



Book Buddy

Sprint 4 Update

Team 5 - Code Avengers

Pace University Capstone Project - Spring 2024



Agenda

1. Team Details
2. Improvements Made
3. Project Description
4. Working Agreement
5. Personas
6. Technologies
7. Algorithms
8. Diagrams
9. Product Backlog
10. Sprint Summaries
11. Sprint 4 Backlog
12. Metrics
13. Retrospective
14. Demo

Team Members



Jimmy Karoly
Scrum Master/Developer



Dhanasri Salla
Machine Learning Engineer



Sai Sandeep Mandava
Machine Learning Engineer

Team Members



Praveen Raj Guju
Tester



Anusha Meka
Developer



Sairam Vinjamoori
Developer

Team Members



Krushal Rama
Developer



Alekhyा Bommineni
Developer



Changes due to Professor's Feedback

- Used stories for Sprint recap instead of bullet points
- Added historic and average metrics
- Reformatted chart slides to show headers if charts were split
- Made MVP description more detailed
- Corrected labels for burndown charts

Slides with changes have this icon:



Project Description

Project Name:	Book Buddy
Team:	Code Avengers
Project Description:	<p>A recommendation system that will prioritize unknown and less popular authors and allow users to purchase recommendations.</p> <p>For book readers who search for new books to read the recommendation system, Book Buddy, is a website that allows a user to generate recommendations based off of a survey or books they have read unlike GoodReads or other book recommendation systems our application will prioritize newer and unknown authors with different life experiences and views.</p>
Benefit Outcomes:	<p>A reader will have get recommendations that are different than they have gotten before</p> <p>Unknown and less popular authors will be able to gain a new audience</p> <p>Users will have a one stop site to organize their reading habits and purchase books that are recommended to them</p>
Github Link:	https://github.com/htmw/2024S-Code-Avengers/wiki

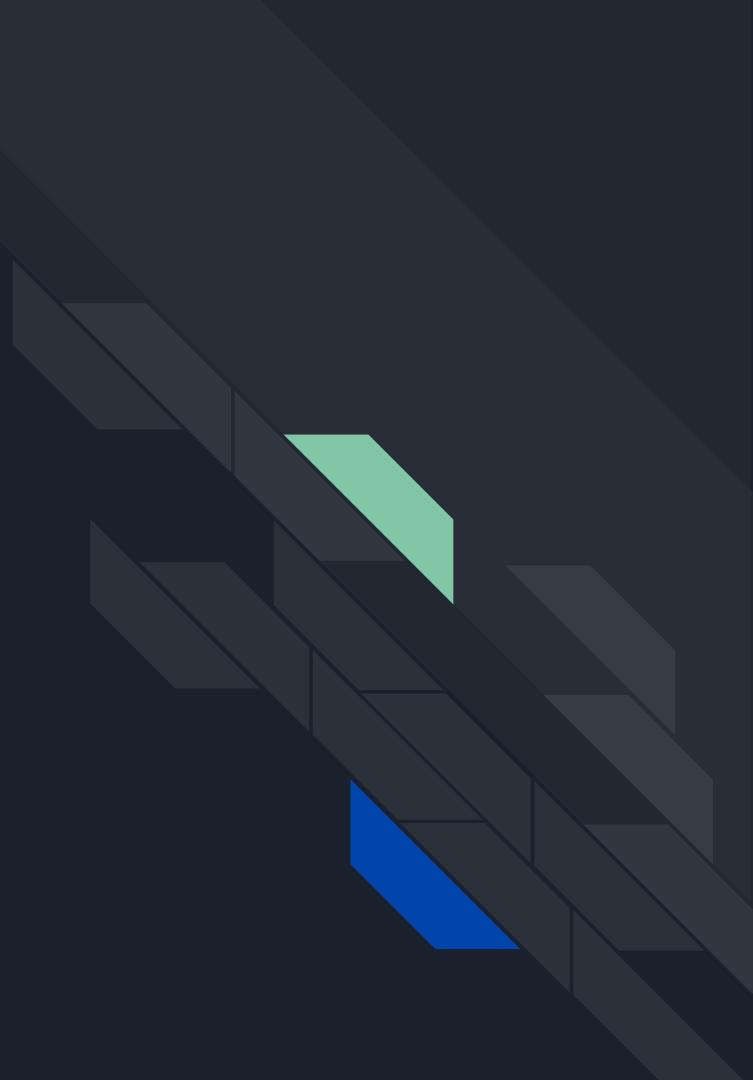


Team Working Agreement

Team Agreement

- All team members agree to attend all meetings scheduled every week on Wednesday, either before or after class
- If a team member can't attend a meeting then they will let the group know ahead of time, and we can talk about the possibility of rescheduling and if rescheduling is not possible then the absent teammate will agree to whatever is decided by the majority that attends the meeting
- If a team member needs help then they will reach out to the team in advance and not wait until the night before something is due
- All team members should feel open to sharing their opinion and group consensus will decide the direction we will go in, if not opposing opinions are shared then the assumption will be that you are in agreement.
- Team members will stay active in the group chat and pay attention to questions and participate in group discussions about project details
- Work will be divided as evenly as possible and is expected to be complete in a timely manner
- Members agree to respect the time and other obligations of fellow team members, by attending meetings on time and responding in the group chat in a timely manner.
- Work will be done to the best of every members ability

Personas



User Persona



Alex Müller

About



Age: 62 Years



New York, NY



Education: Bachelor's



Gender: Male



Job Title: Retired Bank Manager

Profile

Alex is an avid book reader and always loves looking for new books. Lately he's been underwhelmed by the recommendations he's gotten from the leading book sites, and wants a place that will specifically recommend underrepresented authors.

Goals

- He wants to find new authors
- He doesn't just want the same popularity based recommendations

Pain Points

- Likes GoodReads but would want one place that could give recommendations and he could purchase them
- Gets recommended the same thing repeatedly

Reading Habits

- Alex reads daily
- He can usually finish 3-4 books in a month

User Persona



Jennifer Farmer

About



Age: 26 Years



Miami, FL



Education: Bachelor's



Gender: Female



Job Title: Graduate Student

Reading Habits

- Jennifer reads daily
- Most reading for school she can finish 2 books of her own choosing a month

Profile

Jennifer is a 26 year old graduate student and she is interested in philosophy and gender studies. She reads a lot for school but also likes to find time to read for leisure.

Goals

- She wants to find books in her field of study that are written by less-known authors
- She wants to find one place for new recommendations and purchasing

Pain Points

- Difficulty finding diverse book recommendations outside the mainstream
- Doesn't have a lot of time to devote to finding new books

User Persona



Joseph Harps

About



Age: 32 Years



Los Angeles, CA



Education: Master's



Gender: Male



Job Title: Software Developer

Profile

Joseph is a busy software developer and doesn't have a lot of time to read. He wants to branch out and find new topics to read about from different perspectives. He wants to experience books outside of the normal bestsellers.

Goals

- Since he doesn't have a lot of time he wants something that is easy to use and doesn't require much setup.

Pain Points

- Doesn't know where to start looking
- Good Reads seems to always recommend the same things

Reading Habits

- Joseph tries to read once or twice a week
- He can usually finish 1 book a month



Minimum Viable Product

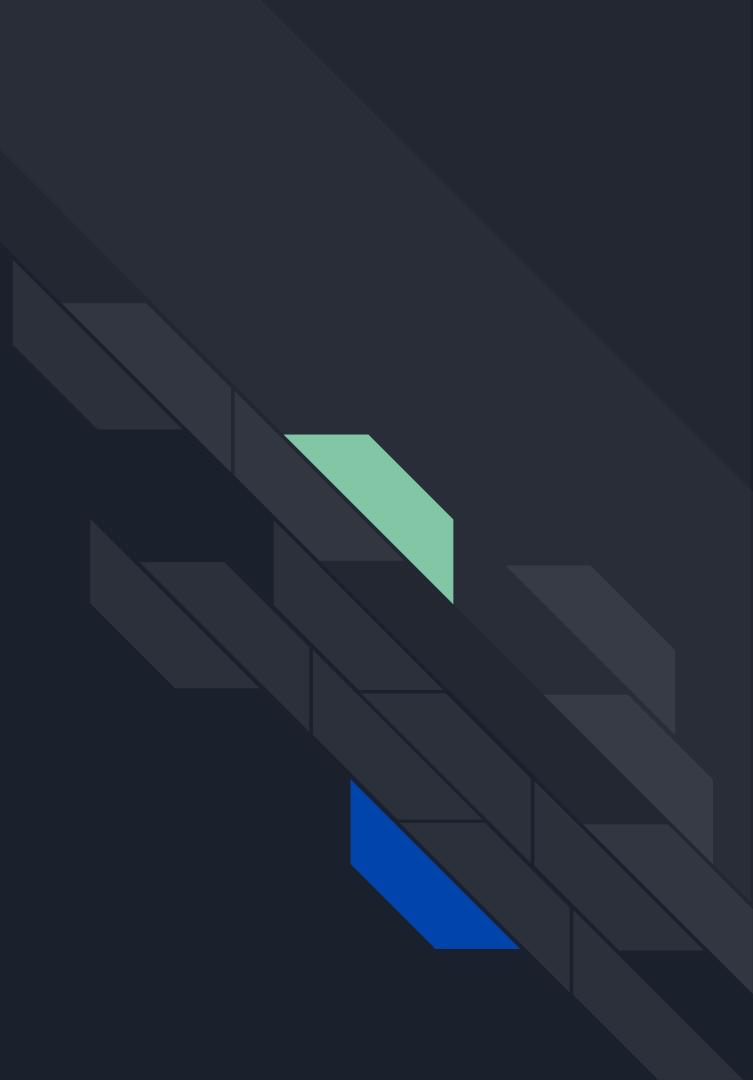
Our MVP will consist of the following functionalities:

Generate Book Recommendations for the User

The User can create and manage custom book collections such as:
“Books to Read” or “Books I Love”

The site will contain basic marketplace functionality with a
shopping cart the user can manage and being able to purchase
books.

Technologies and Algorithm



Front End Technologies



React



Firebase

We will be using the React JS library to create our UI along with some HTML and CSS as well.

