**Section 1: Introduction**

**1.1 Purpose**

The WhatABook project aims to develop a **Python-based application** that connects to a **MongoDB database** to provide users with an intuitive book browsing and wishlist management experience. This application will enable customers to:

* Browse in-store book listings
* Search for books by title, genre, author, and book ID
* Add books to a personal wishlist
* View their wishlist
* Access a user-friendly interface tailored for middle-aged users with minimal computer experience

The primary goal of this project is to create a simple and accessible **console-based application** that facilitates easy interaction with the MongoDB database while meeting **business requirements** set by WhatABook.

**1.2 User Personas**

**Persona 1: Emily Carter**

* **Name:** Emily Carter
* **Distinguishing Characteristics:** Avid reader, enjoys fantasy novels, prefers dark mode UI
* **Photo/Illustration/Icon:** 📖
* **Features Used Most Often:** Search for books, add books to favorites, leave reviews
* **Features Rarely Used:** Administrative functions, book purchase options
* **Needs Met by Application:** Personalized book recommendations, an easy-to-navigate library
* **Computer Skill Level:** Intermediate
* **Additional Elements:** Prefers mobile apps, uses voice search, reads e-books, participates in online book clubs, frequently shares book reviews on social media, prefers dark mode for reading at night

**Persona 2: James Anderson**

* **Name:** James Anderson
* **Distinguishing Characteristics:** Bookstore manager, responsible for inventory
* **Photo/Illustration/Icon:** 📚
* **Features Used Most Often:** Manage book inventory, add/edit book details
* **Features Rarely Used:** Book recommendations, personal reviews
* **Needs Met by Application:** A simple dashboard for managing book listings
* **Computer Skill Level:** Advanced
* **Additional Elements:** Prefers desktop access, needs data export functionality, uses reports to track best-selling books, often trains new employees on inventory management, wants a bulk upload feature for adding books quickly

**Persona 3: Sarah Lee**

* **Name:** Sarah Lee
* **Distinguishing Characteristics:** College student, uses the library for research
* **Photo/Illustration/Icon:** 📝
* **Features Used Most Often:** Search books by category, add to reading list
* **Features Rarely Used:** Manage inventory, admin functions
* **Needs Met by Application:** Quick search with filters, citation generation
* **Computer Skill Level:** Beginner
* **Additional Elements:** Prefers web-based solutions, needs bookmarking feature, likes to create reading lists for different subjects, wants text-to-speech functionality for accessibility, uses cloud storage to sync notes across devices

**1.3 User Stories**

|  |  |  |
| --- | --- | --- |
| **User Story ID** | **Persona** | **User Story** |
| **US1** | Emily Carter | As a book lover, I want to search for books by title or genre, so that I can easily find books that interest me. |
| **US2** | Emily Carter | As a book lover, I want to add books to my favorites list, so that I can keep track of books I want to read. |
| **US3** | Emily Carter | As a book lover, I want to receive personalized book recommendations, so that I can discover new books based on my interests. |
| **US4** | Emily Carter | As a book lover, I want to leave reviews on books I have read, so that I can share my thoughts with other readers. |
| **US5** | Emily Carter | As a book lover, I want to filter books by rating, so that I can find highly rated books quickly. |
| **US6** | James Anderson | As a bookstore manager, I want to add new books to the inventory, so that customers can see updated book listings. |
| **US7** | James Anderson | As a bookstore manager, I want to edit book details, so that I can ensure the catalog is accurate. |
| **US8** | James Anderson | As a bookstore manager, I want to remove books that are out of stock, so that customers only see available books. |
| **US9** | James Anderson | As a bookstore manager, I want to generate reports on book sales, so that I can track inventory trends. |
| **US10** | James Anderson | As a bookstore manager, I want to set discounts for certain books, so that I can run promotions. |
| **US11** | Sarah Lee | As a student, I want to search for academic books by subject, so that I can find relevant research material. |
| **US12** | Sarah Lee | As a student, I want to add books to a reading list, so that I can keep track of books I need for my studies. |
| **US13** | Sarah Lee | As a student, I want to view book summaries, so that I can quickly determine if a book is useful for my research. |
| **US14** | Sarah Lee | As a student, I want to generate citations for books, so that I can properly reference them in my assignments. |
| **US15** | Sarah Lee | As a student, I want to bookmark specific pages in an e-book, so that I can easily revisit important information. |

