

Booked

CS 411W | Team Gold | 18 April 2023

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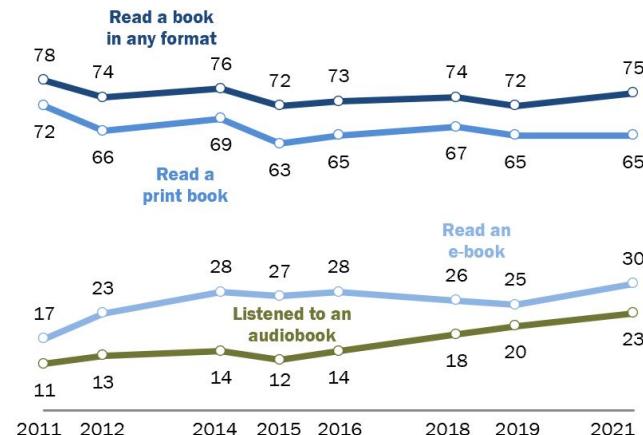
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Problem Background

- In 2021, 75% of U.S. adults say they have read a book in any format in the previous 12 months.
 - 65% say they read a print book in the last year.
 - 30% say they read an e-book in the last year.
- Despite print books being favored, many independent bookstores have gone out of business or have been unable to compete with online conglomerates, such as Amazon.

Print books continue to be more popular than e-books or audiobooks

% of U.S. adults who say they have ____ in the previous 12 months



Note: Those who did not give an answer are not shown.

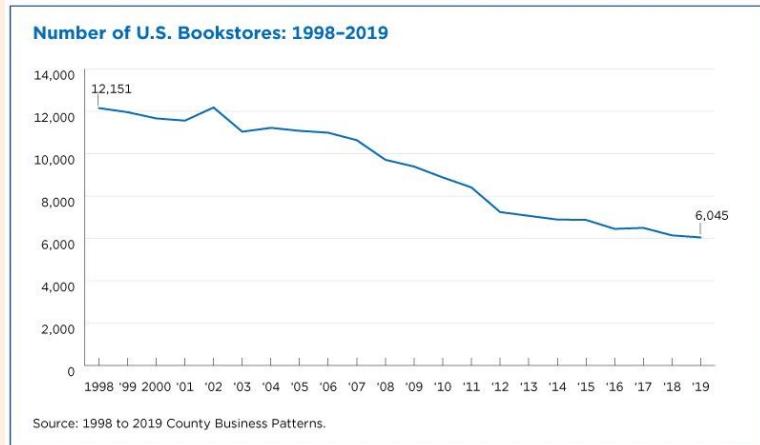
Source: Survey conducted Jan. 25-Feb. 8, 2021.

PEW RESEARCH CENTER



Problem Background cont.

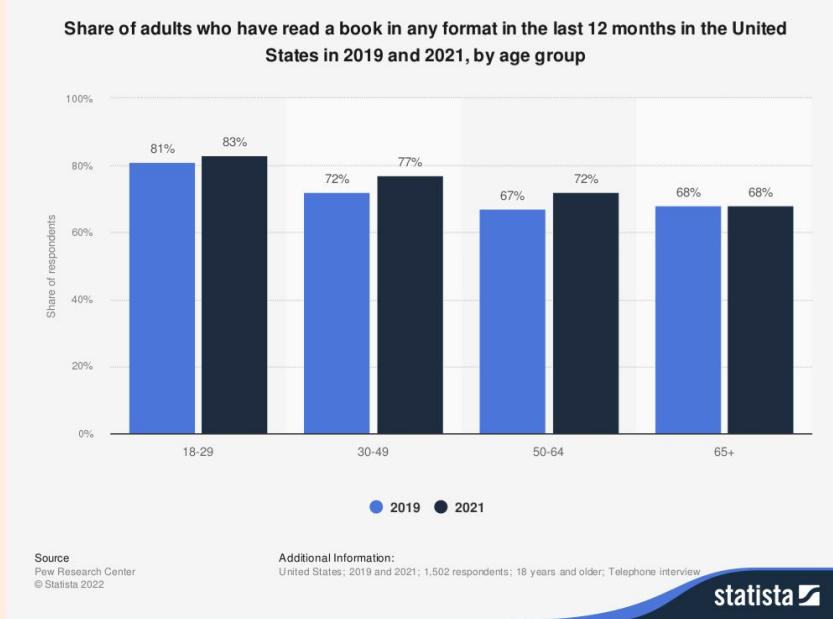
- Since 1998, there has been a steady decrease in physical bookstores and increase in online bookstores^{[1][5]}
- Not all online booksellers list the same criteria
 - Type, edition, condition, etc.
- Hard to find the lowest cost when buying books online
 - Book collecting can be expensive



Problem Statement

There exists no platform that allows a user to search for a book based on its type (physical or electronic), edition (e.g., hardcover or paperback), and condition (new or used) as well as display its cheapest cost (including shipping and handling) for **small and/or independent bookstores**.

Customers & End-Users



- Customers: independent bookstores
- End-Users: book lovers

Solution Statement

Booked is a web-based application that shows users which **independent bookstore** to purchase a book from based on its type, edition, condition, and lowest total cost.

Solution Characteristics

- Booked will save time and money during the book-searching process by laying out the type, edition, condition, and cost for customers
- It will also introduce users to local and/or **independent businesses**.
- Those who prefer to shop online will be presented with a link to seller's website
- Those who prefer to shop in-person will be presented with the **local bookstore's** address
 - This feature will give readers the opportunity to explore independent bookstores and will build a strong independent bookstore presence in cities across the country.

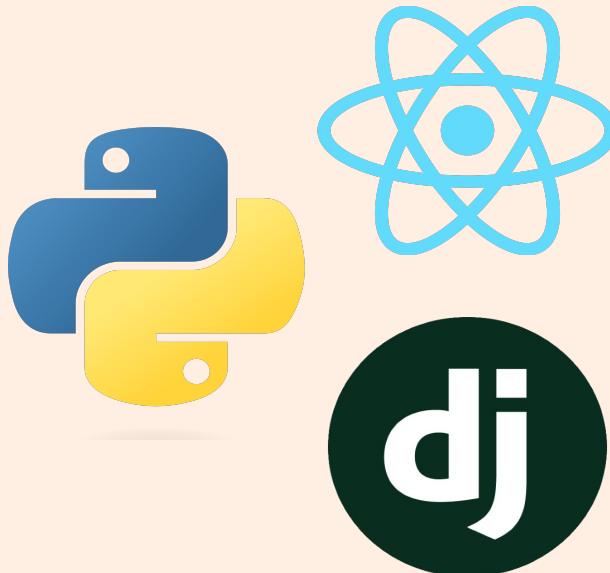
Tech Stack

Front-End:

- HTML
- CSS(Bootstrap)
- JavaScript(React)

Back-End:

- Django
 - SQLite
- Python
 - Selenium
 - Pgeocode



Source: [React Logo](#), [Python Logo](#), [Django Logo](#)

Development Tools

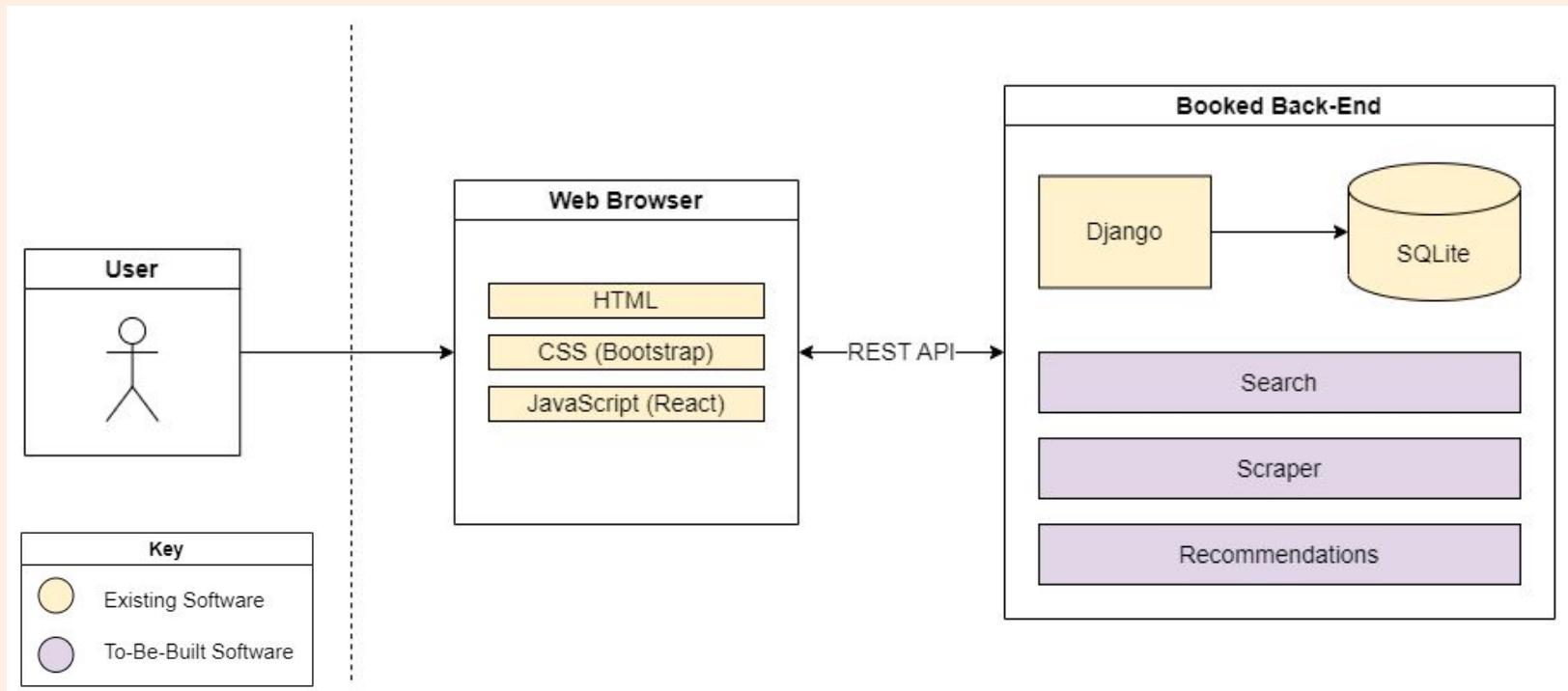
Software Requirements:

- **Scheduling:** Trello
- **Issue Tracking:** GitHub
- **Version Control:** Git via GitHub
- **IDE:** Visual Studio Code
- **Documentation:** GitHub Pages
- **API Testing:** Postman
- **GUI Mockups:** Figma

Hardware Requirements:

- Only a PC capable of running the software tools listed is needed.

Major Functional Components Diagram



Development Model



Source: [What is Agile software development?](#)

Milestones

01/09 - 01/20

Sprint 1

- Role assignments
- Project management tool setup
- Environment and database setup and configuration

01/23 - 02/03

Sprint 2

- Focus on the front-end
- Get familiar with Bootstrap and React
- Create dummy pages

02/06 - 02/17

Sprint 3

- Focus on the front-end
- Create components for major features
- Begin back-end configuration

02/20 - 03/03

Sprint 4

- Focus on the back-end
- Set up database
- Build scrapers for bookstores

03/13 - 03/24

Sprint 5

- Work on REST API in order to add functionality to front-end components

Milestones cont.

03/27 - 04/07

Sprint 6

- Complete REST API
- Make final additions to database
- Make final additions to front-end

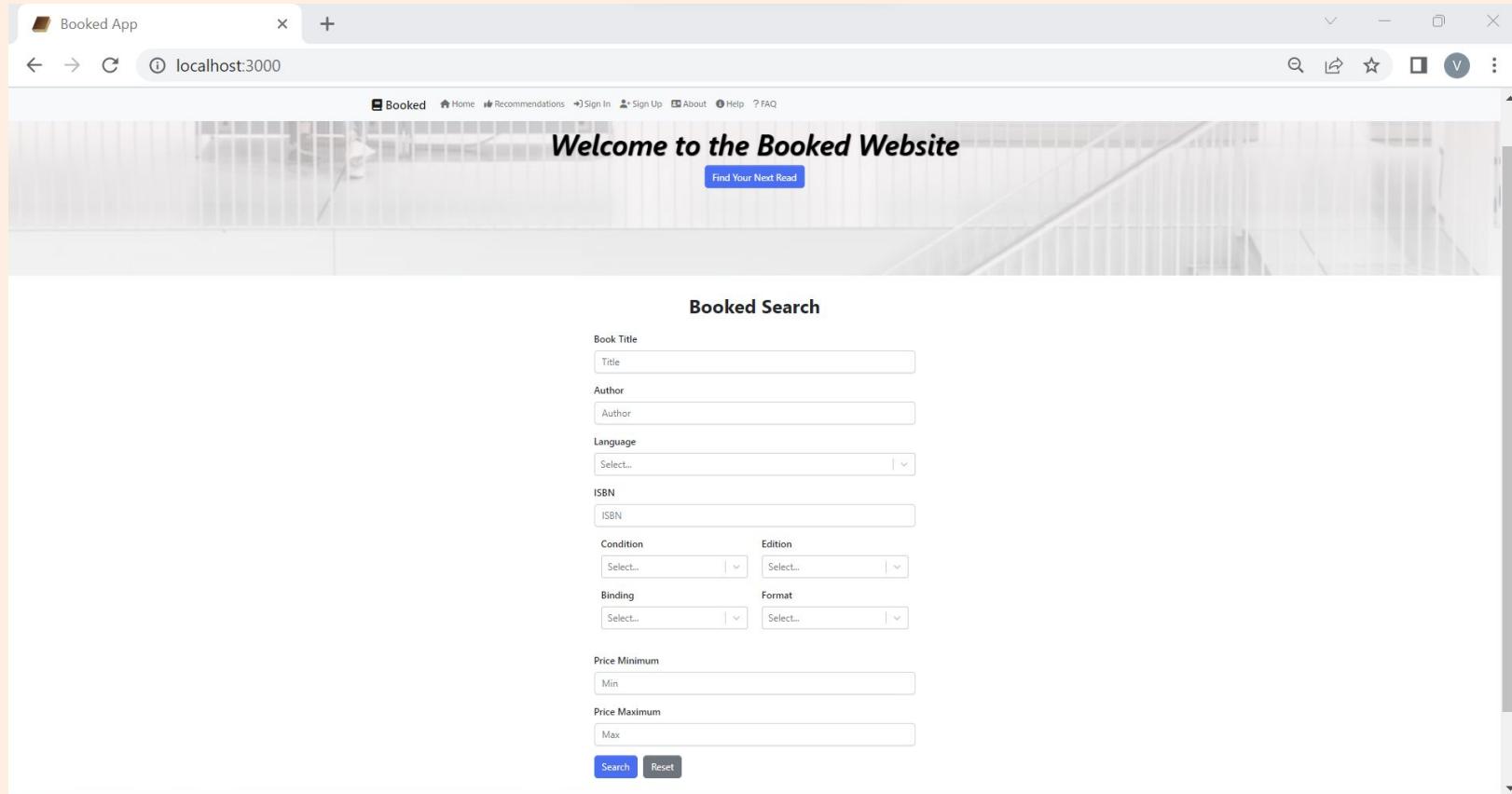
04/10 - 04/14

Sprint 7

- Add search functionality
- Add distance functionality
- Add variants functionality



GUI Mockup: Search Page



GUI Mockup: Search Results Page

The screenshot shows a web browser window titled "Booked App" at the URL "localhost:3000/result". The page displays search results for the title "Foundation". The search filters applied are:

- Title: Foundation
- Author: Isaac Asimov
- Language: [not specified]
- ISBN: [not specified]
- Condition: [not specified]
- Edition: [not specified]
- Binding: [not specified]
- Format: [not specified]
- Price Minimum: [not specified]
- Price Maximum: [not specified]

5 results found

#	BOOK SELLER	BOOK INFO	DISTANCE	SHIPPING	TOTAL	FAVORITE
1	Second and Charles 	Title: Foundation Author: Isaac Asimov ISBN: 9780553293357 Binding: N/A Condition: Used Variant: 1 2	10 miles	4.99	\$ 12.98	<button>Favorite</button>
2	Second and Charles 	Title: Foundation Author: Isaac Asimov ISBN: 9780553382570 Binding: N/A Condition: New	10 miles	4.99	\$ 21.99	<button>Favorite</button>
3	Second and Charles 	Title: Foundation and Earth Author: Isaac Asimov ISBN: 9780553538759 Binding: N/A Condition: Used	10 miles	4.99	\$ 13.98	<button>Favorite</button>
4	Prince Books 	Title: Foundation (Apple Series Tie-in Edition) Author: Isaac Asimov ISBN: 9780593487487 Binding: Paperback Condition: New	10 miles	4.99	\$ 21.99	<button>Favorite</button>

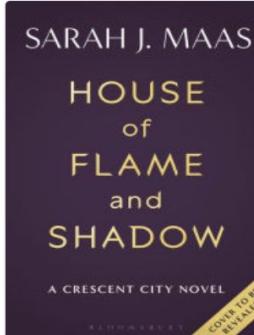
GUI Mockup: Recommendations Page

Booked App X +

localhost:3000/recommendations

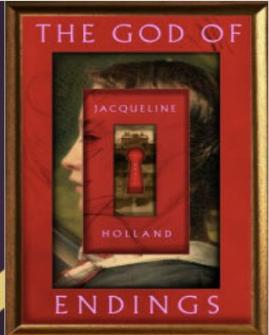
Booked Home Recommendations Sign In Sign Up About Help FAQ

Recommendations



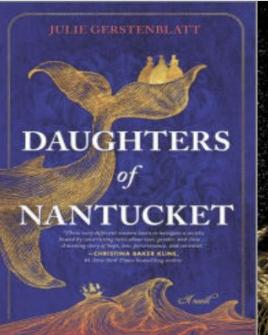
SARAH J. MAAS
HOUSE
of
FLAME
and
SHADOW
A CRESCENT CITY NOVEL
BLOOMSBURY
COVER TO BE RELEASED

House of Flame and Shadow
(Crescent City Series #3)
Written by Sarah J. Maas
Just announced this week is the third book in the Crescent City series which includes House of Earth and Blood and House of Sky and Breath. This book will be published on January 30, 2024!