For our login/registration we will be using Google Firebase. They allow you to interact with it through an API

Back End Technologies



PyTorch



We are using PyTorch for our ML Algorithm

We will create an API for the algorithm using Python

The backend will be written in Java using the Spring Framework

Our Database will be Postgres



Machine Learning Algorithm

1. Feature Vector Construction:

Represent each book as a vector of features. Each dimension corresponds to a specific characteristic or keyword associated with the book.

For textual features, use techniques like TF-IDF to weight the importance of each word or tag.

2. Cosine Similarity Calculation:

Calculate the cosine of the angle between two book vectors, A and B, using the formula: **Cosine Similarity = $(A \cdot B) / \|A\| \|B\|$**

Where:

$A \cdot B$ is the dot product of vectors A and B

$\|A\|$ and $\|B\|$ are the magnitudes (Euclidean norms) of vectors A and B, respectively.

3. Interpretation:

The cosine similarity ranges from -1 to 1, where 1 means identical, 0 indicates orthogonality (no similarity), and -1 implies opposite.

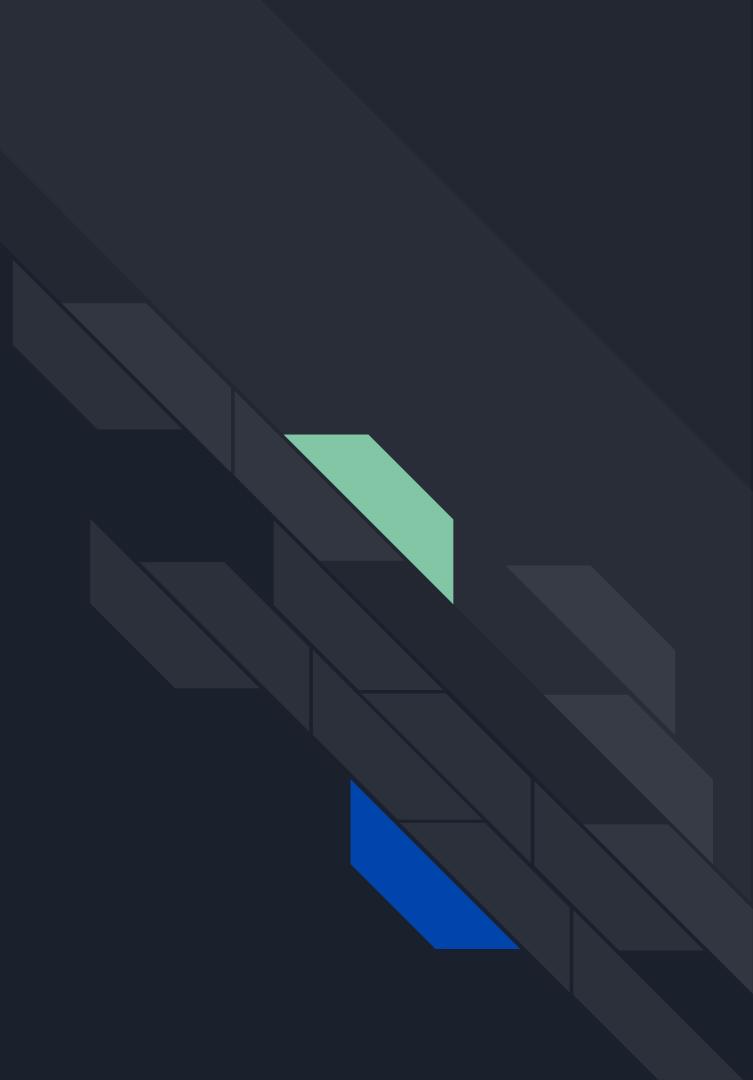
For book recommendations, we focus on positive similarity scores, with higher scores indicating greater similarity.

4. Recommendation:

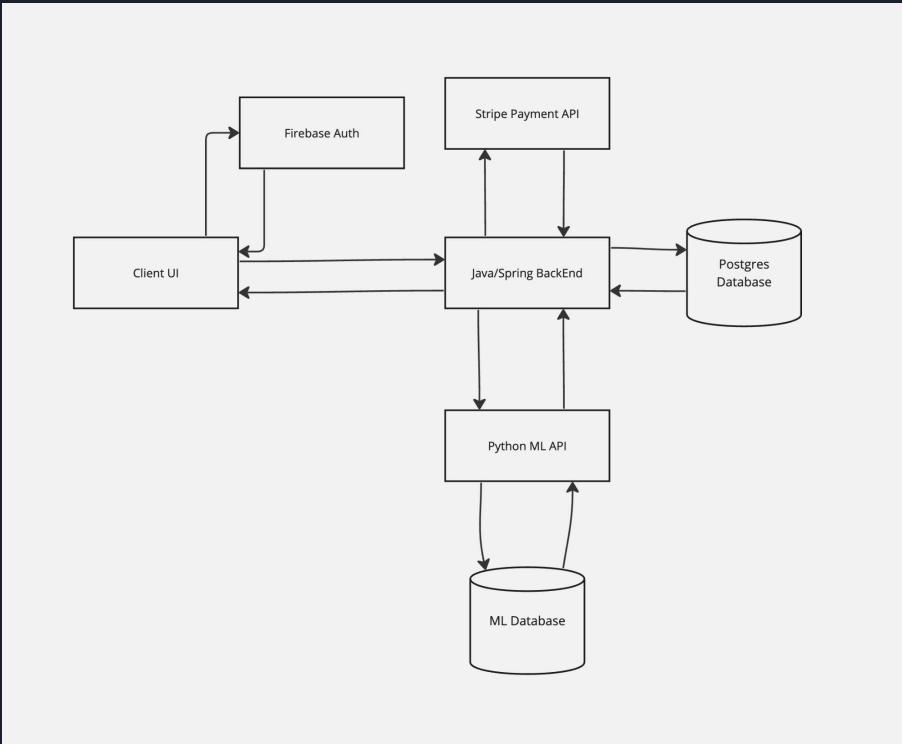
For a target book, calculate its cosine similarity with all other books in the dataset.

Recommend books with the highest similarity scores to the reader.