**1.4 Story Decomposition & Tasking**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **User Story ID** | **Persona** | **User Story Description** | **Task #** | **Task Description** |
| **US1** | Emily Carter | Search for books by title or genre | T1 | Define UI requirements |
| **US1** | Emily Carter | Search for books by title or genre | T2 | Implement backend functionality |
| **US1** | Emily Carter | Search for books by title or genre | T3 | Connect UI to backend |
| **US1** | Emily Carter | Search for books by title or genre | T4 | Develop database schema |
| **US1** | Emily Carter | Search for books by title or genre | T5 | Test and optimize functionality |
| **US2** | Emily Carter | Add books to favorites list | T1 | Define UI requirements |
| **US2** | Emily Carter | Add books to favorites list | T2 | Implement backend functionality |
| **US2** | Emily Carter | Add books to favorites list | T3 | Connect UI to backend |
| **US2** | Emily Carter | Add books to favorites list | T4 | Develop database schema |
| **US2** | Emily Carter | Add books to favorites list | T5 | Test and optimize functionality |
| **US3** | Emily Carter | Receive personalized book recommendations | T1 | Define UI requirements |
| **US3** | Emily Carter | Receive personalized book recommendations | T2 | Implement backend functionality |
| **US3** | Emily Carter | Receive personalized book recommendations | T3 | Connect UI to backend |
| **US3** | Emily Carter | Receive personalized book recommendations | T4 | Develop database schema |
| **US3** | Emily Carter | Receive personalized book recommendations | T5 | Test and optimize functionality |
| **US4** | Emily Carter | Leave reviews on books | T1 | Define UI requirements |
| **US4** | Emily Carter | Leave reviews on books | T2 | Implement backend functionality |
| **US4** | Emily Carter | Leave reviews on books | T3 | Connect UI to backend |
| **US4** | Emily Carter | Leave reviews on books | T4 | Develop database schema |
| **US4** | Emily Carter | Leave reviews on books | T5 | Test and optimize functionality |
| **US5** | Emily Carter | Filter books by rating | T1 | Define UI requirements |
| **US5** | Emily Carter | Filter books by rating | T2 | Implement backend functionality |
| **US5** | Emily Carter | Filter books by rating | T3 | Connect UI to backend |
| **US5** | Emily Carter | Filter books by rating | T4 | Develop database schema |
| **US5** | Emily Carter | Filter books by rating | T5 | Test and optimize functionality |
| **US6** | James Anderson | Add new books to inventory | T1 | Define UI requirements |
| **US6** | James Anderson | Add new books to inventory | T2 | Implement backend functionality |
| **US6** | James Anderson | Add new books to inventory | T3 | Connect UI to backend |
| **US6** | James Anderson | Add new books to inventory | T4 | Develop database schema |
| **US6** | James Anderson | Add new books to inventory | T5 | Test and optimize functionality |
| **US7** | James Anderson | Edit book details | T1 | Define UI requirements |
| **US7** | James Anderson | Edit book details | T2 | Implement backend functionality |
| **US7** | James Anderson | Edit book details | T3 | Connect UI to backend |
| **US7** | James Anderson | Edit book details | T4 | Develop database schema |
| **US7** | James Anderson | Edit book details | T5 | Test and optimize functionality |
| **US8** | James Anderson | Remove books from inventory | T1 | Define UI requirements |
| **US8** | James Anderson | Remove books from inventory | T2 | Implement backend functionality |
| **US8** | James Anderson | Remove books from inventory | T3 | Connect UI to backend |
| **US8** | James Anderson | Remove books from inventory | T4 | Develop database schema |
| **US8** | James Anderson | Remove books from inventory | T5 | Test and optimize functionality |
| **US9** | James Anderson | Generate reports on book sales | T1 | Define UI requirements |
| **US9** | James Anderson | Generate reports on book sales | T2 | Implement backend functionality |
| **US9** | James Anderson | Generate reports on book sales | T3 | Connect UI to backend |
| **US9** | James Anderson | Generate reports on book sales | T4 | Develop database schema |
| **US9** | James Anderson | Generate reports on book sales | T5 | Test and optimize functionality |
| **US10** | James Anderson | Set discounts for books | T1 | Define UI requirements |
| **US10** | James Anderson | Set discounts for books | T2 | Implement backend functionality |
| **US10** | James Anderson | Set discounts for books | T3 | Connect UI to backend |
| **US10** | James Anderson | Set discounts for books | T4 | Develop database schema |
| **US10** | James Anderson | Set discounts for books | T5 | Test and optimize functionality |
| **US11** | Sarah Lee | Search for academic books | T1 | Define UI requirements |
| **US11** | Sarah Lee | Search for academic books | T2 | Implement backend functionality |
| **US11** | Sarah Lee | Search for academic books | T3 | Connect UI to backend |
| **US11** | Sarah Lee | Search for academic books | T4 | Develop database schema |
| **US11** | Sarah Lee | Search for academic books | T5 | Test and optimize functionality |
| **US12** | Sarah Lee | Add books to reading list | T1 | Define UI requirements |
| **US12** | Sarah Lee | Add books to reading list | T2 | Implement backend functionality |
| **US12** | Sarah Lee | Add books to reading list | T3 | Connect UI to backend |
| **US12** | Sarah Lee | Add books to reading list | T4 | Develop database schema |
| **US12** | Sarah Lee | Add books to reading list | T5 | Test and optimize functionality |
| **US13** | Sarah Lee | View book summaries | T1 | Define UI requirements |
| **US13** | Sarah Lee | View book summaries | T2 | Implement backend functionality |
| **US13** | Sarah Lee | View book summaries | T3 | Connect UI to backend |
| **US13** | Sarah Lee | View book summaries | T4 | Develop database schema |
| **US13** | Sarah Lee | View book summaries | T5 | Test and optimize functionality |
| **US14** | Sarah Lee | Generate citations for books | T1 | Define UI requirements |
| **US14** | Sarah Lee | Generate citations for books | T2 | Implement backend functionality |
| **US14** | Sarah Lee | Generate citations for books | T3 | Connect UI to backend |
| **US14** | Sarah Lee | Generate citations for books | T4 | Develop database schema |
| **US14** | Sarah Lee | Generate citations for books | T5 | Test and optimize functionality |
| **US15** | Sarah Lee | Bookmark pages in e-books | T1 | Define UI requirements |
| **US15** | Sarah Lee | Bookmark pages in e-books | T2 | Implement backend functionality |
| **US15** | Sarah Lee | Bookmark pages in e-books | T3 | Connect UI to backend |
| **US15** | Sarah Lee | Bookmark pages in e-books | T4 | Develop database schema |
| **US15** | Sarah Lee | Bookmark pages in e-books | T5 | Test and optimize functionality |

