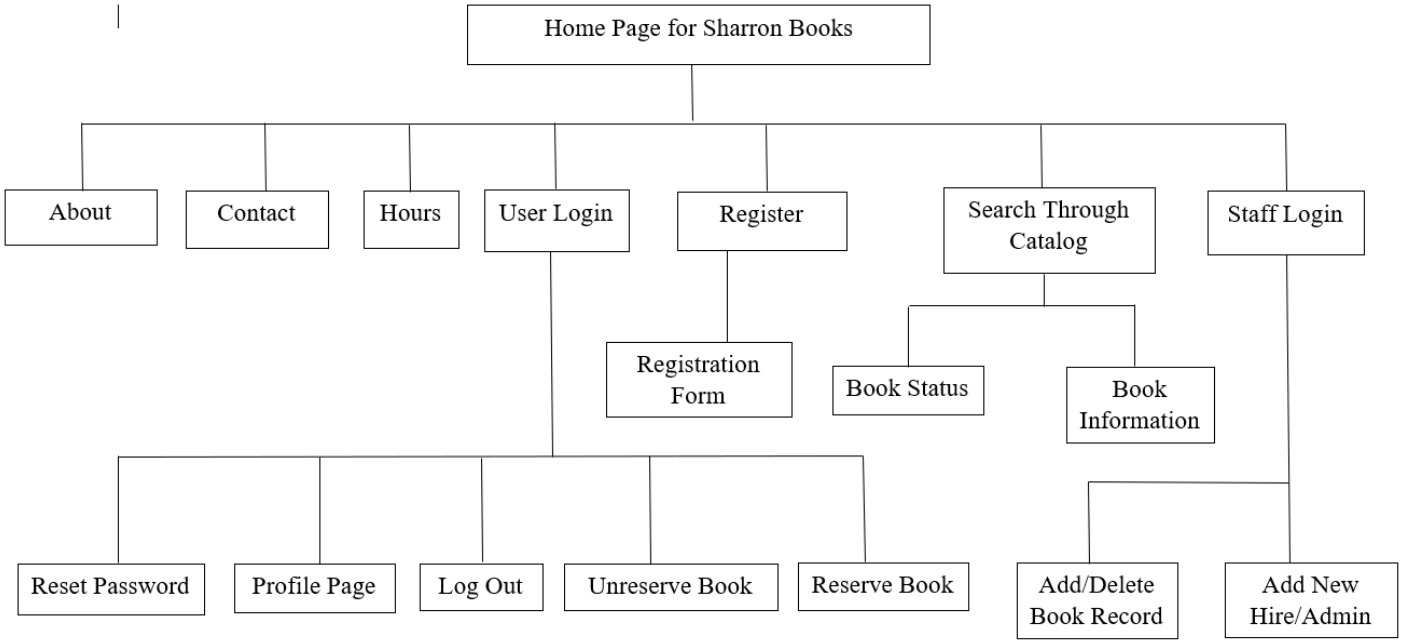
Reservation
Catalog
Genre
Year

4 Navigational Chart



5 CRUD Matrix

Form Table	Users	Administrators	Books	Reservations
Create Admin Account		CR		
Create User Account	CR			
User Login	R			
Admin Login		R		
Delete Book			RD	RD
Add Entry			C	
Catalog			RD	R
Reserve	R		R	CRU
Unreserve	R		R	RD
User Profile	R			R

Admin Profile		R		
Details			RD	R
Index			R	
Cookie Login	R			
Login Reset	RU			

6 Database Creation

The database can be created by creating a database with the name ‘library’ on a database management service like phpmyadmin. Once created from the project directory ‘sql/library.sql’ should be used to import the tables and populate them with the necessary information.