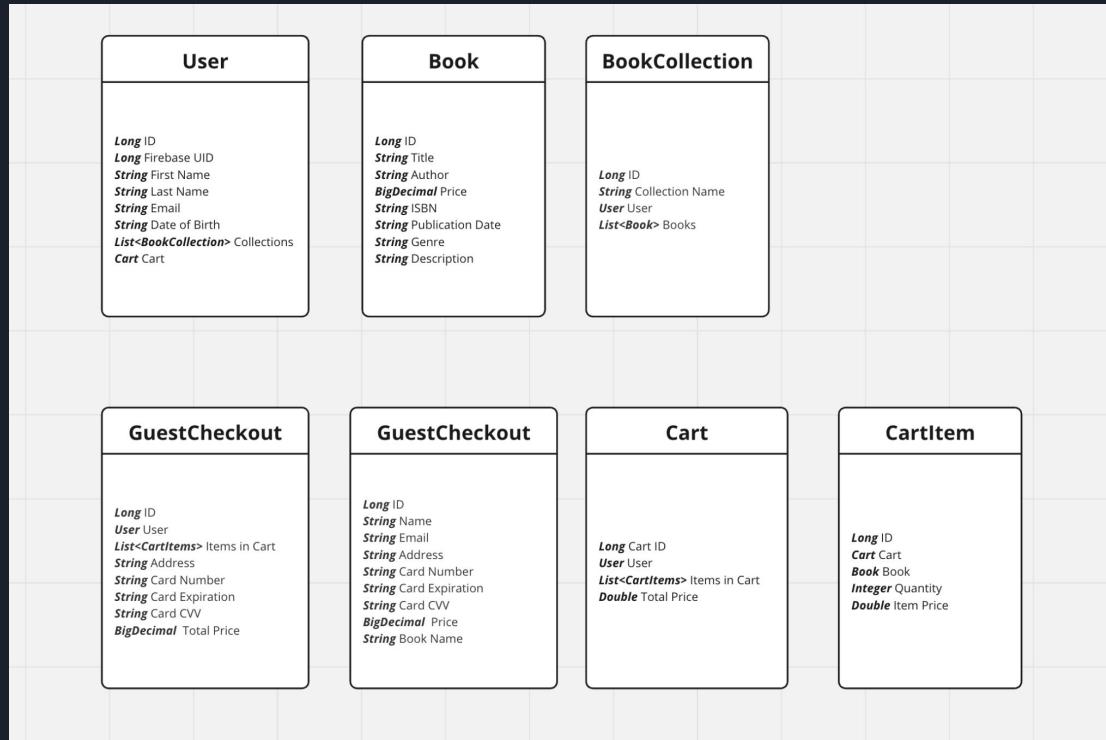
Diagrams



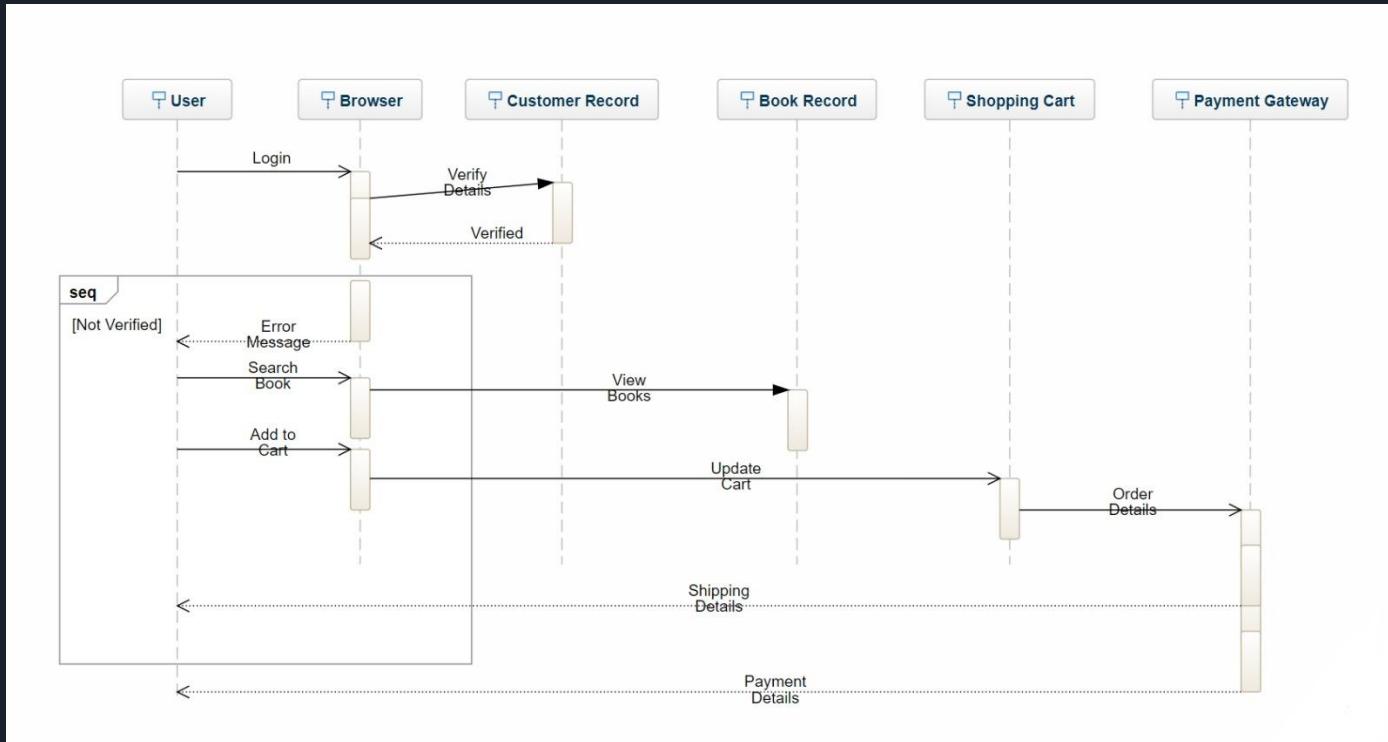
Conceptual Architecture Diagram



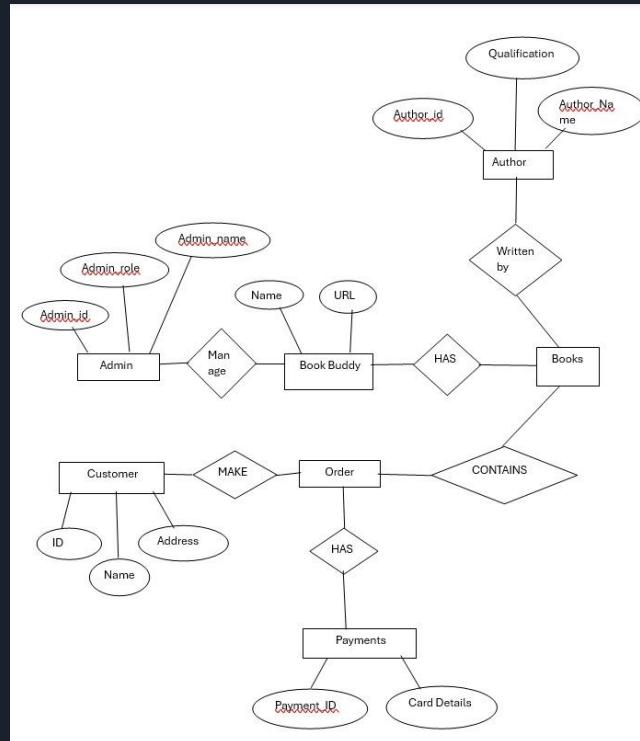
Class Diagram



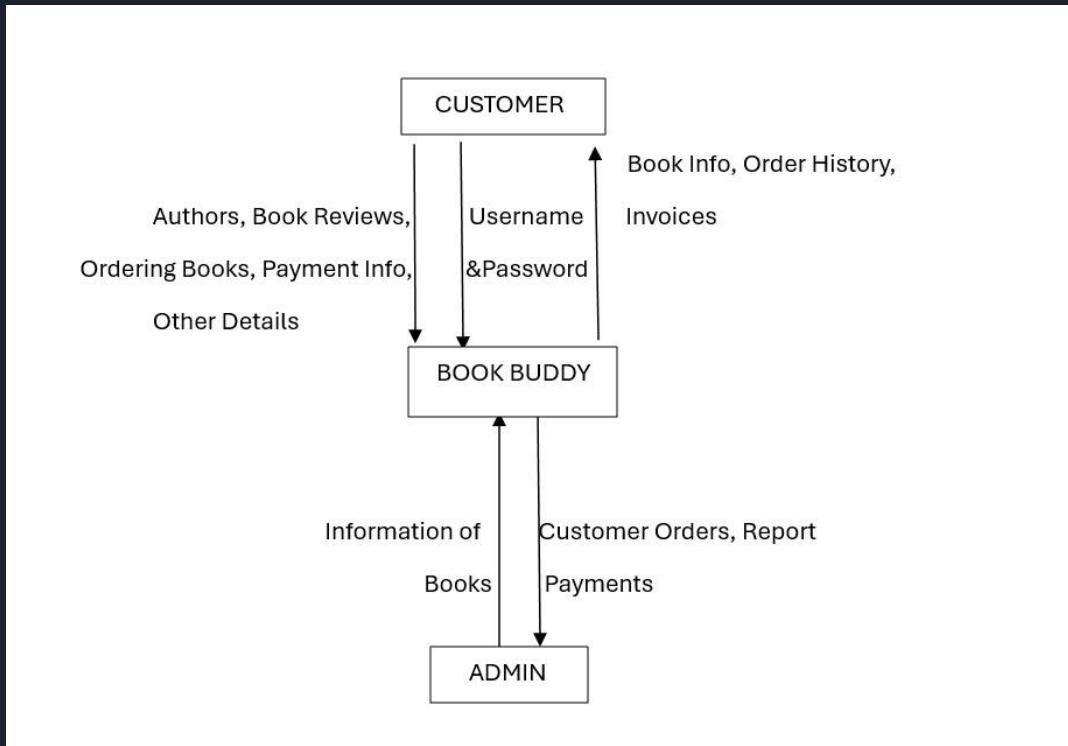
Sequence Diagram



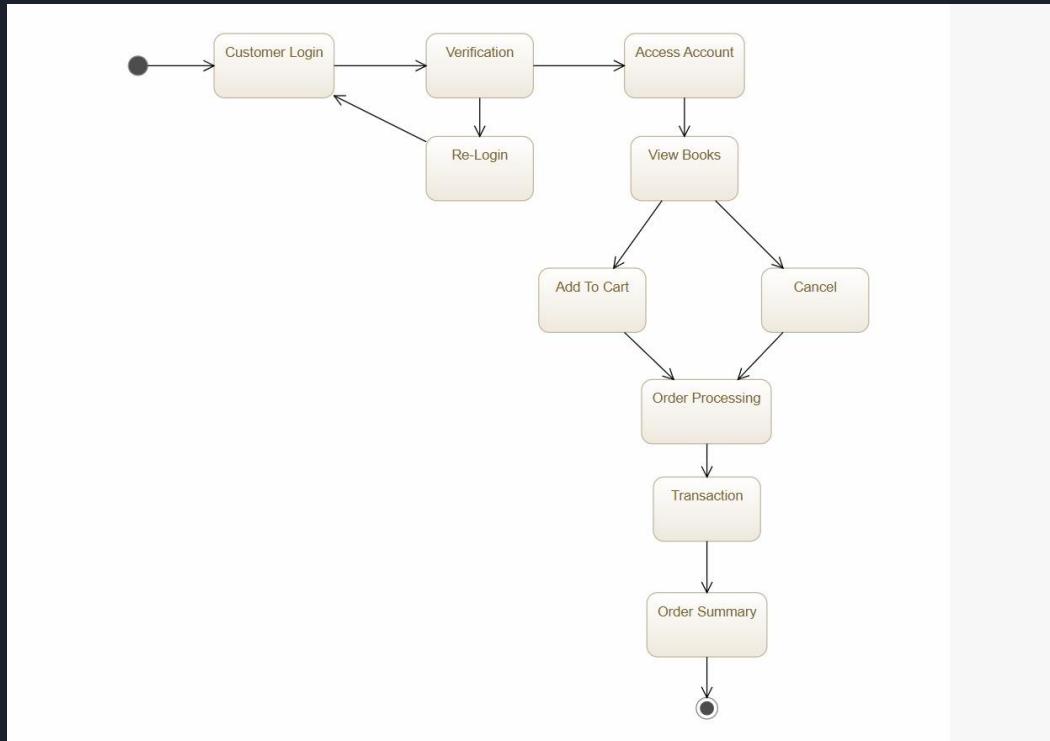
Entity Relationship Diagram



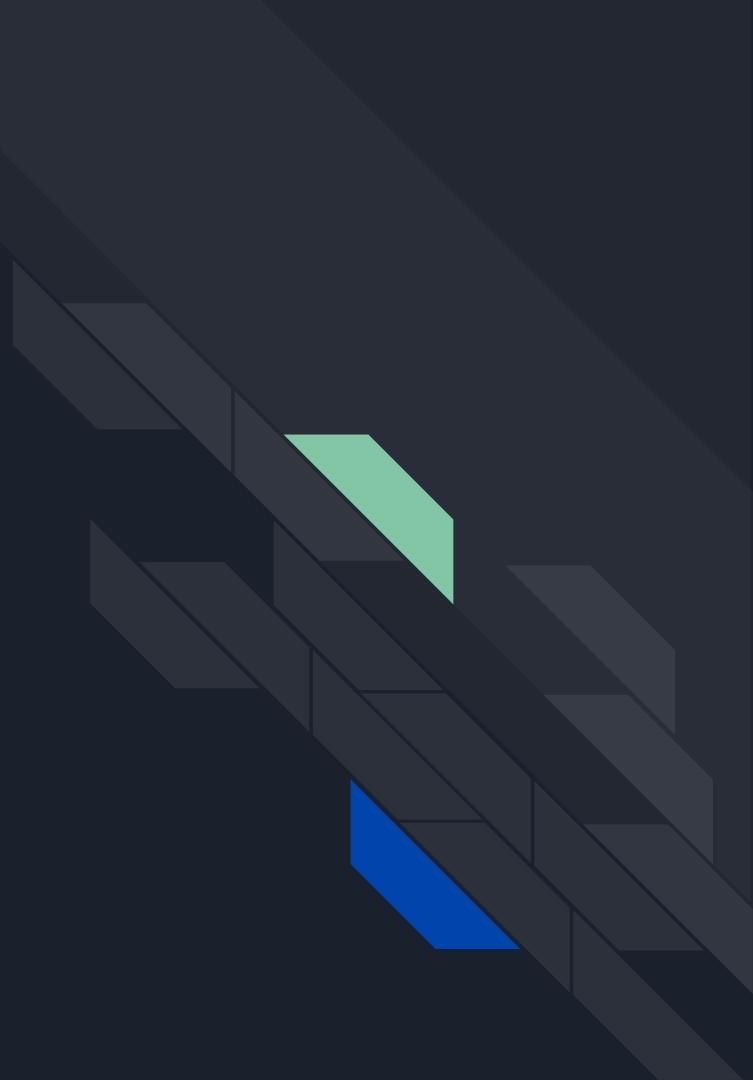
Context Diagram



State Diagram



Sprint 3 Recap

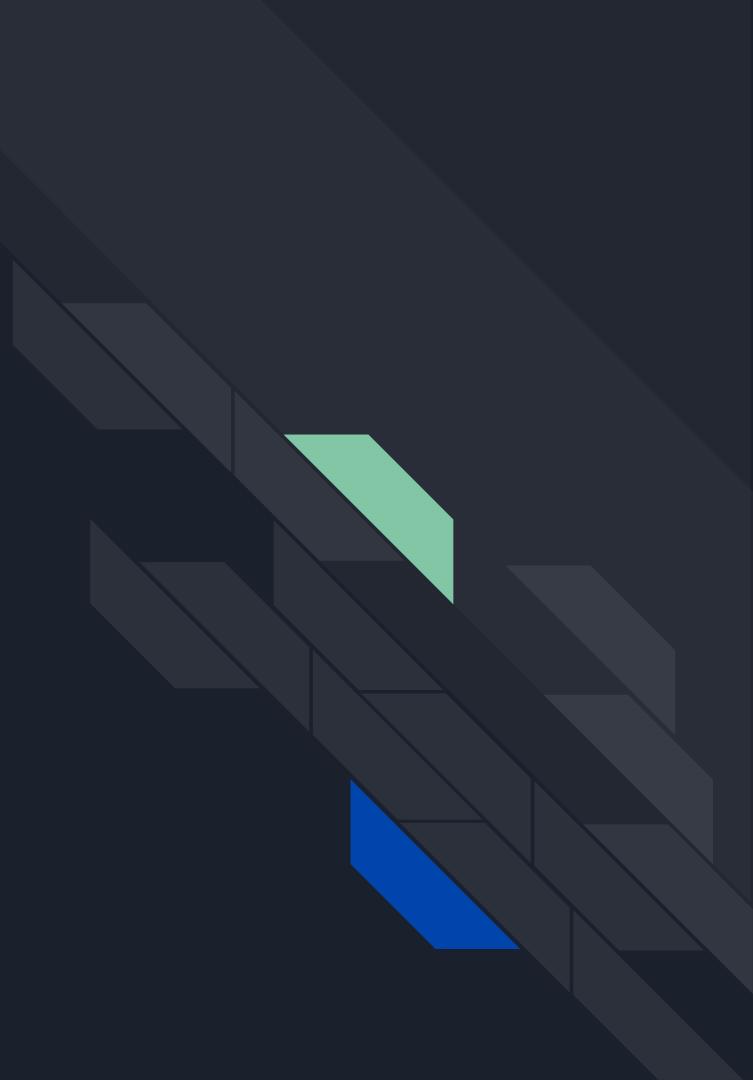




Sprint 3 Stories

User Story ID	Sprint 3 Stories	POINTS	STATUS
9	As a passionate reader, I want to be able to create a new list that I can name so I can organize and track my reading habits.	2	Complete ▾
10	As a passionate reader, I want to add books to a specific list, such as liked/disliked or recommendations, so that I can keep track of books I have read or want to read.	3	Complete ▾
11	As a passionate reader, I want to view and manage the books in my lists, including editing and deleting them, so that I can maintain an organized reading list.	5	Complete ▾
12	As a passionate reader, I want my recommendations to be automatically added to a specific list for easy access, so that I can keep track of recommended books.	3	Complete ▾
19	As a passionate reader, I want to be able to register for an account with my email address and password, so that I can access the application.	5	Complete ▾
21	As a busy reader, I want to be able to reset my password if I forget it, so that I can regain access to my account.	2	Complete ▾
22	As a busy reader, I want to be able to log out, so I can end my session securely.	2	Complete ▾
13	As a busy reader, I want to view detailed information about a book, including its description, author, and price, so that I can decide whether to purchase it.	5	Complete ▾
14	As a busy reader, I want to add books to my shopping cart, so that I can purchase them later.	3	Complete ▾
1	As a passionate reader, I want to input my likes and dislikes into the system, so that the recommendation system can take them into account	2	In Progress ▾
6	As a new reader with no reading history, I want to receive basic recommendations based on popular and new authors in genres I like , so that I can read more.	3	In Progress ▾
35			

Product Backlog



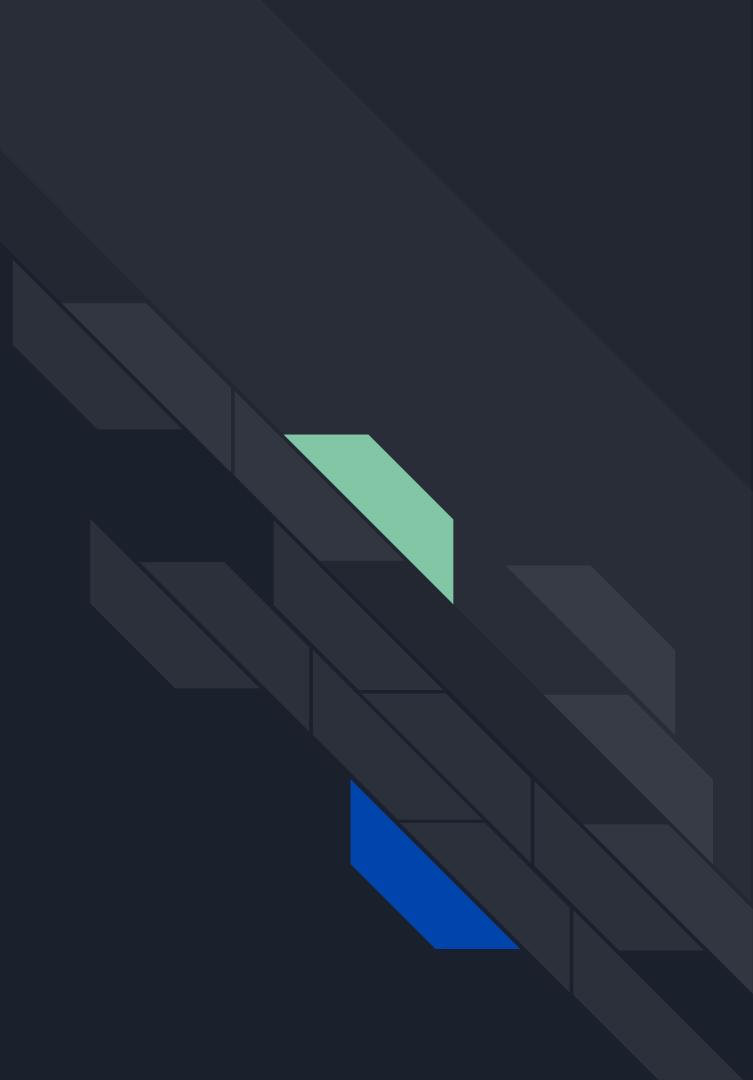
Product Backlog

ID	User Stories	FEATURE	ESTIMATION
1	As a passionate reader, I want to input my likes and dislikes into the system, so that the recommendation system can take them into account	Recommendation System	2
2	As a passionate reader, I want the system to generate recommendations based on my likes and dislikes so that I can get better recommendations.	Recommendation System	8
3	As a passionate reader, I want to view the recommendations generated based on my likes and dislikes and explore the books from the list.	Recommendation System	2
