

Online Music Application with Modified Features of Bangla Songs

by

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A project submitted to the Department of Computer Science and Engineering
in partial fulfillment of the requirements for the degree of
M.Eng. in Computer Science

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Brac University
May 2024

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Declaration

It is hereby declared that

1. The project submitted is my own original work while completing degree at Brac University.
2. The project does not contain material previously published or written by a third party, except where this is appropriately cited through full and accurate referencing.
3. The project does not contain material which has been accepted, or submitted, for any other degree or diploma at a university or other institution.
4. I have acknowledged all main sources of help.

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Abstract

The musical industry has been transformed through a revolutionary change over the past few years due to the increasing availability of the internet across the globe. In this phenomena, musical streaming mobile application plays a significant role. It is easy to use, hassle free to download, effortless streaming and sharing experience and gives the musical industry a new platform of promotion and earning revenue along with the user benefits. Some of the most famous Mobile Applications used all around the world are Spotify, Apple Music, Sound Cloud etc. The common features in all these applications are huge libraries of music of various countries, genres, artists, customizable playlists, and machine learning algorithms applied in understanding each user's preferences for song recommendations. These Applications not only foster the listeners' benefit but also provides a revenue platform to the artists. They launch services like subscription selling, advertisement generation, promotional strategies, patron support from listeners etc. that expand business growth. Although there are issues faced very commonly such as artist compensation, user privacy maintenance, streaming issues etc. My proposed Music Application has provided a streaming platform to not only surf the international songs but also an individual module to browse for Bangla songs. There is unavailability of Bangladeshi Music Mobile Application that is a hybrid platform for both local and foreign artistry. This application provides some unique features along with an efficient business model that makes it stand out on the market and holds potential for a futuristic approach.

Keywords: Mobile Application; Mobile Banking; Music; Subscription; Hybrid; Flutter; Communication

Dedication (Optional)

A dedication is the expression of friendly connection or thanks by the author towards another person. It can occupy one or multiple lines depending on its importance. You can remove this page if you want.

Acknowledgement

Firstly, all praise to the Great Allah for whom my project have been completed without any major interruption.

Secondly, to my supervisor Dr. Muhammad Iqbal Hossain sir for his kind support and advice in my work. He helped me whenever I needed help.

And finally to my parents without their throughout support it may not be possible. With their kind support and prayer I am now on the verge of my post graduation.

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Chapter 1

Introduction

1.1 The idea behind the project

The big musical streaming platforms like Spotify, Sound Cloud etc. are international companies based in outer countries. There is no such existing independent Bangladeshi Platform which has a wider reach to the audience to make our regional artist and produced music have a marketplace. The existing streamers either belong from any cellular operators like Banglalink Vibe, GP Music, Robi Yonder Music or Shadhin, Bongo that are not hybrid or serve the sole purpose of bringing all the services under one shed. The necessity, utility and absence of services are the generating factors behind this project's idea.

1.2 Objective

Among many motivating factors, the first stating factor can be the optimization of the communication procedure between our local music production houses and international streaming platforms. It is easier to build a network, set terms and policies, reach out to a local company rather than dealing with organizations outside. Another obstacle can be the subscription purchasing system of these Applications. Spotify, Sound Cloud do not provide any gateway for mobile banking for our regional users which is one of the most convenient, widespread, and demanded method of payment in Bangladesh in today's date. User convenience is set as the topmost priority factor while selling off a service which in this can has not been ensured. The third notable point can be there are no existing hybrid application for both International and local music streaming currently built in Bangladesh on which we are losing out in this very potential marketplace and lagging behind. This Application is going to provide a suitable, affordable, multifunctional streaming service to the audience and music industry of Bangladesh.

1.3 Components of the project

This project consists of three components all being interdependent. The publisher end has both artist and company registration slots, then there is an administrative panel for the maintenance and executive parts of the Application and the third actor being the end user with both logged in subscriber and guest user module.

1.4 Web Application

An aspired future expansion of this project is its web version. Website format of any system provides the usage run online. It is not a locally used system on the device, but an online browsing platform that connects with the server bringing data from API. Keeping the functionality of the Application intact this version serves a wider range of audiences.

1.5 Mobile Application

The most crucial part of this project is its Mobile Application and the choices of its released platforms. I have chosen Flutter developing tool to build this Application since it is a hybrid approach both working for Android and iOS with the same code. It reduces the hassle of rebuilding the Application for different operating systems. It will simultaneously be available for downloading on both Play Store and App store. Users will be able to buy subscriptions through online payment methods like card and mobile banking. Registered users will have access to exclusive features such as Bangla Song directory, customizable playlist etc.

Chapter 2

Related Work

2.1 Mobile Application for Music Applications

There are several Music Applications available on the market. Some of the most renowned names are Spotify, Apple Music, Amazon Music, Youtube Music, Gaana, JioSaavn etc. Some of these applications are hybrid in terms of content release as they bring both regional and music of other countries in one Application. Others only display their local regional music. If the Bangladeshi Application regarding this concept is taken into account, there are very few names like Banglalink Vibe, GP Music, Robi Yonder Music, Shadhin etc who let the user stream music. Although Spotify is a hybrid Application that release Bangla Music to a limited amount, but it is not featured in the most convenient way for Bangladeshi users. The other mentioned Applications do not serve the sole purpose of this project despite of having a similar structure.

