

# **BOOKLY: AN AUDIOBOOK APPLICATION TO LISTEN YOUR FAVORITE BOOKS & STORIES**

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This Report Presented in Partial Fulfillment of the Requirements for the Degree of Bachelor  
of Science in Computer Science and Engineering

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**DAFFODIL INTERNATIONAL UNIVERSITY**

**DHAKA, BANGLADESH**

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## **APPROVAL**

This Project titled “BOOKLY: AN AUDIOBOOK APPLICATION TO LISTEN YOUR FAVORITE BOOKS & STORIES”, submitted by JAMEUR RAHMAN FIDA, ID No: 173-15-10445, MD. TAUHIDUL ISLAM, ID No: 173-15-10421, EMDADUL HAQUE, ID No: 173-15-10408 to the Department of Computer Science and Engineering, Daffodil International University has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on 02 January 2022.

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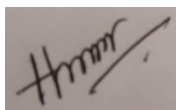
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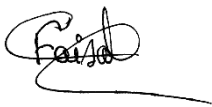
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## DECLARATION

We hereby declare that this project has been done by us under the supervision of **Fahad Faisal**, **Assistant Professor, Department of CSE** Daffodil International University. We also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree or diploma.

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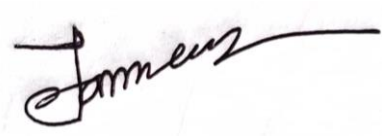
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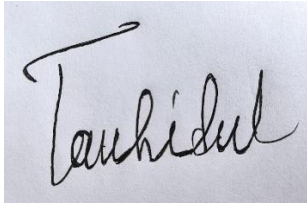
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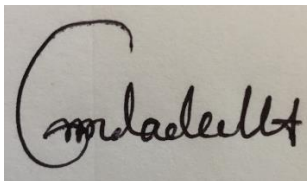
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## ABSTRACT

The project “**Bookly**” is an audiobook app which will help to ease the reading experience of people. A misconception is there that listening to a book is less profitable than reading the book in terms of acquiring knowledge. But in recent studies it is visible that despite the misconception the popularity of audiobooks is growing day by day. Readers can multitask while listening to a book. The sellers use the multi-tasking facilities of audiobooks for advertisement. The audiobook industry has proven its ability in the market during the pandemic using different media. COVID-19 is actually a blessing for the audiobooks industry. It was thought that it would not work as planned. But the scenario has dramatically changed after the covid pandemic. Digital audiobooks have continued their growth path and are thriving to relax during the epidemic.

## TABLE OF CONTENTS

CONTENTS	PAGE
Board of examiners	i
Declaration	iii
Acknowledgements	v
Abstract	vi
<b>CHAPTER 1: INTRODUCTION</b>	<b>1-5</b>
1.1 Introduction	1
1.2 Motivation	2
1.3 Objective	3
1.4 Expected Outcome	4
1.5 Report Layout	4
<b>CHAPTER 2: BACKGROUND</b>	<b>6-9</b>
2.1 Introduction	6
2.2 Related Works	6
2.2.1 Related Work In Bangladesh	7
2.3 Comparative Studies	7
2.4 Scope of the Problem	8
2.5 Challenges	8
2.6 Bookly Features	8
<b>CHAPTER 3: LITERATURE REVIEW</b>	<b>10-15</b>
3.1 Business Process Modeling	10
3.2 Requirement Collection and Analysis	10
3.2.1 Software Requirements	10
3.3 Analysis of the Gathered Requirements Phase	12

3.4 Logical Model	14
<b>CHAPTER 4: DESIGN SPECIFICATION</b>	<b>16-24</b>
4.1 Front-End Design	16
4.2 Back-End-Design	21
4.3 Interaction Design and UX	23
4.4 Implementation Requirements	24
<b>CHAPTER 5: IMPLEMENTATION AND TESTING</b>	<b>25-35</b>
5.1 Implementation of Database	25
5.2 Implementation of Backend API	26
5.3 Implementation of Audiobook recommendation System	27
5.3.1. Proposed Methodology	27
5.3.2 Background of Cosine_similarity	28
5.3.3 Data-Set Collection	29
5.3.4 Data Preparation	29
5.3.5 Proposed Model	29
5.3.6 Result Discussion	29
5.4 Android App Implementation	32
5.5 Implementation of The Website	34
5.6 Implementation of Interaction	35
5.7 Testing Implementation	35
5.8 Testing Result and Reports	35
<b>CHAPTER 6: CONCLUSION AND FUTURE SCOPE</b>	<b>36</b>
6.1 Discussion and Conclusion	36
6.2 Scope for Future Developments	36
<b>REFERENCES</b>	<b>37</b>
<b>APPENDIX</b>	<b>38</b>
<b>PLAGIARISM REPORT</b>	<b>38</b>

## LIST OF FIGURES

	PAGE
Figure 2.1: Bookly Features	9
Figure 3.1: Logical Data Model.	13
Figure 4.1: App Landing Page (Feed).	16
Figure 4.2: Showing Books by Categories (Poetry, Literary Fiction & Plays).	17
Figure 4.3: Showing Books by Categories (Sci-Fi, Satire & Romance)	18
Figure 4.4: Search Bar, Playbar & Settings Bar	18
Figure 4.5: Search Bar, Playbar & Settings Bar	19
Figure 4.6: MySQL Database	20
Figure 4.7: SQL File	21
Figure 4.8: Backend API	22
Figure 4.9: API Call	23
Figure 5.1: Database Model	25
Figure 5.2: Implementation	26
Figure 5.3: Backend API Model	27
Figure 5.4: Cosine similarity	27
Figure 5.5: Cosine Similarity Example	28
Figure 5.6: Machine Learning Algorithm	29
Figure 5.7: Machine Learning Algorithm	30
Figure 5.8: Machine Learning Algorithm	30
Figure 5.9: Machine Learning Algorithm	31
Figure 5.10: App Implementation	31
Figure 5.11: App Implementation	32
Figure 5.12: App Implementation	32
Figure 5.13: App Implementation	33
Figure 5.14: App Implementation	34
Figure 5.15: Website Implementation	34

# CHAPTER 1

## INTRODUCTION

### 1.1 Introduction

Audiobooks have changed to different forms over the last few years, especially in terms of portability from the store to the application form on your smartphones, but audiobooks have never been that much popular like physical books in the market. At the beginning of audiobooks in the late 1800s it was way costlier than printing books. Printing books were much cheaper and simpler to make when audiobooks started to come to the market, and for the lack of simplicity and price the industry of audiobooks was never that popular. There is a debate about the usefulness of audiobooks. Some of the consumers feel that they do not catch up more information when they listen to the audio book than when they read a printed book; but many of the consumers feel that listening is better practice than reading to store up information, especially if it is a regular practice.

Because some of the users strongly believe in the misconceptions that audio publishers face many obstacles at the time of marketing their articles. In reality, it has been started to be believed that the audiobooks industry is a successful one, they should not only make as much money as the printed book industry but also cross the entertainment value of printed books. To bring change to any practice, especially the reading method of them, which is why marketing of the books to the targeted audience is tough. The advertisers find different ways to promote the books to the consumers to sell them. In 2010 Footnote4 had contributed 1.96% to the total commercial revenue of the company by digital and physical audiobooks; also contributed 8.3% of total book industries revenue. Printed books bring 75% of US sales each year. The audiobooks have grown very popular. But despite its popularity and success in revenue it is still not seen as the same number of printed books.

The popularity of audiobooks, podcasts and other forms of listening based entertainment is increasing very rapidly day by day especially during the coronavirus pandemic when people are at home for safety and they spend a lot of time on smartphones. Digital audiobooks are kind of plug and play. It can be installed to your smartphone in seconds, especially during travel.

More recently, COVID-19 pandemic has had a huge blow over the publication industry since the US closure in March 2020. For the first few months of the pandemic the sales of audiobooks had fallen due to the less frequent customers. Before covid 19, Audio Publishers Association (APA) ran a study which showed more than 50% of the listeners aged 12 have listened to the 2019 audiobook; this was the highest percentage the APA had ever seen. Despite of COVID-19, audiobook listeners were regular to the listing area; in reality, the mass seemed to have grown a practice to listen to the audiobooks during the pandemic as 32% of listeners said they had listened to more audiobooks in the pandemic year and 50% of the listeners reported listening to the same number. Compared to 2020, only 29% of listeners said they listened to additional audiobooks every year and 52% said they have listened to the same number.

In a brief, over the past few years the audiobooks have become the center of attraction for the passengers, which emphasizes the accessibility, flexibility and productivity of audiobooks. Before COVID-19 and in the former social and political functions, the publishing industry has cope with the cultural changes in strategy, format and content with major technological advancements as like the past. By changing the resource from compact disc (CD) to digital downloads, the digital space for audiobooks is enriching day by day in the market. The biggest problem the retailers are facing is marketing strategies, it's a major challenge to make the consumers accustomed to the long-term lifestyle. In response to the need for consumers, educators and travelers, audio publishers use the push of COVID-19 into the visible world by marketing and reaching their online customers to reduce screen time. Looking forward, the popularity of digital audiobooks will grow continuously, as smartphone and smart home technology become more and more popular day by day.

## **1.2 Motivation**

Text abstraction is one of the best advantages of audiobooks recording. Initially, the production cost was cited as the common reason, however, the production of complete works decreased significantly because the recording now can be stored as data rather than CD or tapes. This falling in pricing directly affects the supply and demand of audiobooks. The scenario can be understood better by audiobook statistics and demographics by a survey by an American institute.

- 28% of the Americans listen to audiobooks

- 92% Audiobook listeners read a book in the last 12 months
- 33% Audiobook listeners read 16 books in the last 12 months
- 88% of the listeners are graduate
- 53% of them are youth
- 63% of child listen to audiobook

### Why consumers choose audiobook:

- 40% users use audiobook while travelling
- 23% users use audiobook while exercising
- 18% of them while going to work
- 9% of them to read textbook
- 9% to work with children
- 5% for classroom activities
- 4% for others

Most e-book readers are thinking about buying audiobooks instead of e-books. Though still the market of e-books is growing. Modern platforms like Kindle are helping the audiobook industry. Which already has an impact on e-books industry.

## 1.3 Objectives

- Introduce students to books beyond their reading level.
- A model for good interpreting learning.
- Teach deep listening.
- Highlight jokes in books.
- Introduce new species that readers may not think otherwise.

- Introduce new vocabulary or specific difficult words or regions.
- Sidestep of unfamiliar dialects or idioms, Old English, and classic writing styles.
- Provide an example of reading aloud.
- Provide a bridge to important discussion topics for parents and children who can listen together while attending sports events, music lessons, or during leisure time.

## **1.4 Expected Outcome**

1. By using this app, people can access to 1000s of Bangla Stories.
2. People can Save playlists and keep track of your listening history
3. People can Save playlists and keep track of your listening history
4. Users can Save playlists and keep track of your listening history
5. Users can Save playlists and keep track of your listening history
6. There will be Dedicated sections for all genres
7. Users can Download their stories and listen even without an internet connection

## **1.5 Report Layout**

### **Chapter 1: Introduction**

The basic things about the project are discussed here like project motivation, project outcome etc.

### **Chapter 2: Background**

The condition of our project is discussed in this section like the scopes, problems and challenges of our project.

### **Chapter 3: Demand Specification**

This section is used to discuss the BPM, collection of needs in the market, and analyze them.

### **Chapter 4: Design Specification**

All kinds of designs are discussed here like the front end, back end, UX etc.

## **Chapter 5: Implementation and testing**

Implementation with coding, database are discussed in this part.

## **Chapter 6: Conclusion and Scope of the Future**

The final result of the project and the future plans are discussed here.

## **CHAPTER 2**

### **BACKGROUND**

#### **2.1 Introduction**

We researched the same previously done work on different sources before starting this project. To complete the project in an appropriate way the background is a must. Google helps us a lot to do the project. We search for relevant projects on google. We found many relevant projects. We took a lot of information from the previously done work and brought some modifications in it. Then we started work with the limitations of the project. We have tried to erase all the limitations and bring the project in light. Finally, we built BOOKLY, our audiobook app. The related works helped us a lot to get knowledge about the features of the app. It would not be possible without those works. And that's why, the background of the project plays a vital role for developing a fruitful project.

#### **2.2 Related Work**

Here is some of related audiobooks from which we are motivated

- Audible
- Audiobooks.com
- Realm
- Google Play Books
- Kobo Books
- Bookmobile
- Smart Audiobook Player

## **2.2.1 Related Work in Bangladesh**

### **Puthika**

Puthika is a platform which is the collection of the most e-books. It is working to suggest your favorite audiobook to you from many years ago. It is the most user friendly and interactive book browser. It will help you to organize your favorite books with many categories and genres.

