

# Final Report

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# INTRODUCTION

### Motivation

According to a national survey, 13% of Canadians consider themselves non-readers, including people who are:

- **Low literate:** non-readers who have trouble reading;
- **Aliterate:** non-readers who read without difficulty but do not like to read;
- **Dormant:** non-readers who read without difficulty and like to read, but only read occasionally (Créatec +, 2005).

Audiobook club focuses on reducing rates of low literate and aliterate non-readers because increased literacy rates benefit Canadians as a whole: for every 1% increase in Canadian literacy, there is a 2.5% and 1.5% increase in labour productivity and output, respectively (Serge, Tremblay, & Marchand, 2004)

### What

Essentially, Audiobook Club allows users to download and listen to audiobooks, and then upon completion of chapters, unlock chapter discussions, including written comments, questions and answers, and audio comments. Upon completion of the book as a whole, users unlock the ability to record audio trailers—sound clips that summarize books without revealing spoilers.

These functions distinguish Audiobook Club from traditional book clubs in two main ways:

1. In traditional book clubs, members have to wait until other members are done the book before discussing it or risk spoiling it by discussing it midway; whereas, Audiobook Club allows users to discuss chapters as they progress through the book.
2. Also, anyone who downloads the app is a part of the club, so users do not have to join a specific club to be a part of the discussions.

In addition to unlocking discussions and book trailers, users receive badges and level increases for listening to and discussing books.

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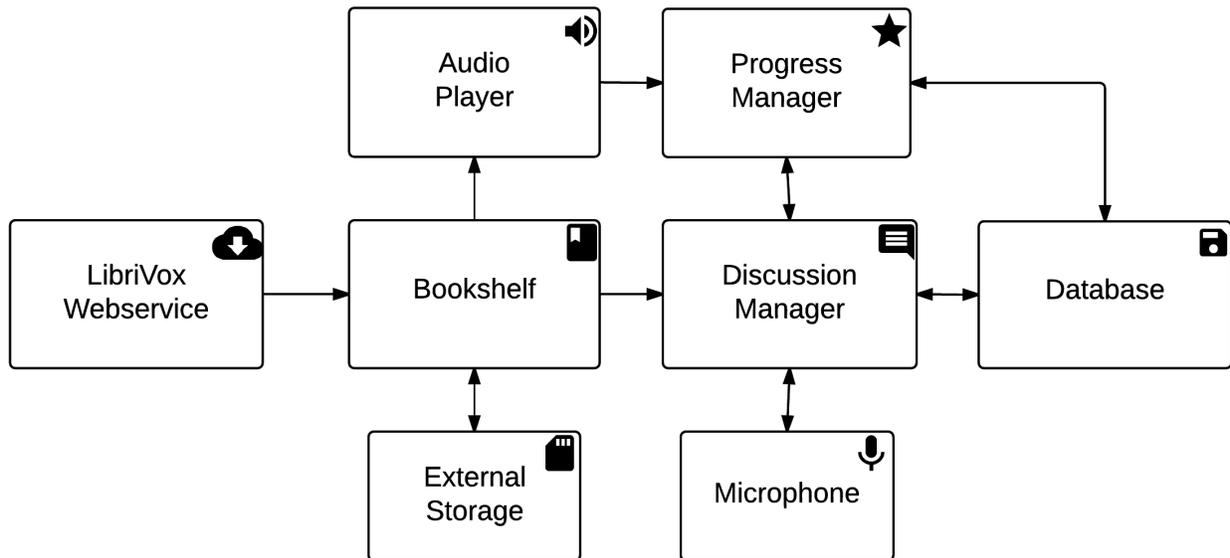
## AUDIOBOOK CLUB

### Why

The main functionalities of Audiobook Club are based on research about audiobooks and reading programs.