2.2 Existing Application Review

Among many motivating factors, the first stating factor can be the optimization of the communication procedure between our local music production houses and international streaming platforms. It is easier to build a network, set terms and policies, reach out to a local company rather than dealing with organizations outside. Another obstacle can be the subscription purchasing system of these Applications. Spotify, Sound Cloud do not provide any gateway for mobile banking for our regional users which is one of the most convenient, widespread, and demanded method of payment in Bangladesh in today's date. User convenience is set as the topmost priority factor while selling off a service which in this can has not been ensured. The third notable point can be there are no existing hybrid application for both International and local music streaming currently built in Bangladesh on which we are losing out in this very potential marketplace and lagging behind. This Application is going to provide a suitable, affordable, multifunctional streaming service to the audience and music industry of Bangladesh.

2.3 Components of the project

Among the various available applications on the marketplace I have reviewed some of the relevant ones with each of the problem statement that is being offered with modification in this project.

2.3.1 Spotify

It is the most renowned music streaming Application all around the world with a huge library of over 70 million songs, artist accounts, albums and banners release, podcasts etc. variety of content and subscriber count. Spotify deals with musical content of different localities and languages. Spotify has various kinds of subscription plans like free tier, premium subscription, family plan, student plan, duo plan. It has included Bangla song module as well. But the inconvenience arises on the payment gateway which is limited to card payments online only. For Bangladeshi perspective there are not many credit card users on the root level which makes it difficult to take subscription.

2.3.2 Sound Cloud

Sound cloud is an application best known for its registered artist defining variation where independent singers can upload their content. It differentiates the big label holder registers from the new comers and gives a platform to showcase their talent also gain from it. This Application also holds audiobooks and other verbal content. But here also the same issue is faced for Bangladeshi Users, the communication optimization and payment convenience along with our regional content variety that is unavailable.

2.3.3 GP Music

It is not a separate Application but a feature provided by the cellular operator Grameen Phone's regular Application MyGP. There are several other such mobile operators providing similar service like Banglalink Vibe, Robi Music etc. But these are very limited features not a separate music application.

2.3.4 Shadhin

The only similar application with this project's concept is this application Shadhin that is run by Radio Shadhin FM Station. This application displays limited library of Bangla band music. But this is not a hybrid application with international music in it.

2.4 Review and Improvement in My Music Application

The main goal of My Music Application is to create a hybrid platform with vast library setup easier for Bangladeshi customers to consume. It creates a local platform for artists and users to collaborate, participate and consume the services. The unique

features that this application is going to provide are Bangladeshi Music Application, Mobile Banking, personalized easier and cheaper subscription packages etc.

Chapter 3

My Music Application what is it?

3.1 Project Summary

My Music Application will have three types of access account with sub branches. The three main actors are-

- User or Subscriber (Registered and Guest)
- Publisher (Individual Artist and Music Company)
- Admin

The Subscriber will download the application from Play Store or App Store. Then he can log into the system by signing up as a new user or logging in as a registered user if signed up before. Signing up will require buying a subscription package among various available offers. There is another option for an user to enter the application, that is as a guest user. Guest users can view some of the features of the application but not all. Some exclusive features will be inaccessible to the guest user. After the Splash introductory screen and login or sign up screen, the user will land upon the dashboard screen where all the song directories are displayed. Then on each feature press the user will be navigated to different interfaces.

The Publisher can either be any individual artist or a music house. They need to create their own user account like the login, signup method. There will be song uploading option for them.

The admin panel will have access to all the account's backend for monitoring, updating and shifting changes in the interface. They have the authority to delete, block, update features and accounts.

3.2 Problem Identification

The Problems of current scenario of music application availability in Bangladeshi consumerism are listed below- • No hybrid music application available on the market of Bangladeshi produced applications • Payment gateway not included mobile banking in existing applications • Artists and publishers have to face a communication barrier while dealing with international application administration • Very low ratio of Bangla songs streamed on existing applications • Lack of opportunities for smaller local music brands to earn from streaming platforms

3.3 Importance of Project

This application is going to create a promising market for the music industry of Bangladesh. Surprising fact being this concept has not been implemented in our local application production yet is a big opportunity to ace. It not only creates a platform for our singers but also the users get to easily enjoy the service through more adaptable payment gateways. It will create a comfortable communication bridge between the application administration and the publishers to make dealings since it will be our very own regional product. There will be cheaper packages for the subscribers to receive. Also it will provide a wide range of Bangla music along with the international which is a all in one place combination for the users.

3.4 Development Methods

The Scrum model is an agile framework used for developing, delivering, and sustaining complex products. It is particularly popular in software development but can be applied to any field that requires a flexible and iterative approach to project management. Scrum emphasizes collaboration, accountability, and iterative progress toward a well-defined goal. In this product I will be using Scrum method of Agile Development. The benefits are-

- All aspects of the process will be visible to those responsible for the outcome. This includes having a common understanding of what completion means.
- Regularly checks progress toward a sprint goal to detect variances. This is done through Scrum events like the Daily Scrum and Sprint Review.
- Adjusts processes and practices to minimize deviations from the goal. Adaptation is often based on insights gained during inspections.