Puthika is a collection of many genres of different interests. It provides the best e-book reader to help the users to enjoy every bit of their reading experience.

There are very few steps for Bengali books in e-book platforms and Puthika is one of them. A campaign is run to suggest your audiobooks in the Puthika app.

### **Shuni Bangla Audiobook**

The Shuni app is also among the very few of them. It offers free Bangla books and podcasts around the world. It is a social organization which provides different Bangla books without any financial criteria. Its goal is to spread the beauty of Bangla literature. Shuni app is basically developed for the non-native Bangla speakers, passengers, and anyone who wants to listen.

### **Galpowala**

This app is an exclusive collection of Bangla stories, mythologies and History narrated by famous voice artists which is very attractive for both the native and non-native Bangla speakers.

The platform is well known for Bangla choto golpo by famous writers like Rabindranath, Sarat Chandra and many more. They also include many podcasts of famous personalities which is another center of attraction.

### **Amazon Kindle**

Amazon holds the biggest collection of Bangla audiobooks. Kindle devices will help you to enrich your mind with knowledge about Bengali literature. All the stories are narrated by famous artists.

## **2.3 Comparative Studies**

There are many features on our app. Some are motivated from the previous work and some are brand new. We tried to build it as user friendly as possible.

- Users can have a fresh feeling entering the app because of the fresh user interface.
- All the books are organized in an ordered way for the help of the users.
- App will suggest books to the user by calculating the previous activities of the user.
- Users can search books. They can search either by the author's name, book name, or genres.

## **2.4 Scope of the problem**

Many problems arose while doing the project. We have sorted out all the problems successfully. We have collected the available audiobooks information found in Bangladesh. Choosing a database for the project was also a dilemma for us. At the end of the day we have chosen to use MySQL database, VS code for coding. We have used different programming languages for developing the project as per need: Flutter, Dart for the frontend and JAVASCRIPT for backend. We used Dart to design the app.

## **2.5 Challenges**

The challenges we have faced to carry out the project are:

- MySQL database knowledge was very limited for us. We have learnt it deeply before we start
- Designing part of the app.
- To make a user friendly UI.
- Both the admin and user part are in the same spot. Which was kinda tough.
- Giving security assurance
- Stopping the unauthorized user from bringing any changes to the app.

## **2.6 Features:**

- Access to 1000s of Bangla Stories
- Save your favorite stories
- Listen to Non-stop Stories for free
- Enjoy publication details of your favorite stories
- Experience the user-friendly app in English & Bangla

- Ability to enjoy and rate stories, writers, and narrators
- Dedicated sections for all genres
- Listen to offline section



Figure 2.1: Bookly Features

## **CHAPTER 3**

### **REQUIREMENT SPECIFICATION**

#### **3.1 Business Process Modeling**

The first audiobooks may have been formed back in the 1940s. They were available in schools and libraries and other educational institutions as teaching methods. It is called speech books before the digital audiobooks came to the market. Analog tapes and recorded versions were sold in the market. With the invention of the internet, a huge sum of audiobooks was available from many different sources.

With digitalization the analog days when audiobooks were sold on compact discs are gone forever. Now, all one needs a smart device to avail audiobooks and enjoy. It's kind of plug and play. Audiobooks refers to the recorded version of a textbook. One can listen to the recording rather than reading it. You can enjoy audiobooks from any of your smart devices like smartphone, computer, audio systems etc. The downloading process of audiobooks is the same as music and video. People can also buy audiobooks from online book markets.

The popularity of audiobooks is increasing proportionally to the popularity of different podcasts, which has enabled the publishers to use the resources more efficiently. To produce a growing creative and eager listening experience from eager listener teams.

#### **3.2 Requirement Collection and Analysis**

Now, in the publishing industry among all the segments audiobooks is at the top. Many investors have started to believe that audiobook app development is a place where they can invest without any fear, and publishers use audiobooks to develop their catalogues. The main goal of learning is to understand the context of the text. There are many students who have difficulties understanding the context, though they have simplified instruction by their instructors in the class. So for the readers this problem has become the biggest problem. As Bangla stated pupils, the pupils of our country face difficulties at the time of reading English. Apart from this, those who are not interested in reading their capabilities of learning and

understanding have reduced. Different social functions and language structures are becoming very very difficult to understand.

As an example, we can say about the Senior High School in Kabupaten Buru Maluku. They have undergone the same problem. Their gradual decrease in academic results is evidence of this fact. According to the National Examination Report, in the English test in the annual examination the student's average marks less than 55.00. This stated that the reading test capabilities of the students are below the acceptable range.

This catastrophe happened because of the difference between the learning procedure of English and their first language, as a result they have been experiencing different kinds of problems like different language features and English grammar over the years. Many studies are studied on this and focused on some factors that simplify the comprehension reading in English. From a study socio-cultural complexity helps the knowledge seekers to comprehend the context of a text. The student's attitudes to learn and the way they behave to learn shared a direct relationship, it is the key to comprehending. Moreover, some criteria of students have had a direct impact on learning comprehension skills like background knowledge, interests, motivation, goals, and attitude. It is said that Interest has the influential power to enable the eagerness to develop comprehension skills. On the contrary, students with positive attitudes for reading understand the context better than those who have negative attitudes.

Moreover, students can improve their comprehension skills by using both the reading habits and audiobooks. The audiobook powers up young people's interest in reading, and also helps the students who are struggling to stay connected and at the end of the day to learn the wonderful art of reading a book.

The benefits of audiobooks for the EFL students are huge. They get to learn about native speakers, and can hear their pronunciation. And in learning a language, pronunciation is one of the best ways. Audiobooks are highly effective for EFL students to develop their reception skill, which is possible due to their listening skill. The listening skill is also responsible for understanding reading comprehensions. Audiobooks are helpful to ensure the quality of learning and facilitate inspiration of reading for knowledge seekers as well.

### **3.2.1 Software Requirements**

To develop this application, we used following Software Requirements:

- OS: Windows 8.1 & 10.
- System Design: Visio.
- Language: Dart, PHP, HTML, CSS, JavaScript
- Database: MySQL Database
- Tools: Visual Studio Code
- Platform: Android & iOS.

Software Requirements, for running the application:

- Operating System: Android & iOS
- Network: Wi-Fi or Cellular Network

### **3.2.2 Hardware Requirements**

To develop this application, we need the following Hardware Requirements:

- Processor: Ryzen 5 3600
- RAM: 16 GB
- Space on disk: Minimum 20 GB

## **3.3 Analysis of the Gathered Requirements Phase**

If we analyze the effect of audiobook vs comprehensive reading, we can see that back in 1931 the American Congress for the National Library Service (NLS) were required to deliver some equipment to the blind and handicapped people which is called speech book. The invention of Speech books were basically for entertainment and communication purposes, but later it was widely named as audiobooks. Audiobooks are specifically designed for the disabled persons thus they can read using their ears. The audiobook has it's very own and unique styles specially designed for those handicapped people. In the first decade of audiobooks, it was used to describe history, experience and life events. The outcome of audiobooks for the english students are many. They can get help with pronunciation, utterance etc. At the same time, dramatic audiobooks keep the students interested in it even if they reach their reading level. Apart from

this, with the help of audiobooks, pupils can test different learning skills. Also, audiobooks help the knowledge seekers to get knowledge about literacy.

Many studies yell that audiobook can increase the reception skills of the listeners. A study ran in 2009 which stated that audiobooks enhanced the performance of English language learners in learning the language and in the class performance as well. Audiobooks also increase the reading and writing skills of the students. A big achievement in audiobooks for readers as they listen is they start to comprehend the structure of the language, and enhance their vocabulary.

For the struggling readers audiobooks have several benefits. At the time of listing the reader gets a deep knowledge about the language. A study stated that the listeners have better reading text skill. Audiobooks can be used to develop the reading, listening capabilities of the student. It can also be used in the classroom as support materials, stated by a study. Listening while reading uses two sensors of a human at a time. Which sharpens the sensors, helps to better understand.

The audiobooks give immense flexibility in study. Audiobooks can be used in every level of education.. The reading is not in a frame like text book reading. Readers can read from anywhere, it can be done on smart devices from anywhere; apart from this, reading is no more boring. It has become more enjoyable.

With this, the combination of listening and reading is very good. Listening enriches one's vocabulary. And vocabulary helps to understand any text better. Online audiobooks are especially useful for Learning English Language mentioned below;

- [www.getaudiobooksonline.com](http://www.getaudiobooksonline.com)
- [download-free-audio-books.com/](http://download-free-audio-books.com/) audio,
- [www.audiobooksforfree.com](http://www.audiobooksforfree.com),
- [www.audible.com](http://www.audible.com),
- [www.audiopub.org](http://www.audiopub.org),
- [www.audiofilemagazine.com](http://www.audiofilemagazine.com),
- [www.recordedbooks.com](http://www.recordedbooks.com),

- [www.librivox.com](http://www.librivox.com),
- <http://www.jiggerbug.com>,
- [www.readingrockers.org](http://www.readingrockers.org),
- [www.learningthroughlistening.org](http://www.learningthroughlistening.org) / sitedata / docs / teaching tipsword /,
- <http://dmoz.org/shopping/publications/books/audio>.
- <https://lvcenglish.com/>
- <https://www.digitalbook.io/>

To gather experience, comprehensive reading is a must. It is also needed to understand a thing better. The heart of learning activity is comprehensive reading. To be skillful in another language reading can be a weapon. Learning is a complex process which involves many criteria. A study states that students must be able to find the best ideas by themselves.

### **3.4 Logical Model**

This is the logical data model of how the app is getting data from server using PHP based backend rest API. This is done using model view controller model. The view part is user view at the application. Rest API is created with PHP and it is getting data from our MySQL database also sometimes 3<sup>rd</sup> party API.

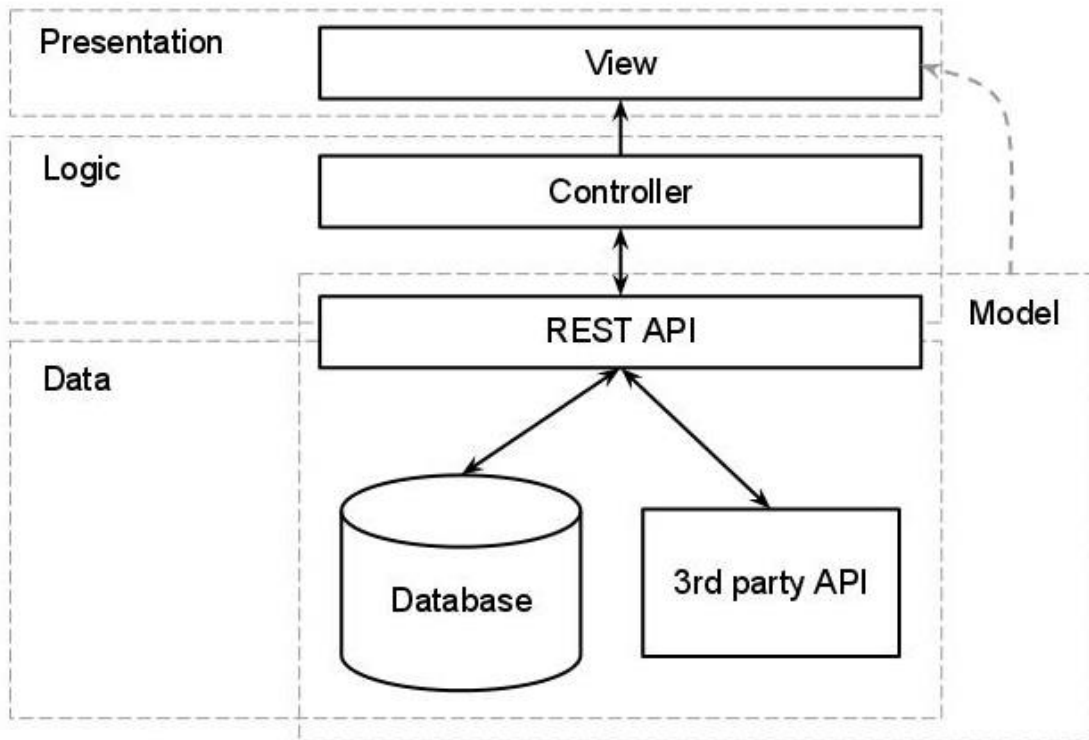


Figure 3.1: Logical Data Model

### 3.5 Design Requirements

- This system has 2 users, book author and listeners.
- On the Feed page users will see the recommended books.
- On general category tabs users will see books by category
- All the audio data will come from the server.
- Users can also read the book on pdf if the pdf is available.
- Users can search the book.
- Settings option to change App Theme.
- All the users will have the registration options.
- Authors also have to register or sign up.

“Simple is the Beautiful” remembering these words we started the designing part of the app. We also take efficiency of the app in mind. We tried to keep it simple for the users and build a very user-friendly interface.