- **Audiobooks:** studies show that audiobooks have a positive impact on both reading skills and attitudes toward reading of audiobooks as well as written books (Thooft, 2011; Whittingham, Huffman, Christensen, & McAllister, 2013).
  - **Discussions:** many studies have shown that peer based discussion has a positive effect on reading comprehension (Almasi & Garas-York, 2014)
  - **Book trailers:** in a qualitative study, Ragen (2012) shows that creating book trailers inspires a love of reading and fosters literacy skills that are invaluable for becoming lifelong learners.
  - **Rewards:** Audiobook Club rewards users for listening to and discussing audiobooks, since rewards attributed to effort rather than luck motivate people to read (Chen & Wu, 2010).
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### OVERALL DESIGN



- **LibriVox webservice:** a suite of APIs provided by LibriVox allows us to query and download audiobook chapters and accompanying metadata from their public domain library.
  - **Bookshelf:** the centerpiece of the app that handles the user's current books.
  - **Audio player:** plays the currently selected chapter, and can be directed to go to the previous or next chapter of the audiobook.
  - **Discussion manager:** manages comments and discussions for chapters of books that the user has completed. Also allows users to add comments and audio recordings for these chapters.
  - **Progress manager:** handles the tracking of user's progress through the app in terms of badges and level. Also responsible for the events that triggers these progression.
  - **Database:** an SQLite database that stores a user's comments, badges, and levels.
  - **External storage:** the storage space located on the user's device, either physical or virtual. Files stored on the external storage will be visible to other apps, so the audiobooks can be used by different applications.
  - **Microphone:** the microphone on the user's device. Records audio input, including audio comments and book trailers.
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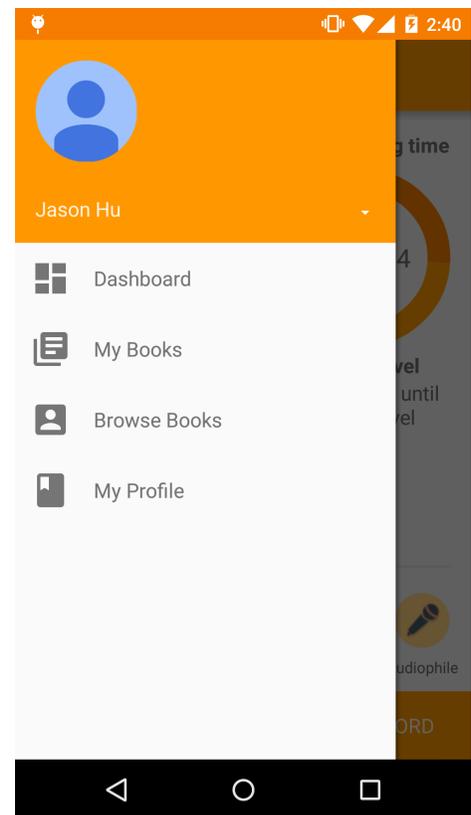
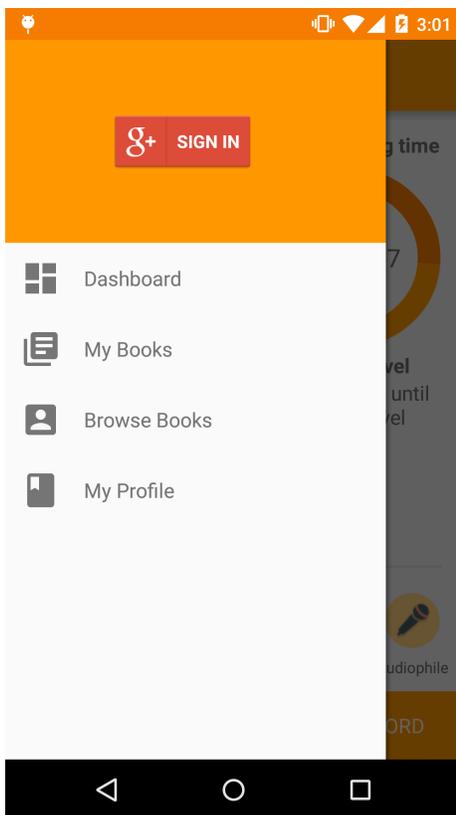
# SCREEN SHOTS FROM APP

### Statement of functionality

The following screenshots outlines the working functionalities and features in our app. Excluding the small bugs that we are aware of, there isn't anything that is "not working" per se. However there are features that we did not implement due to difficulties which will be discussed in our Key Learnings and Future Work sections.

### Navigation Drawer

The navigation drawer is the central point of control that allows the user to navigate to the four main views of the app which are respectively, the dashboard, my books, browse books and my profile. It also allows the user to log in using their Google+ account.