3.5 Business Request for My Music Mobile Application

Table 3.1: Business Requirements

Project Name	Online Music Application with Modified Features of Bangla Songs
Project Sponsor	Dr. Muhammad Iqbal Hossain
Business Need	The Primary Motivation of this Application is to create a convenient and user, artist friendly music application with hybrid features and diverse payment gateways in Bangladesh's perspective. <ul style="list-style-type: none"> -Licensing and Copyrights -Content Acquisition -Platform Capability -User Experience Design
Business Requirements	<ul style="list-style-type: none"> -Monetization Strategy -Payment Processing -Legal and Compliance Requirements -Customer Support and Feedback -Marketing and Promotion -Convenience and Accessibility -Personalization and Discovery -Revenue Generation -Audience Engagement
Business Values	<ul style="list-style-type: none"> -Promotion and Exposure -Data Insights and Analytics -Brand Partnerships and Advertising -Community Building -Global Reach and Cultural Exchange -Innovation and Industry Growth -Changing industry Dynamics -Data Privacy and Security -User Engagement and Discovery -Technical Infrastructure
Constraints	<ul style="list-style-type: none"> -User Acquisition and Retention -Monetization Pressure -Competition and Market Saturation -Platform Fragmentation -Content Acquisition Costs -Licensing and Copyright Issues

Chapter 4

Product Description

4.1 Web Application

This is one of the major components of My Music Application. Web Application drives to an extended version of service to the users, enhancing the modulation of an application.

4.1.1 Usability

The Web Application provides the services of My Music Application on web devices connecting to the web server. Mobile applications are comprehended for the use of mobile users only whereas this web version will be serving to the personal computers, tablets and other devices.

4.2 User Management

User Types There are three types of end users of this web application-

- 1) Subscriber
- 2) Publisher and
- 3) Admin.

Manipulate Users

The Admin Panel has the access to create, delete, restrict etc control over the users.

- Create Users :

When a new subscriber purchases the subscription, a new registered user profile is created for that subscriber with personalized playlist options.

- Delete User :

When a registered user closes profile that profile is then terminated from the system interface.

- Restrict User :

When the user entering the application is not a registered user but uses the app as a guest user, some features are then restricted from that guest user, here bangla song list has been restricted for guest user's use.

- Maintain Publisher Profile :

Admin also manages registered publisher profile which requires constant monitoring and permission before uploading content.

4.3 Mobile Application

4.3.1 Structure

My Music Mobile Application is a software application designed for mobile devices like smartphones and tablets, allowing users to stream, download, listen to, and manage music. This application offers a variety of features to enhance the music listening experience and often include social and discovery components. Here I have used Flutter tool and Android Studio as a platform to build this Application. The programming language is Dart. The reason for choosing this platform is the hybrid nature of being applicable for both IOS and Android platforms. I have also integrated Firebase Firestore Database system into my code.

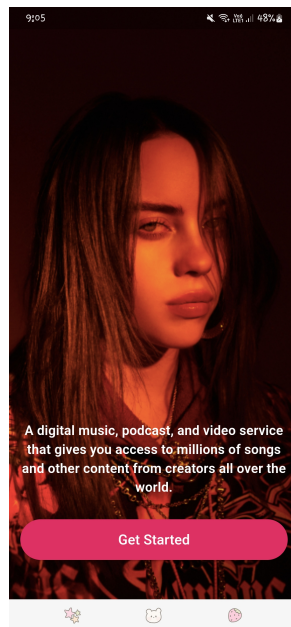


Figure 4.1: Splash Screen

The Application starts with a Splash Screen of Introductory message. Here the graphical image have been set as an asset in the code taken from open source. Once the Get Started button gets pressed user is navigated to the Login page.

4.3.2 Login Page

In the login page the user is asked to login if previously registered user, or visit as guest user with restricted features. These two are currently functional manuals of this Application. This page contains other features-

- Logo
- Login Floating pop up
- Email Address or User Name entry field
- Password Entry filed

- Password visibility turn on/off button
- Login Button
- Guest User button
- Sign up Button
- Forgot Password feature
- New member sign up message

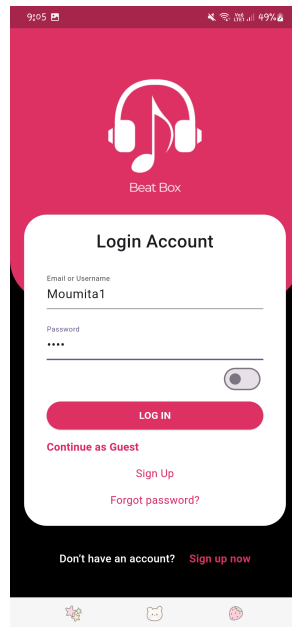


Figure 4.2: User Credential

Here I have set username as “user” and password as “password” manually for the initial entry. This login feature will be modified with login database through an API where all the users’ username, email address and corresponding passwords will be stored and while giving entry it will be checked. Here if the user login entry does not match with my set credential then an warning pop up will show up to enter valid username and password. Here the condition matches with my previously set credentials and then only lets the user go to the next page as a logged in user with special features availability.