4	As a passionate reader, I want the system to generate recommendations that promote diversity and highlight authors from different backgrounds	Recommendation System	8
5	As a passionate reader, I want to be able to adjust my likes and dislikes so that I can refine the recommendations.	Recommendation System	3
6	As a new reader with no reading history, I want to receive basic recommendations based on popular and new authors, so that I can read more.	Recommendation System	3
7	As a new reader with no reading history, I want to specify my preferred genre so that recommendations are more tailored to my interests.	Recommendation System	5
8	As a new reader with no reading history, I want to explore recommended books with brief descriptions or summaries to help me decide, so I can read more.	Recommendation System	3
9	As a passionate reader, I want to be able to create a new list that I can name so I can organize and track my reading habits.	Book Collections	2
10	As a passionate reader, I want to add books to a specific list, such as liked/disliked or recommendations, so that I can keep track of books I have read or want to read.	Book Collections	3

Product Backlog Continued

ID	User Stories	FEATURE	ESTIMATION
11	As a passionate reader, I want to view and manage the books in my lists, including editing and deleting them, so that I can maintain an organized reading list.	Book Collections	5
12	As a passionate reader, I want my recommendations to be automatically added to a specific list for easy access, so that I can keep track of recommended books.	Book Collections	3
13	As a busy reader, I want to view detailed information about a book, including its description, author, and price, so that I can decide whether to purchase it.	Marketplace	5
14	As a busy reader, I want to add books to my shopping cart, so that I can purchase them later.	Marketplace	3
15	As a busy reader, I want to view and manage the items in my shopping cart, including adding, removing, and updating quantities, so that I can finalize my purchase.	Marketplace	3
16	As a busy reader, I want to have a smooth and secure checkout process, including entering my payment and shipping information, so that I can complete my purchase.	Marketplace	5
17	As a busy reader, I want to view my order history, including past purchases and order status, so that I can track my purchases.	Marketplace	8
18	As a busy reader, I want the option to use different payment methods when purchasing books, so that I am not limited to only one.	Marketplace	3
19	As a passionate reader, I want to be able to register for an account with my email address and password, so that I can access the application.	Login/Registration	5
20	As a busy reader, I want to be able to reset my password if I forget it, so that I can regain access to my account.	Login/Registration	2
21	As a busy reader, I want to be able to log out, so I can end my session securely.	Login/Registration	2

