

WHATABOOK

TECHNICAL DESIGN DOCUMENT (TDD)

TEAM NAME: **LOGIX LYNX**

TEAM MASCOT: **SIBERIAN LYNX**

TEAM LEAD: **WENDY RZECHULA**

COLLABORATOR: **JOHN KURONYA**

COLLABORATOR: **CHRISTOPHER
WEAVER**

TEAM NAME & MASCOT

Logic Lynx's mascot is a sleek **Iberian Lynx** which represents our team's speed, intelligence, and ability to spot subtle patterns in logic and data flow.

TEAM BIOS

Hi, my name is **Wendy Rzechula**. I recently moved to Arlington Heights after living near Wrigley Field for 23 years. The move was not planned, but I'm trying to look at it as a fresh start or a reset. Right now, I work in retail but have worked as a Technology Specialist in the past. It's been a while since I was in tech, but with the recent changes in my life I decided to get back to web development and see where it takes me. Outside of class, I like to explore different things around the Chicagoland area.

Hey everyone, I'm **Chris "Chieff" Weaver**. Originally from Houston, Texas, I now call Knoxville, Tennessee home. Music has always fueled my soul, and tech has powered my journey—I've been immersed in IT and Operations Management for the past 8 years. With my current pursuit of a Web Development degree, I'm excited to level up and take my passion for technology to new heights.

My name is **John Kuronya**, and I live in Walnutport, PA. I've been working in the IT field for the past 25 years, and it's a career I've really enjoyed growing with over time. I'm married and have a son and a daughter, and family is a big part of my life. My wife and I love going on vacations together—our most recent trip was an unforgettable cruise around the Caribbean.

When I'm not working, I like to get outside and enjoy nature. I'm especially into mountain biking and fishing on my boat, which helps me unwind and recharge.

SECTION 1: INTRODUCTION

1.1 PURPOSE

The purpose of the WhatABook application is to give customers an easy and convenient way to browse book listings, search for specific items, and maintain a personalized Wishlist. It also provides book reviews, ratings and recommendations to enhance the reading experience.

The application will be installed on phones and personal computers. It will feature an intuitive platform for users to discover, search, and manage their favorite books. It will connect to a MongoDB database to store user data, book information, and user interactions such as reviews and bookmarks.

1.2 USER PERSONAS

PERSONA 1:

Name: Ryesha Reed (daughter: Jade)

Age: 43

Occupation: Archivist/Parent

Distinguishing Characteristics:

- Detail-oriented and organized
- Values educational resources for her daughter
- Balancing work and parenting

Most Used Features:

- Search books by title
- Browse book by author

Least Used Features:

- Book sharing
- Review posting



Needs the Application Can Meet/Design Impact:

- Needs efficient search tools to quickly locate books
- Easy navigation to browse authors and titles

Computer Skill Level: Moderate

Device Used: Laptop

Goals With Application/Motivation:

- Supports her daughter's education with books.
- Manages personal and daughter's reading list.
- Discover new books for them

Internet Usage Habits:

- Regularly uses the internet for research
- Prefers reliable and straightforward applications.

PERSONA 2:

Name: Joe Green

Age: 51

Occupation: School Teacher

Distinguishing Characteristics: Avid reader, enjoys fiction and historical novels

Most Used Features:

- Search books, add to favorites, post reviews

Least Used Features:

- Admin/book management tools

Needs the Application Can Meet/Design Impact:

- Easy-to-navigate UI, detailed book summaries

Computer Skill Level: Intermediate

Device Used: Smartphone

Goals With Application/Motivation:

- Search for books
- Keeps a favorites list

Internet Usage Habits: Daily user of apps like Goodreads and Kindle

PERSONA 3:

Name: Jennifer Lagerlout

Age: 60

Occupation: Wilderness docent by day, saga poet by firelight

Distinguishing Characteristics: Adventurous, poetic, introspective, loyal to tradition

Most Used Features:

- Searches

Least Used Features:

- Social Feed

Needs the Application Can Meet/Design Impact:

- User friendly interface
- Gesture-based navigation for cold-weather conditions

Computer Skill Level: Intermediate

Device Used: Ruggedized e-reader or smartphone with waterproof case

Goals With Application/Motivation:

- Access to longform and mythical narratives with thematic filters and immersive settings



1.3 USER STORIES

PERSONA 1: RYESHA

Story 1: *As a user, I want to search for books by authors so that I can find works by my favorite writers.*

Story 2: *As a user, I want to see a list of books so that I can quickly browse what is available.*