## CHAPTER 4

### DESIGN SPECIFICATION

#### 4.1 Front-End Design

In any application, front-end-design is particularly important because users interact with the application by this. We have tried to make it user friendly and easily understandable by the users.

To make the user interface, we have used Flutter & Dart. Our application has many pages, we needed to design every single page. Let us see some pages with their design and code.

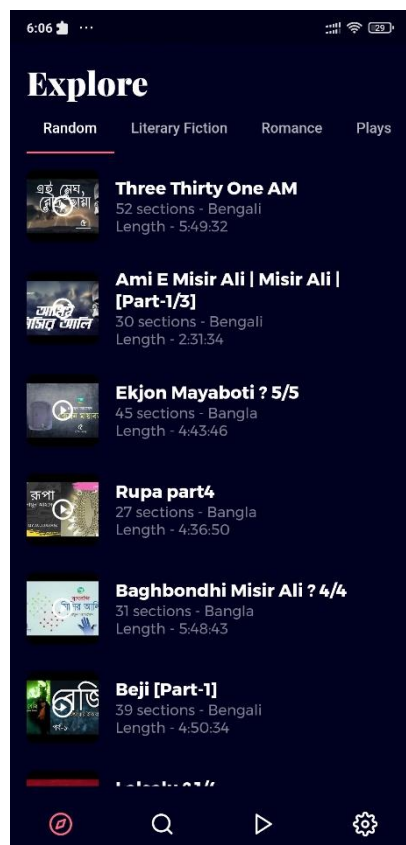


Figure 4.1: App Landing Page (Feed).

In Figure 4.1 is the app page. It is designed with Flutter with Dart code. At first when someone opens our app, he/she will view this page. This page will show him some book suggestions based on his interest.

The first thing we did in the Main.dart file is that we imported the Material Design library, which lets us use the Material Design widgets, which in this case are MaterialApp, Scaffold, and AppBar. After initializing the app we have a MaterialApp class which is supposed to hold the entire widget tree for the application. In the Home parameter of the MaterialApp class, we have a Scaffold Widget which provides the full screen of the device to render the App Widgets. Then inside the scaffold widget, we have the AppBar widget which is capturing the AppBar parameter. [13]

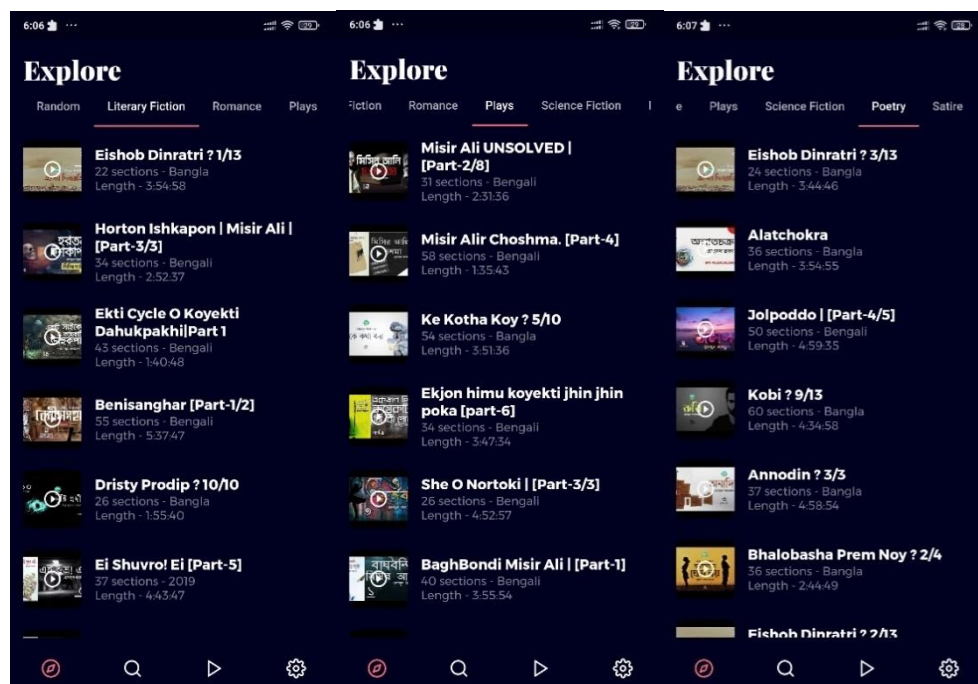


Figure 4.2: Showing Books By Categories (Poetry, Literary Fiction & Plays).

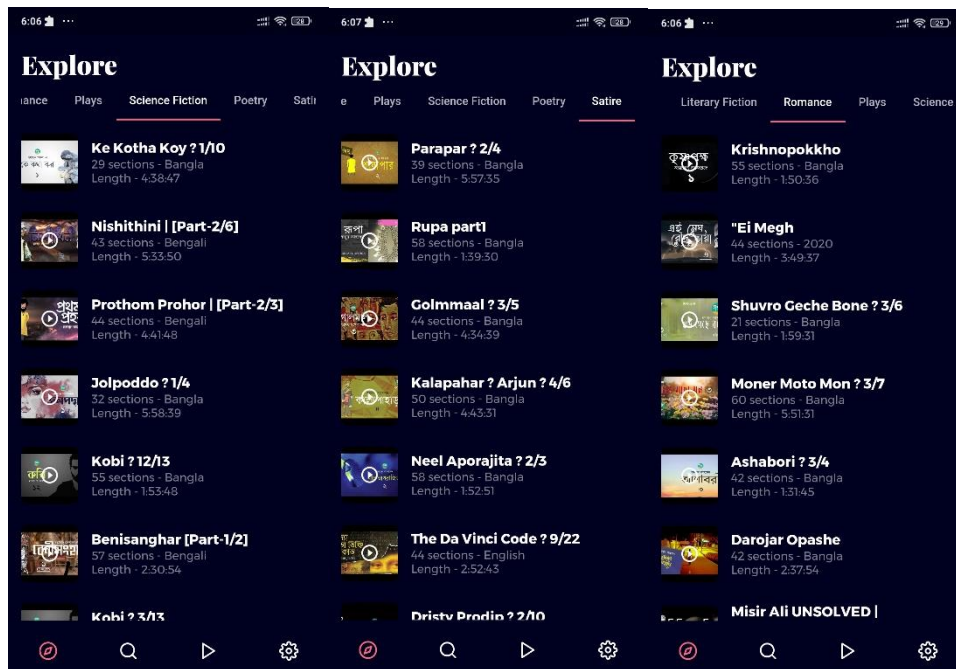


Figure 4.3: Showing Books By Categories (Sci-Fi, Satire & Romance)

In Figure 4.2 and 4.3 is the category page. The books are fetching data from the database based on their category.

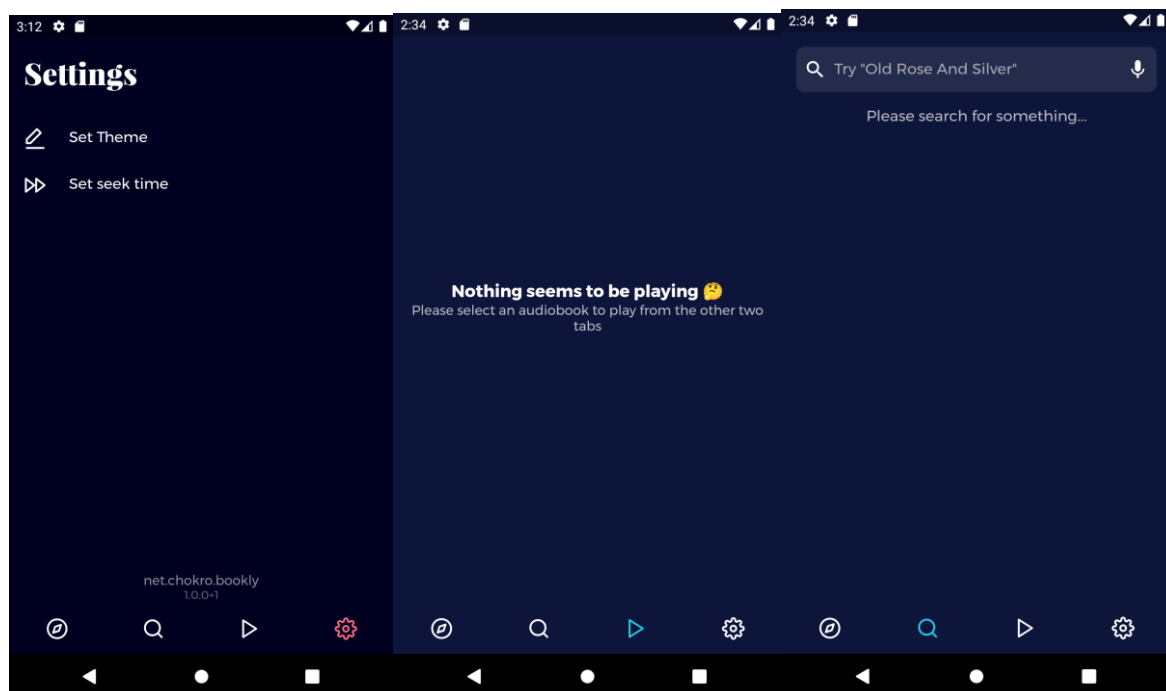


Figure 4.4: Searchbar, Playbar & Settingsbar

In Figure 4.3 is the App search bar, audio player and Settings page. On the search bar, the app is searching audio on the server and getting data to show users. Audio player is playing the audio files stored in the database. With the help of the settings page, users can change the theme and seek time.

Front end is created with a flutter material design widget. At the heart of it is a flexible design program, supported by open-source code, which helps engineers easily build high-quality, digital self-awareness. From design guidelines to engineer components, Important can help engineers build products faster. Essential design guides provide advanced processes and design for use. User usability and guidance to help ensure that our app works for all users, no matter which platform they use. Within the guidelines, there are component components that make the product usable and functional. Each component page includes instructions on how to use it, a collaborative pattern, and design specifications that give you the information a developer needs to ensure you get it right. A color theme in a material refers to a restricted set of colors that define an interface. The default material theme includes colors like Vivid, Primary and Secondary, as well as color slots for backgrounds, surfaces, flaws, and more. Defining a color theme. This approach is helpful because it helps create a coherent and logical color story that can be used globally and consistently throughout your app. It helps the users to understand the content and know more easily how the app works. [13]