THE GOD OF
ENDINGS
JACQUELINE
HOLLAND

The God of Endings: A Novel
Written by Jacqueline Holland
Gorgeous debut novel here. The prose is brilliant, the characters are interesting and fully realized. This is a unique perspective on the vampire mythology, a vampire who cares and tries to do good while moving through the world but entropy and chaos follow her, forcing her to rebuild over and over. For fans of modern gothic stories and complex protagonists.



JULIE GERSTENBLATT
DAUGHTERS
of
NANTUCKET
"These two disparate women have an unlikely bond...a compelling story of love, loss, and the power of family." —CHRISTINA BAKER KLINE, #1 New York Times bestselling author of The Nightingale

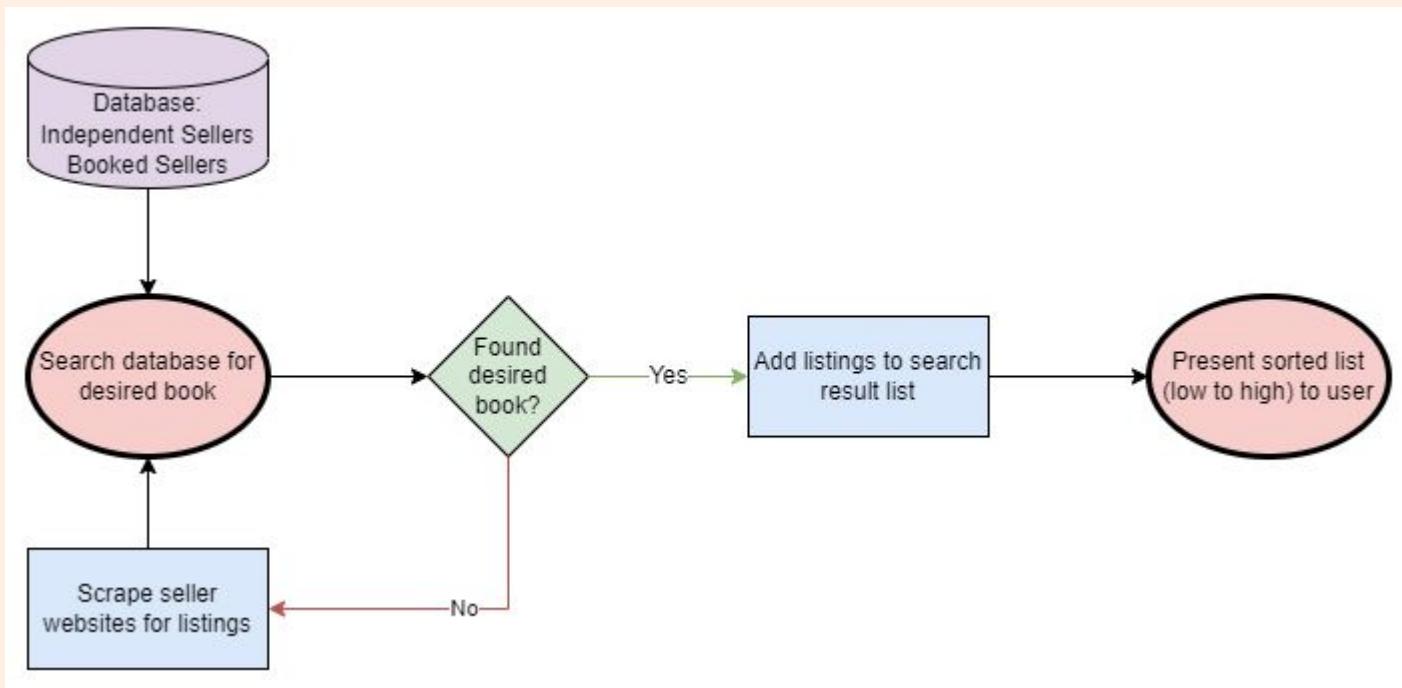
Daughters of Nantucket: A Novel
Written by Julie Gerstenblatt
A historical fiction novel set during the Nantucket fire in 1846, this is a beautifully written novel featuring strong female protagonists. Following three Nantucket women, their stories are very different but similarly tragic with issues spanning from race to romance. As the fire breaks out, each woman must decide what is their priority to save and how to rebuild afterwards.



KRISTIN
HANNAH
#1 New York Times Bestselling Author of *The Nightingale*
"Spectacular." —People
THE
FOUR WINDS

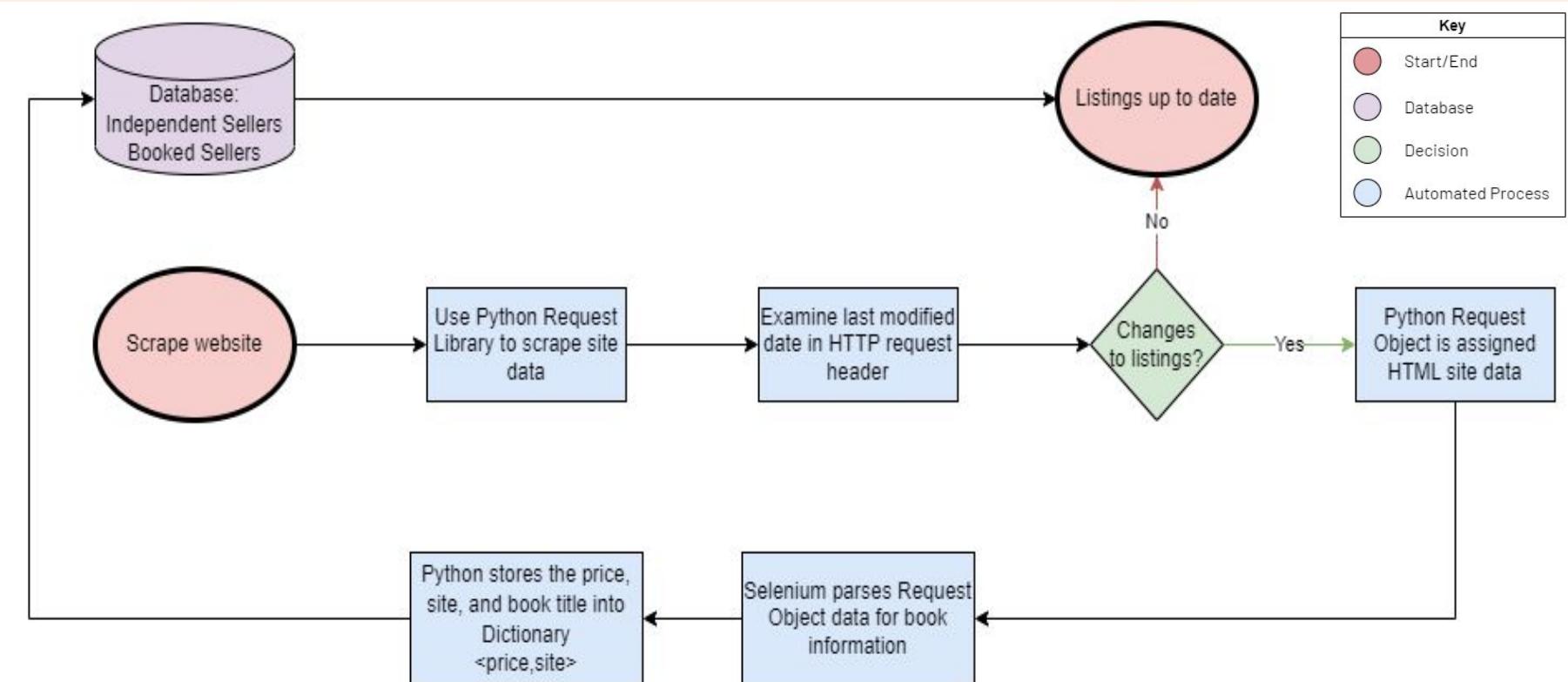
The Four Winds: A Novel
Written by Kristin Hannah
Perfect for fans of Where the Crawdads Sing, Kristin Hannah's stunningly beautiful and heart-wrenching dustbowl drama traces the conflicts and challenges faced by Elsa and her family, who journey west in search of a better life. Elsa's critical choices shape the lives of the people around her for generations to come.