Story 3: *As a user, I want the interface to show the author and genre with the book title, so that I get more context.*

Story 4: *As a user, I want fast responses when I search so that I don't waste time.*

Story 5: *As a user, I want to remove a book from my Wishlist so that I can manage my preferences.*

PERSONA 2: JOE

Story 1: *As a user, I want to search for books easily and read detailed summaries on my smartphone, so that I can quickly decide which books to add to my favorites and review later.*

Story 2: *As a user, I want to save books to a personal favorites list, so that I can quickly return to the ones I plan to read or recommend.*

Story 3: *As a user, I want to write and post reviews for books I've read, so that I can share my opinions and help other readers discover great titles.*

Story 4: *As a user, I want to read detailed summaries of books, so that I can decide if a book is worth reading before, I commit to it.*

Story 5: *As a user, I want a user interface that's optimized for smartphones, so that I can enjoy a smooth experience while using the app during breaks or on the go.*

PERSONA 3: JENNIFER

Story 1: *As a user, I want to browse books by genre, so that I can find the types of books that I like quickly.*

Story 2: *As a user, I want to track my reading progress, so that I can collect data and share details with others.*

Story 3: *As a user, I want to organize my favorite books into custom shelves and mark specific sections, so that I can return to them easily whenever I want.*

Story 4: *As a user, I want to take part in challenges and community read along, so that I can be social with others who enjoy books.*

Story 5: *As a user, I want to download and read books offline, so that I can read them anywhere.*

User story assumptions:

- Users like to browse and search for books using filters like author and genre.
- Users expect a fast, mobile-friendly interface that responds quickly.
- Users want to personalize their experience by saving favorites, organizing books into shelves and managing Wishlist's.
- Users are interested in engaging with a book community to join challenges and share opinions

1.4 WORK ESTIMATION (STORY POINTS)

STORY	TASKS & STORY POINTS	TOTAL STORY POINTS
Ryesha's Story 1: As a user, I want to search for books by authors, so that I can find works by my favorite writers.	<ul style="list-style-type: none">• Design search UI component - 1• Create backend query to filter by author - 2• Connect frontend and backend - 1• Write tests for search functionality - 1	5
Ryesha's Story 2: As a user, I want to see a list of books so that I can quickly browse what is available.	<ul style="list-style-type: none">• Design layout for book list display - 1• Get book from database - 1• Display book in a list format - 1	3
Ryesha's Story 3: As a user, I want the interface to show the author and genre with the book title, so that I get more context.	<ul style="list-style-type: none">• Include author and genre book list component - 1• Ensure database query for author and genre - 1	2

Ryesha's Story 4: As a user, I want fast responses when I search, so that I don't waste time.	<ul style="list-style-type: none"> • Optimize database for search fields - 2 • Implement caching for frequent searches - 2 • Conduct testing - 1 	5
Ryesha's Story 5: As a user, I want to remove a book from my Wishlist, so that I can manage my preferences.	<ul style="list-style-type: none"> • Create remove button - 1 • Create code backend to handle request - 1 • Conduct testing - 1 	3
Joe's Story 1: As a user, I want to search for books easily and read detailed summaries on my smartphone, so that I can quickly decide which books to add to my favorites and review later.	<ul style="list-style-type: none"> • Implement search bar UI - 2 • Build backend endpoint - 3 • Connect frontend to backend - 2 • Test search with mock data - 2 • Style search results - 1 	10
Joe's Story 2: <i>As a user, I want to save books to a personal favorites list, so that I can quickly return to the ones I plan to read or recommend.</i>	<ul style="list-style-type: none"> • Create 'Add to Favorites' button - 1 • Create MongoDB favorites schema - 2 • Build save logic in backend - 1 • Update UI to reflect saved books - 1 • Test feature - 1 	7
Joe's Story 3: <i>As a user, I want to write and post reviews for books I've read, so that I can share my opinions and help other readers discover great titles.</i>	<ul style="list-style-type: none"> • Design review form UI - 2 • Set up review schema in MongoDB - 2 • Build backend endpoint - 2 • Connect UI with backend - 2 • Test review functionality - 2 	10
Joe's Story 4: <i>As a user, I want to read detailed summaries of books, so that I can decide if a book is worth reading before I commit to it.</i>	<ul style="list-style-type: none"> • Display summary in book detail UI - 1 • Fetch summary from DB - 1 • Link summaries to each book entry - 1 • Style detail view - 1 • Test summary rendering - 1 	5