**1.4 Work Estimation (story points)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **User Story ID** | **Persona** | **User Story Description** | **Task #** | **Task Description** | **Work Hours** | **Story Points** |
| US1 | Emily Carter | Search for books by title or genre | T1 | Define UI requirements | 3 | 1 |
| US1 | Emily Carter | Search for books by title or genre | T2 | Implement backend functionality | 4 | 2 |
| US1 | Emily Carter | Search for books by title or genre | T3 | Connect UI to backend | 5 | 3 |
| US1 | Emily Carter | Search for books by title or genre | T4 | Develop database schema | 6 | 5 |
| US1 | Emily Carter | Search for books by title or genre | T5 | Test and optimize functionality | 8 | 8 |
| US2 | Emily Carter | Add books to favorites list | T1 | Define UI requirements | 3 | 1 |
| US2 | Emily Carter | Add books to favorites list | T2 | Implement backend functionality | 4 | 2 |
| US2 | Emily Carter | Add books to favorites list | T3 | Connect UI to backend | 5 | 3 |
| US2 | Emily Carter | Add books to favorites list | T4 | Develop database schema | 6 | 5 |
| US2 | Emily Carter | Add books to favorites list | T5 | Test and optimize functionality | 8 | 8 |
| US3 | Emily Carter | Receive personalized book recommendations | T1 | Define UI requirements | 3 | 1 |
| US3 | Emily Carter | Receive personalized book recommendations | T2 | Implement backend functionality | 4 | 2 |
| US3 | Emily Carter | Receive personalized book recommendations | T3 | Connect UI to backend | 5 | 3 |
| US3 | Emily Carter | Receive personalized book recommendations | T4 | Develop database schema | 6 | 5 |
| US3 | Emily Carter | Receive personalized book recommendations | T5 | Test and optimize functionality | 8 | 8 |
| US4 | Emily Carter | Leave reviews on books | T1 | Define UI requirements | 3 | 1 |
| US4 | Emily Carter | Leave reviews on books | T2 | Implement backend functionality | 4 | 2 |
| US4 | Emily Carter | Leave reviews on books | T3 | Connect UI to backend | 5 | 3 |
| US4 | Emily Carter | Leave reviews on books | T4 | Develop database schema | 6 | 5 |
| US4 | Emily Carter | Leave reviews on books | T5 | Test and optimize functionality | 8 | 8 |
| US5 | Emily Carter | Filter books by rating | T1 | Define UI requirements | 3 | 1 |
| US5 | Emily Carter | Filter books by rating | T2 | Implement backend functionality | 4 | 2 |
| US5 | Emily Carter | Filter books by rating | T3 | Connect UI to backend | 5 | 3 |
| US5 | Emily Carter | Filter books by rating | T4 | Develop database schema | 6 | 5 |
| US5 | Emily Carter | Filter books by rating | T5 | Test and optimize functionality | 8 | 8 |
| US6 | James Anderson | Add new books to inventory | T1 | Define UI requirements | 3 | 1 |
| US6 | James Anderson | Add new books to inventory | T2 | Implement backend functionality | 4 | 2 |
| US6 | James Anderson | Add new books to inventory | T3 | Connect UI to backend | 5 | 3 |
| US6 | James Anderson | Add new books to inventory | T4 | Develop database schema | 6 | 5 |
| US6 | James Anderson | Add new books to inventory | T5 | Test and optimize functionality | 8 | 8 |
| US7 | James Anderson | Edit book details | T1 | Define UI requirements | 3 | 1 |
| US7 | James Anderson | Edit book details | T2 | Implement backend functionality | 4 | 2 |
| US7 | James Anderson | Edit book details | T3 | Connect UI to backend | 5 | 3 |
| US7 | James Anderson | Edit book details | T4 | Develop database schema | 6 | 5 |
| US7 | James Anderson | Edit book details | T5 | Test and optimize functionality | 8 | 8 |
| US8 | James Anderson | Remove books from inventory | T1 | Define UI requirements | 3 | 1 |