Sprint Summaries



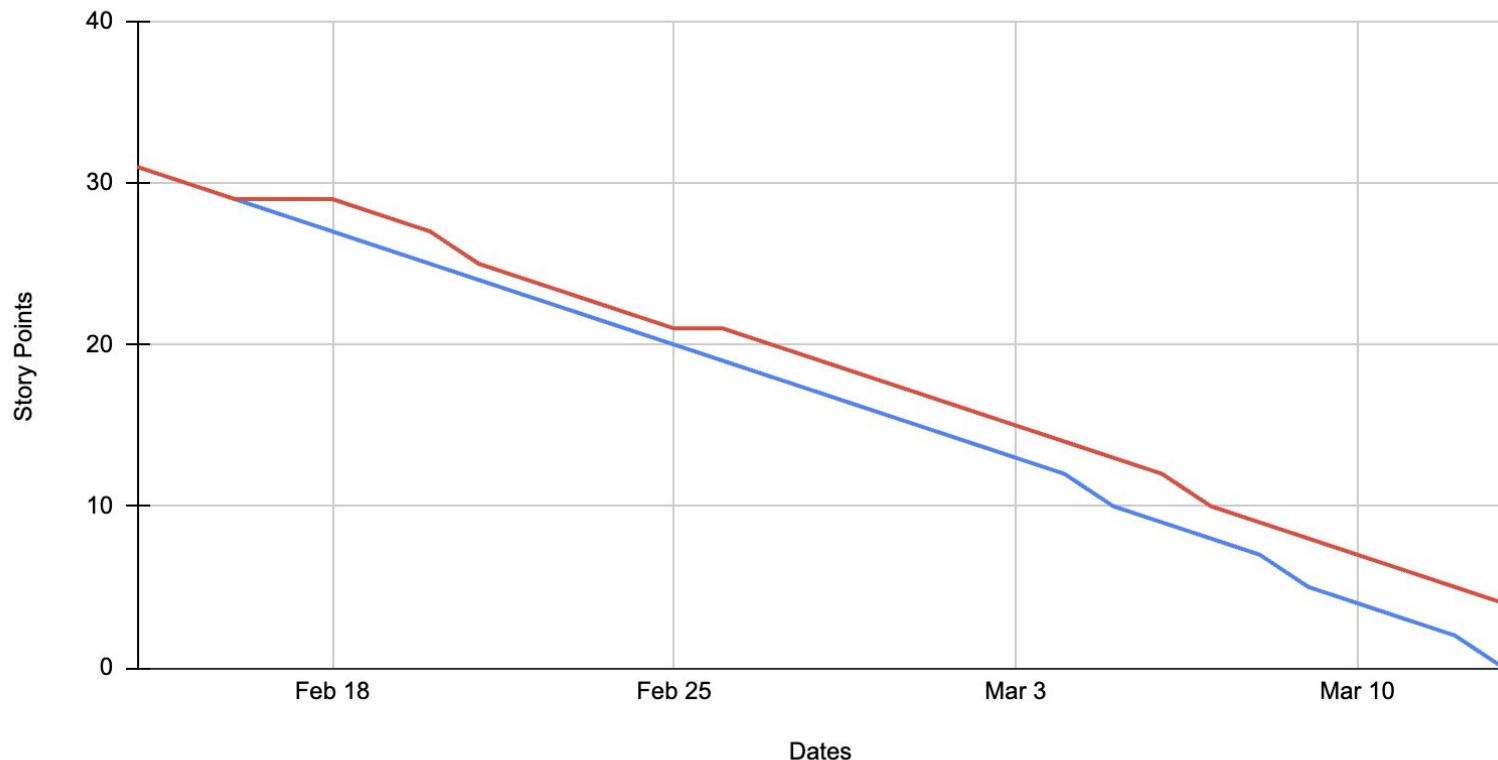
Sprint 2 Tasks

Sprint 2 Tasks

Task ID	Sprint 2 Tasks	POINTS	STATUS
1	Integrate firebase	5	In Progress
2	Experiment with back end classes and business logic	2	Complete
3	ML Dataset research and beginning setup	3	Complete
4	Write user stories	2	Complete
5	Write acceptance criteria	2	Complete
6	Write test cases for Sprint 2 stories	2	Complete
7	Create Diagrams (Arch, Sequence, Class, ER)	3	Complete
8	Finalize design	1	Complete
9	Implement login page	2	Complete
10	Update wiki page with all information needed	1	Complete
11	Complete Sprint 2 Powerpoint	2	Complete
12	Complete Sprint 2 Retrospective	3	Complete
13	Film Sprint 2 presentation	5	Complete
TOTAL		33	

Burndown Chart - Sprint 2

Ideal Actual



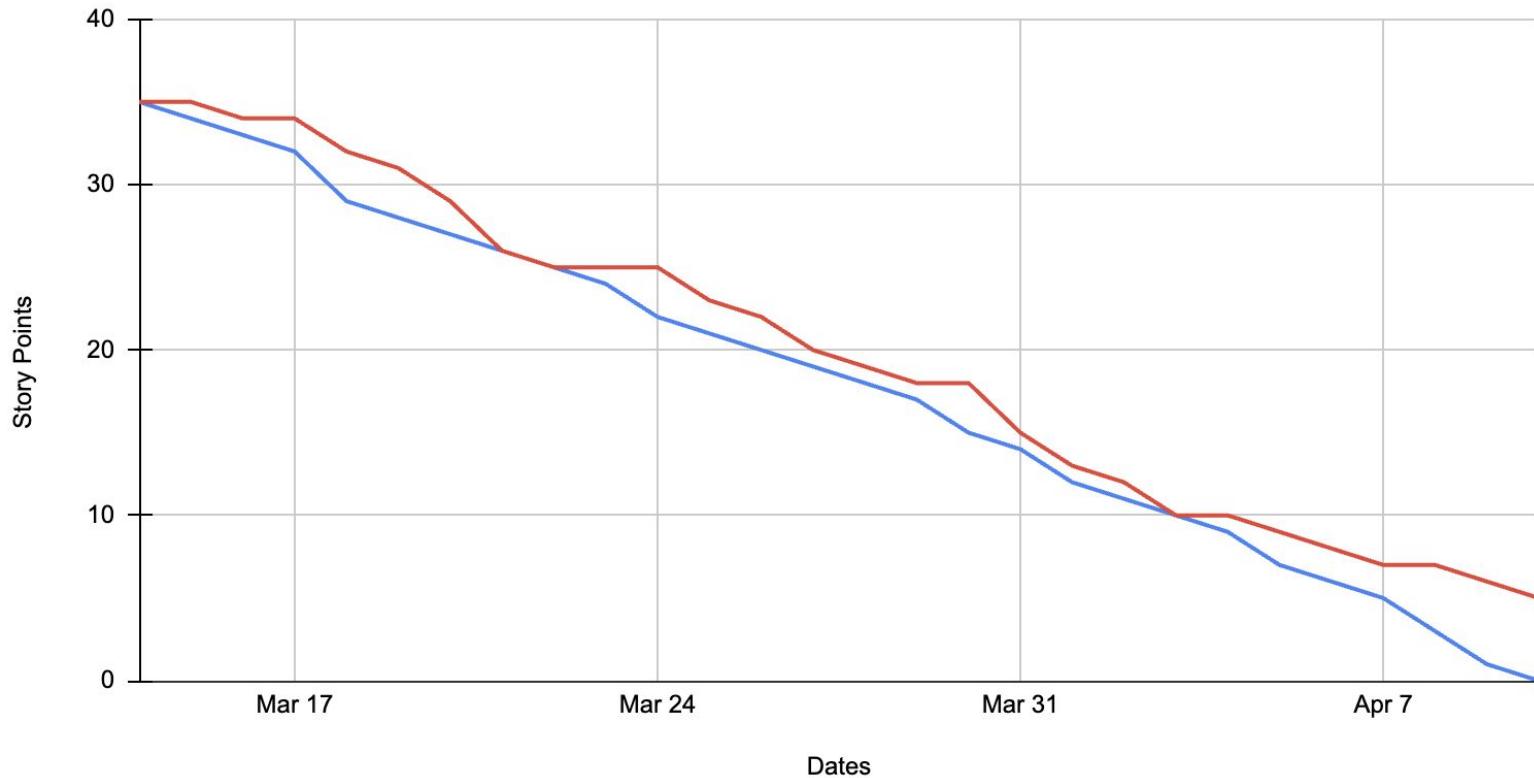
Sprint 3 Stories

Sprint 3 Stories

User Story ID	Sprint 3 Stories	POINTS	STATUS
9	As a passionate reader, I want to be able to create a new list that I can name so I can organize and track my reading habits.	2	Complete
10	As a passionate reader, I want to add books to a specific list, such as liked/disliked or recommendations, so that I can keep track of books I have read or want to read.	3	Complete
11	As a passionate reader, I want to view and manage the books in my lists, including editing and deleting them, so that I can maintain an organized reading list.	5	Complete
12	As a passionate reader, I want my recommendations to be automatically added to a specific list for easy access, so that I can keep track of recommended books.	3	Complete
19	As a passionate reader, I want to be able to register for an account with my email address and password, so that I can access the application.	5	Complete
21	As a busy reader, I want to be able to reset my password if I forget it, so that I can regain access to my account.	2	Complete
22	As a busy reader, I want to be able to log out, so I can end my session securely.	2	Complete
13	As a busy reader, I want to view detailed information about a book, including its description, author, and price, so that I can decide whether to purchase it.	5	Complete
14	As a busy reader, I want to add books to my shopping cart, so that I can purchase them later.	3	Complete
1	As a passionate reader, I want to input my likes and dislikes into the system, so that the recommendation system can take them into account	2	In Progress
6	As a new reader with no reading history, I want to receive basic recommendations based on popular and new authors in genres I like , so that I can read more.	3	In Progress
35			