Algorithm: Booked Search

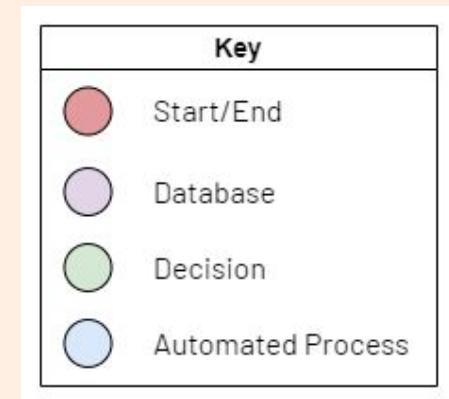
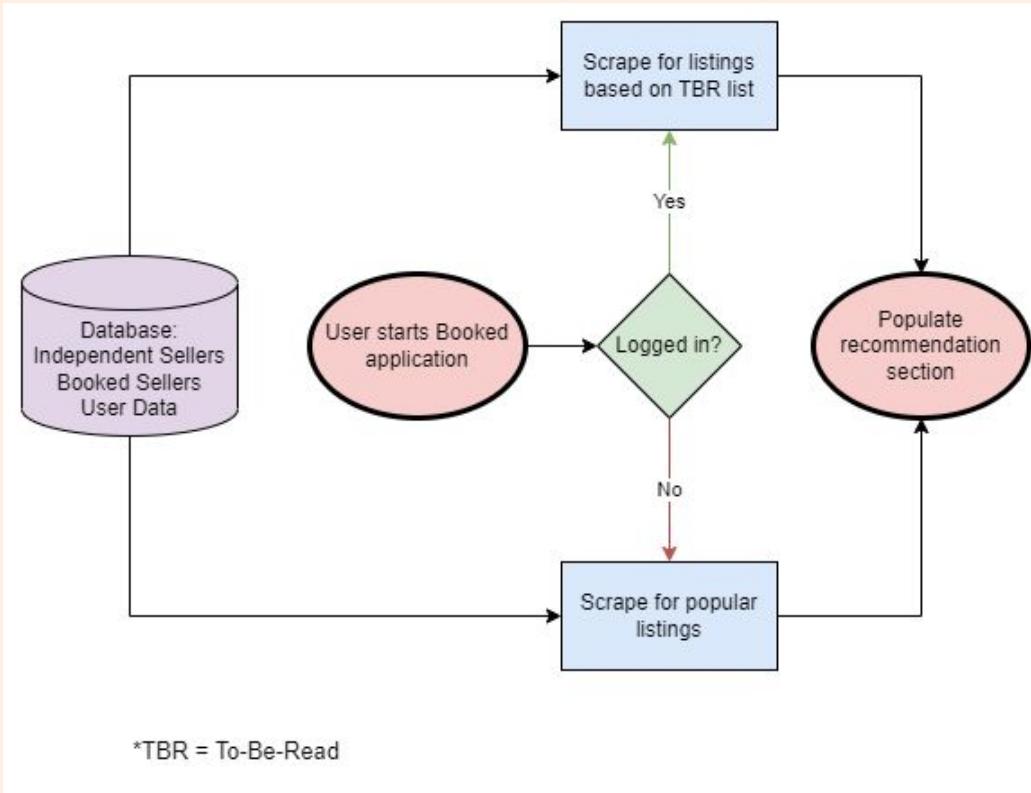


Key	
Start/End	
Database	
Decision	
Automated Process	

Algorithm: Booked Scraper



Algorithm: Recommendation System



*TBR = To-Be-Read

Prototype Overview

Our prototype will be a fully functional web application with correct splash images and design related to our product. We will forgo basic features like account creation and user profiles. We will be focusing on the key algorithms and features instead. Mock data may be used when demonstrating functionality.

Real World Product vs. Prototype

Feature	RWP	Prototype	Prototype Actual
Landing Pages	✓	✓	✓
User Account Creation or Login	✓	✓	
User Profile (includes to-be-read list)	✓	✓	
Partner Account Creation or Login	✓		
Partner Profile (includes analytics and inventory management)	✓		
Search Form with Specific Search Criteria	✓	✓	✓
Search Results List (includes total cost, seller website link, seller bookstore address, etc.)	✓	✓	✓

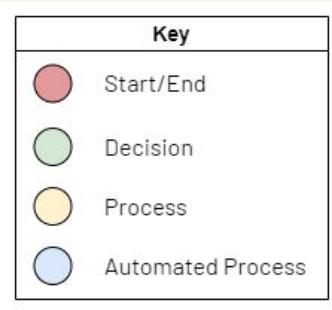
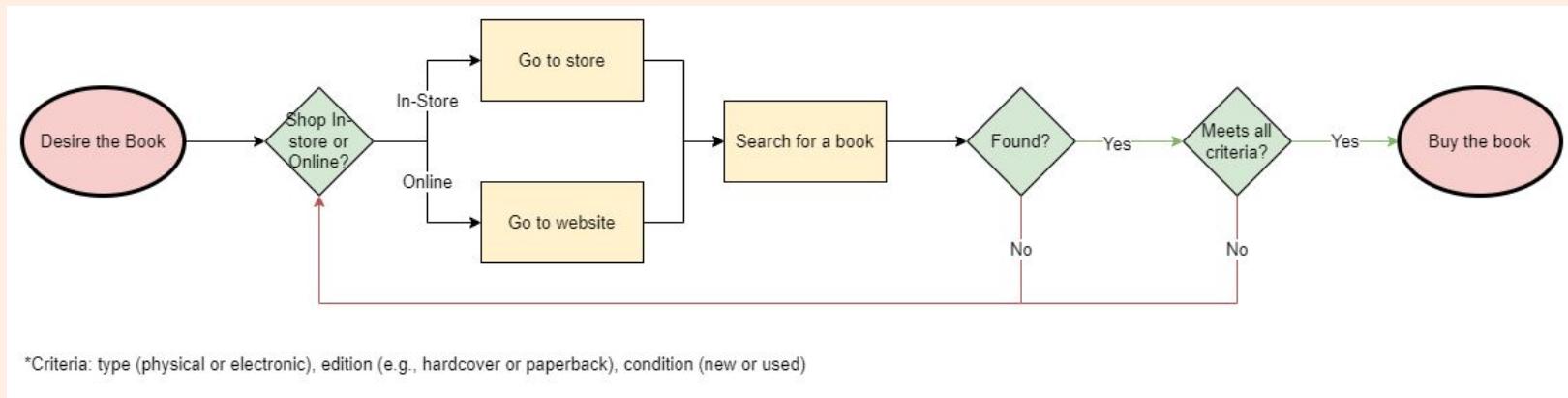
Real World Product vs. Prototype *cont.*

Feature	RWP	Prototype	Prototype Actual
Recommendations based on To-Be-Read List	✓	✓	
Recommendations based on Popular Listings	✓	✓	✓
Booked Database (e.g., book data, seller data, and user data)	✓	✓	✓
Show distance of physical bookstore from user	✓	✓	✓
Show comparison of book variants	✓	✓	✓