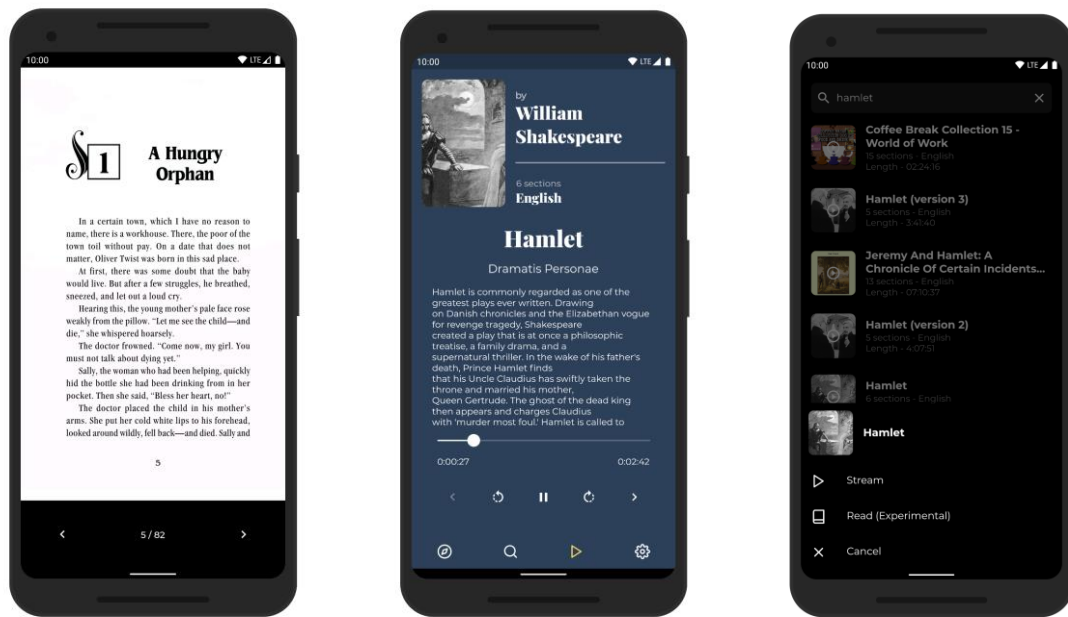


Figure 4.5: Searchbar, Playbar & Settingsbar

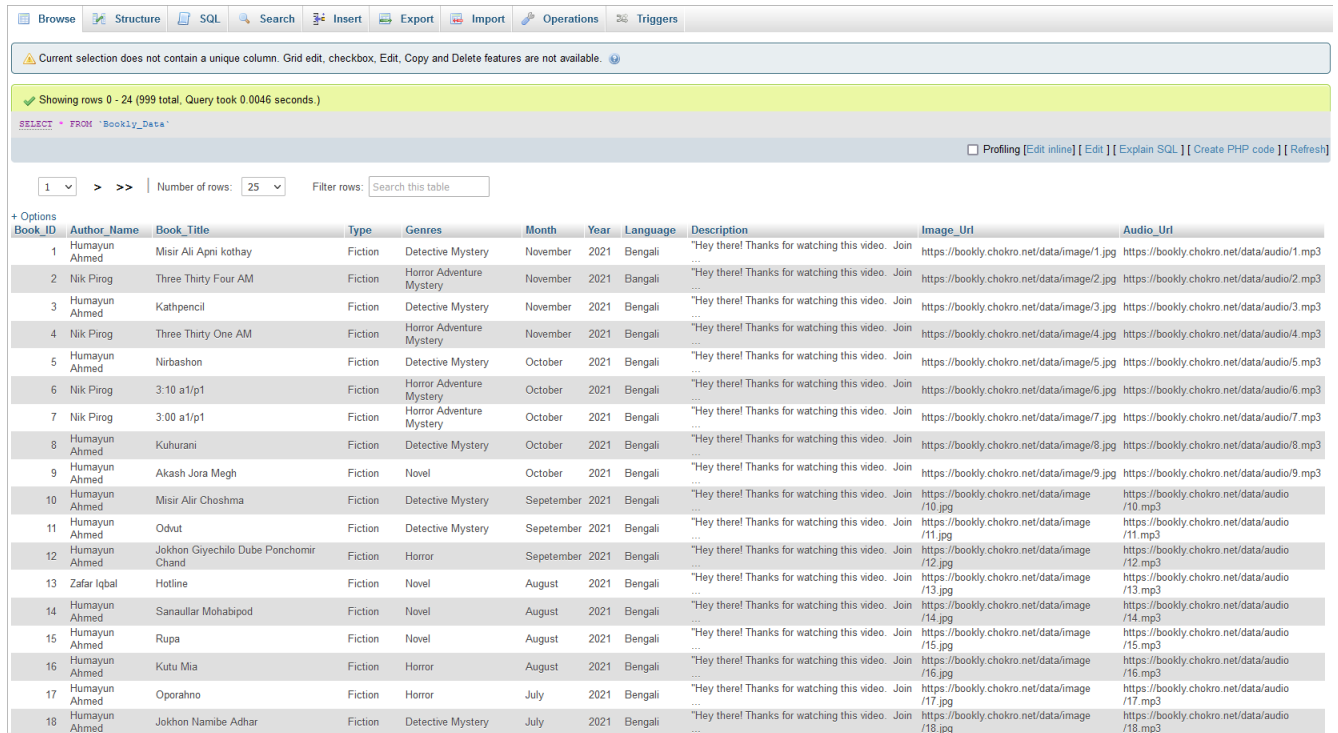
We used the AudioPlayer Plugin here to play the audio. It is A Flutter audio plugin (Swift/Java) to play remote or local audio files on iOS / Android / MacOS / Web.

## Features

- Android / iOS / MacOS / Web
- play remote file
- play local file ( not for the web)
- stop
- pause → seek
- onComplete → mute
- onDuration / onCurrentPosition

## 4.2 Back-End Design

On the Backend, we have a MYSQL database and an API created with Javascript. Have a look at our MYSQL database:



Book_ID	Author_Name	Book_Title	Type	Genres	Month	Year	Language	Description	Image_Url	Audio_Url
1	Humayun Ahmed	Misir Ali Apni kothay	Fiction	Detective Mystery	November	2021	Bengali	"Hey there! Thanks for watching this video. Join ..."	https://bookly.chokro.net/data/image/1.jpg	https://bookly.chokro.net/data/audio/1.mp3
2	Nik Pirog	Three Thirty Four AM	Fiction	Horror Adventure Mystery	November	2021	Bengali	"Hey there! Thanks for watching this video. Join ..."	https://bookly.chokro.net/data/image/2.jpg	https://bookly.chokro.net/data/audio/2.mp3
3	Humayun Ahmed	Kathpencil	Fiction	Detective Mystery	November	2021	Bengali	"Hey there! Thanks for watching this video. Join ..."	https://bookly.chokro.net/data/image/3.jpg	https://bookly.chokro.net/data/audio/3.mp3
4	Nik Pirog	Three Thirty One AM	Fiction	Horror Adventure Mystery	November	2021	Bengali	"Hey there! Thanks for watching this video. Join ..."	https://bookly.chokro.net/data/image/4.jpg	https://bookly.chokro.net/data/audio/4.mp3
5	Humayun Ahmed	Nirbason	Fiction	Detective Mystery	October	2021	Bengali	"Hey there! Thanks for watching this video. Join ..."	https://bookly.chokro.net/data/image/5.jpg	https://bookly.chokro.net/data/audio/5.mp3
6	Nik Pirog	3:10 a1/p1	Fiction	Horror Adventure Mystery	October	2021	Bengali	"Hey there! Thanks for watching this video. Join ..."	https://bookly.chokro.net/data/image/6.jpg	https://bookly.chokro.net/data/audio/6.mp3
7	Nik Pirog	3:00 a1/p1	Fiction	Horror Adventure Mystery	October	2021	Bengali	"Hey there! Thanks for watching this video. Join ..."	https://bookly.chokro.net/data/image/7.jpg	https://bookly.chokro.net/data/audio/7.mp3
8	Humayun Ahmed	Kuhurani	Fiction	Detective Mystery	October	2021	Bengali	"Hey there! Thanks for watching this video. Join ..."	https://bookly.chokro.net/data/image/8.jpg	https://bookly.chokro.net/data/audio/8.mp3
9	Humayun Ahmed	Akash Jora Megh	Fiction	Novel	October	2021	Bengali	"Hey there! Thanks for watching this video. Join ..."	https://bookly.chokro.net/data/image/9.jpg	https://bookly.chokro.net/data/audio/9.mp3
10	Humayun Ahmed	Misir Alir Choshma	Fiction	Detective Mystery	Sepetember	2021	Bengali	"Hey there! Thanks for watching this video. Join ..."	https://bookly.chokro.net/data/image/10.jpg	https://bookly.chokro.net/data/audio/10.mp3
11	Humayun Ahmed	Odut	Fiction	Detective Mystery	Sepetember	2021	Bengali	"Hey there! Thanks for watching this video. Join ..."	https://bookly.chokro.net/data/image/11.jpg	https://bookly.chokro.net/data/audio/11.mp3
12	Humayun Ahmed	Jokhon Giyechilo Dube Ponchomir Chand	Fiction	Horror	Sepetember	2021	Bengali	"Hey there! Thanks for watching this video. Join ..."	https://bookly.chokro.net/data/image/12.jpg	https://bookly.chokro.net/data/audio/12.mp3
13	Zafar Iqbal	Hotline	Fiction	Novel	August	2021	Bengali	"Hey there! Thanks for watching this video. Join ..."	https://bookly.chokro.net/data/image/13.jpg	https://bookly.chokro.net/data/audio/13.mp3
14	Humayun Ahmed	Sanaullah Mohabipod	Fiction	Novel	August	2021	Bengali	"Hey there! Thanks for watching this video. Join ..."	https://bookly.chokro.net/data/image/14.jpg	https://bookly.chokro.net/data/audio/14.mp3
15	Humayun Ahmed	Rupa	Fiction	Novel	August	2021	Bengali	"Hey there! Thanks for watching this video. Join ..."	https://bookly.chokro.net/data/image/15.jpg	https://bookly.chokro.net/data/audio/15.mp3
16	Humayun Ahmed	Kutu Mia	Fiction	Horror	August	2021	Bengali	"Hey there! Thanks for watching this video. Join ..."	https://bookly.chokro.net/data/image/16.jpg	https://bookly.chokro.net/data/audio/16.mp3
17	Humayun Ahmed	Oporahno	Fiction	Horror	July	2021	Bengali	"Hey there! Thanks for watching this video. Join ..."	https://bookly.chokro.net/data/image/17.jpg	https://bookly.chokro.net/data/audio/17.mp3
18	Humayun Ahmed	Jokhon Namibe Adhar	Fiction	Detective Mystery	July	2021	Bengali	"Hey there! Thanks for watching this video. Join ..."	https://bookly.chokro.net/data/image/18.jpg	https://bookly.chokro.net/data/audio/18.mp3

Figure 4.6: MySQL Database

Here on our table “bookly\_data” we have 7 columns. The image\_URL and audio\_URL contains the image data and audio data of the books. Every book has its own unique ID. Author name is the writer of the book. On the title column we have all the book titles. Types and genres are an especially important part of this database because our machine learning recommendation system is based on the type and gener we are going to train our machine learning model on.

Now have a look at the SQL file of the database, it is created simple SQL codes and data was collected on an excel file and entered to the database with those SQL codes.

```

/* CREATE TABLE */
CREATE TABLE Bookly_Data(
Book_ID DOUBLE,
Author_Name VARCHAR(100),
Book_Title VARCHAR(100),
Type VARCHAR(100),
Genres VARCHAR(100),
Month VARCHAR(100),
Year DOUBLE,
Language VARCHAR(100),
Description VARCHAR(1000),
Image_Url VARCHAR(100),
Audio_Url VARCHAR(100)
);

/* INSERT QUERY NO: 1 */
INSERT INTO Bookly_Data(Book_ID, Author_Name, Book_Title, Type, Genres, Month, Year, Language, Description, Image_Url, Audio_Url)
VALUES
(
001, 'Humayun Ahmed', 'Misir Ali Apni kothay', 'Fiction', 'Detective Mystery', 'November', 2021, 'Bengali', '"Hey there! Thanks for watching this vid"', ' ', ' '
);

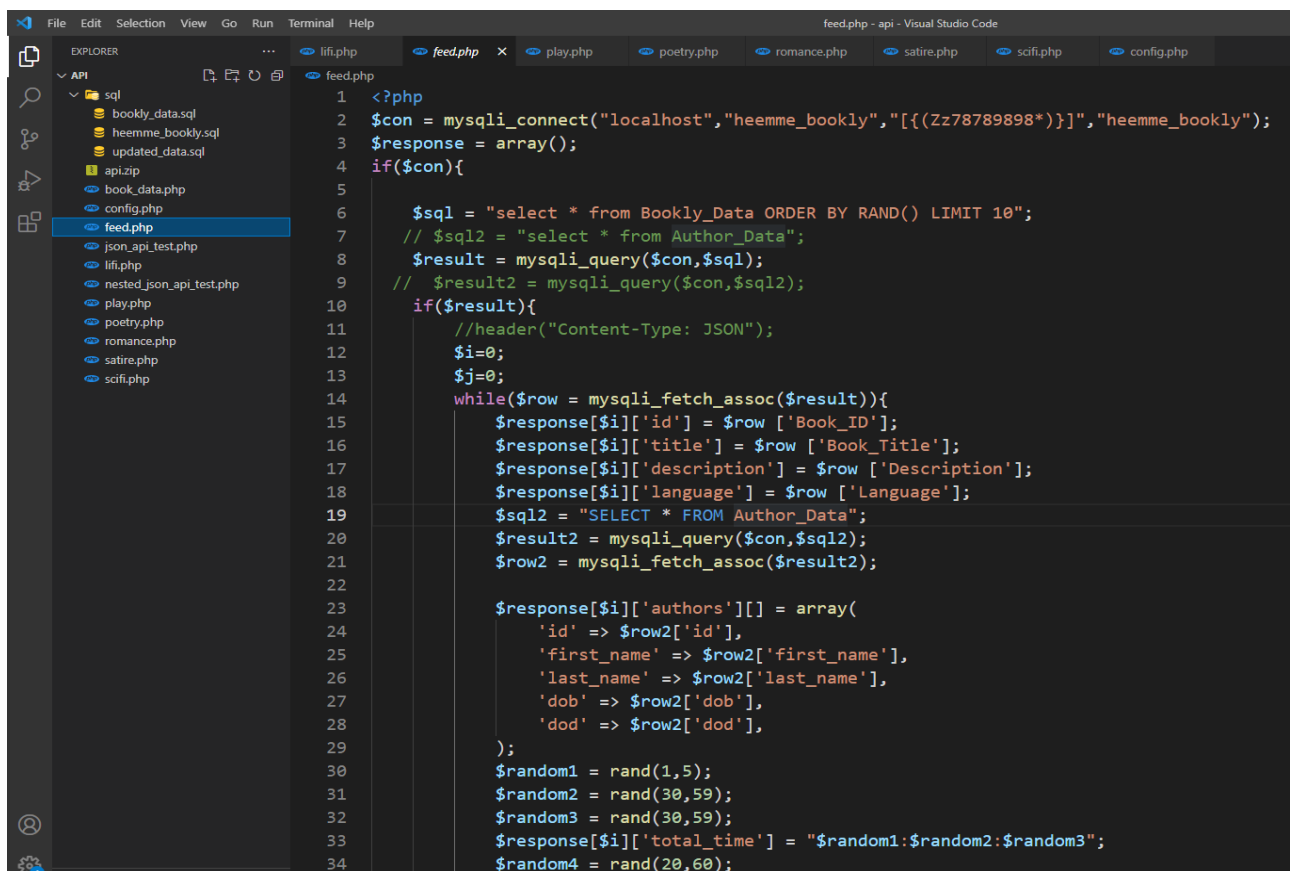
/* INSERT QUERY NO: 2 */
INSERT INTO Bookly_Data(Book_ID, Author_Name, Book_Title, Type, Genres, Month, Year, Language, Description, Image_Url, Audio_Url)
VALUES
(
002, 'Nik Pirog', 'Three Thirty Four AM', 'Fiction', 'Horror Adventure Mystery', 'November', 2021, 'Bangali', '"Hey there! Thanks for watching this vid"', ' ', ' '
);

/* INSERT QUERY NO: 3 */
INSERT INTO Bookly_Data(Book_ID, Author_Name, Book_Title, Type, Genres, Month, Year, Language, Description, Image_Url, Audio_Url)
VALUES
(
003, 'Nik Pirog', 'Three Thirty Four AM', 'Fiction', 'Horror Adventure Mystery', 'November', 2021, 'Bangali', '"Hey there! Thanks for watching this vid"', ' ', ' '
);