Joe's Story 5: <i>As a user, I want a user interface that's optimized for smartphones, so that I can enjoy a smooth experience while using the app during breaks or on the go.</i>	<ul style="list-style-type: none"> • Ensure responsive layout adapts to smartphone screens - 1 • Implement mobile-friendly navigation (e.g., hamburger menu) - 1 • Adjust text size and spacing for readability - 1 • Test on multiple devices and screen sizes - 1 • Optimize tap targets for touchscreens - 1 	5
Jennifer's Story 1: As a user, I want to browse books by genre, so that I can find the types of books that I like quickly.	<ul style="list-style-type: none"> • Design genre metadata - 3 • Create UI for genre filters - 5 • Implement backend endpoint for genre browsing - 5 • Add genre tags to book records in the database - 3 • Test genre filter interactions across devices - 2 	18
Jennifer's Story 2: As a user, I want to track my reading progress, so that I can collect data and share details with others.	<ul style="list-style-type: none"> • Design reading progress schema in MongoDB - 3 • Build progress bar component in the UI - 5 • Create logic to update progress on page turns - 5 • Implement device sync for cross-platform tracking - 5 • Add celebratory badges for progress milestones - 3 	21
Jennifer's Story 3: As a user, I want to organize my favorite books into custom shelves and mark specific sections, so that I can return to them easily whenever I want.	<ul style="list-style-type: none"> • Design "Shelf" data model with personalization fields - 3 • Build shelf creation/editing/deletion flows - 5 • Create "Add to Shelf" button on book preview cards - 5 • Link shelf data to user profiles - 5 • Test shelf sorting by genre, author, and title - 3 	21
Jennifer's Story 4: As a user, I want to take part in challenges and community read along, so that I can be social with others who enjoy books.	<ul style="list-style-type: none"> • Design challenge rules and goal criteria - 3 • Create backend logic for challenge tracking - 5 • Build dashboard UI with Viking theme option - 5 • Add achievement badges and leaderboard functionality - 5 • Notify users with updates via push/email -3 	21
Jennifer's Story 5: As a user, I want to download and read books offline, so that I can read them anywhere.	<ul style="list-style-type: none"> • Add offline caching and download toggle - 5 • Create sync logic on reconnect - 5 	21

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- Enable offline access to metadata and previews - 5
 - Optimize file storage and compression methods - 3
 - QA testing on various devices/environments - 3
-

SECTION 2: PROCESS DESIGN

2.1 SITEMAP

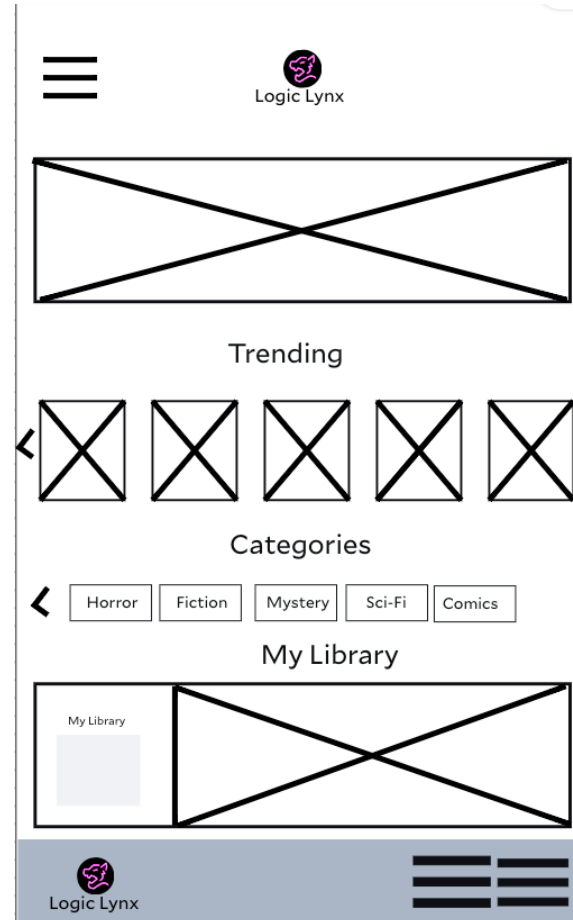
- Home
- About Us
- Browse Books
 - By Author
 - By Title
 - By Genre
- Search
- Reviews
 - View Reviews
 - Submit Review
- Login / Register
- Account
 - Profile Settings
 - Wishlist
 - My Library
 - Recently Read
 - In Progress
 - Finished
 - My Reviews
 - Customized Lists
- Contact Us
- Sitemap