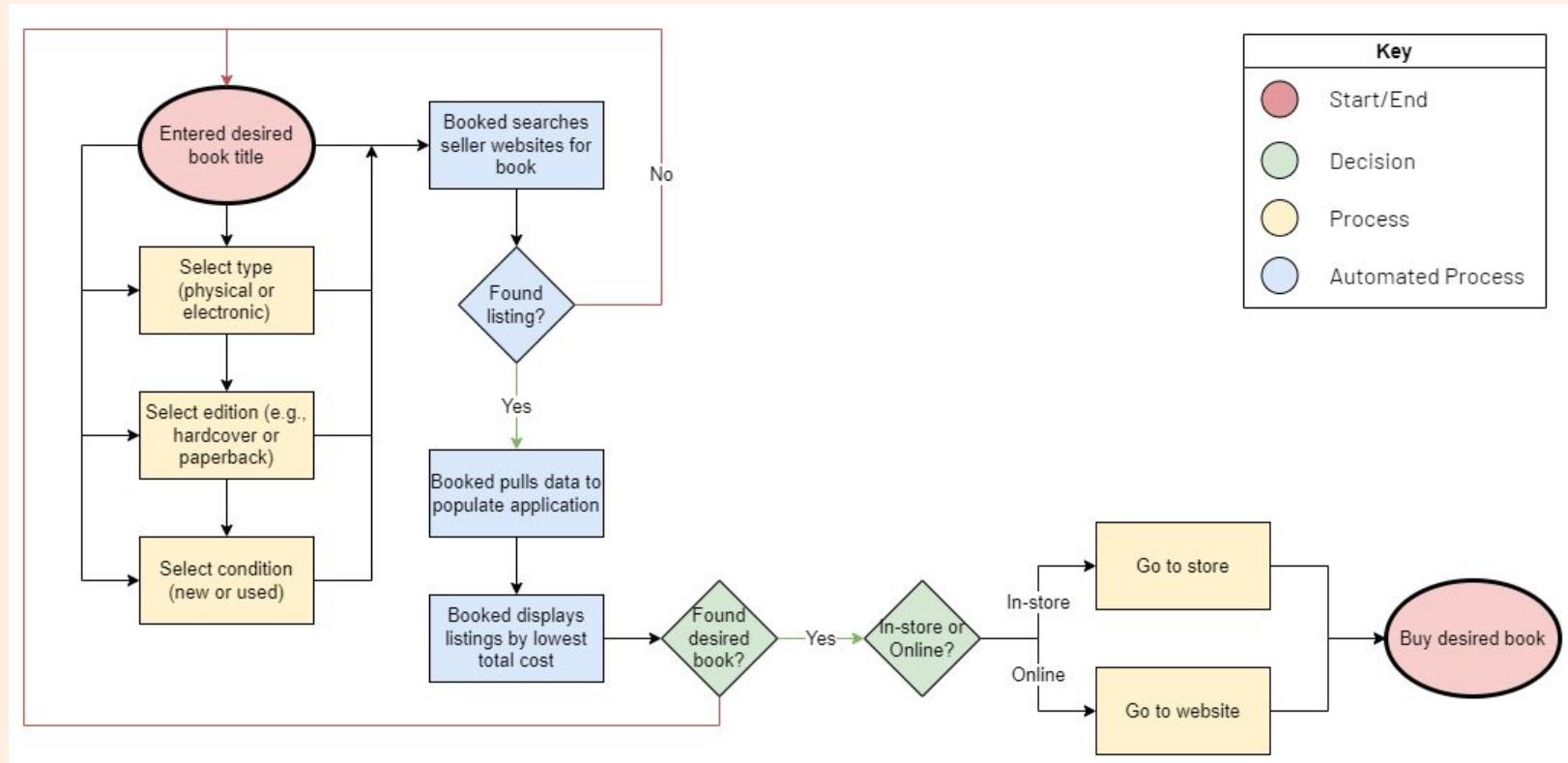
Prototype Demonstration

Appendix

Current Process Flow



Solution Process Flow



Competitors

Biblio: Largest independent book marketplace that specializes in used, rare, and out-of-print books.

BookFinder: Search engine for new, used, out-of-print books and textbooks. Checks major catalogs, retailers and listing sites.

Bookshop: Online marketplace that partners with independent bookstores.

Amazon: Largest marketplace in the United States. Offers new and used books and textbooks, as well as book and ebook rentals.

AbeBooks: A top online marketplace focusing on used, rare, collectible and out of print titles for sale by independent booksellers.

Ebay: An auction house and marketplace that simply facilitates the sale of goods between third-party buyers and sellers.

Indirect Competitors

Barnes and Noble: Physical bookstore in most large U.S. cities. Also, offers an online bookstore to purchase new books.

Book Publishers (e.g., Penguin Random House): Publishing houses offer new books to be purchased online.

Local Libraries: Local libraries are an alternative to buying books as they provide free book rentals to the general public.

Competition Matrix

Functionality	Booked	Biblio	BookFinder	Bookshop	Amazon AbeBooks	Ebay
Find physical books and e-books	✓			✓	✓	✓
Sources exclusively from independent bookstores	✓			✓		
Shows each bookstore's distance from user	✓					
Filter and sort by edition and/or condition	✓	✓	✓		✓	✓
Compares variants of same item	✓	✓	✓		✓	
Provides user analytics to independent bookstore users	✓					
Show total cost	✓		✓			
Recommend books	✓			✓	✓	✓

Security/Technical Risks

T1: Incomplete or outdated data pulled

Mitigation:

- Put checks in place to verify data

Initial: MEDIUM → MITIGATED: LOW

T2: No backup system for unplanned downtime

Mitigation:

- Use standard practices for load balancing

Initial: HIGH → MITIGATED: MEDIUM

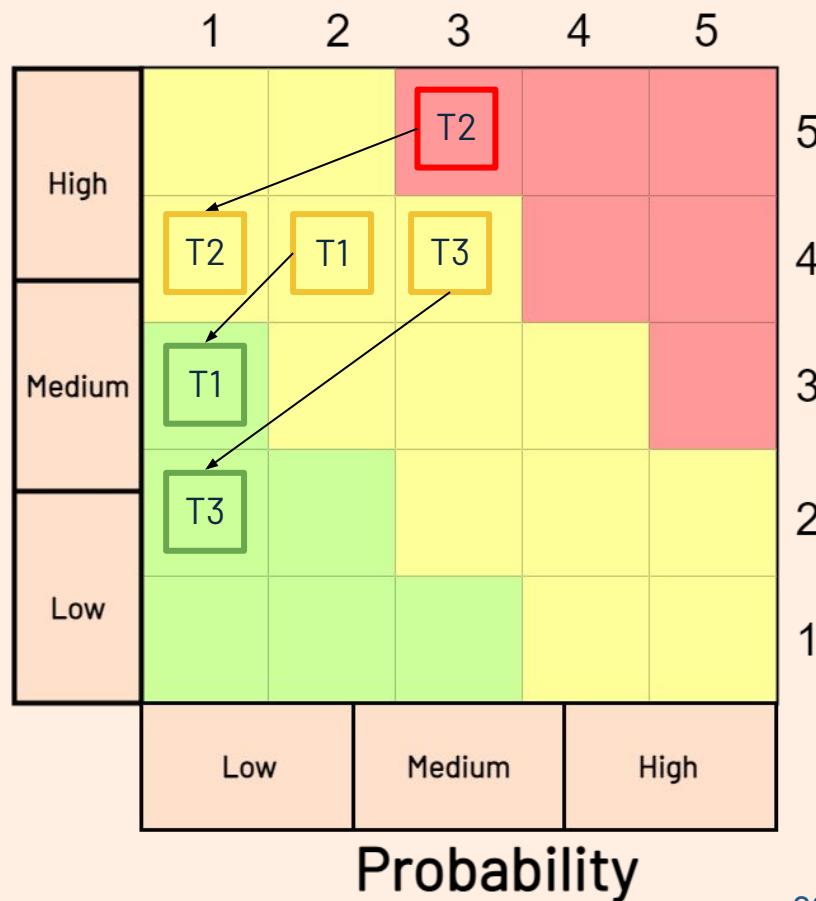
T3: Booked platform is compromised

Mitigation:

- Use standard practices for website security

Initial: MEDIUM → MITIGATED: LOW

Impact



Customer Risks

C1: Difficult to appeal to customers

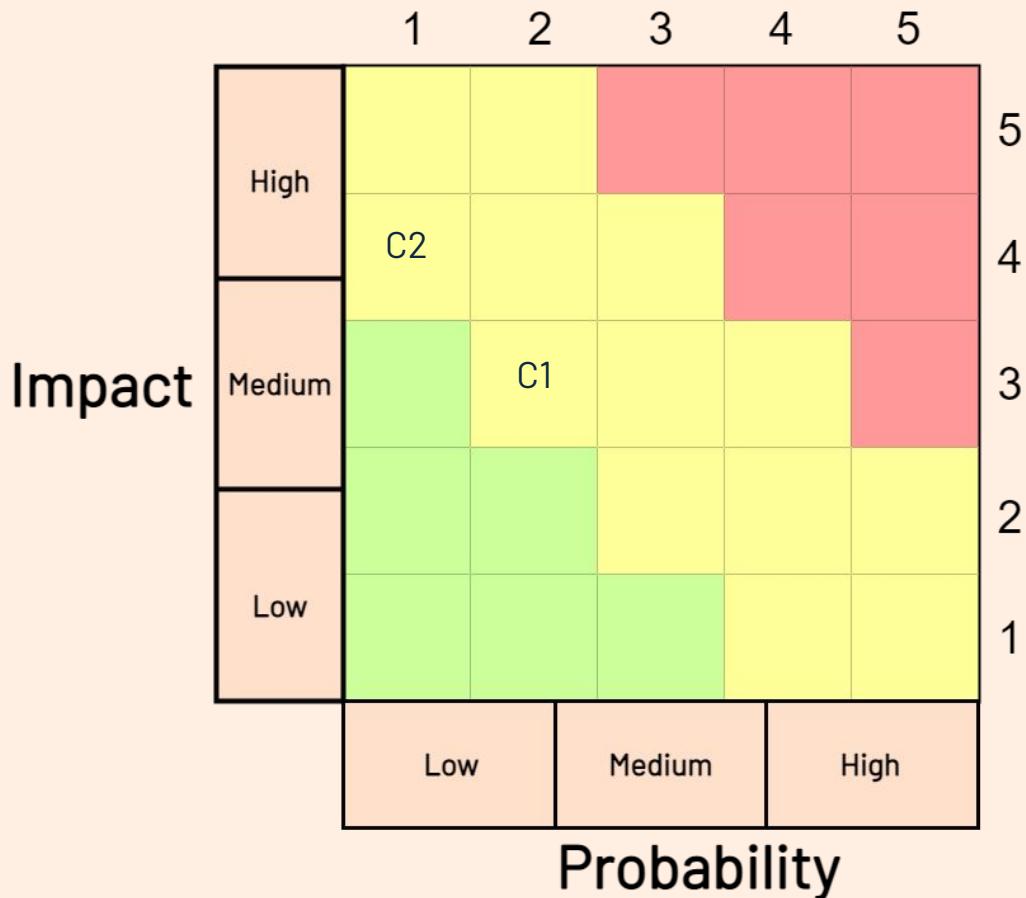
Mitigation:

- Show differences between us and competitors

C2: Account emails could be compromised

Mitigation:

- Use best practices to secure customer information

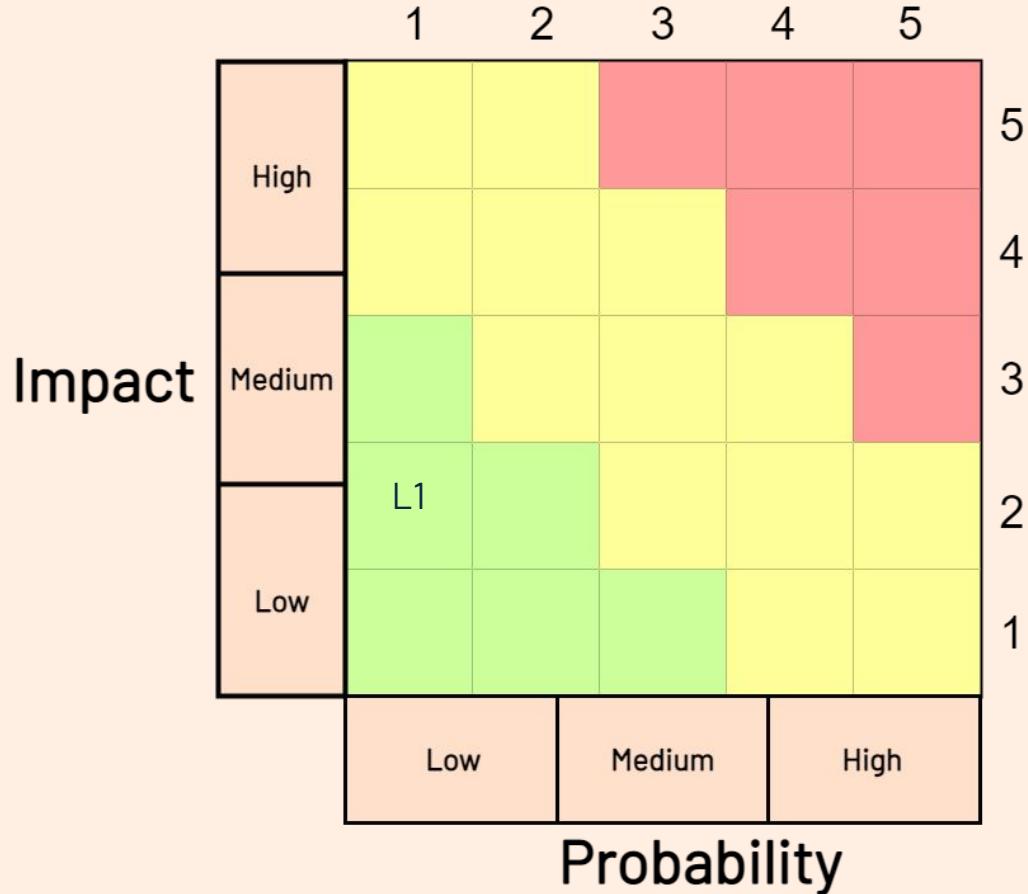


Legal Risks

L1: Cease and desist for web scraping

Mitigation:

- Obtain data through API
- Form partnerships with bookstores that want advertising



Milestones

01/09 - 01/20

Sprint 1

- Role assignments
- Project management tool setup
- Environment and database setup and configuration

01/23 - 02/03

Sprint 2

- Focus on the front-end
- Create front tests
- Assess test results

02/06 - 02/17

Sprint 3

- Focus on the back-end (search algorithm)
- Test search code
- MVP: application with basic search algorithm

02/20 - 03/03

Sprint 4

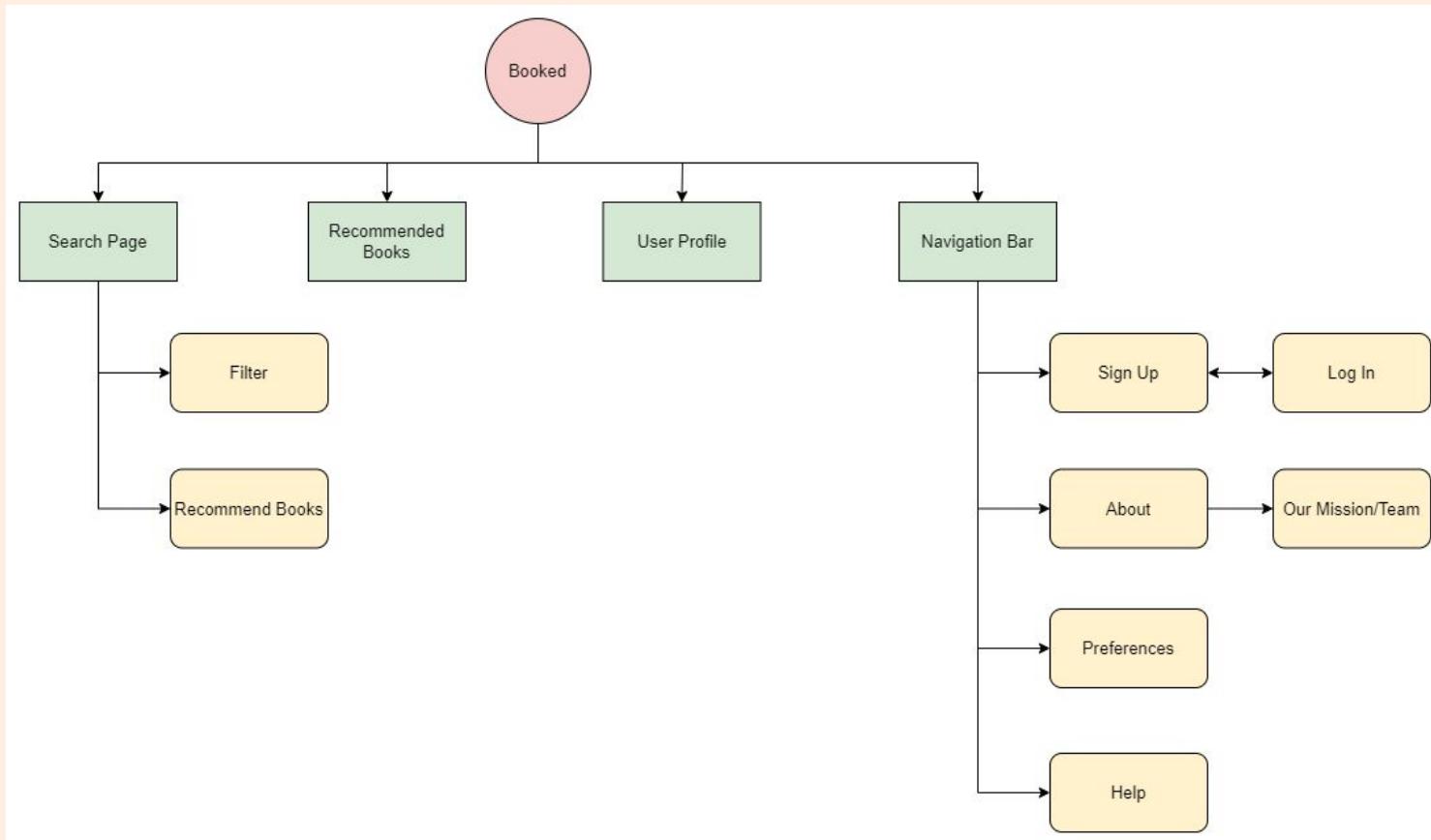
- Focus on the back-end (scraper algorithm)
- Test scraper code
- MVP: application with basic search and scraper algorithm

