MUSIC STREAMING APP

UCS503 Software Engineering Project Report

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1) Project Overview

Listening to music is one of the relishing aspects of the life of an individual and keeping that in mind, we intend to make the music listening experience of the user more memorable with an app with easy to use features.It has been developed on flutter.**Flutter** is an open-source UI software development kit created by Google. It is used to develop applications for Android, iOS, Linux, Mac, Windows, Google Fuchsia,[4] and the web from a single codebase.Android is open source code mobile phone operating system that comes out by Google in November 2007. Its appearance has broken the traditional closed mobile phone operating system. Anyone can modify the mobile phone operating system as well as function according to personal preference, which is also the most attractive merit of Android. Music player in this article is application software based on Google Android. Android's application on mobile terminals also completely broke the traditional understanding of the mobile terminals. And appreciate music is one of the best ways to relieve pressure in stressful modern society life. Therefore, many kinds of mobile phone players are also developed. However, a lot of players devote to fancy appearance and function, while caused resources wasting to the user's mobile phone, such as large required memory and CPU, which brings a lot of inconvenience as multiple programs running at the same time. For the most ordinary users, many functions are useless. The purpose of this article is to develop a player which can play the mainstream music file format. To browse and query the storage space as well as operation of adding, deleting, and playing can be realized. Meanwhile, this software can play, pause and select songs with latest Btn and next Btn according to users' requirement as well as set up songs' order and etc,. Music player based on Android application is popular in the market at the present. The completing development of Android operating system gives developers a nice platform, which can learn the popular computer technology combining with learned knowledge, and master the latest knowledge, enrich oneself, and enjoy entertainment. Our flutter based project has up to date industry features like Online Song Search,Streaming support,Offline Download Support,320Kbps m4a/mp3 Format ,ID3 Tags Attached,Lyrics Support

2.SRS

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Revision History

1. Introduction

1.1 Purpose

The purpose of this document is to present a detailed overview of our project Music Streaming.It will explain the purpose and features of the system, the interfaces of the system, the project's target audience and its user interface, hardware and software requirements.

1.2 Document Conventions

We have used the standard font Times New Roman in the size of 12. For highlighting purposes, we have chosen to bold the text and use the size 17 wherever and whenever required.

1.3 Intended Audience and Reading Suggestions

This document is intended for the developers,project managers, programmers, designers, testers, data analysts, data scientists, and the general public. It can be used to inform those who are involved in a project or an investment related to the music streaming applications and for those who have a strong interest in the field of music or building applications. It should be useful to the customer(s) as well as the software development team who are tasked to build and/or maintain the system itself. This document includes a prototype, which demonstrates how the final system will look and function.

1.4 Project Scope

The software system of which this document concerns is a process to listen to stream and listen to music. This interactive software provides a detailed functions to users such as streaming directly from the internet, downloading offline and viewing lyrics of songs. Music is a good way to elevate mood and reduce stress. It is also healthy for heart as it improves our blood flow. The aim of this project is to help people escape from their daily stressful life and feel better.