2.1 PROTOTYPE

DESKTOP



MOBILE



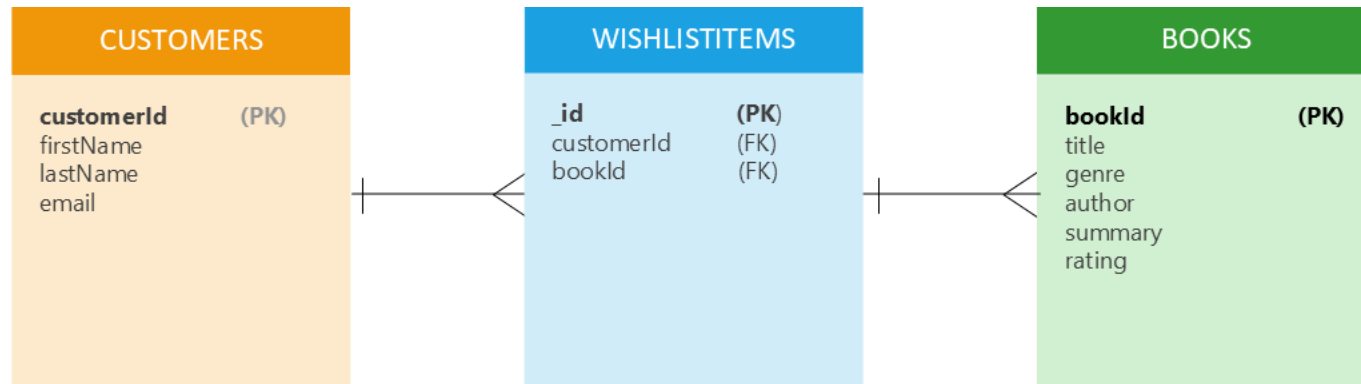
User Interface Design Principles & Best Practices

- These designs use a **clear visual hierarchy** that's highlighted by the positioning and large size of the Logic Lynx Collective title, which draws attention to the brand.
- They also have a **consistent layout and grouping** shown by the organized placement of categories and book covers images.

2.3 ORD

Collections:

- Books
- Customers
- Wishlistitems



- A customer can have many wishlist items.
- Each wishlist item links a customerId and bookId.
- Books are not nested — they remain a separate collection.

2.4 NOSQL DATA STRUCTURE

```
// install-whatabook
use whatabook;
db.dropDatabase();
```

```
// Create collections
db.createCollection("books");
db.createCollection("customers");
db.createCollection("wishlistitems");

// Create books
db.books.insertMany([
  {
    bookId: "B1001",
    title: " The Midnight Library ",
    genre: " Fantasy Fiction ",
    author: { authorId: "A1001", name: "" },
    summary: " A woman discovers a mysterious library between life and death that lets her explore all the lives she could have lived.",
    rating: 4.7
  },
  {
    bookId: "B1002",
    title: " The Silent Patient ",
    genre: " Psychological Thriller ",
    author: { authorId: "A1002", name: "" },
    summary: " A famous painter shoots her husband and never speaks another word. A psychotherapist becomes obsessed with uncovering her motive. ",
    rating: 4.5
  },
  {
    bookId: "B1003",
    title: " Where the Crawdads Sing ",
```

```
    genre: " Mystery / Coming-of-Age ",
    author: { authorId: "A1003", name: "" },
    summary: " An abandoned girl grows up alone in the marshlands of North Carolina and becomes entangled in a murder
investigation. ",
    rating: 4.3
  },
];
```

```
// Create customers
db.customers.insertMany([
  {
    customerId: "C1001",
    firstName: "Ryesha",
    lastName: "Reed",
    email: "rreed@books.com",
    wishlist: ["B1001", "B1002"],
    favorites: ["B1002"]
  },
  {
    customerId: "C1002",
    firstName: "Joe",
    lastName: "Green",
    email: "green@books.com",
    wishlist: ["B1001"],
    favorites: ["B1002"]
  },
  {
```

```
customerId: "C1003",  
firstName: "Jennifer",  
lastName: "Lagerlout",  
email: "jlagerlout@books.com",  
wishlist: ["B1003"],  
favorites: []  
},  
]);
```

```
// Create wishlists
```

```
db.wishlistitems.insertMany([  
  { customerId: "C1001", bookId: "B1001" },  
  { customerId: "C1002", bookId: "B1002" },  
  { customerId: "C1002", bookId: "B1001" },  
  { customerId: "C1003", bookId: "B1003" },  
]);
```

SECTION 3: RETROSPECTIVE

3.1 TEAM CHALLENGES

TBD

3.2 WHAT WOULD DO DIFFERENTLY

TBD