Burndown Chart - Sprint 3

Ideal Actual



Sprint 4 Backlog

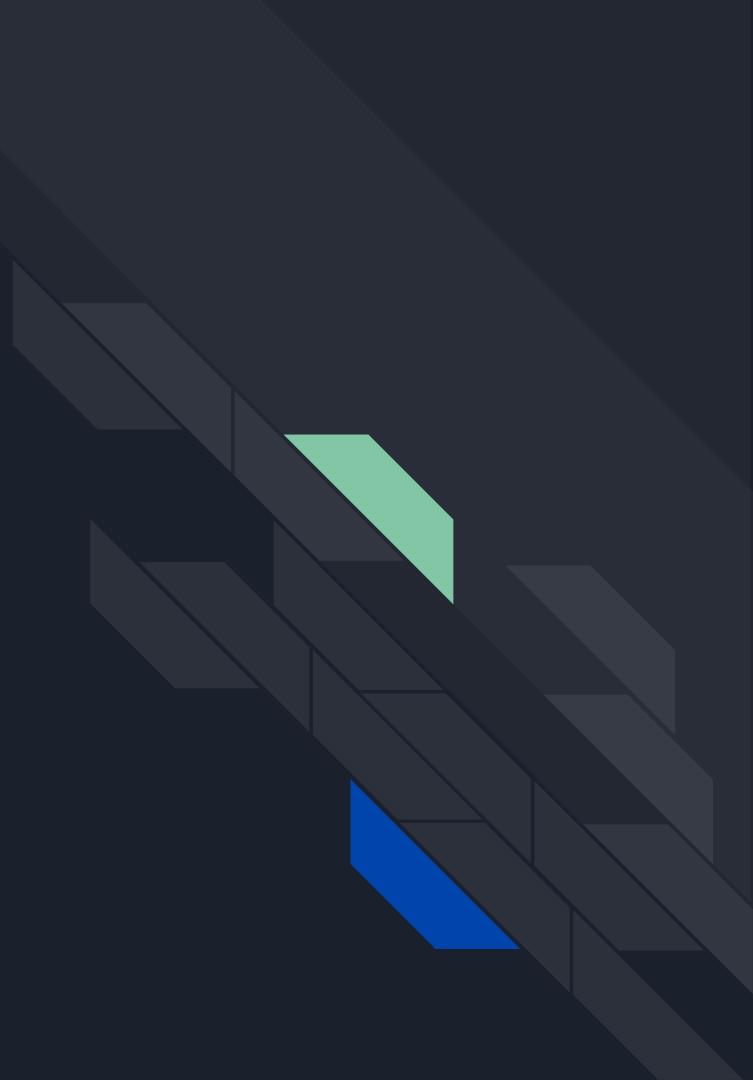
Sprint 4 Stories

User Story ID	User Story Description	POINTS	STATUS
16	As a busy reader, I want to have a smooth and secure checkout process, including entering my payment and shipping information, so that I can complete my purchase.	5	Complete
Acceptance Criteria for US 16: User is able to enter credit card details. Upon submission, the backend securely processes the payment using Stripe. The frontend displays a clear message indicating whether the transaction was successful or if the user needs to try again.			
17	As a busy reader, I want to view my order history, including past purchases and order status, so that I can track my purchases.	3	Complete
Acceptance Criteria for US 17: User should have an option to list all previous orders. When requested, backend will send list of previous orders. Front end will display them correctly or display an error.			
4	As a passionate reader, I want the system to generate recommendations that promote diversity and highlight authors from different backgrounds	8	Complete
Acceptance Criteria for US 4: User should have the option to get diverse recommendations based off a book. Recommendations will be generated and displayed in frontend. User will be able to save recommendations if requested.			
5	As a passionate reader, I want to be able to adjust my likes and dislikes so that I can refine the recommendations.	3	Complete
Acceptance Criteria for US 5:			
7	As a new reader with no reading history, I want to specify my preferred genre so that recommendations are more tailored to my interests.	5	Complete
Acceptance Criteria for US 7: The user will have an option to input their favorite genre. Recommendations will be generated based off of that.			

Sprint 4 Stories Continued

User Story ID	Sprint 4 Stories	POINTS	STATUS
18	As a busy reader, I want the option to use different payment methods when purchasing books, so that I am not limited to only one.	3	Complete
Acceptance Criteria for US 18: The checkout form should allow the user to use different credit card types. The correct payment information should be sent to the payment processor.			
15	As a busy reader, I want to view and manage the items in my shopping cart, including adding, removing, and updating quantities, so that I can finalize my purchase.	5	Complete
Acceptance Criteria for US 15: The user will have access to a shopping cart and be able to manage that cart. The cart will persist in the database. The cart can be retrieved when the user signs in again.			
8	As a new reader with no reading history, I want to explore recommended books with brief descriptions or summaries to help me decide, so I can read more.	3	Complete
Acceptance Criteria for US 8: Each book should have a detail page so the user can see a description about the book.			
1	As a passionate reader, I want to input my likes and dislikes into the system, so that the recommendation system can take them into account	2	Complete
Acceptance Criteria for US 1: The user should have an option to input likes and a short description about themselves. This will be stored in the database and used for recommendations.			
6	As a new reader with no reading history, I want to receive basic recommendations based on popular and new authors in genres I like, so that I can read more.	3	Complete
Acceptance Criteria for US 6: The user will be able to write a short description about themselves to generate recommendations. This will be used by the system to populate recommendations with no reading history			
			40

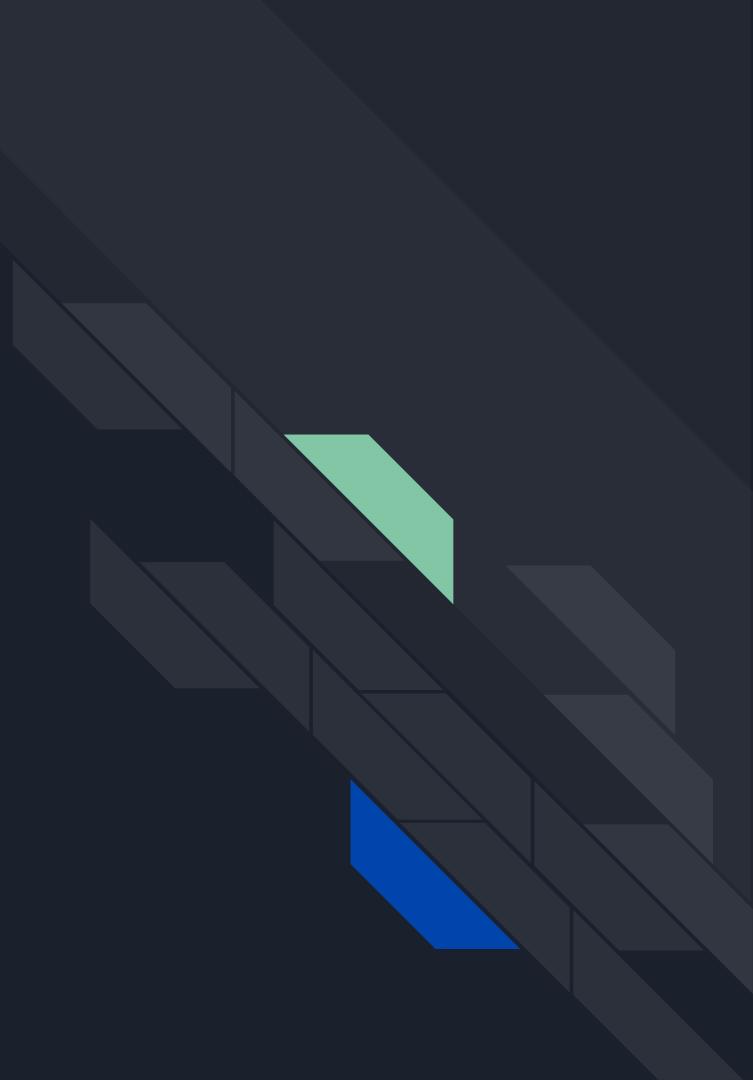
Sprint 4 Test Cases



Test Case ID	User Story ID	Title	Objective	Test Data	Steps	Expected Result	Status
TC - 012	US 16	Checkout Process	The user is able to enter payment information and address into the system and it is sent to Stripe correctly	-Test Credit Card -Test Address -Test Order	1. Create temporary order 2. Fill out checkout form and make sure front end generates Stripe Payment Token 3. Token and Order information is sent to Create Order endpoint 4. Payment Intent sent to Stripe for Processing	Payment successful: Order is saved in Database and response sent to front end Payment Unsuccessful: Order is not saved in Database and error is sent to front end	PASS
TC - 013	US 17	Order History	The user can get a display of all completed orders	-Test User -Test Orders (1+)	1. Fill user's account with test orders 2. User order history endpoint to get orders	Orders are displayed to user in an easy to read way	PASS
TC - 014	US 4	Diversity of Recommendations	The user can use the recommendations sent to them to get a more diverse set of recommendations using a LLM	-Test recommendations	1. Have ML API generate recommendations for user 2. After recommendations are given click on diversify recommendations 3. Recommendations are sent to an LLM via an API call	Books returned are in the same genre as ML recommendations but are more diverse highlighting newer and underrepresented authors.	PASS
TC - 015	US 5 US 1	Input and adjust likes and dislikes	The user will be able to adjust their likes and dislikes in the system	-Test User	1. Go through signup process 2. Input liked genres 3. Adjust liked genres	Liked genres are stored in DB	PASS