03/13 - 03/24

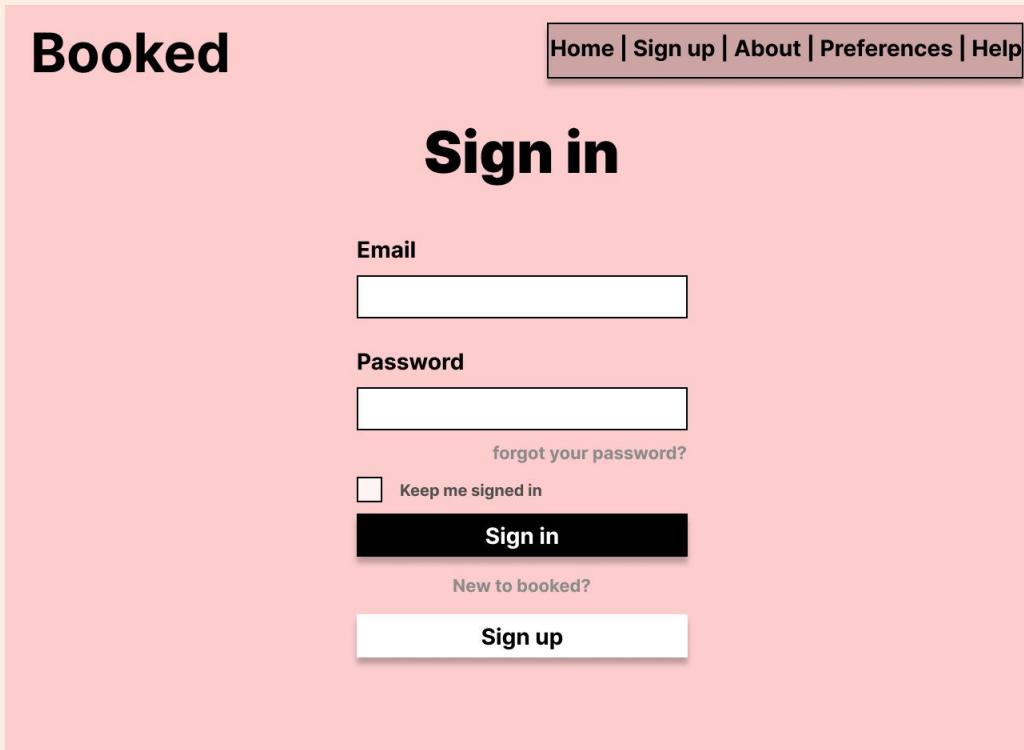
Sprint 5

- Focus on the back-end (recommendation algorithm)
- Test recommendation system code
- MVP: application with basic search, scraper, and recommendation algorithm

GUI Sitemap



GUI Mockup: Login Page



The mockup shows a login page with a light pink background. At the top left, the word "Booked" is displayed in a large, bold, black font. To the right, a horizontal navigation bar contains links: Home, Sign up, About, Preferences, and Help, all enclosed in a thin black border.

The main title "Sign in" is centered in a large, bold, black font. Below it are two input fields: one for "Email" and one for "Password", both represented by white rectangular boxes with black borders. Underneath the password field is a link "forgot your password?".

A small checkbox labeled "Keep me signed in" is positioned next to the password field. Below these fields is a large, solid black button with the text "Sign in" in white. At the bottom of the page, there is a link "New to booked?" followed by a white button with a black border and the text "Sign up" in black.

GUI Mockup: Account Creation Page

Booked

[Home](#) | [Sign in](#) | [About](#) | [Preferences](#) | [Help](#)

Create Account

Your name *

Email *

Password *

⚠ Passwords must be at least 6 characters

Re-enter password

⚠ Passwords must match

Zip code (optional)

Sign up

By creating an account, you agree to the Booked Terms of Service and Privacy Policy

Already have an account?

Sign in

GUI Mockup: User Profile Page

Booked

Welcome back, Stephen! [sign out]

PERSONAL HOME | TO-BE-READ | SAVED-SEARCHES

Recent Searches

- books by Sun Tzu
- "Art of war" by Sun Tzu
- "art of war"

(Clear searches)

Saved Searches

Book Title: The Hunger Games
Author: Suzanne Collins

(x)

To Be Read

ADD

currently empty

Book Title: A Game of Thrones
Author: George R. R. Martin
Condition: New

(x)

Role:
[register user](#) [become a partner]

Name:
[Stephen](#) [change name]

Member since:
[Fri, Jan 24, 2020](#)

GUI Mockup: Partner Profile Page

Booked

Welcome back, Abe's Bookstore! [\[sign out\]](#)

[Home](#) | [David](#) | [About](#) | [Preferences](#) | [Help](#)

[BOOKED-WEEKLY-FEED](#) | [MY-weekly feed](#) | [Update my inventory](#)

My weekly feed

Book title	total traffic
It Ends with Us: A Novel by Colleen Hoover	52%
Verity by Colleen Hoover	28%
Harry Potter and the Order of the Phoenix: The Illustrated Edition by J. K. Rowling	13%
Others	7%

Role:
[Partner](#) [\[end partnership\]](#)

Name:
[Abe's Bookstore](#) [\[change name\]](#)

Member since:
[Thr, Mar 3, 2022](#)

GUI Mockup: Partner Profile Page (Analytics)

Booked

Welcome back, Abe's Bookstore! [sign out]

It Starts with Us: A Novel (It Ends with Us)
by Colleen Hoover
12/18/2022 ~ 12/24/2022

The chart displays three data series: Average (blue line), Checked-out (orange line), and Your price (grey line). The Y-axis represents price in dollars, ranging from 0 to 50. The X-axis shows days of the week: Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday, and Average. The 'Your price' series generally shows the highest values, peaking at approximately \$44 on Thursday. The 'Average' and 'Checked-out' series are lower, fluctuating between \$25 and \$38.

Day	Average (\$)	Checked-out (\$)	Your price (\$)
Sunday	32.00	17.00	22.00
Monday	35.00	32.00	38.00
Tuesday	30.00	29.00	31.00
Wednesday	33.00	28.00	39.00
Thursday	37.00	27.00	44.00
Friday	31.00	30.00	25.00
Saturday	29.00	26.00	32.00
Sunday	34.00	28.00	33.00
Average	32.88	28.63	33.00

Role: Partner **Name:** Abe's Bookstore **Member since:** Thr, Mar 3

Your Average price
\$32.88 16% Higher than Avg-Checked-out

Average Checked-out price
\$27.63

Average Market price
\$32.46

32% NEW 23% Hardcover
311 visits from Booked

45% NEW 65% Hardcover
45% NEW

Legend: Average (Blue Line), Checked-out (Orange Line), Your price (Grey Line)

[weekly feed](#) | [Update my inventory](#)

weekly feed

Category	Percentage
total traffic	52%
Uncertain Times by Michelle Obama	28%
It Starts with Us: A Novel (It Ends with Us) by Colleen Hoover	13%
Other	7%

A horizontal bar chart titled 'weekly feed' showing the percentage of total traffic for different categories. The categories are 'total traffic' (52%), 'Uncertain Times by Michelle Obama' (28%), 'It Starts with Us: A Novel (It Ends with Us) by Colleen Hoover' (13%), and 'Other' (7%). A cursor icon is positioned over the 'Other' category bar.

GUI Mockup: Partner Profile Page (Inventory)

Booked

Welcome back, Abe's Bookstore! [\[sign out\]](#)

[BOOKED-WEEKLY-FEED](#) | [MY-WEEKLY-FEED](#) | [UPDATE-INVENTORY](#)

Update My Inventory

Book title	OUT OF STOCK	number...	UPDATE
<input checked="" type="radio"/> It Ends with Us: A Novel by Colleen Hoover	OUT OF STOCK	number...	UPDATE
<input type="radio"/> Verity by Colleen Hoover	OUT OF STOCK	number...	UPDATE
<input type="radio"/> Harry Potter and the Order of the Phoenix: The Illustrated Edition by J. K. ...	OUT OF STOCK	number...	UPDATE

Role:
[Partner](#) [\[end partnership\]](#)

Name:
[Abe's Bookstore](#) [\[change name\]](#)

Member since:
[Thr, Mar 3, 2022](#)

GUI Mockup: Search Page (User)

Booked

Welcome back, Stephen!

Finding the book from your local independent bookstore - Simplified!