If you choose not to use this file: Here are the create table statements

```
CREATE TABLE `books` (
  `Title` varchar(255) NOT NULL,
  `Author` varchar(255) NOT NULL,
  `Publisher` varchar(255) NOT NULL,
  `Genre` varchar(255) NOT NULL,
  `YearPubbed` int(4) NOT NULL,
  `Description` text DEFAULT NULL,
  `BookID` decimal(13,0) NOT NULL,
  `CheckedOut` tinyint(1) NOT NULL DEFAULT 0,
  `ImageLocation` varchar(255) DEFAULT NULL
) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4;

CREATE TABLE `users` (
  `Username` varchar(255) NOT NULL,
  `Password` varchar(255) NOT NULL,
  `Email` varchar(255) NOT NULL,
  `UserID` int(9) NOT NULL,
  `FirstName` varchar(255) NOT NULL,
  `LastName` varchar(255) NOT NULL,
  `ReserveOne` decimal(13,0) NOT NULL DEFAULT 0,
  `ReserveTwo` decimal(13,0) NOT NULL DEFAULT 0
) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4;

CREATE TABLE `bookreserve` (
  `BookID` decimal(13,0) NOT NULL,
  `UserID` int(9) NOT NULL,
  `ReservedDate` date DEFAULT NULL
) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4;

CREATE TABLE `administrators` (
```

```
  `Username` varchar(255) NOT NULL,
  `Password` varchar(255) NOT NULL,
  `Email` varchar(255) NOT NULL,
  `UserID` int(8) NOT NULL,
  `FirstName` varchar(255) NOT NULL,
  `LastName` varchar(255) NOT NULL
) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4;
```

Please note that these create statements do not seed the database, so all tables will be empty.

7 Program Code and Internal Documentation

All of our program code, including internal documentation and README can be accessed from this link: https://github.com/cwj03503/sharron-books.

8 Major Problem Summary

8.1 Database discrepancies

One major issue that came up was the inability to sync our localhost databases like we did with our source code. Because we used Git to manage our codebase, there was no issue making sure that we all were working with roughly the same source code, but there was no way to make the localhost database update with every pull. To mitigate the issue, we made sure to export the database into a '.sql' file in phpMyAdmin before any commit and import after every pull. This was tedious but it generally worked, and any time we encountered issues with the database we made sure to reimport the SQL file on GitHub.

8.2 Collaboration

One major issue that came up was needing to arrange systems to work together. As we worked on projects certain fundamental parts of html were changed and it became difficult to keep up with lining up the proper div's and using the new functions that were made. A user also couldn't export their database for some reason, so it became difficult to work with their implementations. Especially with the system design as regularly we would need to rework original diagrams as they became deprecated to our new works.

9 Lessons Learned

9.1 Carson Jones

One thing that didn't occur to me at the beginning of this project was the scale of it. There is a lot of code needed to build a functioning website, and because this is the first project I've worked on with a large codebase, I learned the value of organization and efficiency. This is the most code I've written for a single project, even if some of it was just plain HTML. As the codebase became bigger, I had to rethink my strategies of organization and do some major refactoring to make the code maintainable and easy to style. In the future, I would like to put more planning into minimizing repetition and coding efficiently early on so that it won't become a problem later.

9.2 Drew Jenkins

I learned that when working on projects at this scale unit testing is much more important than just simply testing the system as a whole. Every point in a project can have some small error, and to be safe it helps to test new features in smaller environments where there are less complications. Learning these languages while implementing them into the project became a major problem as the differing syntaxes often led to me being confused on certain aspects, but it helped me learn to apply different techniques to solve problems. In future projects with collaboration I know I will need to implement my units first with basic unit testing, so that I can be confident in my portion and be able to help others out with their work as needed.

9.3 Kylie Sengpiel

One thing I struggled with at the start was that I ended up copypasting a lot of code, which caused some minor issues as some of the HTML had to be refactored to make modifying certain parts of the website less annoying. I also probably should have sank more time into learning more JavaScript for the project, since that was used in order to fix the copypasted code, and it would have been nice to have added more interactivity from my end rather than being satisfied with just the bare minimum.