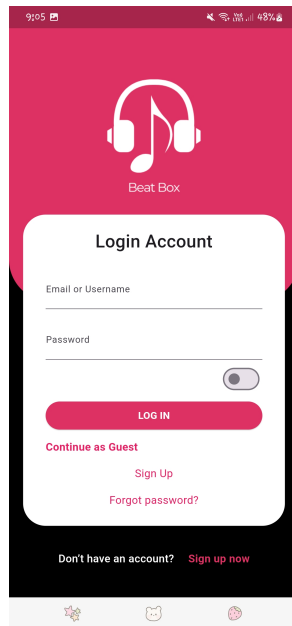


Figure 4.3: User Login Page

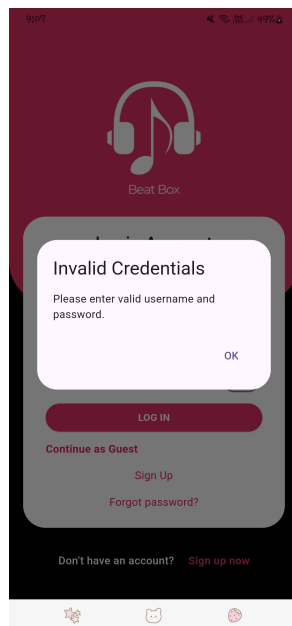


Figure 4.4: Wrong Credentials

For the guest user entry just pressing at the guest user button will navigate to the next page.

I have also created a sign up option for the new registration of users. While user presses the sign up button a registration pop window opens. There the user can insert email address or username and a password to register. That registration form is then redirected to a payment page where the subscription will be bought. The Payment Page consists of two payment gateways Mobile Banking and Card Payment. The Mobile Banking includes gateways like Bkash, Nogod, Rocket and the Card Payment has options like Visa Card, PayPal, American Express and Master Card.

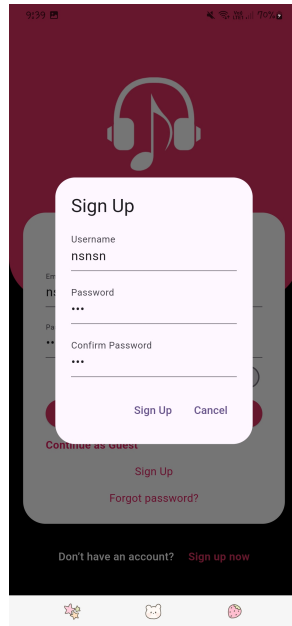


Figure 4.5: Sign Up

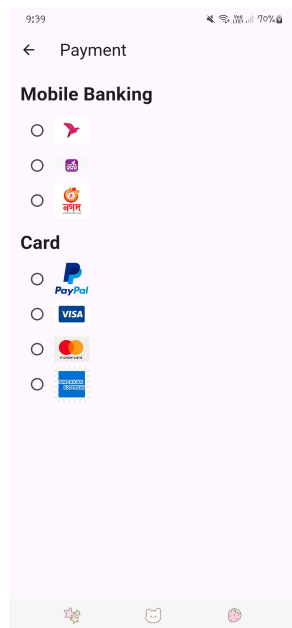


Figure 4.6: Payment Gateways

While the user signs up the credential information gets stored in my Firebase Firestore database user table. Later each time the user logs in with that credential the login is authenticated from the database.

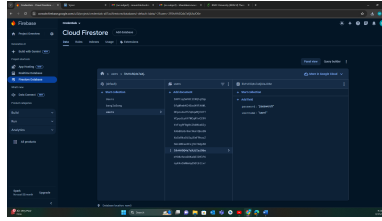


Figure 4.7: Database User Credential Table

4.3.3 Dashboard

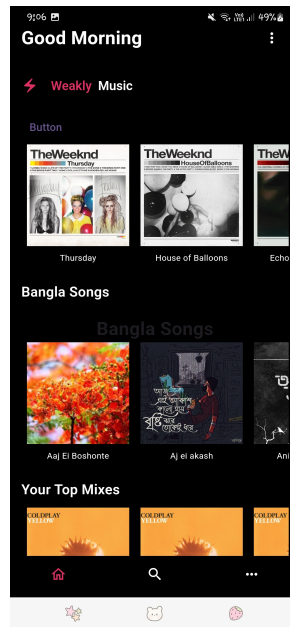


Figure 4.8: Album List

Here the interface holds a list of albums of songs. This list is fetched from an API that contains fields like Album Name, Artist Name, Year Released, Style, Genre, Label, Release Format, Album Thumbnail, Description, Speed, Location, All Music, Review, Rating, Wikipedia ID, iTunes ID, Amazon Id etc. The values of these fields for each album can be fetched from this API and display on the Application.

The next Widget holds the Bangla Song List of few selected songs. This list is open for guest users as it is a limited library. The data inside this list is inserted dynamically through database. I have created a Bangla Song table in my Firebase Firestore Database where image, audioUrl and songName fields have been inserted manually in the database. The audioclips are both set in the database and manually fetched from the codebase assets folder.