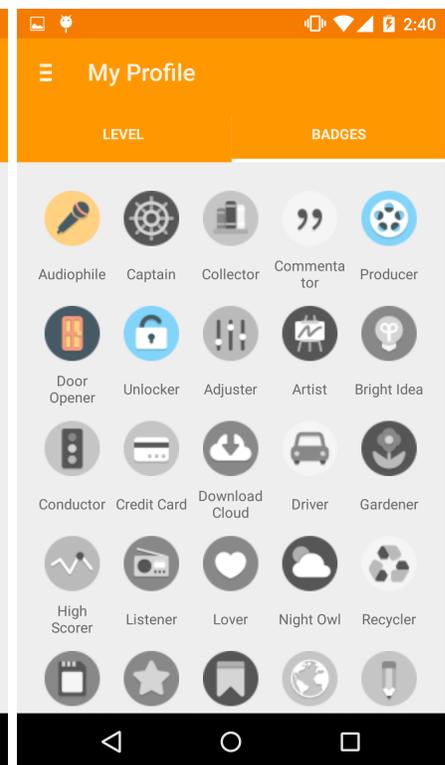
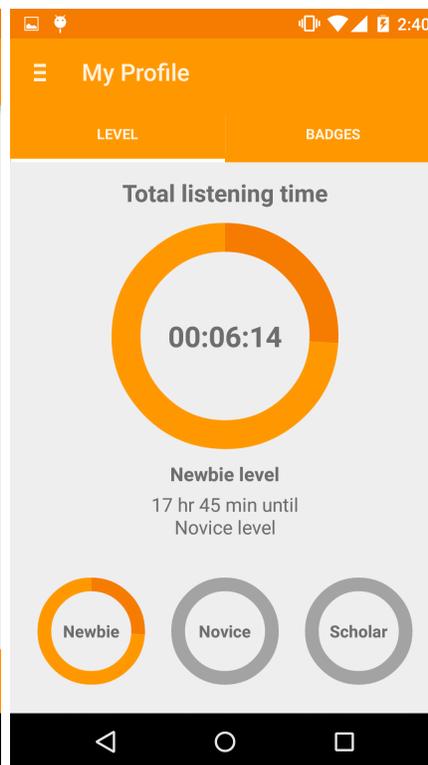
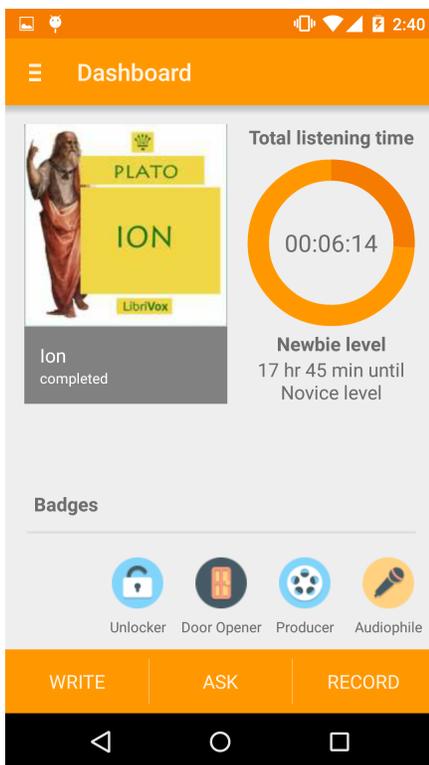


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## AUDIOBOOK CLUB

### Dashboard and My Profile

The dashboard screen, as well as, level and badges screens accessible from my profile are responsible for showing the user's progress in the app. In the dashboard, the audiobook shown is the one that the user listened to last and it provides the user a quick way of navigating to it upon click. This screen also shows the total listening time and the level associated with that listening time. Lastly on the bottom of the screen, the user's most recently acquired badges are shown. The level screen also shows user's progress through the listener level by their total listening time, in addition to levels that the user can unlock. The badges screen outlines all the badges available, including the ones that the user has unlocked (full color) and the ones that have yet to be unlocked (grayed out).