```

Figure 4.7: SQL File

Now have a look at the backend API created with PHP:



```

1  <?php
2  $con = mysqli_connect("localhost","heemme_bookly","[(Zz78789898*)]", "heemme_bookly");
3  $response = array();
4  if($con){
5
6      $sql = "select * from Bookly_Data ORDER BY RAND() LIMIT 10";
7      // $sql2 = "select * from Author_Data";
8      $result = mysqli_query($con,$sql);
9      // $result2 = mysqli_query($con,$sql2);
10     if($result){
11         //header("Content-Type: JSON");
12         $i=0;
13         $j=0;
14         while($row = mysqli_fetch_assoc($result)){
15             $response[$i]['id'] = $row ['Book_ID'];
16             $response[$i]['title'] = $row ['Book_Title'];
17             $response[$i]['description'] = $row ['Description'];
18             $response[$i]['language'] = $row ['Language'];
19             $sql2 = "SELECT * FROM Author_Data";
20             $result2 = mysqli_query($con,$sql2);
21             $row2 = mysqli_fetch_assoc($result2);
22
23             $response[$i]['authors'][] = array(
24                 'id' => $row2['id'],
25                 'first_name' => $row2['first_name'],
26                 'last_name' => $row2['last_name'],
27                 'dob' => $row2['dob'],
28                 'dod' => $row2['dod'],
29             );
30             $random1 = rand(1,5);
31             $random2 = rand(30,59);
32             $random3 = rand(30,59);
33             $response[$i]['total_time'] = "$random1:$random2:$random3";
34             $random4 = rand(20,60);

```

Figure 4.8: Backend API

There are a total of 6 files in our API. The main and important one is `getbook.js`.

This file is connecting the database from the server and getting all the books information from the database. Then sending them to the app. The app is receiving data from the API and viewing them to the user. When a user clicks on the Stream button, he can stream the audio. Backend API call from the app is shown in the picture below.

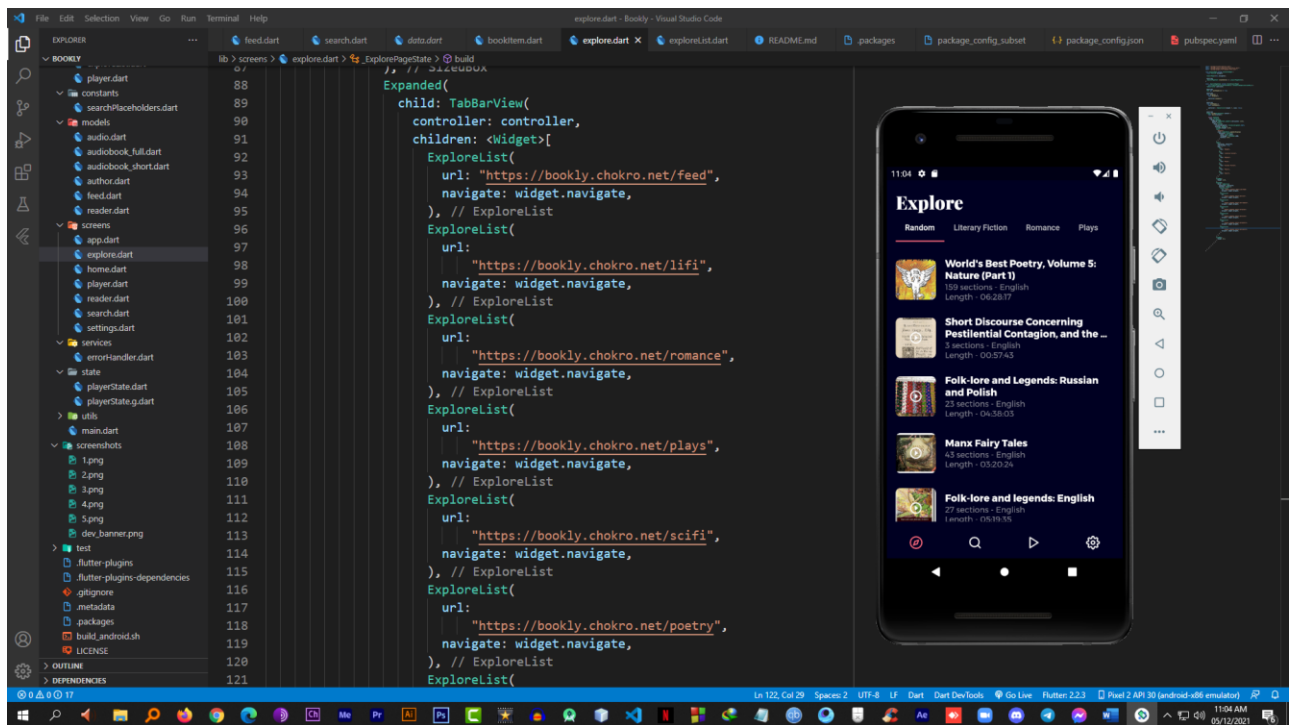


Figure 4.9: API Call

Here on the `ExploreList` widget, the app is getting data from API and showing them on genre tabs.

## 4.3 Interaction Design and UX

### User App Page Design:

- App Feed
- Load Books by category
- Stream Books
- Read PDF of the book
- Contact Us (All contact information of authentication of community center is here)

- FAQ (Display frequently asked questions set by admin)
- Registration (Registration for Admin, User)
- Account create (Registration from the page and create account)
- Sign In, Sign Up
- Menu Bar (HOME, Packages, Service, Mobile app, Blog, Registration, Admin, Contact)

#### **Author Homepage Design:**

- Log In (Author can log in from the sign in form)
- Upload book
- FAQ (Display frequently asked questions set by admin)
- Registration (Registration for Admin, User)
- Account create (Registration from the page and create account)
- Sign In, Sign Up
- Menu Bar (HOME, Packages, Service, Blog, Registration, Admin, Contact)

#### **UX**

User Experience is the abbreviation of UX. I have tried to make a user's friendly website. I have used this app from various mobiles. Some people have used this project, but they have given me a positive review. I have found everything okay. But as I have not launched this app publicly, so I do not have enough information on user experience at this moment.

#### **4.4 Implementation Requirements**

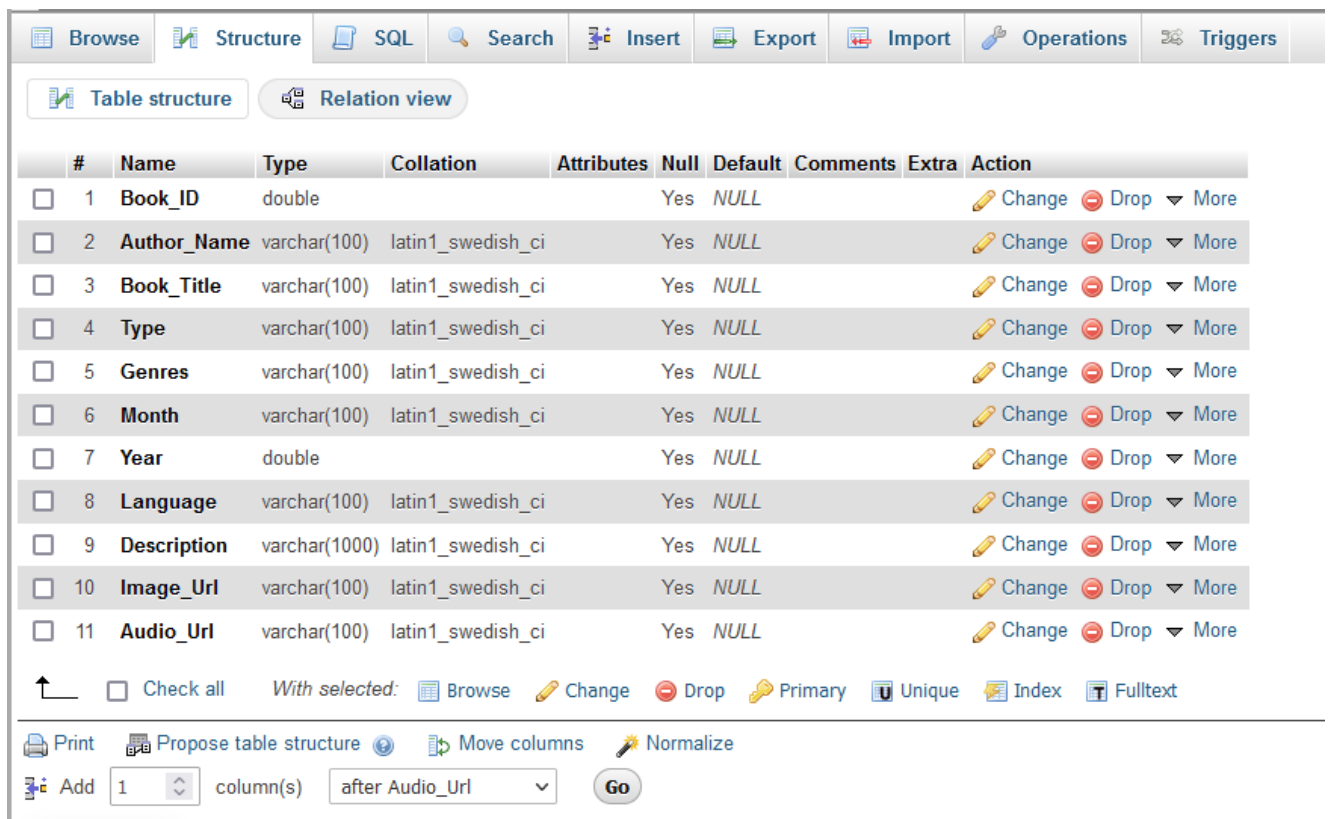
- Flutter & Dart. Implemented with Visual Studio Code.
- We do not need to worry about servers. Because MySQL gives us the facility of servers. We can use the storage, database, and authentication features of MySQL very smoothly. MySQL manages server, hosting etc. I need to connect my project with MySQL.
- Emulator, a feature in visual studio, is a virtual operating system which can be created in visual studio to debug, test, and run an application on different browsers of visual studio.
- Recommendation system model trained by Cosine Similarity Using Python on Jupyter Notebook.

## CHAPTER 5

### IMPLEMENTATION AND TESTING

#### 5.1 Implementation of Database

Database is a basic requirement for any project. We need to store various data in our database. We keep data and retrieve from the database according to our needs. Though I was developing a cross platform application, so I need a database. So I used a MySQL database.