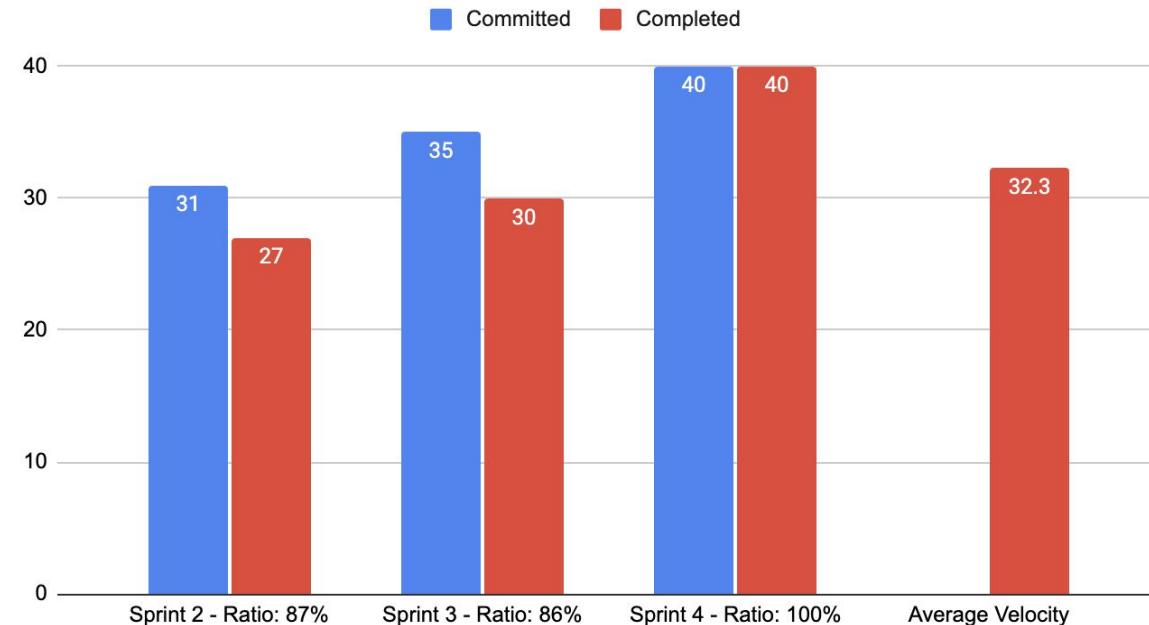
Test Case ID	User Story ID	Title	Objective	Test Data	Steps	Expected Result	Status
TC - 016	US 6 US 7	Specify preferred genre and base recommendations off of it	The user will be able to specify their favorite genre	-Test User	1. Specify genres liked at sign up 2. Recommendations will take that into account	Recommendations are generated based of preferred genre	PASS
TC - 017	US 18	Payment methods	The user will be able to use all major credit cards	-Test User -Test Orders (1+) -Test Cards	1. Go to checkout page 2. Submit test order with one type of test card 3. Submit another test order with different type of test card	Different types of cards can be used to procces orders	PASS
TC - 018	US 15	Manage shopping cart	The user is able to add and remove items, and also will be able to change item quantity	-Test User -Test Cart -Test Items	1. Add items to cart 2. Remove items from cart 3. Change quantity of items in cart	Each of these actions should persist to the database and be able to be retrieved.	PASS
TC - 019	US 8	Book detail page	The user is able to click on any book and get a detail page with the full decscription and price	-Test Book	1. From homepage click on any book listed 2. Should be taken to book detail page that has all relevant information on it 3. Should be able to return to previous page	Book detail page will populate with description and details	PASS

Sprint 4 Metrics and Charts



Velocity and Completed/Committed Metrics

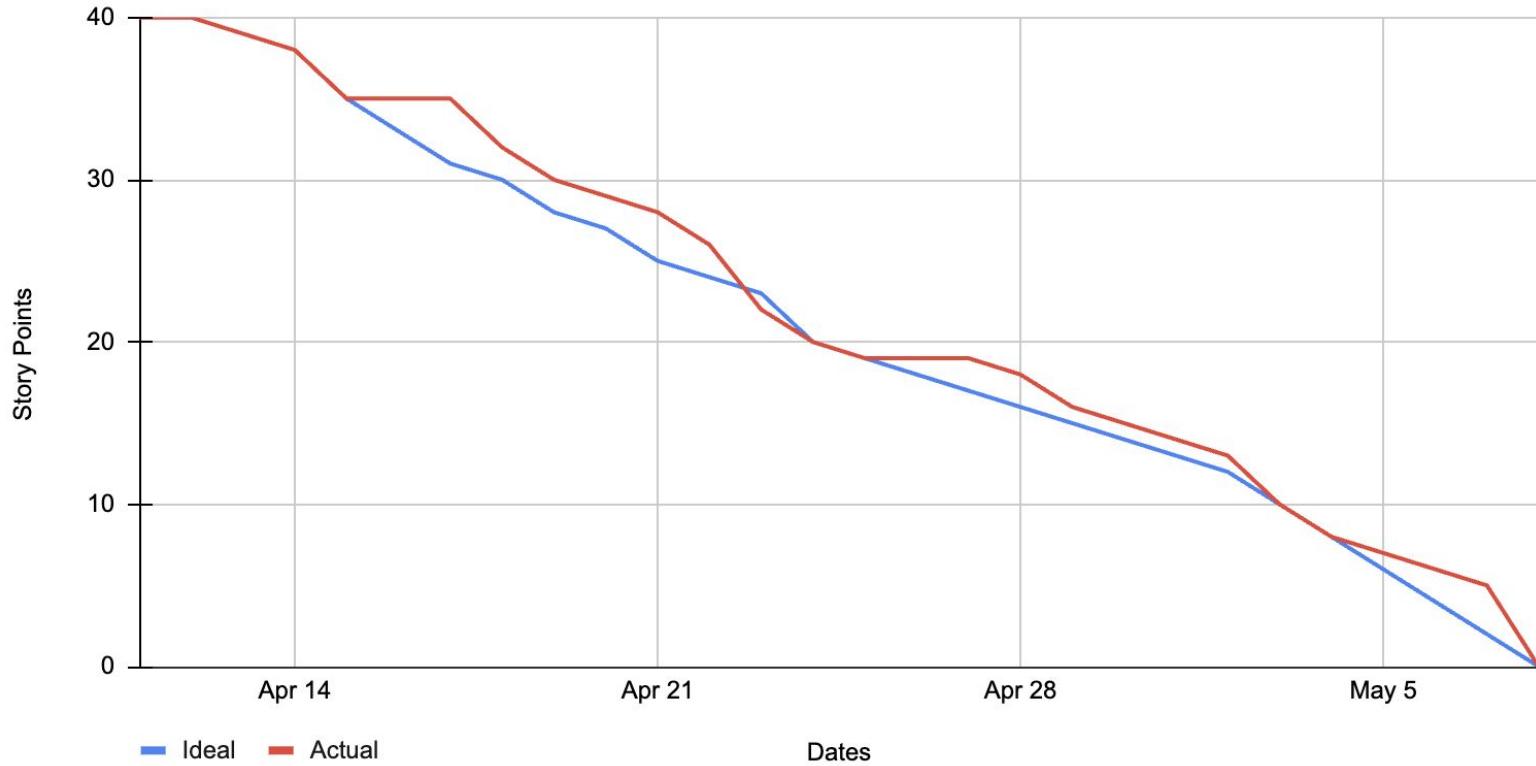
Historical, Current and Average Velocity



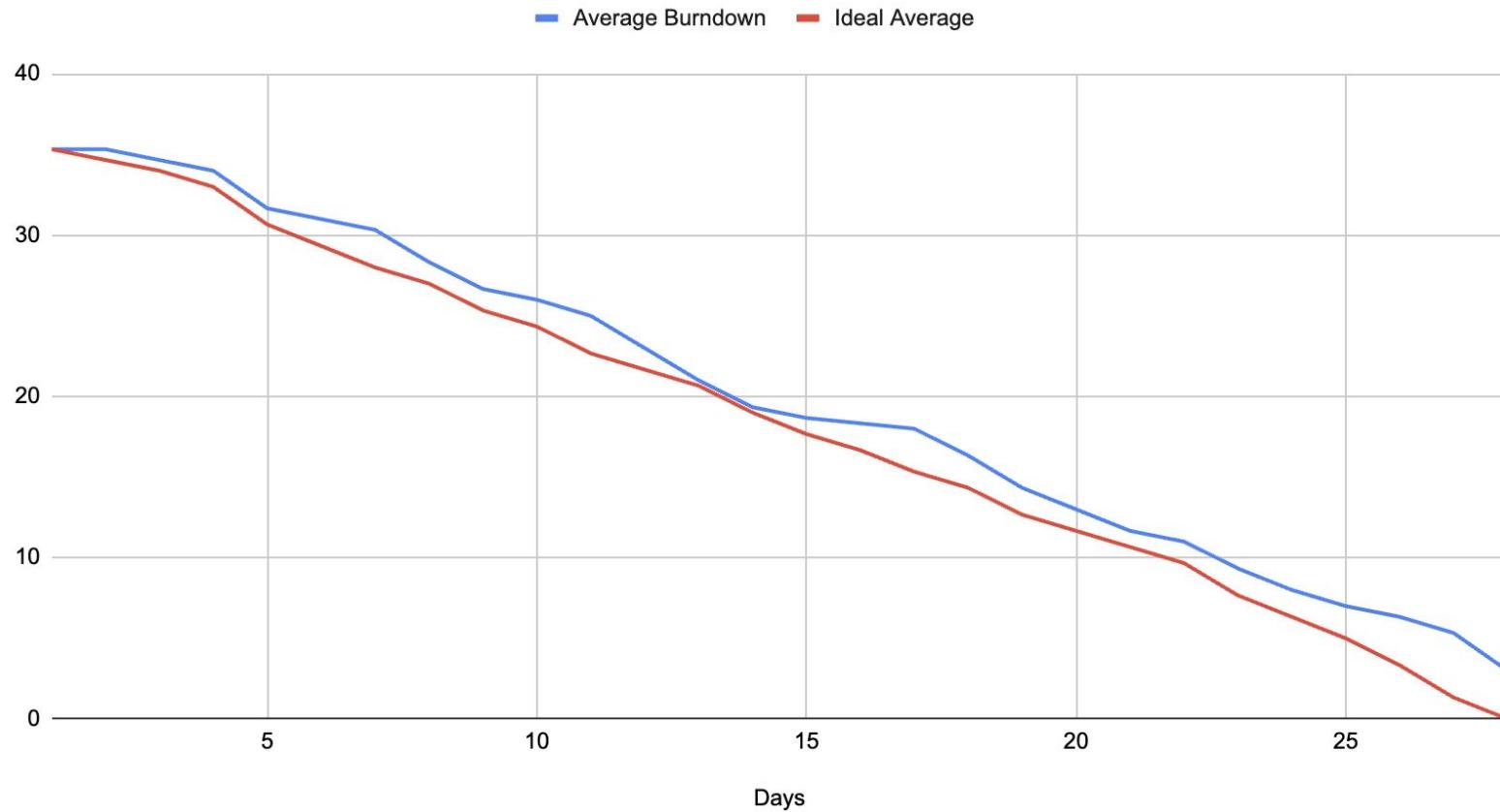
Velocity:
-Sprint 2: 27 Points
-Sprint 3: 30 Points
-Sprint 4: 40 Points