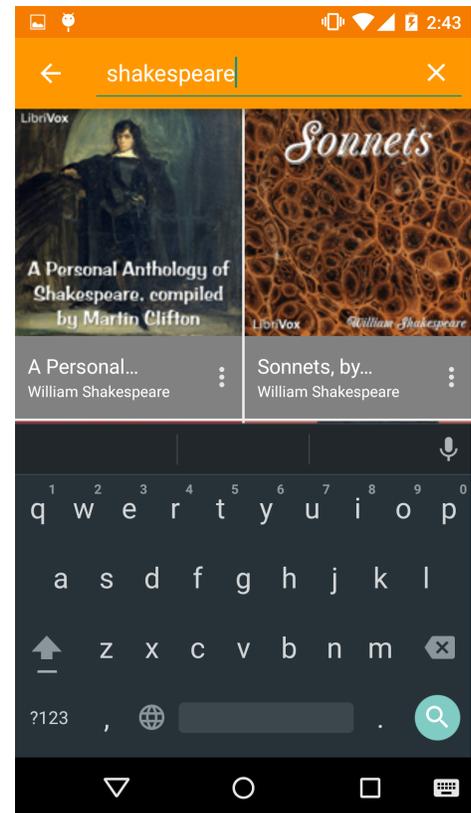
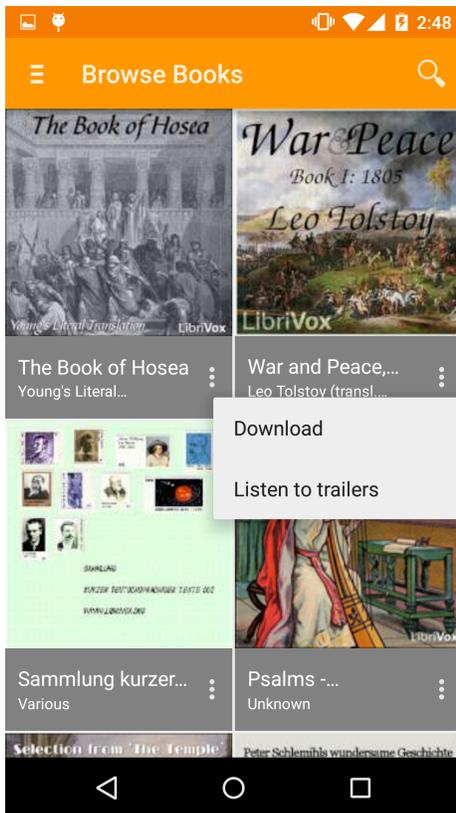


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## AUDIOBOOK CLUB

### Browse Books

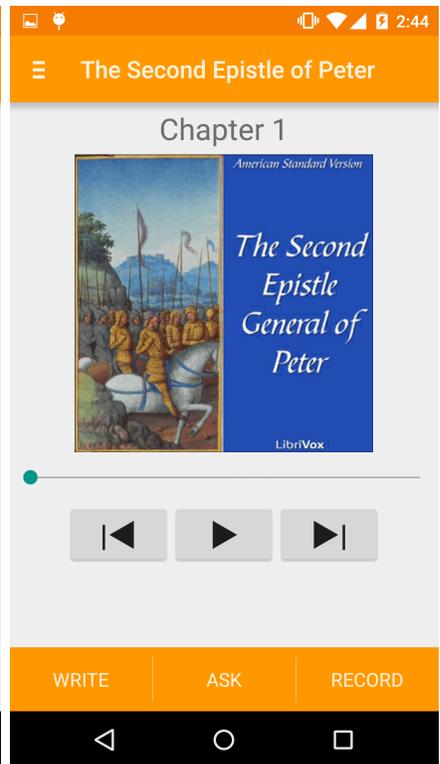
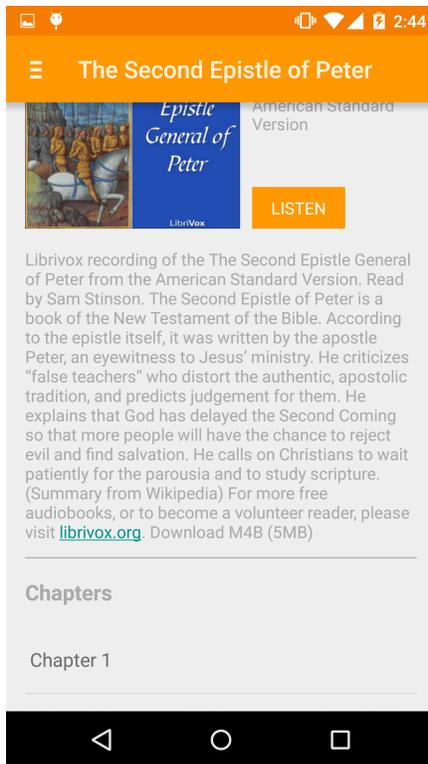
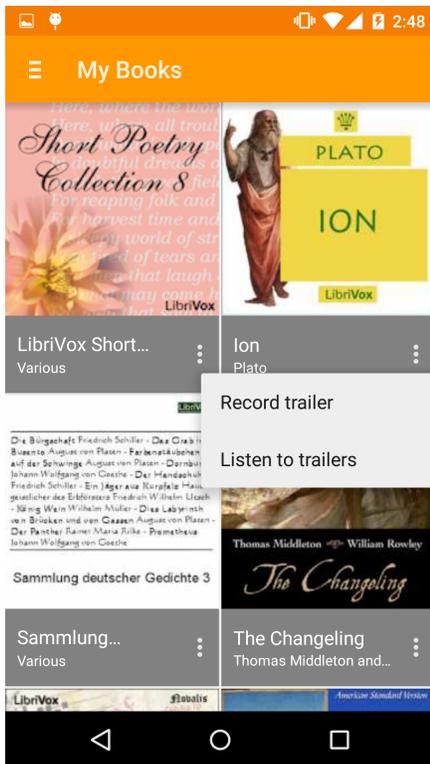
In the browse books screen, users first are presented with a list of new releases from LibriVox. Additionally, users can also use the search function in the action bar to query for specific audiobooks. The query string will be checked against an audiobook's title as well as any of its authors. For any audiobook found in browse books, the user can download or listen to user recorded trailers, if there are any. After navigating to an audiobook, the book details page is identical to books in the my books screen with the exception of the "listen" button being "download" instead (shown on the following page).



# AUDIOBOOK CLUB

## My Books

Although the layout of the my books screen is similar to the layout of the browse books screen, the my books screen only shows books that the user has downloaded onto his or her phone and are, thus, ready to be played. For any books that the user has completed, they also unlock the option to record a user audio trailer for said book. The book details page includes all the information associated with the book such as author, description and the list of its chapters. From here the user can start listening to the audiobook from any of its chapters. The audio player screen has a simple design for the player itself that supports the basic playback functionalities. When a user completes a chapter, the bottom discussion bar will appear for that chapter, allowing the user to write text comments, ask questions (also text), or record an audio comment.

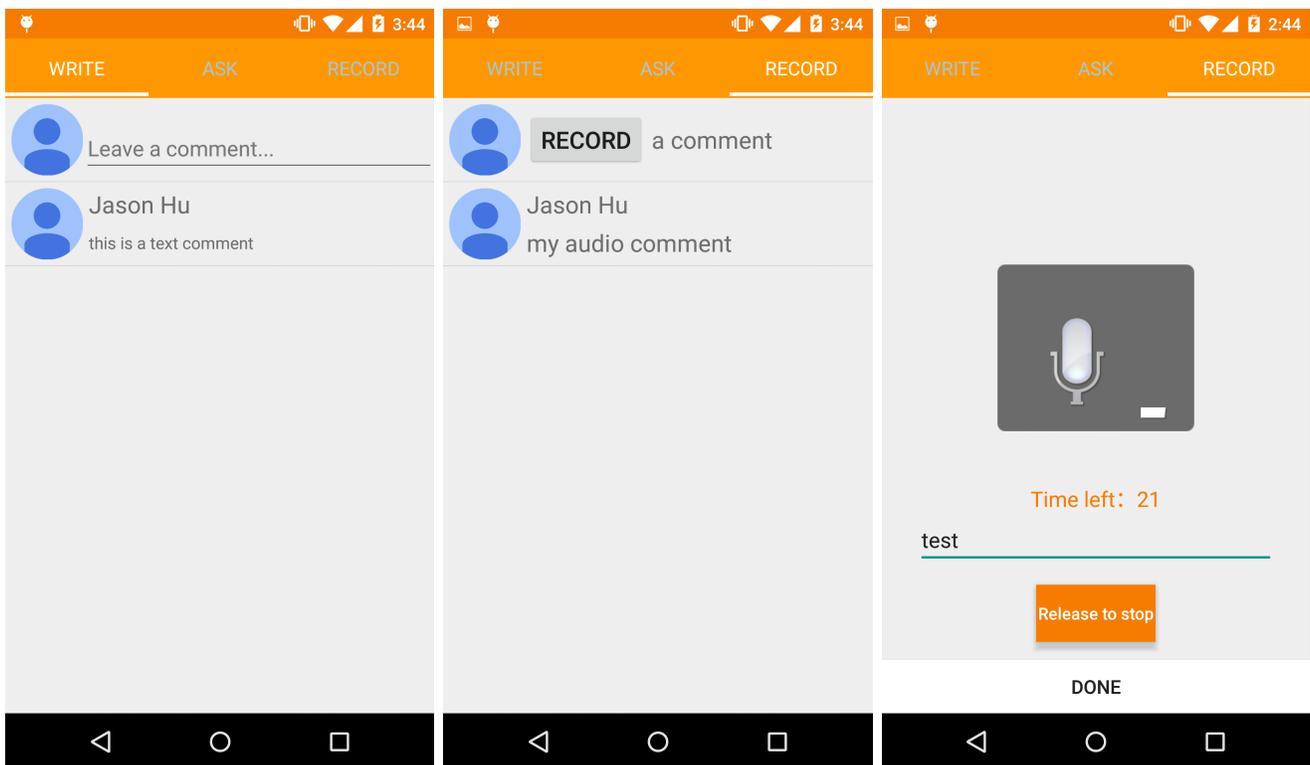


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## AUDIOBOOK CLUB

### Comments

Like previously mentioned, the users can write text comments, ask questions (also text) and record audio clip comments. Each comment is associated with the Google+ account and stored in our SQLite database. We have also set a limit on the audio recording to be 30 seconds for storage space reasons.



# KEY LEARNINGS

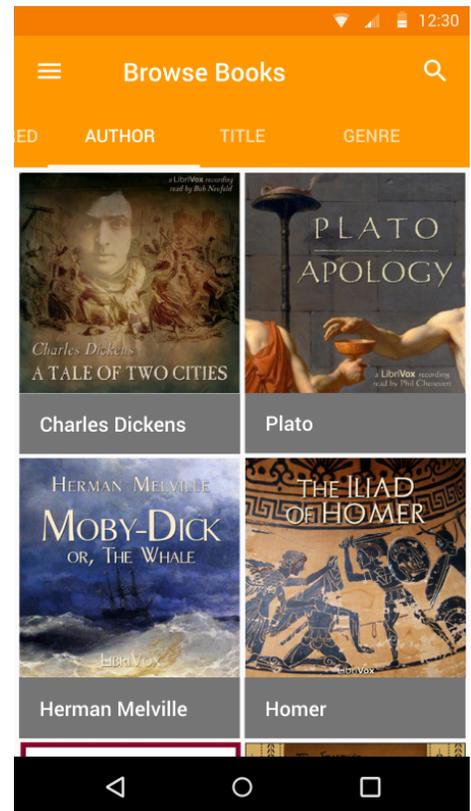
### Understand the limitations of the services required for an app

About halfway through the app's development and upon completion of the app's mockup, we realized that there are some limitations to the LibriVox API that we did not take into account when developing the app's mockup. For example, the API does not have an efficient method for sorting by categories, such as genre and language, so we were not able to implement the browse feature that was designed in the mockup (see mockup screen on the right for a sample browse screen).

If we could start this project again, we would all sit down together and look at the limitations of the API, so that the mockups would reflect the capabilities of the API.

### Design as a prototype rather than a product

Despite clarifications from Professor Rose, we approached the design and development of this app as a product rather than a prototype for the majority of the course duration. This problem originated from the overestimation in both the complexity of our envisioned app, and the overestimation of the time we have to dedicate to this project. As a result, during the development stages, we've dedicated time to work on certain aspects of the apps in attempt to make it more useable, the code more extensible and maintainable, instead of focusing on delivering a prototype that demonstrates the main functionalities' feasibility. As such, we could have had more fleshed out ideas, designs and functionality instead of worrying about these other matters. Given the chance to restart this project, we would have set more realistic goals in the design and development planning and treat the building of a prototype as such.