#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
<input type="checkbox"/>	1	Book_ID	double		Yes	NULL			Change  Drop  More
<input type="checkbox"/>	2	Author_Name	varchar(100)	latin1_swedish_ci	Yes	NULL			Change  Drop  More
<input type="checkbox"/>	3	Book_Title	varchar(100)	latin1_swedish_ci	Yes	NULL			Change  Drop  More
<input type="checkbox"/>	4	Type	varchar(100)	latin1_swedish_ci	Yes	NULL			Change  Drop  More
<input type="checkbox"/>	5	Genres	varchar(100)	latin1_swedish_ci	Yes	NULL			Change  Drop  More
<input type="checkbox"/>	6	Month	varchar(100)	latin1_swedish_ci	Yes	NULL			Change  Drop  More
<input type="checkbox"/>	7	Year	double		Yes	NULL			Change  Drop  More
<input type="checkbox"/>	8	Language	varchar(100)	latin1_swedish_ci	Yes	NULL			Change  Drop  More
<input type="checkbox"/>	9	Description	varchar(1000)	latin1_swedish_ci	Yes	NULL			Change  Drop  More
<input type="checkbox"/>	10	Image_Url	varchar(100)	latin1_swedish_ci	Yes	NULL			Change  Drop  More
<input type="checkbox"/>	11	Audio_Url	varchar(100)	latin1_swedish_ci	Yes	NULL			Change  Drop  More

☐ Check all With selected: Browse Change Drop Primary Unique Index Fulltext

Print Propose table structure Move columns Normalize

Add 1 column(s) after Audio\_Url Go

Figure 5.1: Database Model

This is my MySQL database table structure. Here we have 11 columns. The image\_URL and audio\_URL contains the image data and audio data of the books. Every book has its own unique ID. Author name is the writer of the book. On the title column we have all the book titles. Types and genres are an especially important part of this database because based on the type and genre we are going to train our machine learning model.

## 5.2 Implementation of Backend API

We used the rest API using the CRUD method. CRUD is a programming concept that refers to the four basic actions (create, read, update, and delete) that can be performed on a data source.

In a REST API, these actions correspond to the types of requests or request methods:

**Post:** Create action. Adds new data to the server. By using this type of request, for example, you can add a new ticket to your list.

**Get:** Read action. Receives information (such as a list of objects). This is the most common type of request. Using this, we can get the data we are interested in that the API is ready to share.

**Put:** Update action. Replaces existing information. For example, using this type of request, it would be possible to change the color or price of an existing product.

**Delete:** Delete action. Deletes existing information.

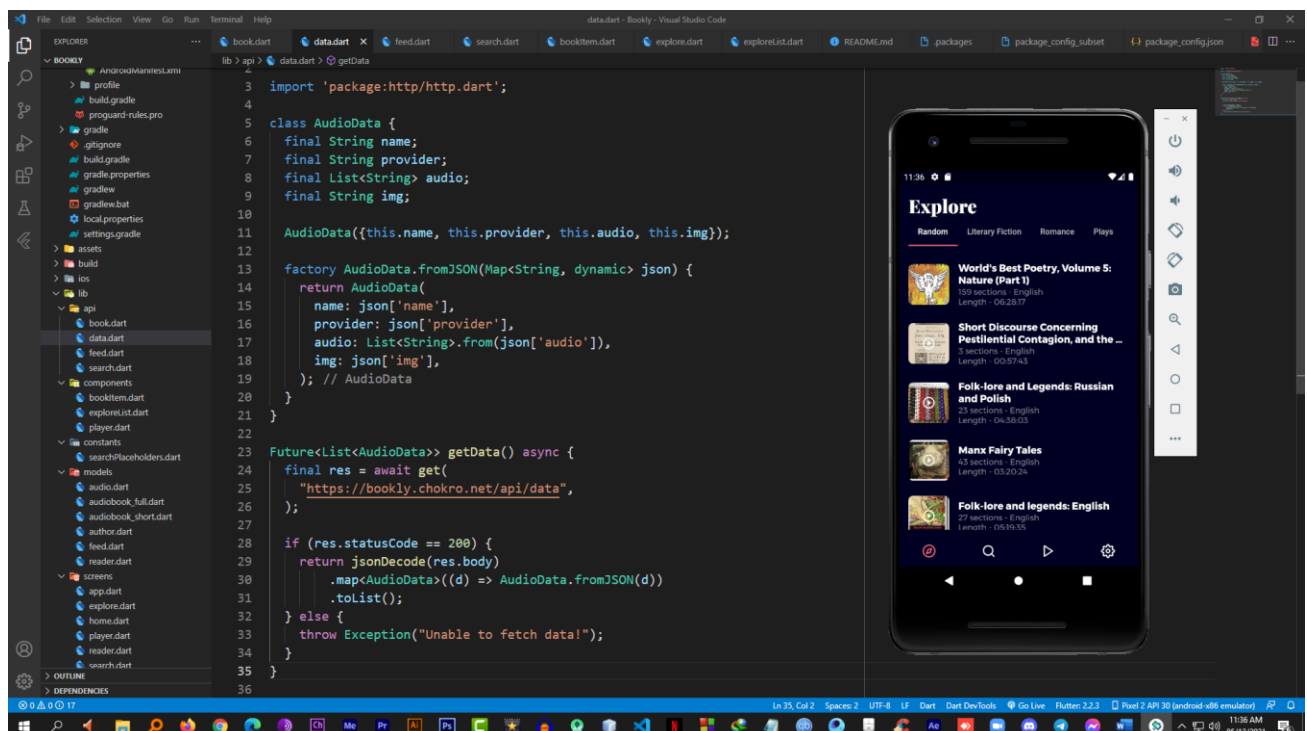


Figure 5.2: Implementation

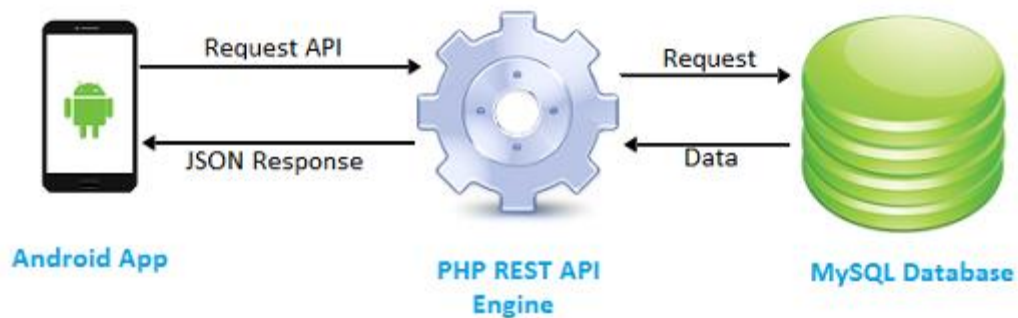


Figure 5.3: Backend API Model

## 5.3 Implementation of Audiobook recommendation System

We used a procedure named ‘cosine similarity’ for the auto recommendation system. It’s a ratio between two non zero vectors. And it is equal to the angle between the two vectors, which yields an internal common vector of the same length. The procedure cosine similarity only focuses on the angle between the vectors, not any other things.

### 5.3.1. Proposed Methodology

The proposed procedure only measures the perspective of 2 gadgets. It does the work of comparison work on a normal scale. The works may also finish by a mere dot product of the two mentioned entities.

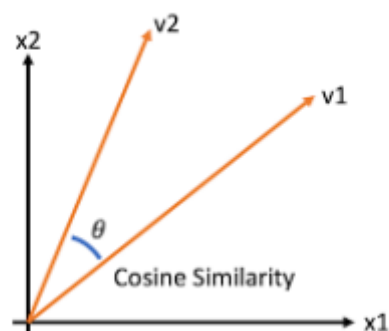


Figure 5.4: Cosine similarity

Here in the figure two vectors are  $v_1$  and  $v_2$ . The angle between them is  $\theta$ . Larger angles decrease the similarity and vice versa. This can be simplified by the statement that if the angle is small the vectors are the same but if it is big they are totally different.

### 5.3.2 Background of Cosine\_similarity

It is a metric to measure the similarities between two entities, without bothering about their sizes. It measures the angle between two vectors projected on a space. It is a blessing. Because even if two similar vectors are way apart from each other, they can still be close to each other. If the angle is small the similarity increases. It works depending on common words used in the document. But it also has a drawback. When the size of the document increases it also increases the commonly used words. It counts all of it, not even looking that it is a completely different topic.

#### Cosine Similarity Example:

Let's assume we have 2 players statistics – Sachin Tendulkar and Dhoni. All the documents are from wikipedia.


Document - Term Matrix (Word Counts)				Similarity Metrics			
Word Counts	"Dhoni"	"Cricket"	"Sachin"	Similarity or Distance Metrics	Total Common Words	Euclidean distance	Cosine Similarity
Doc Sachin	10	50	200		10 + 50 + 10 = 70	432.4	0.15
Doc Dhoni	400	100	20		20 + 10 + 7 = 37	204.0	0.23
Doc Dhoni_Small	10	5	1		10 + 10 + 7 = 27	401.85	0.77

Figure 5.5: Cosine Similarity Example

### **5.3.3 Data-Set Collection**

We made a dataset of 1000 audiobooks with 5 rows and 24 columns. After creating a new column which combines all selected features it becomes 956 books with 5 rows and 25 columns.

### **5.3.4 Data Preparation**

First we import the whole dataset. Then choose some field and create a new column. Then create a count matrix from this newly made column by using CountVectorizer. After that the dataset is ready to use.

### **5.3.5 Proposed Model**

It's a ratio between two non zero vectors. And it is equal to the angle between the two vectors, which yields an internal common vector of the same length. The procedure cosine similarity only focuses on the angle between the vectors, not any other things. . The cosine of  $0^\circ$  is equal to 1, apart from this any angle between the vectors is less than 1 radian. This is why we only can estimate the direction not the quantity: if two vectors share 0 degree angle their cosine similarity is one means they are same, if they share 90 degree angle their cosine similarity is zero means they are completely different. Cosine similarity only works on positive sight, not looking about the size. Cosine similarity can be used in any dimension; only the space should be positive.

### **5.3.6 Result Discussion**

The similarity on audiobooks is done based on many different properties. If two vectors are projected on a space it calculates the angle between them.. It is helpful to find similar objects. We have used Cosine Similarity and CountVectorizer function to build the recommendation system of our app coded in python using NumPy and pandas libraries.

```

from google.colab import drive
drive.mount('/content/drive')

Drive already mounted at /content/drive; to attempt to forcibly remount, call drive.mount("/content/drive", force_remount=True).

import pandas as pd

bookly_df = pd.read_csv('/content/drive/MyDrive/Bookly Dataset/Bookly-Audio-Dataset.csv')
bookly_df.head()

#df = pd.read_csv("movie_dataset.csv")
#df.head()

features = ['Type','Genres','Author_Name']

def combine_features(row):
    try:
        return row['Type'] + " " + row['Genres'] + " " + row['Author_Name']
    except:
        print ("Error:", row)

bookly_df['combined_features'] = bookly_df.apply(combine_features,axis=1)

bookly_df

```

Book_ID	Author_Name	Book_Title	Type	Genres	Month	Year	Language	Description
0	Humayun Ahmed	Misir Ali Apni kothay	Fiction	Detective,Mystery	November	2021	Bengali	Hey there! Thanks for watching this video.Vin...
1	Nik Pirog	Three Thirty Four AM	Fiction	Horror,Adventure,Mystery	November	2021	Bangali	Hey there! Thanks for watching this video.Vin...
2	Humayun Ahmed	Kathpencil	Fiction	Detective,Mystery	November	2021	Bengali	Hey there! Thanks for watching this video.Vin...
3	Nik Pirog	Three Thirty One AM	Fiction	Horror,Adventure,Mystery	November	2021	Bengali	Hey there! Thanks for watching this video.Vin...
4	Humayun Ahmed	Nirbashon	Fiction	Detective,Mystery	October	2021	Bengali	Hey there! Thanks for watching this video.Vin...