| US8 | James Anderson | Remove books from inventory | T2 | Implement backend functionality | 4 | 2 |
| US8 | James Anderson | Remove books from inventory | T3 | Connect UI to backend | 5 | 3 |
| US8 | James Anderson | Remove books from inventory | T4 | Develop database schema | 6 | 5 |
| US8 | James Anderson | Remove books from inventory | T5 | Test and optimize functionality | 8 | 8 |
| US9 | James Anderson | Generate reports on book sales | T1 | Define UI requirements | 3 | 1 |
| US9 | James Anderson | Generate reports on book sales | T2 | Implement backend functionality | 4 | 2 |
| US9 | James Anderson | Generate reports on book sales | T3 | Connect UI to backend | 5 | 3 |
| US9 | James Anderson | Generate reports on book sales | T4 | Develop database schema | 6 | 5 |
| US9 | James Anderson | Generate reports on book sales | T5 | Test and optimize functionality | 8 | 8 |
| US10 | James Anderson | Set discounts for books | T1 | Define UI requirements | 3 | 1 |
| US10 | James Anderson | Set discounts for books | T2 | Implement backend functionality | 4 | 2 |
| US10 | James Anderson | Set discounts for books | T3 | Connect UI to backend | 5 | 3 |
| US10 | James Anderson | Set discounts for books | T4 | Develop database schema | 6 | 5 |
| US10 | James Anderson | Set discounts for books | T5 | Test and optimize functionality | 8 | 8 |
| US11 | Sarah Lee | Search for academic books | T1 | Define UI requirements | 3 | 1 |
| US11 | Sarah Lee | Search for academic books | T2 | Implement backend functionality | 4 | 2 |
| US11 | Sarah Lee | Search for academic books | T3 | Connect UI to backend | 5 | 3 |
| US11 | Sarah Lee | Search for academic books | T4 | Develop database schema | 6 | 5 |
| US11 | Sarah Lee | Search for academic books | T5 | Test and optimize functionality | 8 | 8 |
| US12 | Sarah Lee | Add books to reading list | T1 | Define UI requirements | 3 | 1 |
| US12 | Sarah Lee | Add books to reading list | T2 | Implement backend functionality | 4 | 2 |
| US12 | Sarah Lee | Add books to reading list | T3 | Connect UI to backend | 5 | 3 |
| US12 | Sarah Lee | Add books to reading list | T4 | Develop database schema | 6 | 5 |
| US12 | Sarah Lee | Add books to reading list | T5 | Test and optimize functionality | 8 | 8 |
| US13 | Sarah Lee | View book summaries | T1 | Define UI requirements | 3 | 1 |
| US13 | Sarah Lee | View book summaries | T2 | Implement backend functionality | 4 | 2 |
| US13 | Sarah Lee | View book summaries | T3 | Connect UI to backend | 5 | 3 |
| US13 | Sarah Lee | View book summaries | T4 | Develop database schema | 6 | 5 |
| US13 | Sarah Lee | View book summaries | T5 | Test and optimize functionality | 8 | 8 |
| US14 | Sarah Lee | Generate citations for books | T1 | Define UI requirements | 3 | 1 |
| US14 | Sarah Lee | Generate citations for books | T2 | Implement backend functionality | 4 | 2 |
| US14 | Sarah Lee | Generate citations for books | T3 | Connect UI to backend | 5 | 3 |
| US14 | Sarah Lee | Generate citations for books | T4 | Develop database schema | 6 | 5 |
| US14 | Sarah Lee | Generate citations for books | T5 | Test and optimize functionality | 8 | 8 |
| US15 | Sarah Lee | Bookmark pages in e-books | T1 | Define UI requirements | 3 | 1 |
| US15 | Sarah Lee | Bookmark pages in e-books | T2 | Implement backend functionality | 4 | 2 |
| US15 | Sarah Lee | Bookmark pages in e-books | T3 | Connect UI to backend | 5 | 3 |
| US15 | Sarah Lee | Bookmark pages in e-books | T4 | Develop database schema | 6 | 5 |
| US15 | Sarah Lee | Bookmark pages in e-books | T5 | Test and optimize functionality | 8 | 8 |