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## AUDIOBOOK CLUB

# CONTRIBUTION BY GROUP MEMBERS

### Courtney (Apper)

Thought of the idea for the app and revised the app's functionality and structure based on feedback and research of audiobooks, book clubs, reading programs, and literacy. Developed **a mockup of the app** and provided specifications—e.g. colours, fonts, spacing, etc.—for each screen. Created some UI components, i.e. created ninepatch buttons and transformed icons into badges with material design colours. Wrote accompanying text for badges and a rough draft for the final report.

### Jason (Programmer)

Designed the structure and framework of the app in terms of Activity and Fragment interactions. Implemented the underlying file system of which the audiobook files (mp3 audio clips) and data (book titles, chapter titles, authors, description, etc.) are stored and retrieved on the user's phone. Worked with the LibriVox APIs to implement the functionalities for searching their library of audiobooks and facilitating the download of said audiobooks into our own file system. Implemented the manager responsible for handling the persistence of user progress such as listening duration, comments made, etc. as well as the events that would trigger these progression. Created the base schema for the SQLite database for storing all the persistent app information. Refined the app's UI with respect to the mockups provided by our apper.

### Hongyi (Programmer)

Implemented user authentication using Google Identity via Google+ accounts. Managed and modified the base SQLite schema in accordance with associating text and audio comments with specific users. Implemented media player that allows the playback of audiobook chapters. Created voice recorder that is used both in the posting of audio comments and also the recording of user trailers for audiobook titles. Worked on the flow for the writing and viewing of text based comments and the recording as well as playback of audio comments. Refined app's UI.

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## APPER PROJECTS

Since Library and Information Science (LIS) is concerned with fostering the search for information, knowledge, and wisdom by connecting people with information resources, this application could be used in academia to research the impact of different information resources on low literacy and aliteracy. For example, an LIS researcher could investigate if there is a significant difference in reading comprehension, rates, and attitudes for two groups: (A) those who discuss a book after it is completed and (B) those who discuss after each chapter of the book. Another LibriVox app, LibriVox Audio Books, and discussion forum could be used for group A, while Audiobook Club could be used for group B. Results of this study could help inform reading program organization, as well as, app based reading program design.

On a more practical note, typically librarians foster this search for information, knowledge, and wisdom by providing physical and digital libraries where patrons can borrow books and attend programs—e.g. reading and literacy. However, some libraries cannot afford all the costs associated with providing books or spaces for these programs, so Audiobook Club could be used to substitute or supplement reading programs.

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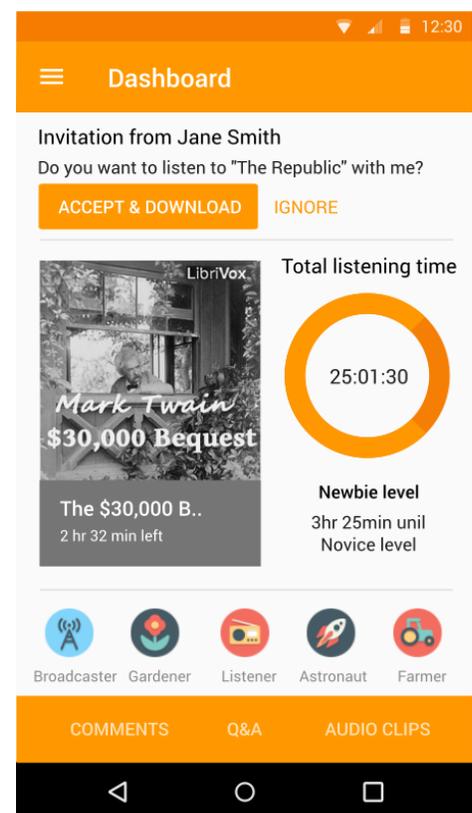
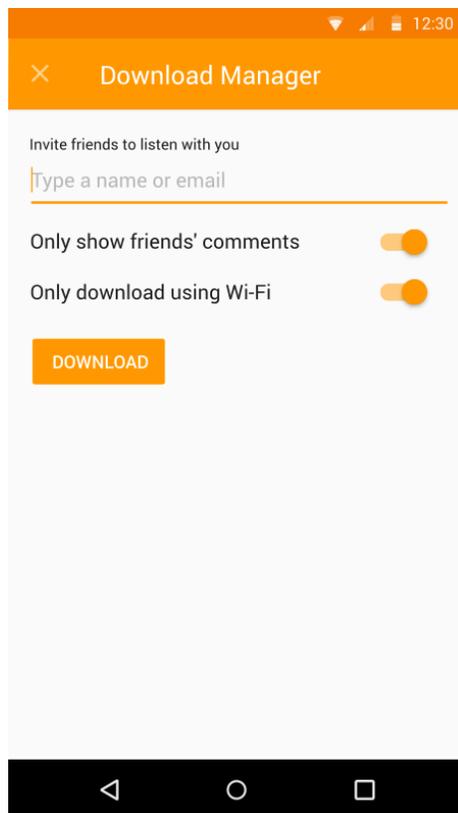
# FUTURE WORK

### Set up a server

Since setting up a server to host user comments would allow for discussions between multiple users, this set up would be the first task we would accomplish, if we were to continue working on this project; because studies show that discussions increase reading comprehension.

### Listen and comment in groups

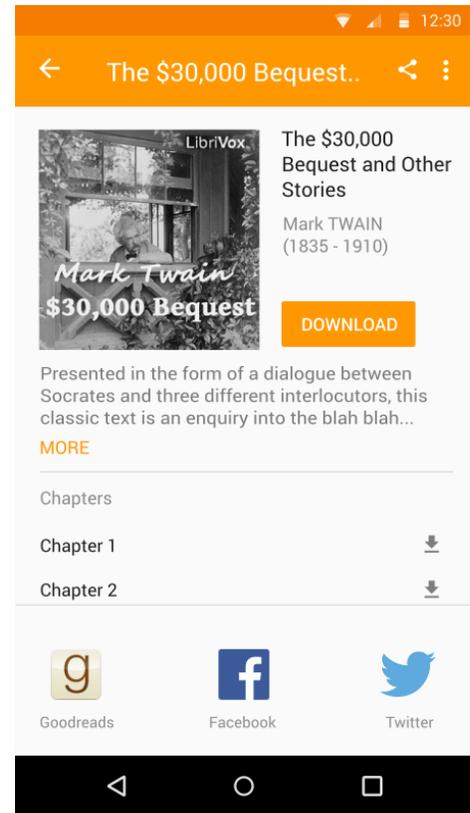
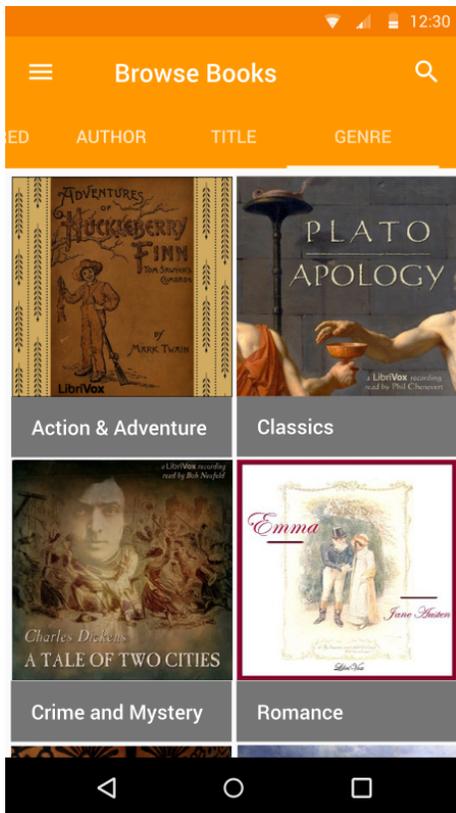
Based on feedback from peers in the ECE1778 course, listening to audiobooks and being able to comment on audiobooks with a group of people, rather than everyone who uses the app, would motivate people to use this app. The way that this feature would be implemented is that upon download of a book, a user can invite friends to listen to the book with her and limit who can see her comments.



## AUDIOBOOK CLUB

### Share via social media

Since this app focuses on discussions, we would like users to be able to discuss their progress and thoughts via social networking sites, in order to move the discussions beyond people who are using the app.



### Browse by category

Due to limitations of the LibriVox API, we were not able to browse by category efficiently, so in future work we would like to investigate this issue further, and ultimately implement some sort of browse feature. Browsing would be beneficial because oftentimes users do not know which book they want to listen to before searching for a book.

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