Figure 5.6: Machine Learning Algorithm

```

print ("Combined Features:", bookly_df['combined_features'].head())

##Step 4: Create count matrix from this new combined column

Combined Features: 0      Fiction Detective,Mystery Humayun Ahmed
1      Fiction Horror, Adventure, Mystery Nik Pirog
2      Fiction Detective,Mystery Humayun Ahmed
3      Fiction Horror, Adventure,Mystery Nik Pirog
4      Fiction Detective,Mystery Humayun Ahmed
Name: combined_features, dtype: object

combine_features = []

for feature in bookly_df['combined_features']:
    feat = str(feature).replace(","," ").replace(" ",",")
    combine_features.append(feat)

combine_features[:10]

['Fiction Detective Mystery Humayun Ahmed',
'Fiction Horror Adventure Mystery Nik Pirog',
'Fiction Detective Mystery Humayun Ahmed',
'Fiction Horror Adventure Mystery Nik Pirog',
'Fiction Detective Mystery Humayun Ahmed',
'Fiction Horror Adventure Mystery Nik Pirog',
'Fiction Horror Adventure Mystery Nik Pirog',
'Fiction Detective Mystery Humayun Ahmed',
'Fiction Novel Humayun Ahmed',
'Fiction Detective Mystery Humayun Ahmed']

bookly_df.shape[0]

500

import numpy as np
from sklearn.feature_extraction.text import CountVectorizer
from sklearn.metrics.pairwise import cosine_similarity

##### helper functions. Use them when needed #####
def get_title_from_index(index):
    return bookly_df[bookly_df.Book_ID == index]['Book_Title'].values[0]

```

Figure 5.7: Machine Learning Algorithm

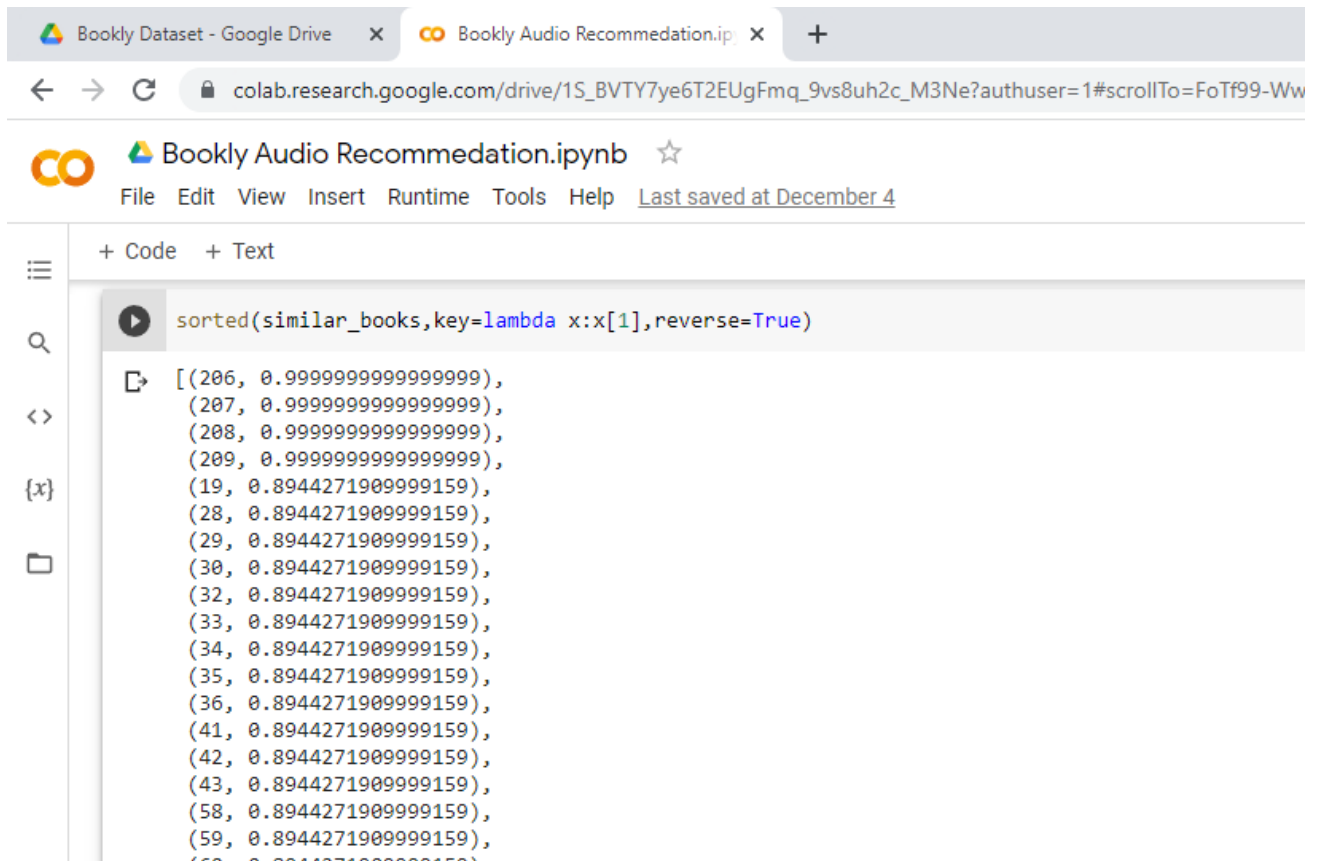


Figure 5.8: Machine Learning Algorithm

```
[ ] ## Step 7: Get a list of similar audiobooks in descending order of similarity score
sorted_similar_books = sorted(similar_books, key=lambda x: x[1], reverse=True)
```

```
[ ] ## Step 8: Print titles of first 10 Audiobooks
i=0
for element in sorted_similar_books:
    print (get_title_from_index(element[0]))
    i=i+1
    if i>10:
        break
```

```
Megher Chaya. Shuvro. [Part-1]
TondraBilas. [Part-4]
TondraBilas. [Part-3]
TondraBilas. [Part-2]
Pishachini
Himur Ekanto Shakkhatkar O onnano
Nee
Chokkhe Amar Trishna
Nishad
Ami Ebong Koyekti Projapoti
Megher Upor Bari
```

Figure 5.9: Machine Learning Algorithm

## 5.4 Android App Implementation

We discussed app implementation in detail at **4.1 Front-End Design**, Now have a look at some of the important files on dart code in the app.

