



Cross-platform Application Development - Book Trade App

Course Code: IERG4999

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more information available here

Introduction

To encourage student to make friends and prevent waste on campus, we developed the Book Trade App, a cross-platform application that facilitates book trades while allowing users to chat and make new friends.



The app icon features a book with a recycling symbol inside, indicating the theme of reusing books. This design choice reflects the app's goal, which is to promote green campus^[1] by exchanging books to prevent book waste.

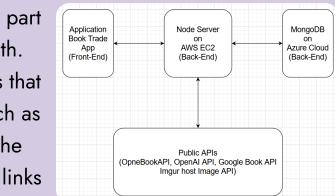
Objectives

- Facilitating book trades among users to reduce book waste using the trade interface.
- Encouraging social interaction by providing chat features for users.
- Book searches for users to find books to trade.
- Enhancing the user experience with GPT-generated book recommendations based on their searches.
- The product is a cross-platform application that can run on both Android and iOS platforms.

Methodology

This application contains three main components. The first part is the UI/UX, which is the front end for users to interact with. The next part is the Node server part, which provides APIs that help us CRUD data. It also calls the public API for data such as book detail from Google Books and GPT prompt results. The final part is the MongoDB database to store user data and links for accessing the images.

Since we were building a cross-platform application, we opted for Flutter, which offers user-friendly widgets and tools for building native mobile apps using a single codebase in Dart.

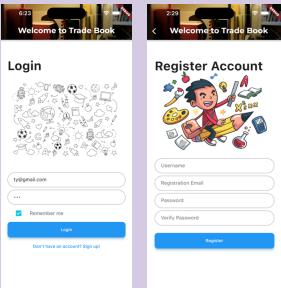


Front-end Results

The front-end side let end-users to manage their account resources, and to interact with back-end server. By using flutter framework with dart, the app features a user-friendly interface with smooth effects.

Login and Registration

For users to log in and register an account.



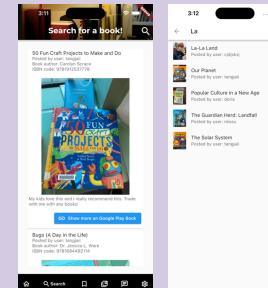
Home

Some recommendation of trade/book for users.



Search

Let user to search book for creating a trade offer.



Inventory

Inventory, trade history and book details for books.



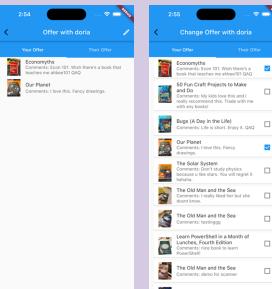
Upload Page

A page for user to upload books.



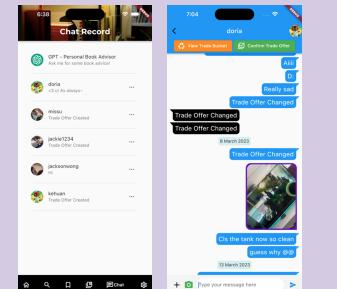
Trade Bucket

Trade interface for users to easily trade books with others.



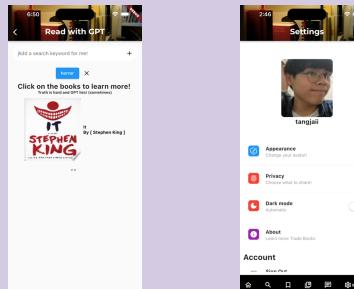
Chat Record and Chatter

A place for user to interact with GPT and other users.



Read with GPT

Book recommendations from GPT for users.



Setting Page

User preference for the app.



Back-end Results

Node Server

Hosted on AWS EC2 with pm2, which let other mobile applications to call its APIs without hosting a server locally for connectivity.

Instances (2) Info					
Q: Find instance by attribute or tag (case-sensitive)					
Name	Instance ID	Instance state	Server	Port	Uptime
sgx_FYP_server	i-01124dac0262c8545	Running	ec2-172-31-10-75.ap-southeast-2.compute.amazonaws.com	22	602 seconds
Instances (2) Info					
ID	Name	Namespace	Version	Mode	PID
0	server	default	1.0.0	fork	274044
1	server	default	1.0.0	fork	274044

MongoDB

MongoDB as our database since it is a non-relational database^[2] which provides us the flexibility to implement the data flow we wanted.

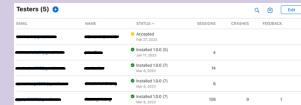
Testing Results

UI/UX and functional testing

Mainly to test out the navigation between pages, button functionality, APIs which will fetch back corresponding data and running the app on both platforms

Black Box testing

As we have the Apple Developer subscription, we can publish our app on TestFlight to conduct a beta test with our friends and gather more UX feedback.



By testing the app and collecting feedback from testers, we were able to identify areas for improvement and implement fixes to enhance the UI/UX and overall functionality.

Future Directions

- Expand app to include other categories like electronics and housewares
- Implement a subscription model for self-sustainability and more features
- Develop a web app for enhanced accessibility and more options
- Add chat forum and leverage social media for promotion
- Publish app on sites for wider audience.

Conclusion

Overall, this project is a success as we have met our objectives. We developed and deployed a cross-platform book trading app that allows users to trade books while having social interactions through chats. Users can also receive book recommendations from GPT. We have achieved all of our set objectives.

Ref:

[1] Medina, Juan Miguel, Ignacio J. Blanco, and Olga Pons. "A Fuzzy Database Engine for mongoDB." International journal of intelligent systems 37.9 (2022): 5691–5724. Web.

[2] Yaser, Abu Zahirin. Green Engineering for Campus Sustainability. Ed. Abu Zahirin Yaser. 1st ed. 2020. Singapore: Springer Singapore, 2020. Print.