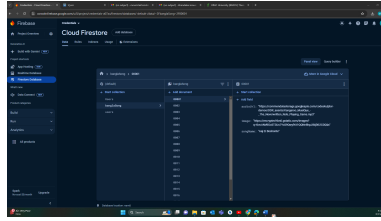


Figure 4.9: Bangla Song List Database

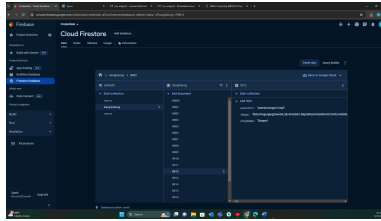


Figure 4.10: Bangla Song List Database from code

Here while each song is played the Player Page opens. It has a loop running till the length of the list. By pressing next and previous button the songs will keep shuffling.



Figure 4.11: Player

Then comes the song list which is also another set API. All the song data comes from the API dynamically. The change in data on the server will navigate the change in the fetched data in the application, there is no manual way to insert or change data from the application interface. The API can be modified when server access is acquired. In the song list API the data parameters are Track ID, Album ID, Artist ID, Artist ID, idIMVDB, strTrack, strAlbum, strArtist, strArtistAlternate, intCD, intDuration, strGenre, strMood, strStyle, strTheme, strDescriptionEN, strDescriptionDE, strDescriptionFR, strDescriptionCN, strDescriptionIT, strDescriptionJP,

strDescriptionRU, strDescriptionES, strDescriptionPT, strDescriptionSE, strDescriptionNL, strDescriptionHU, strDescriptionNO, strDescriptionIL, strDescriptionPL, strTrackThumb, strTrack3DCase, strTrackLyrics, strMusicVid, strMusicVidDirector, strMusicVidCompany, strMusicVidScreen1, strMusicVidScreen2, strMusicVidScreen3, intMusicVidViews, intMusicVidLikes, intMusicVidDislikes, intMusicVidFavorites, intMusicVidComments, intTrackNumber, intLoved, intScore, intScoreVotes, intTotalListeners, intTotalPlays, strMusicBrainzID, strMusicBrainzAlbumID, strMusicBrainzArtistID and strLocked.

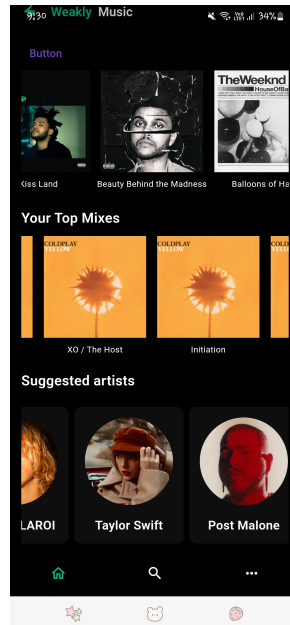


Figure 4.12: Song List and Artist List

Then comes the Artist module. This holds an API of artist data. In this application for display purposes I have added artist data manually with Artist Name and Artist Image. The bottom navigation bar holds 3 page symbols, Home Page, Search Page and Your Library Page. The top most widget holds “Good Morning” greeting wish which will be dynamic associated with the time. Then there is Weekly Music widget and Settings button on the top most corner.

4.3.4 Song Player

The Widget titled as Your Top Mixes has the song list coming from API. While each song is played a player interface is opened. There is an audio file set on the player that will be played while the start button is presses. This audio has been taken from the open sources in mp4 format. The player also syncs with the API library and shows fetched data Song Name, Album Name, Artist Name, Song Image if available. This Player file is synced with the API file to display these data directly fetch from the API for that particularly selected song. This interface holds previous and next song buttons, play and pause active buttons.

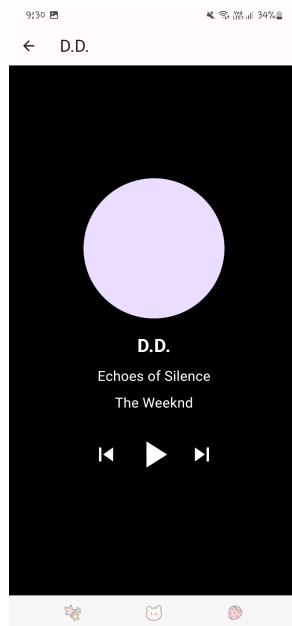


Figure 4.13: Song Player

4.3.5 Search Page

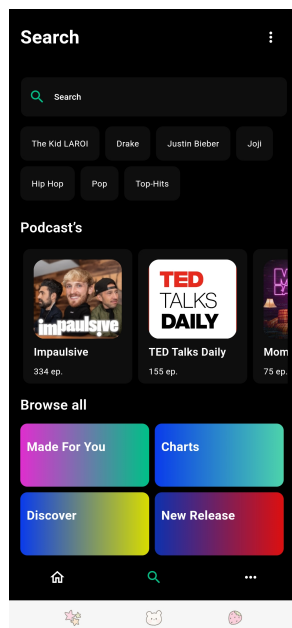


Figure 4.14: Search Page

This page holds multiple widgets. The First widget holds a search bar for songs and albums with some manually fixed recommendations displayed on the screen. The next widget holds a podcast list which will be another API fetched data list in future. Then there is a Browse All card, it has 4 segments, “Made for you”, “Charts”, “Discover” and “New Release”. Here I have made the Discover segment functional with the Bangla Song List in it. When the Discover segment is pressed the user is navigated to the Bangla Song List Page. But before that a condition has been set aside to check whether the user is registered or using as a guest user. If the

user is not logged in It will pop up a Log In First warning and will not let the user access the Bangla Song List Page. If the user is logged in then only it will navigate to the Discover Page.

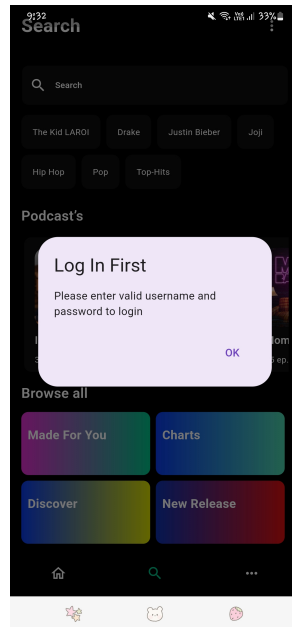


Figure 4.15: Login Checker

4.4 Bangla Song List

In this page a list of songs has been viewed. Here the data has been inserted manually but it will fetch data from an API when large number of library accessible. The list holds attributes of Song Name, Album Name and Artist Name along with a cover photo. When each song is pressed it will navigate to the player page for that particular song.

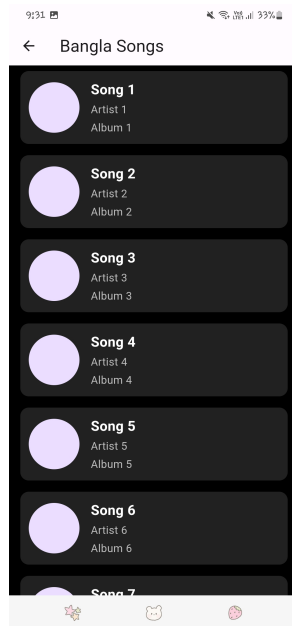


Figure 4.16: Bangla Song List

4.4.1 Your Library

This page is navigated from the dashboard. It holds features like multiple customized playlists for the subscriber's preferences, Liked Songs, Followed Artists. For now this page holds the interface with these features only, it will be functional and modified with data flow in future.

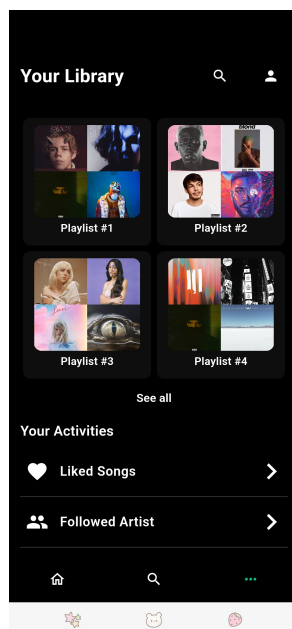


Figure 4.17: Your Library

Chapter 5

Prediction Modeling using Decision Tree

Data Model and Flow Diagram The data flow of My Music Application involves several key components and processes that work together to provide a seamless user experience for discovering, streaming, and managing music.

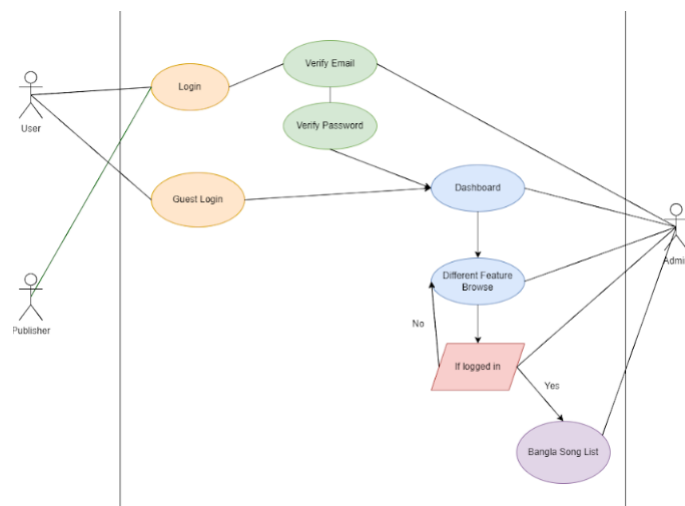


Figure 5.1: Use Case Diagram

5.1 User Interaction and Interface Layer

The user interacts with the app through the graphical user interface, which includes screens for browsing music, creating playlists, and managing account settings.

5.2 Client-Side Processing

User Input

When the user performs actions, such as searching for music, selecting a song, or creating a playlist, these inputs are captured by the app.

Local Storage

Some data, like downloaded songs for offline listening and user preferences, stored locally on the device.

5.3 Networking Layer

API Requests

The app communicates with backend servers through API (Application Programming Interface) requests. These requests are made over the internet and include actions such as fetching music data, user authentication, and streaming audio.

5.4 Backend Processing

5.4.1 Authentication Server

Manages user login, sign-up, and authentication processes. It ensures that users are verified and have appropriate access levels.

5.4.2 Music Database

Contains data about songs, albums, artists, playlists, and user libraries. This database is queried to provide the music data requested by the user.

5.4.3 Content Delivery Network (CDN)

Stores and delivers music files (audio streams) to users. CDNs help in reducing latency and improving streaming speed by caching content at multiple geographically distributed locations.

5.4.4 Recommendation Engine

Processes user data, listening history, and preferences to provide personalized music recommendations. This engine uses algorithms and machine learning to suggest songs, artists, and playlists.

5.4.5 Analytics Server

Collects data on user behavior, app usage, and music preferences. This information is used to improve the app and provide better recommendations.

5.5 Data Flow Steps

5.5.1 User Authentication

When the user opens the app, the authentication server verifies their credentials. If the user is new, they can sign up, and their information is stored in the user database.

5.5.2 Music Discovery

The user searches for music or browses through recommendations. The app sends an API request to the backend, which queries the music database and recommendation engine. The relevant music data is sent back to the app.

5.5.3 Streaming Music

When the user selects a song to play, the app sends a request to the CDN. The CDN delivers the audio stream to the app, which decodes and plays the music for the user.

5.5.4 Creating and Managing Playlists

Users can create, update, and delete playlists. These actions are sent to the backend, where the playlist information is stored in the music database.

5.5.5 Offline Listening

For offline listening, users can download songs. The app requests the song files from the CDN, which are then stored locally on the user's device.

5.5.6 User Feedback and Analytics

As users interact with the app, data on their behavior is sent to the analytics server. This includes information like play counts, skips, and search queries, which helps in refining recommendations and improving the app experience.

5.6 Security and Compliance

5.6.1 Data Encryption

All data transferred between the app and the backend servers is encrypted using protocols like HTTPS to ensure security and privacy.

5.6.2 Compliance

The app adheres to data protection regulations ensuring user data is handled responsibly.

5.7 Benefits

My Music app provides a variety of benefits to users, enhancing their music listening experience and offering convenience, personalization, and access to a vast library of songs.

5.7.1 Anywhere, Anytime Access

My Music app allows users to listen to their favorite songs and playlists anytime and anywhere, as long as they have an internet connection or have downloaded the music for offline listening.

5.7.2 Cross-Device Synchronization

Users can access their music libraries across multiple devices, including smartphones, tablets, and computers, ensuring a seamless experience.

5.7.3 Extensive Collection

My Music app provides access to a large library of songs, albums, and playlists from a wide range of genres and artists, far surpassing the limitations of physical music collections.

5.7.4 New Releases

Users can easily stay up-to-date with the latest releases from their favorite artists.

5.7.5 Tailored Recommendations

My Music app uses algorithms and user data to provide personalized music recommendations, helping users discover new songs and artists that match their preferences.

5.7.6 Custom Playlists

Users can create and customize their own playlists based on their moods, activities, or favorite genres.

5.7.7 Downloadable Content

Premium subscribers can download songs, albums, and playlists for offline listening, which is useful for areas with limited internet connectivity or for saving mobile data.

5.7.8 Sound Quality

My Music app offers high-quality audio streaming, including options for lossless and high-definition sound, providing an enhanced listening experience.

5.7.9 Sharing and Collaboration

Users can share their favorite songs and playlists with friends through social media or within the app. This app will also allow collaborative playlist creation.

5.7.10 Following Artists and Friends

Users can follow their favorite artists to stay informed about new releases and concerts and see what their friends are listening to.

5.7.11 Podcasts and Radio

My Music app also offers access to podcasts, radio stations, and live broadcasts, providing a broader range of audio content.

5.7.12 Intuitive Interface

This app features user-friendly interfaces that make it easy to browse, search, and organize music.

5.7.13 Free Options

This app offers free tiers with ads, allowing users to access a large library of music without a subscription.

5.7.14 Affordable Subscriptions

Paid subscriptions often come with additional benefits such as ad-free listening, offline downloads, and higher audio quality at a reasonable cost.

5.7.15 Genre and Mood Playlists

Curated playlists based on genres, moods, and activities help users discover new music and set the perfect soundtrack for any occasion.

5.7.16 Algorithmic Discoveries

Application will use machine learning to introduce users to music they might not have found on their own, broadening their musical horizons.

Chapter 6

Conclusion

6.1 Future Prospect

The future prospects for My Music Application could be quite promising, given the increasing integration of technology into our daily lives and the growing demand for convenient access to music. This app could become even more personalized, using advanced algorithms and machine learning to tailor playlists, recommendations, and content based on each user's preferences, mood, location, and even activities. AR and VR technologies could revolutionize the way people experience music, allowing for immersive concerts, interactive music videos, and virtual environments where users can explore and interact with music in new ways. My Music app might further integrate social features, allowing users to discover music through their social networks, share playlists, collaborate on playlists in real-time, and attend virtual concerts or listening parties with friends. It could facilitate closer connections between artists and fans, offering exclusive content, behind-the-scenes access, live QA sessions, and virtual meet-and-greets. With the rise of blockchain technology, this app could explore new models for compensating artists, ensuring fair royalties, and enabling direct transactions between artists and fans using cryptocurrencies. As AI and machine learning continue to advance, we may see the emergence of AI-generated music that complements human-created content, offering an endless stream of new compositions tailored to individual tastes. Music has been shown to have therapeutic effects on mental health and well-being. In future this app could incorporate features such as mood-based playlists, guided meditation sessions, and sleep aids to support users' overall health and wellness. As smart home devices become more prevalent, the modified version of My Music app could seamlessly integrate with these devices, allowing users to control their music playback using voice commands and interact with their music libraries across various platforms.

6.2 Initiatives

This Application needs to be boosted properly to get the required popularity. The mobile banking payment gateways and international transaction gateways for subscription need to be integrated. Also the well settled royalties with artists need to be ensured in the construction period.

Chapter 7

References

In order to prepare features of the application, considered many ideas and news from different sources as follows –

- 1.Flutter Development Tools
- 2.Android Studio 1.0.0+1
- 3.SDK Version 'j=2.19.2 ;3.0.0'
- 4.<https://www.theaudiodb.com/api/v1/json/2/album.php?i=112024>
- 5.<https://www.theaudiodb.com/api/v1/json/2/track.php?m=2115888>
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- 7.<https://console.firebase.google.com/u/0/project/credentials-a07ac/firestore/databases/default-/data/2FbanglaSong%2F0012>
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How to install L^AT_EX

Windows OS

TeXLive package - full version

1. Download the TeXLive ISO (2.2GB) from <https://www.tug.org/texlive/>
2. Download WinCDEmu (if you don't have a virtual drive) from <http://wincdemu.sysprogs.org/download/>
3. To install Windows CD Emulator follow the instructions at <http://wincdemu.sysprogs.org/tutorials/install/>
4. Right click the iso and mount it using the WinCDEmu as shown in <http://wincdemu.sysprogs.org/tutorials/mount/>
5. Open your virtual drive and run setup.pl

or

Basic MikTeX - T_EX distribution

1. Download Basic-MiK_TE_X(32bit or 64bit) from <http://miktex.org/download>
2. Run the installer
3. To add a new package go to Start *»* All Programs *»* MikTeX *»* Maintenance (Admin) and choose Package Manager
4. Select or search for packages to install

TexStudio - T_EX editor

1. Download TexStudio from <http://texstudio.sourceforge.net/#downloads>
2. Run the installer

Mac OS X

MacTeX - T_EX distribution

1. Download the file from
<https://www.tug.org/mactex/>
2. Extract and double click to run the installer. It does the entire configuration, sit back and relax.

TexStudio - T_EX editor

1. Download TexStudio from
<http://texstudio.sourceforge.net/#downloads>
2. Extract and Start

Unix/Linux

TeXLive - T_EX distribution

Getting the distribution:

1. TeXLive can be downloaded from
<http://www.tug.org/texlive/acquire-netinstall.html>.
2. TeXLive is provided by most operating system you can use (rpm,apt-get or yum) to get TeXLive distributions

Installation

1. Mount the ISO file in the mnt directory

```
mount -t iso9660 -o ro,loop,noauto /your/texlive####.iso /mnt
```

2. Install wget on your OS (use rpm, apt-get or yum install)

3. Run the installer script install-tl.

```
cd /your/download/directory  
./install-tl
```

4. Enter command 'i' for installation

5. Post-Installation configuration:

```
http://www.tug.org/texlive/doc/texlive-en/texlive-en.html#x1-320003.4.1
```

6. Set the path for the directory of TeXLive binaries in your .bashrc file

For 32bit OS

For Bourne-compatible shells such as bash, and using Intel x86 GNU/Linux and a default directory setup as an example, the file to edit might be

```
edit ~/.bashrc file and add following lines
PATH=/usr/local/texlive/2011/bin/i386-linux:$PATH;
export PATH
MANPATH=/usr/local/texlive/2011/texmf/doc/man:$MANPATH;
export MANPATH
INFOPATH=/usr/local/texlive/2011/texmf/doc/info:$INFOPATH;
export INFOPATH
```

For 64bit OS

```
edit ~/.bashrc file and add following lines
PATH=/usr/local/texlive/2011/bin/x86_64-linux:$PATH;
export PATH
MANPATH=/usr/local/texlive/2011/texmf/doc/man:$MANPATH;
export MANPATH
INFOPATH=/usr/local/texlive/2011/texmf/doc/info:$INFOPATH;
export INFOPATH
```

Fedora/RedHat/CentOS:

```
sudo yum install texlive
sudo yum install psutils
```

SUSE:

```
sudo zypper install texlive
```

Debian/Ubuntu:

```
sudo apt-get install texlive texlive-latex-extra
sudo apt-get install psutils
```

Overleaf: GitHub for L^AT_EX projects

This Project was developed using Overleaf(<https://www.overleaf.com/>), an online L^AT_EX editor that allows real-time collaboration and online compiling of projects to PDF format. In comparison to other L^AT_EX editors, Overleaf is a server-based application, which is accessed through a web browser.