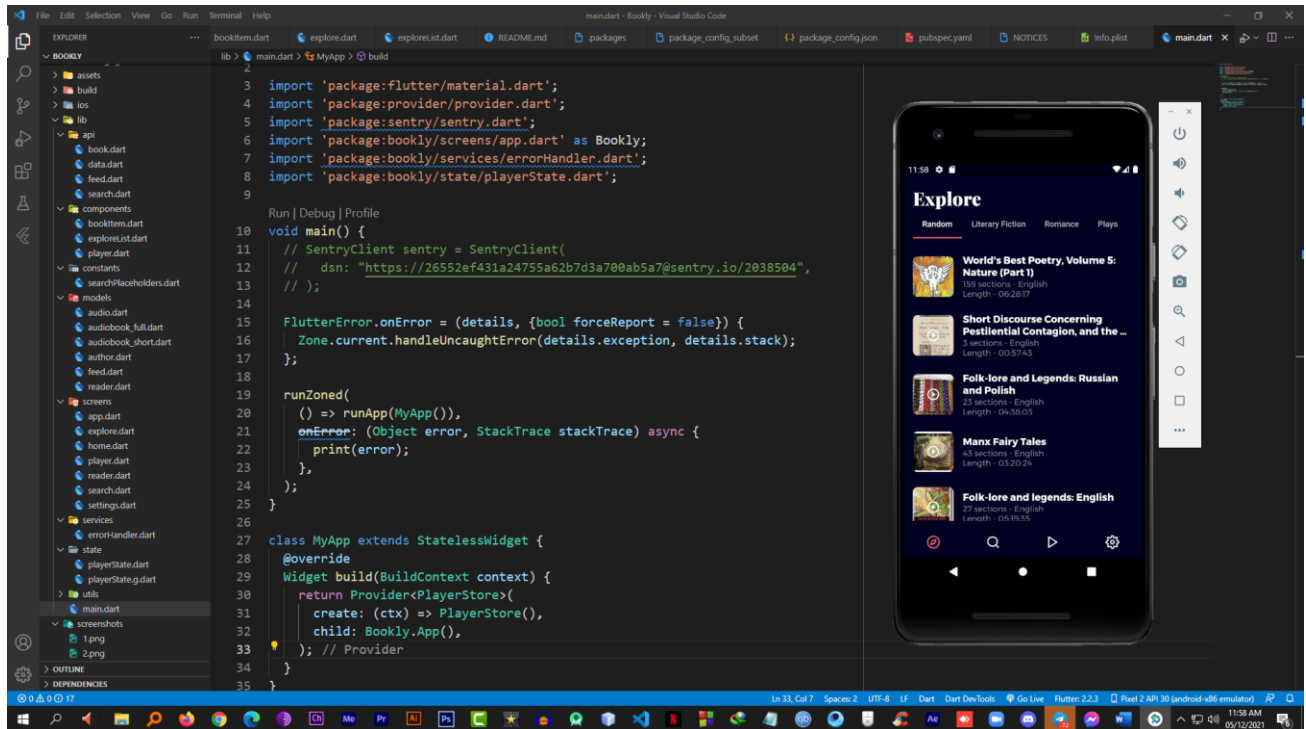


Figure 5.10: App Implementation

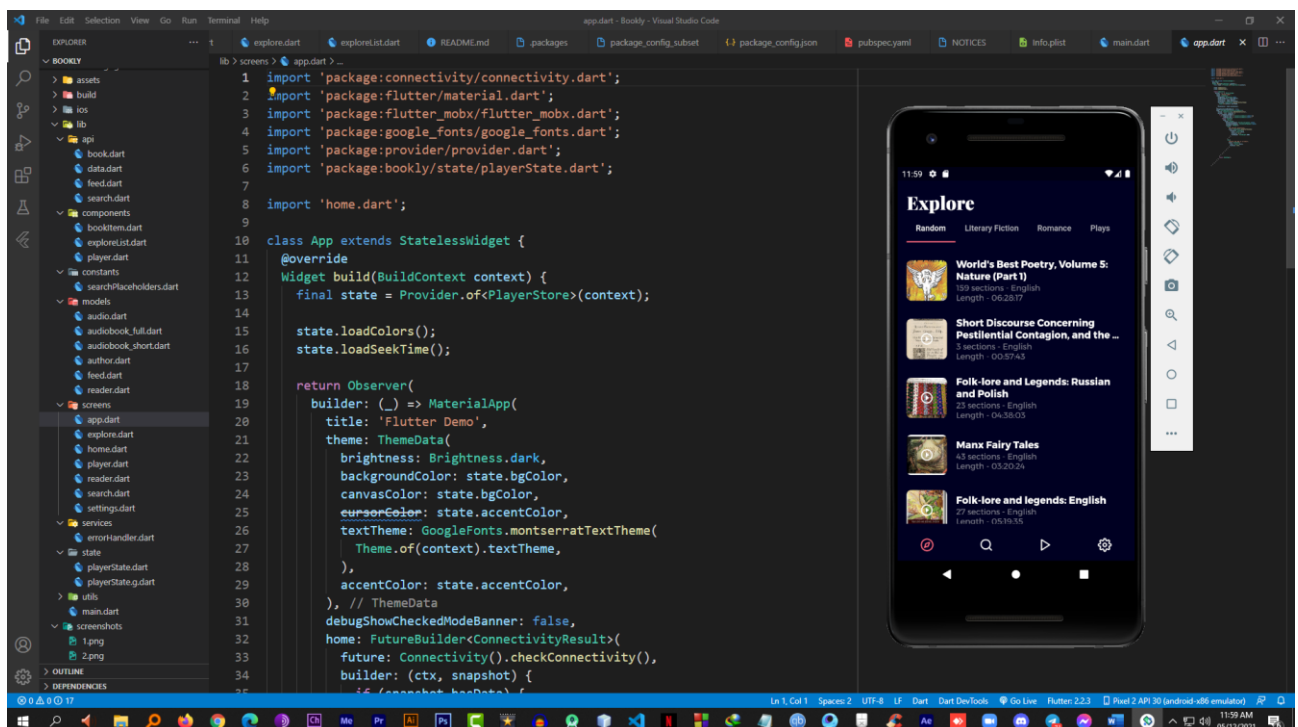


Figure 5.11: App Implementation

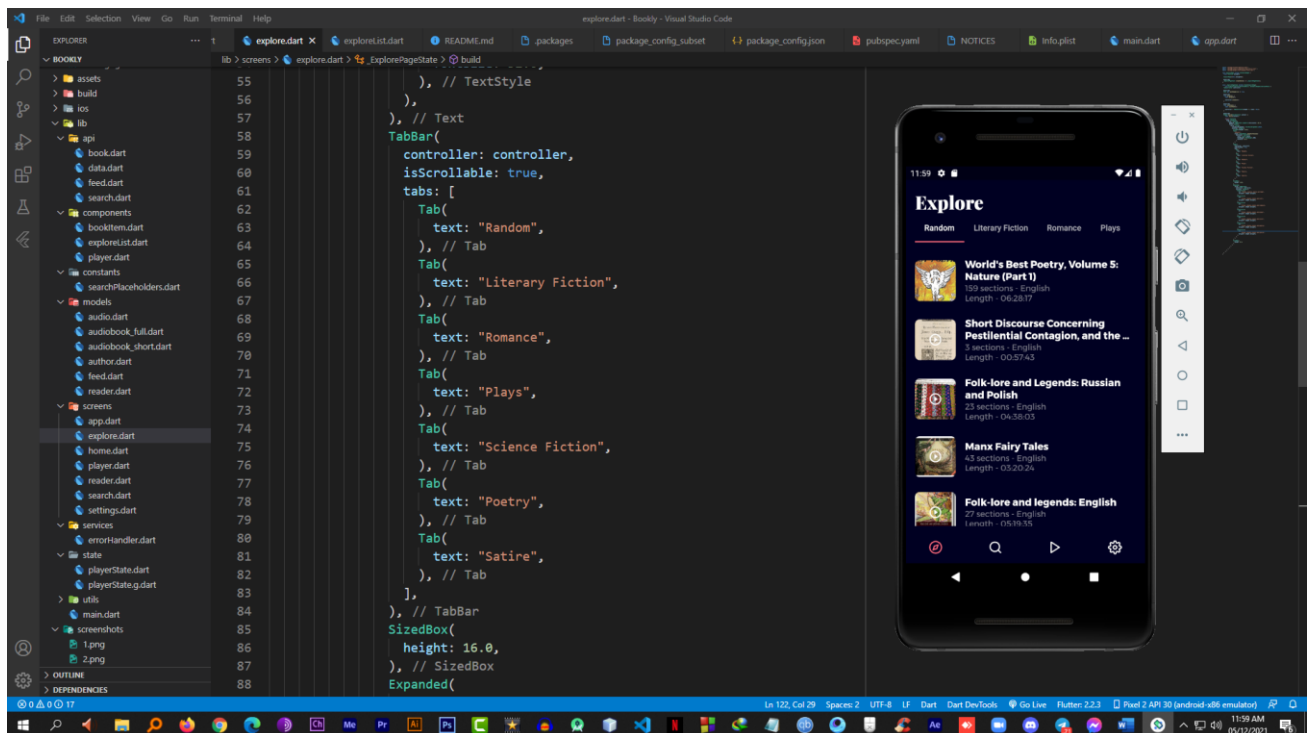


Figure 5.12: App Implementation

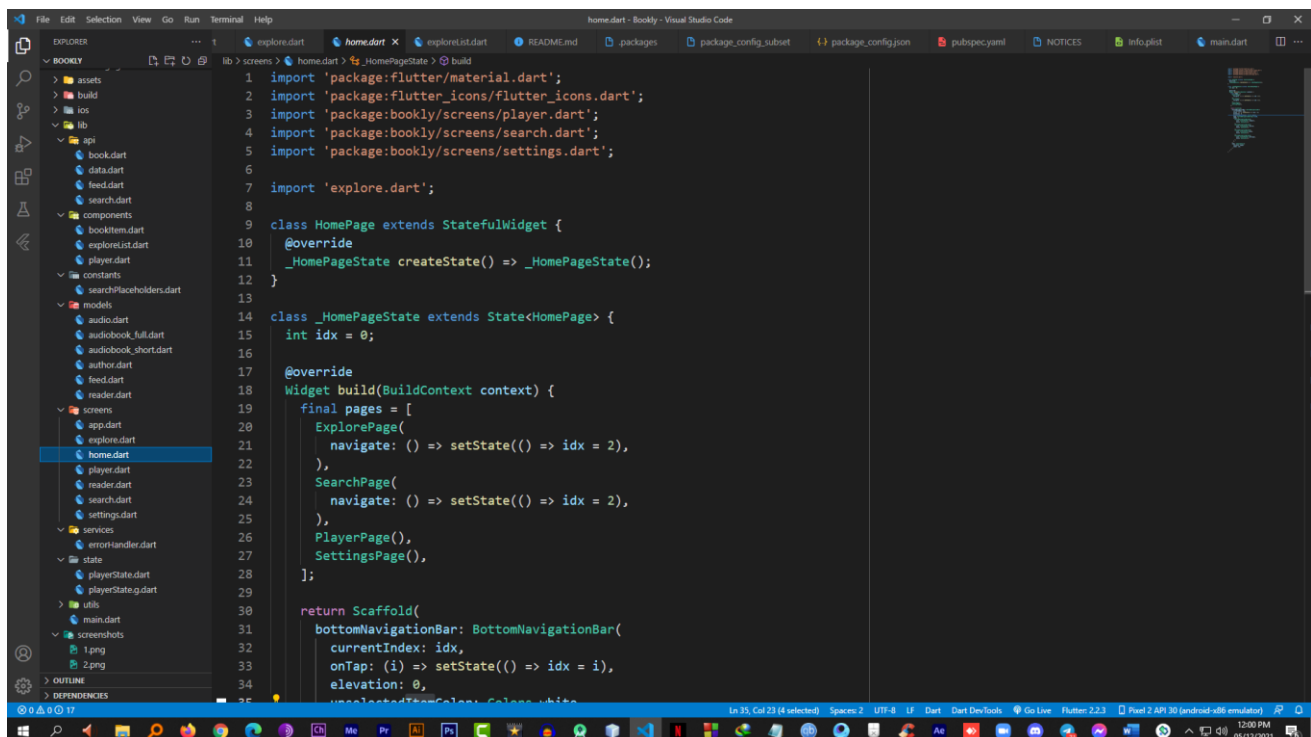


Figure 5.13: App Implementation

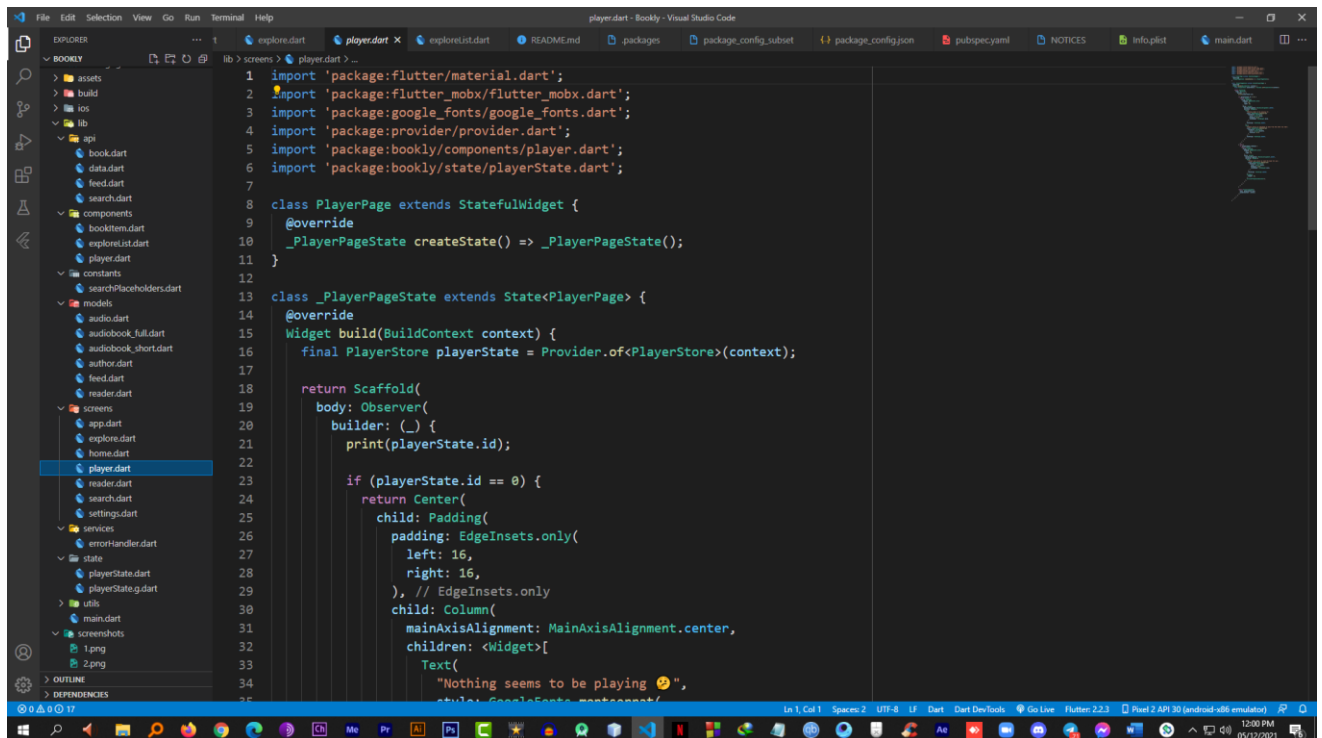


Figure 5.14: App Implementation

## 5.5 Implementation of The Website

We created an app landing page using HTML, CSS & JavaScript. With this website people can view app details and download the app directly from our server both Android & iOS version.

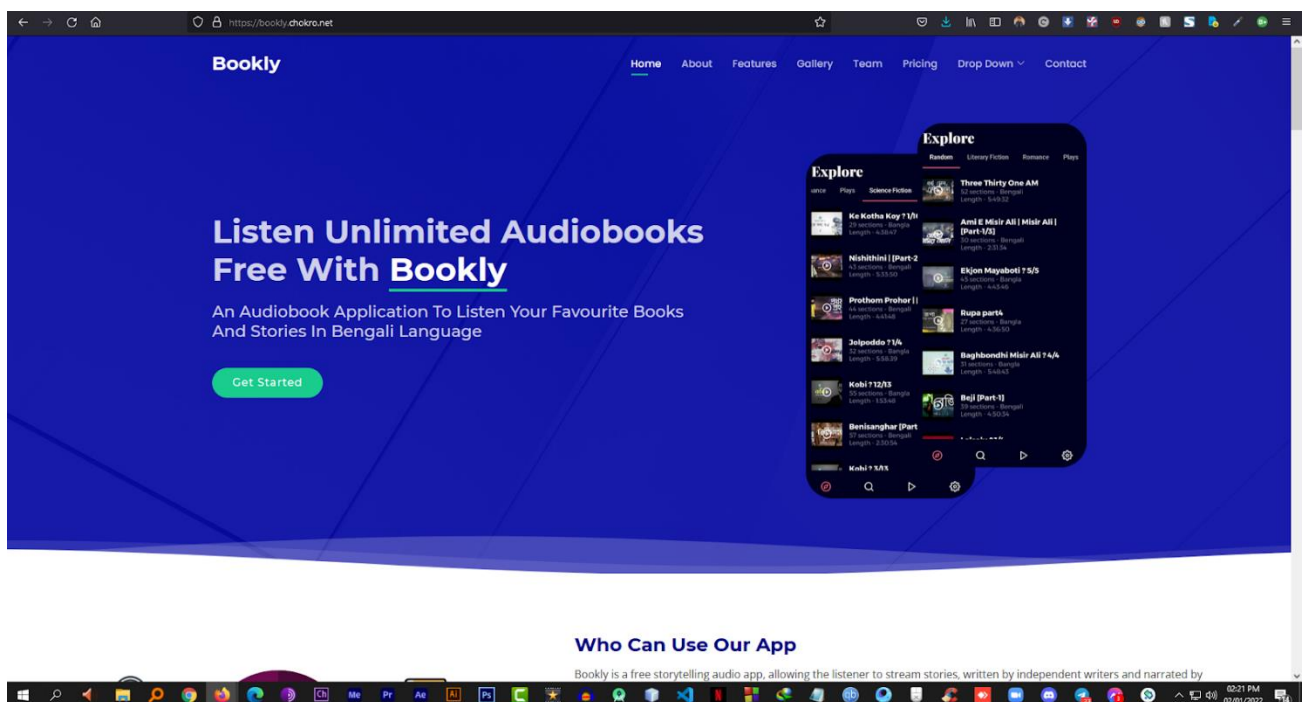


Figure 5.15: Website Implementation

## **5.6 Implementation of Interaction**

Interactive application tells the story of a successful project. Almost every internet user of our country's expectation is for an user-friendly environment. Complex applications do not attract users. That is why our goal is to make the application user friendly. And we tried our best to do so.

## **5.7 Testing Implementation**

After creating the app we run the app several times on our emulator. Then we tested it on our phone. Our project instructor also tests the app by himself.

## **5.8 Testing Result and Reports**

We tested our apps to find if there is any bug or not. From the testing phase we encountered several bugs. And we tried to fix it all.

## **CHAPTER 6**

### **CONCLUSION AND FUTURE SCOPE**

#### **6.1 Discussion and Conclusion**

Audiobook app Bookly will help the users to multitask while listening to their favourite books. Then I do not need to spend extra time reading books. They can use that time to do something else. Books are man's best friend. Many people do not like to read books. This audiobook will be interesting for them and will benefit them with time. We will add more features in the future based on user response.

#### **6.2 Scope for Further Developments**

As we all know, developing is a continuous process. We have some plans to implement to our app in the future. Here are some of those:

- Will analyze the feedback data of the users and bring changes to the app.
- We will keep track of the user behaviour on the app and recommend their favourite books.

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## APPENDIX

### Appendix: A Project Reflection

Back in 2020 we began to build our project. We did plenty of studies on the topic. We tried to get to know about the currently available audiobooks in the market. We collected the relevant information from those platforms.

We focused to keep the UI user friendly as much as possible. We tried to keep it simple and make it user-friendly. This interface will be understandable for any users. So, We hope the Bangla audiobook will be extremely popular to the users.

## PLAGIARISM

### Plagiarism Report:

