THOMPSON RIVERS UNIVERSITY

SENG 3210– Applied Software Engineering

YourCodex Project

Third Delivery

Jose Contreras (T00714272)

Brock Young (T00708314)

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1. Introduction

· Provide a concise overview of the design and a summary of pertinent background information associated with the topic. Clearly articulate the rationale behind the necessity for this information.

· Present the reader with a preview of the upcoming sections, offering insight into the forthcoming content.

· Do not put any detailed results of your work here.

The proposed design of a Book Recommender System aims to bridge the gap between avid readers and undiscovered books. As more and more technology surrounds us with each passing year, a new demographic yearns to return to more traditional media to escape the overwhelming digitalization of everything. However, many readers do not know where to start. YourCodex aims to connect the world of traditional media with the modern digital era to strike a happy medium between the old and the new. Book readers will be able to use the platform in order to find undiscovered gems, and books that would otherwise remain unknown to them.

Books have been around for centuries, remaining mostly the same for most of their history. They simply provide compiled sequences of text for readers to absorb through their pages. However with the advent of technology, an opportunity has arisen to add a modern twist to how we approach books. Through the YourCodex service, readers will be able to rate previously read books and be recommended new ones based on a smart matchmaking algorithm. This modernization technique of matching readers with books best suited to their interests aims to attract new readers who rely on technology or may not know what books to start reading.

Existing matchmaking algorithms have proven to have large success. Applications such as TikTok, Instagram, Youtube, and other media platforms thrive largely due to their algorithm recommending users content tailored to their interests. Much of this content is often viewed under a negative light, reducing attention spans, and causing addiction to technology. YourCodex will aim to employ a matchmaking algorithm in a positive manner, connecting users to long-form media to increase attention span and knowledge.

The following sections of the report will specify the important design considerations that went into creating YourCodex. It will outline the problem definition and how it is addressed, the functional and non-functional requirements, constraints and objectives. Solutions will be proposed, discussed, and ranked according to how they satisfy the requirements. A final solution will be chosen and be discussed in detail. The scope and outcomes of the development project will be mentioned, as well as the management aspects and roles of each team member. A final conclusion will cement the key takeaways from the developed product and report.

2. Design Problem

2.1. Problem Definition

In the current society, users intend to utilize their devices to achieve some degree of entertainment. Nevertheless, users are easily overwhelmed by the intense amount of entertainment material available on the internet, producing user's exhaustion and keeping them away from what they actually would enjoy in their leisure time. Recently, it is somewhat common to receive feedback from users that involves the following idea: *"There are too many things to watch but I don't find anything that I like"*, where users are solely blinded by the amount of information/material offered by the entertainment industry. The previous stated situation is the main problem that some entertainment services are currently facing.

However, there are some key solutions or counter-measurements taken by experts in order to retain user's attention, the main one being the application of Recommendation Systems. This type of system takes as an input the consumed materials of a user and finds common points through those in order to find new materials that present those commonalities which the user might like. Therefore, it is a filter based-on the taste of the user and it is unique to every user.

The current project is the creation of a recommendation system as the main idea and delivery, intended for a ebooks application. The scope for this project is to create a prototype of the App, "YourCodex", that functions as a recommendation system and shows the main information of the recommended books such as Title, year of publication and other, without having the ability to actually read the content of those books, focusing solely in the "Recommendation" feature of the App.

2.2. Design Requirements

The initial requirements can be categorized as follows:

1. Functional Requirements:

The functional requirements for the developed system showcase what key features the finished product should be able to display. They are listed as below

Application Name: YourCodex

- After some deliberation the application was named 'YourCodex'
- The 'Your' portion of the name adds emphasis on the product serving the user and personalizing recommendations
- The 'Codex' portion of the name references the theme of the recommender being based around books, but in a more fun and intriguing way than just 'library'
- 'YourCodex' ultimately serves as a memorable name which relates to the product being designed and the personal aspect of the recommendations

Remote Access & Book Recommendation

- Users of the system will be able to download the application and access the service anytime from any location
- **Alternatively, users will be able to access the service through a web portal via Firebase
- Users will be able to search books available on the service and mark them as read, along with their rating and review
- The service will compile all user ratings for books and formulate an average rating to display to users
- Books will be rated to users based on genre, popularity, rating, and users previously read and rated books

Searching Option:

- Books will be stored with an associated title, author, tags specifying genre, rating, etc
- Users will be able to search for books based on the title and author
- Users will be able to filter search results based on criteria such as minimum rating

Administrator Controls:

- Administrators will be granted elevated privileges to the book recommender service to improve quality of the product
- Administrators will have options to:
- Add books: Create new entries for newly published or available books for users to read and rate
- Edit books: Update book information such as description, title, author, etc.
- Delete books: Remove books from the service to adhere to local policies or regulations regarding banned books or for other reasons

Real-time Dashboard:

- The system will have a home menu upon launching the app which features a real-time dashboard
- The dashboard will dynamically update to showcase the top ten recommended books based on the internal system algorithm
- The user will be able to interact with the shown book entries

Account Creation:

- The system will facilitate the creation of user accounts and storage of account information in the system
- Users will be able to login to their accounts to view their saved data and personalized book recommendations

View Book Ratings & Recommendations

- Users will be able to view other users reviews left on books
- Users will be able to view other user profiles and the books they recommend

2. Non-Functional Requirements:

The non-functional requirements outline how well the system performs its defined functions. The defined system non-functional requirements are as listed below:

Performance:

- Users of the application must not observe any noticeable latency or input delay
- Launch of the application should take under 5 seconds on 80% of all supported devices
- Navigating between application screens should take under 200 ms

Security & Data Integrity:

- Logging into the application should be facilitated through secure means such as third party authentication (i.e. through google sign in)
- User login information should not be stored on product system in unsecure way (i.e. without encryption or hashing)
- System should not ask for or store user sensitive personal information in database

Modifiability:

- The system should be built with modular components to facilitate easy implementation of new features
- The system should remain as simple as possible without unnecessary convolution

Compatibility:

- The developed product must be available to a wide range of devices (from at least API level 19 (KitKat))
- The system UI should support as many different resolutions as possible (i.e. standard phone size, tablet size, etc)

Usability & Accessibility:

- The system should be intuitive and user-friendly, allowing maximum amount of demographics to use the service
- The design should use pleasing colours and sufficiently large text which do not impair colour blind or hard of sight individuals

Scalability:

- The system should be programmed in such a way to easily enable future features
- The system should be able to support large numbers of books and recommendations without significant delays or impacted performance

Energy Efficiency:

- The system should be designed in such a way to not consume large amounts of energy or resources and minimize environmental impact

3. Teamwork

Date: February 19, 2025. From 12:00 to 3:00 p.m.

Purpose: Brainstorm the general Layout of the Application. As well to practice the creation of a second activity inside android studio.

Meeting Minutes:

Team Member	**Previous Task**	**Completion State**	**Next Task**
Brock Young	N/A	N/A	Practice with Android Studio.
Jose Contreras	N/A	N/A	Practice with Android Studio Tools.

Date: February 26, 2025. From 3:00 to 4:00

Purpose: Brainstorm the name of the App as well of the initial functional requirements and non-functional requirements.

Meeting Minutes:

Team Member	**Previous Task**	**Completion State**	**Next Task**

Brock Young	Practice with Android Studio.	75%	Creation of functional requirements
Jose Contreras	Practice with Android Studio Tools.	75%	Set-up Trello environment and create non-functional requirements

Date: March 1, 2025

Purpose: Gather the necessary documents for the First Partial Delivery.

Meeting Minutes:

Team Member	Previous Task	Completion State	Next Task
Brock Young	Creation of functional and non-functional requirements	100%	Design small prototype of the app interface
Jose Contreras	Set-up Trello environment and create app name and problem definition	100%	Design small prototype of the app interface

Date: March 2, 2025

Purpose: Work towards finishing Deliverable 2

Meeting Minutes:

Team Member	Previous Task	Completion State	Next Task
Brock Young	Design small prototype of the app interface	50%	Work on finishing section 1 of report

Jose Contreras	Design small prototype of the app interface	50%	Design small prototype of the app interface

Date: March 7, 2025

Purpose: Work towards Deliverable 3

Meeting Minutes:

Team Member	Previous Task	Completion State	Next Task
Brock Young	Work on finishing section 1 of report	100%	Work on creating main functionality of the app
Jose Contreras	Design small prototype of the app interface	100%	Work on creating main functionality of the app

Date: March 15, 2025

Purpose: Work towards finishing Deliverable 3

Meeting Minutes:

Team Member	Previous Task	Completion State	Next Task
Brock Young	Work on finishing section 1 of report	50%	Work on creating main functionality of the app
Jose Contreras	Design small prototype of the app interface	50%	Work on creating main functionality of the app