9.4 Joseph Zheng

Based on my experience on working on the project, I learned that every component and minor detail within the project all played important roles in working as a successful unit because if even one little detail is wrong, then the whole project could be in jeopardy especially when handling the database. I also realized the importance of all the coding languages, web development concepts, time management, and database management as the project required it in order to function properly. When learning how to implement the various CSS, PHP, and Javascript files, I struggled with making sure both the syntax and logic made sense as some files had nested functions that required more than one coding language within it. But in the end, I was able to get into the flow of how and where the code needed to be formatted through trial and error. Thus, I plan on making sure to code effectively and cautiously in order to prevent any major errors and to also efficiently adjust my workload towards the benefit of the group.

10 User guide

10.1 Entry point

The entry point of the application is the home page: sharron-books/index.php. Once the project directory has been placed in the htdocs/ subfolder of XAMPP/, this webpage can be accessed by simply typing in the file address : localhost/sharron-books/ (This path may be different depending on where you placed the project directory within htdocs/.)

10.2 Starting the Application

Before anything else, you should download the project directory sharron-books/ from our Github: https://github.com/cwj03503/sharron-books. This contains the necessary files to run our application. If you choose to download the project as a Zip file, you'll need to unzip it before moving the file or attempting to run the application.

In order to run Sharron Books locally, you will need to have XAMPP installed on your local machine. XAMPP includes several components necessary to run this application including

phpMyAdmin, mySQL, and Apache. You can download XAMPP here: https://www.apachefriends.org/download.html. After successful installation, boot up XAMPP and use the action buttons to start Apache and MySQL.

From here, you can create the local database that's needed to run Sharron Books. Navigate to localhost/phpmyadmin in your browser, then press the "New" button underneath the logo on the left. From here you will be brought to a new database menu. Enter "library" in the text field and press "Create". Now that the database has been created, it can be populated using our sql file. Click "Import" on the header bar at the top. Then click "browse" and navigate to sharron-books/sql/library.sql. Don't change any of the other options on the page and import this file.

Now that the library database has been created and populated by our sql file, you can place the project directory (sharron-books/) into the htdocs/ subdirectory of xampp/, which you can find wherever you chose to install XAMPP. Then, follow the steps listed in **11.1 Entry Point** to run the application.

10.3 Opening the application

Open the application by navigation to localhost/sharron-books/ in your browser after placing the project directory in xampp/htdocs/.

10.4 Functionality

Sharron Books supports the following:

- Account related functionality
  - Separate administrator accounts and user accounts
  - User and Admin registration
  - User and Admin login
  - User and Admin logout from profile page
  - User and Admin profile pages with distinct features
  - Sessions that keep a user logged in on all pages
- Profile related functionality
  - View profile information, like name, username, and registered email
  - On user profile page, view books reserved by your account
  - On admin profile, add new administrator accounts
- Browsing and database interactions
  - Search through a catalog of books using the search bar on any page
  - Navigate a search query using filters and sorting on the catalog page
  - As an administrator, add and remove books from the library catalog
  - Accessed a detailed view of each book
  - As a user, reserve an unlimited number of books
- Security features
  - Client and server-side input validation
  - HTML regular expression validation on all forms
  - All form data sanitized
  - SQL prepared statements used to avoid injection.

10.5 Supported browsers

Sharron Books has been tested on the following browsers:

- Firefox 99.0.1 for Windows 10
- Chrome for MacOS

10.6 Libraries and tools used

This application was developed using HTML5, CSS3, MySQL, PHP, Javascript, XAMPP, phpMyAdmin, and mySQLi.

10.7 Starter code used/ Code attribution

There was no starter code used. Our database features quite a bit of content lifted from Wikipedia. All book information was taken from Wikipedia, with the exception of book description, which was lifted from Google Books. All images not found in images/covers/ are in the public domain. Basic logo vector was found at this page on the public domain https://publicdomainvectors.org/en/free-clipart/Pencil-and-books/75621.html

10.8 Directory structure