Book Price Comparison

Book Title:

Book is written in: English ▾

Author:

ISBN:

Condition: Any ▾ Binding: Any ▾

Edition: Any ▾ Format: Any ▾

Price range: \$ Minimum to: \$ Maximum

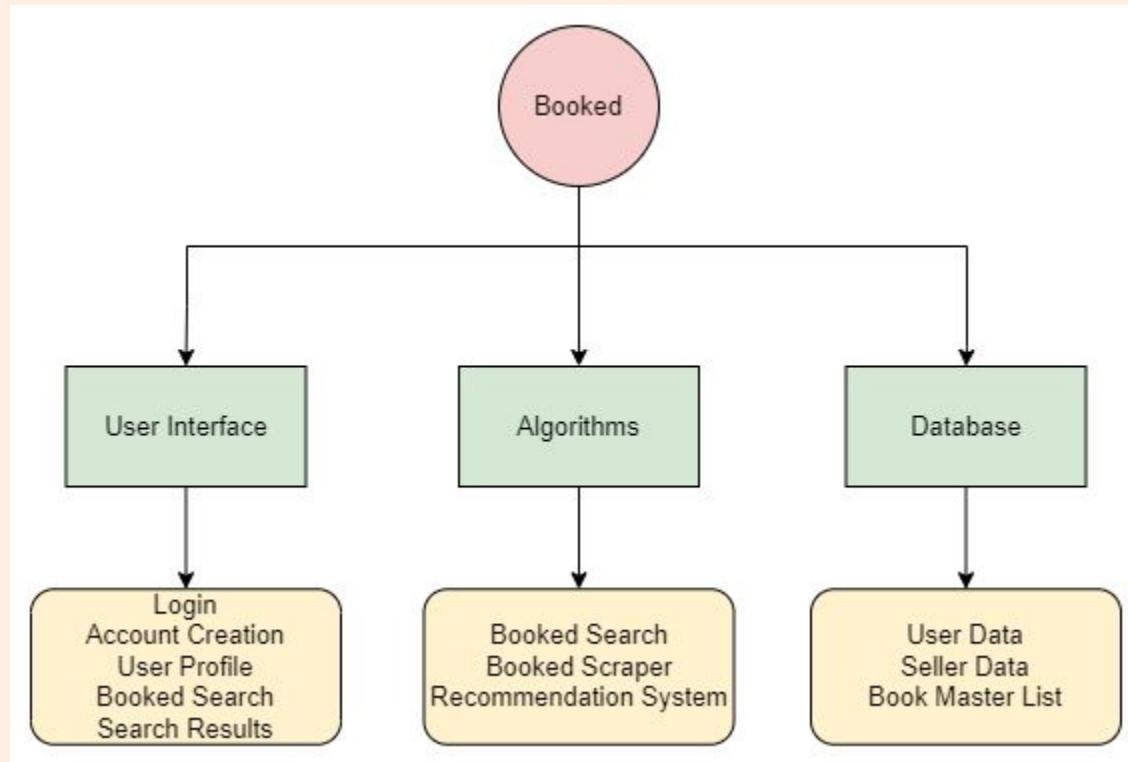
Search

Home | Stephen | About | Preferences | Help

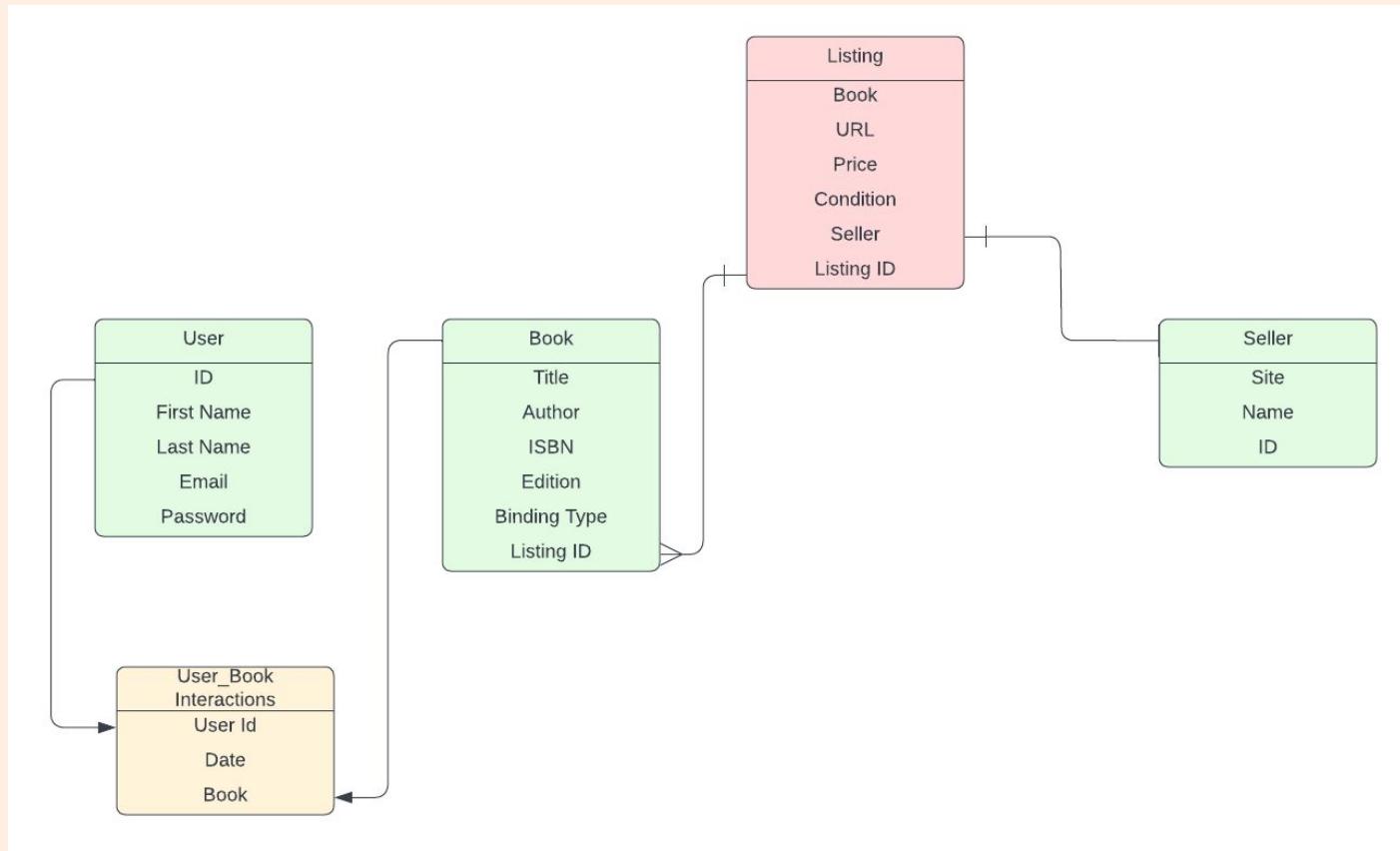
Books based on your interests

< >

Work Breakdown Structure



Database Schema



Conclusion

Booked will not...

- Include major book retailers
- Provide personalized book recommendations
 - Relevant purchases only
- Be limited to textbooks

Booked will...

- Include **independent bookstores** in search results
- Allow users to find **specific books** based on **specific criteria**
 - Ensure that the criteria are met exactly
- Provide users with the **cheapest price**

Thank you!

References

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User Roles

- **Guest:** Non-registered user and visitor to Booked website
- **Booked-user:** Registered user and returning customer to Booked website
- **Booked-partner:** Registered user and independent/local bookstore owner partnered with Booked website
- **Administrator:** Registered user that has administrator privileges that can give a partner role to or remove a partner role from another registered user

User Stories: Guest

- As a guest, I would like the option to create an account with my name and email address.
- As a guest, I would like search for a book based on the book information that I provided.
- As a guest, I would like to see the cheapest overall price for books on top of on the search result page (including shipping).
- As a guest, I would like to see a list of popular books on the search page.
- As a guest, I would like to see the distance of a physical bookstore in the search results.
- As a guest, I would like to compare variants of the same book.

User Stories: Booked-user

- As a Booked-user, I would like to login to my account with my email address and password.
- As a Booked-user, I would like to change my account password.
- As a Booked-user, I would like search for a book based on the book information that I provided.
- As a Booked-user, I would like to see the cheapest overall price for books on top of on the search result page (including shipping).
- As a Booked-user, I would like to have the option to save the book search on the search result page.

User Stories: Booked-user cont.

- As a Booked-user, I would like to create a to-be-read list.
- As a Booked-user, I would like to see a list of recommended books based on my to-be-read list.
- As a Booked-user, I would like to have the option to become a Booked-partner.
- As a Booked-user, I would like to see the distance of a physical bookstore in the search results.
- As a Booked-user, I would like to compare variants of the same book.

User Stories: Booked-partner

- As a Booked-partner, I would like to login to my account with my organization's email address and password.
- As a Booked-partner, I would like to change my account password.
- As a Booked-partner, I would like to alert admin about incorrect information on Booked.
- As a Booked-partner, I would like to view analytics for my store.
- As a Booked-partner, I would like to manage my store's inventory.

User Stories: Administrator

- As an Administrator, I would like to help a Booked-user to change their password.
- As an Administrator, I would like to see a list of pending requests for Booked partnerships.
- As an Administrator, I would like to approve a partnership request from a Booked-user.
- As an Administrator, I would like to deny a partnership request from a Booked-user.
- As an Administrator, I would like to have the ability to give a Booked-user a partner role.
- As an Administrator, I would like to have the ability to remove a partner role from a Booked-user.