Average
Completed/Committed
Ratio: 91%

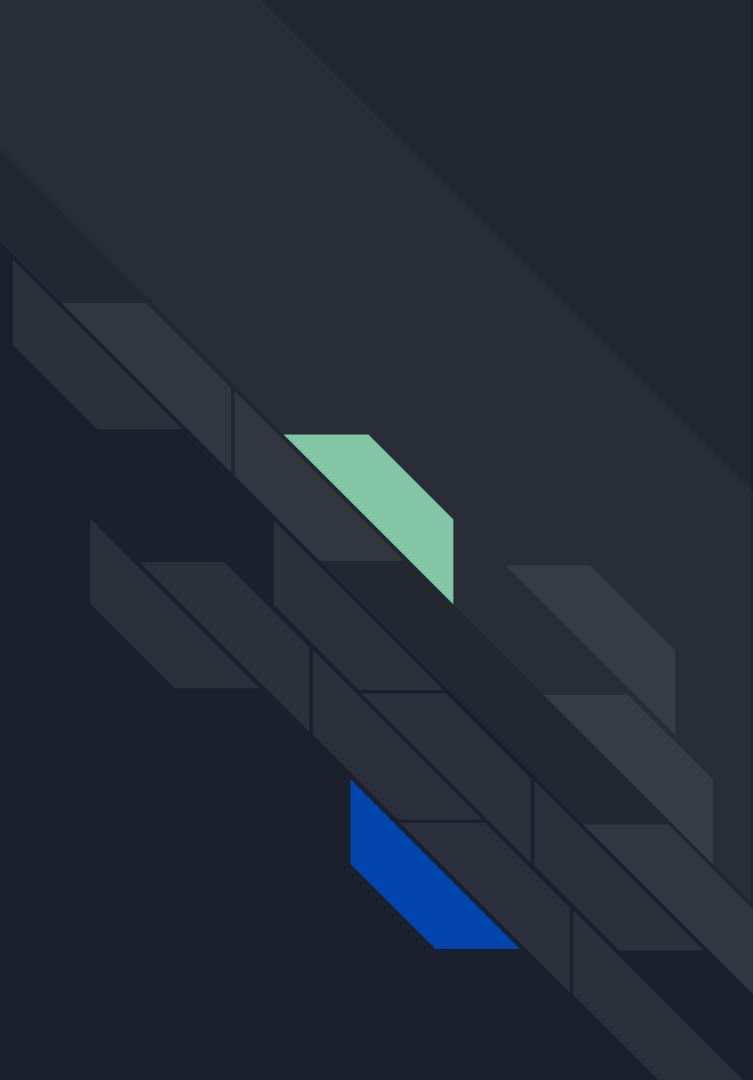
Burndown Chart - Sprint 4



Average Burndown with Ideal Average



Sprint 4 Retrospective



Sprint 4 Retro

What went well

successfully development of machine learning algo	Finished the project on time with good coordination
+ 4	+ 4
Team organization went well	helping each other in the team
+ 3	+ 5
updating in git regularly	Team Bonding
+ 2	+ 3
inter team codination	passing all the test cases
+ 1	+ 4
Backend team and ML Api teams were coordinated well	frontend and ml team well coordinated
+ 4	+ 4
Testing went well	
+ 3	

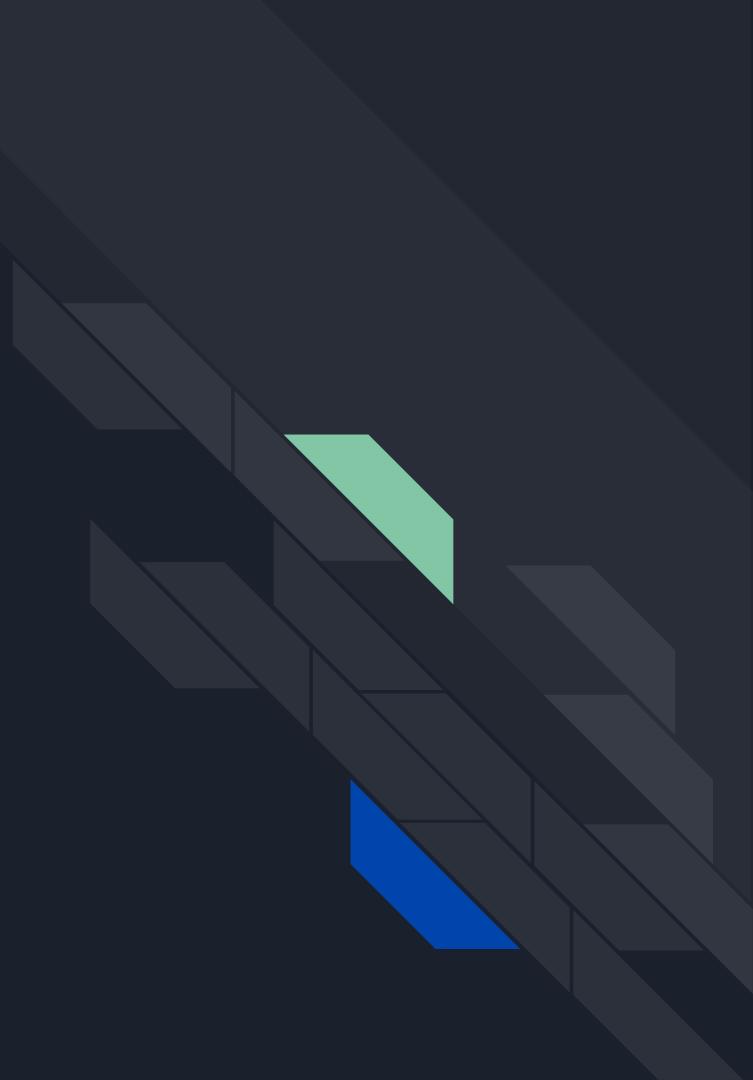
What can be improved

time management	Using a better system to create schedules and calendar
+ 3	+ 3
git hub commits	git commits
+ 3	
Git activity	
+ 1	

Action Items

Create better calendar and stick to schedules	Make sure to make all git commits as needed
+ 0	+ 0

Demo for Sprint 4



Demo Screenshots

The screenshot displays the homepage of the Book Buddy website. At the top right, there are "Sign In" and "Sign Up" buttons. The main heading "Welcome to Book Buddy" is centered above a grid of eight book cards. Each card features a placeholder image of an open book with the text "Cover Coming Soon" below it. The books listed are:

- To Kill a Mockingbird by Harper Lee
- Harry Potter and the Philosopher's Stone (Harry Potter, #1) by J.K. Rowling
- Pride and Prejudice by Jane Austen
- The Diary of a Young Girl by Anne Frank
- Animal Farm by George Orwell
- The Little Prince by Antoine de Saint-Exupéry
- 1984 by George Orwell
- The Great Gatsby by F. Scott Fitzgerald



Cover
Coming Soon

Pride and Prejudice

Jane Austen

Since its immediate success in 1813, Pride and Prejudice has remained one of the most popular novels in the English language. Jane Austen called this brilliant work "her own darling child" and its vivacious heroine, Elizabeth Bennet, "as delightful a creature as ever appeared in print." The romantic clash between the opinionated Elizabeth and her proud beau, Mr. Darcy, is a splendid performance of civilized sparring. And Jane Austen's radiant wit sparkles as her characters dance a delicate quadrille of flirtation and intrigue, making this book the most superb comedy of manners of Regency England. Alternate cover edition of ISBN 9780679783268

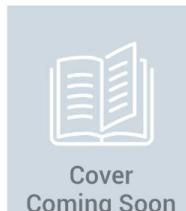
Price: \$19.99

[Proceed to Guest Checkout](#)

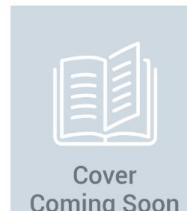
Recommended Books



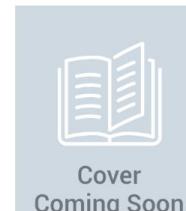
Cover
Coming Soon



Cover
Coming Soon



Cover
Coming Soon



Cover
Coming Soon

Guest Checkout

Book: Pride and Prejudice

Price: \$19.99

Name

Email

Address

Card Number

Expiration Date

CVV

Complete Purchase

Guest Checkout

Book: Pride and Prejudice

Price: \$19.99

Guest checkout data saved successfully!

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Sign Up

Name

Email Address

Description

Favorite Genres

What's your date of birth?

Password

Confirm Password

[Profile](#)[Logout](#)

User Profile

Name: James Karoly

Email: testing@mail.com

Date of Birth: 2024-04-28

Book Collections

No collections found.

[Create New Collection](#)[Go to Cart](#)

New Guest Checkout Route

```
package com.bookbuddy.bookbuddy.Controllers;

import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.http.HttpStatus;
import org.springframework.http.ResponseEntity;
import org.springframework.web.bind.annotation.CrossOrigin;
import org.springframework.web.bind.annotation.PostMapping;
import org.springframework.web.bind.annotation.RequestBody;
import org.springframework.web.bind.annotation.RequestMapping;
import org.springframework.web.bind.annotation.RestController;

import com.bookbuddy.bookbuddy.Entities.GuestCheckout;
import com.bookbuddy.bookbuddy.Repository.GuestCheckoutRepository;

@RestController
@RequestMapping("/guestcheckout")
@CrossOrigin("*")
public class GuestCheckoutController {

    @Autowired
    GuestCheckoutRepository guestCheckoutRepository;

    @PostMapping
    public ResponseEntity<GuestCheckout> saveGuestCheckout(@RequestBody GuestCheckout guestCheckout) {
        GuestCheckout savedGuestCheckout = guestCheckoutRepository.save(guestCheckout);
        return new ResponseEntity<>(savedGuestCheckout, HttpStatus.CREATED);
    }
}
```



WikiPage Link

<https://github.com/htmw/2024S-Code-Avengers/wiki>



Application Demo