**Section 2: Process Design**

**2.1 Sitemap**

The sitemap for **WhatABook** is designed to provide an intuitive and structured navigation experience for users. Below is a hierarchical representation of the sitemap:

* **Home**
  + Browse Books
    - View Book Details
    - Search by Title
    - Search by Genre
    - Search by Author
  + Wishlist
    - Add to Wishlist
    - Remove from Wishlist
    - View Wishlist
  + Reviews
    - Add a Review
    - View Reviews
  + Account
    - Login
    - Register
    - Profile Settings
  + Admin (Only for Bookstore Managers)
    - Add/Edit Books
    - Remove Books
    - Manage Discounts
    - Generate Reports
  + Help & Support
    - FAQ
    - Contact Us

This sitemap ensures that users can easily navigate the application while distinguishing between **regular users (book lovers and students)** and **admin users (bookstore managers)** to provide the appropriate level of access and functionality.

**2.2 Prototypes**

The **prototype** for the WhatABook application consists of **hand-drawn sketches** outlining the core functionalities and user interface. These sketches are designed to align with **usability principles** and best practices for an intuitive experience.

**Key UI Principles Used:**

1. **Consistency** - The interface follows a uniform layout with standardized navigation elements across all pages.
2. **Simplicity** - The design minimizes cognitive load by presenting only essential features to the user.
3. **Accessibility** - Ensures proper font sizes, color contrast, and easy navigation for users of different skill levels.
4. **Mobile-First Approach** - The design prioritizes responsiveness, ensuring usability across desktop and mobile devices.

**Sketches Overview:**

* **Home Page:** Displays featured books, search bar, and navigation menu.
* **Book Details Page:** Shows book information, ratings, reviews, and options to add to wishlist.
* **Wishlist Page:** Allows users to view and manage their saved books.
* **Review Section:** Provides functionality to add/view user reviews.
* **Admin Dashboard:** Contains options for inventory management, reporting, and discount settings.

**A piece of paper with writing on it

Description automatically generated**

**2.3 Object-Relational Diagram (ORD)**

*(Placeholder: This section will contain the Object-Relational Diagram for the WhatABook database structure.)*

**2.4 NoSQL Data Structure**

*(Placeholder: This section will define the NoSQL database schema and collections for MongoDB.)*

**Section 3: Retrospective**

**3.1 Team Challenges**

*(Placeholder: This section will discuss challenges encountered during the project.)*

**3.2 What Would You Do Differently?**

*(Placeholder: This section will outline potential improvements and lessons learned from the project.)*