1.5 References

Flutter: https://flutter.dev/

Dart: h ttps://dart.dev/

Dart Packages: https://pub.dev/

API: https://www.jiosaavn.com/

Material Design: h ttps://material.io/

Stock images: https://www.pexels.com/

2. Overall Description

2.1 Product Perspective

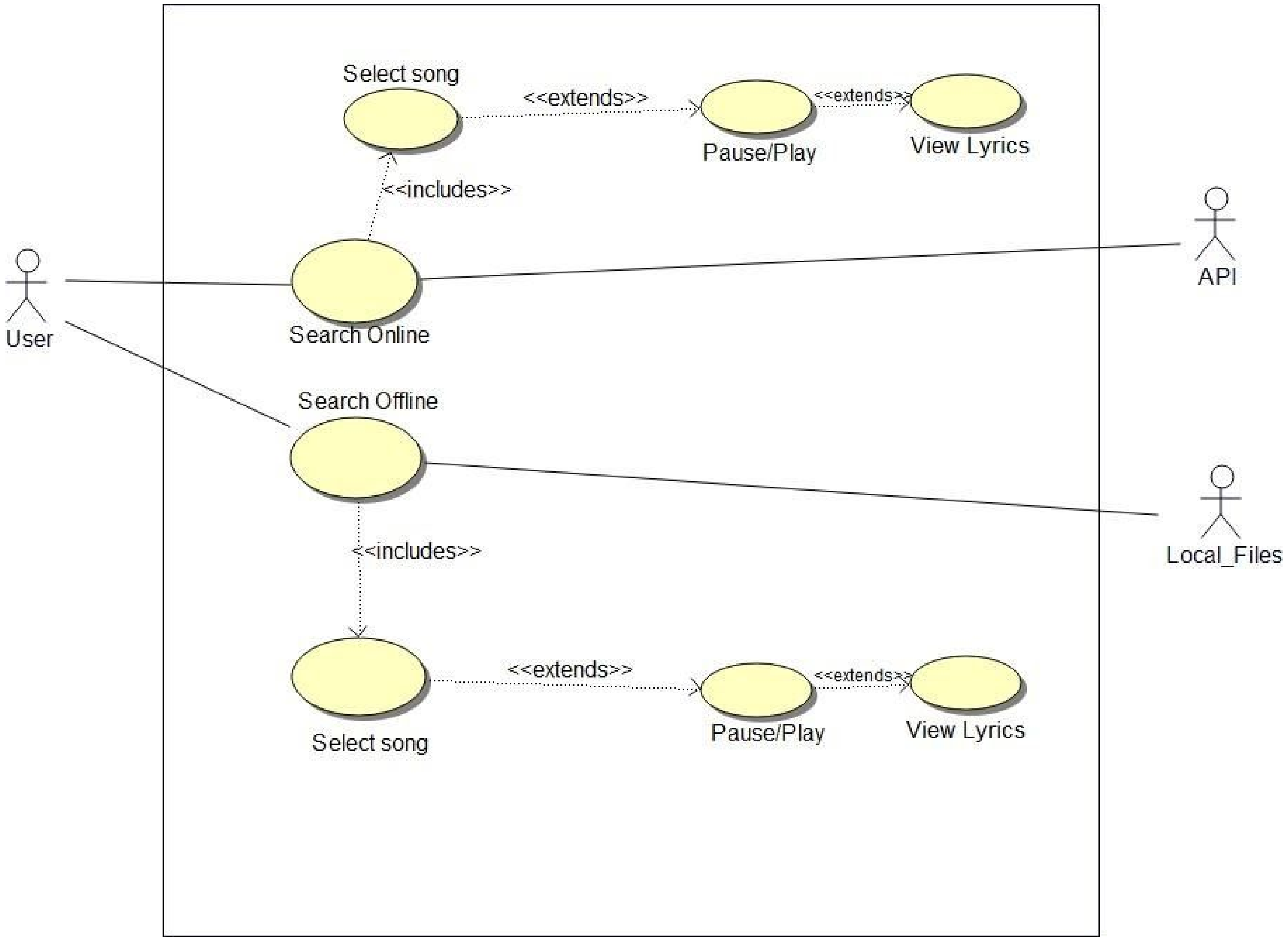
The application runs on all android mobile phones running version 4.4 (KitKat) and above. The system shall synchronize material from a application programming interface by an active internet connection which the user can also download and save offline. It has an in-built audio player to play the music along with other functionalities.

2.2 Product Features

The major features of this project are that it provides the user a very easy way to search and stream high quality (320 kbps) music directly from the internet. It also allows users to download the music and save it in their device locally. Each audio file has ID3 tags attached to it which allows users to view the metadata. It also has a feature to view the lyrics of the song.

2.3 User Classes and Characteristics

There are mainly two user classes involved in the whole development process of the application.



Use - Case diagram

This diagram shows that there are three actors involved which are User, API and Local_Files. The API and Local_Files are basically the data from the database which is being handled by the administrator. The admin controls the overall development of the project. Admin maintains the database involved by directing the user's request and then fetching and returning the data to the user. It handles every request by storing and maintaining the data obtained from database in JSON format until requested. The results are fast and very accurate.

2.4 Operating Environment

The software developed is a mobile application that can run on all Android operating systems running Android version 4.4 (KitKat) and above. In future we plan to expand this application and bring it to other operating environments such as iOS and Windows (as Web App).

2.5 Design and Implementation Constraints

This application is limited to the data that is being provided by the Application Programming Interface being used. It would not give results for anything that is not available. It also requires some memory available in the device in which you wish to install the application. The UI/UX is available only in English language although the data contained in it is over 15+ languages.

2.6 User Documentation

The application contains a user friendly UI and anyone knowing the basic english language can easily use this without requiring any user manuals and they won’t face any difficulty.

2.7 Assumptions and Dependencies

The application would work only if the Application Programming Interface is working well and fine. We assume that every user has an Android Package Installer in the device in which they wish to install the application. We also assume that all the modules we are using while building this application would remain active forever. And lastly, the application require an active internet connection to function accordingly atleast for the first time use.

3. System Features

This project has various features that are required in any Music Streaming Application.

3.1 Search Songs Online

Search over 5 crore music tracks in 15+ languages from a huge database that is updated very frequently. Music from Bollywood, Regional and all across the world can be found from a single search.

3.2 Stream Music

Stream over 5 crore songs in high quality (320 kbps) directly over internet without worrying about your device’s memory. Streaming makes music more accessible to everyone anywhere on the planet.

3.3 Download Offline

Download your favourite songs to make them available to you offline and stop worrying about internet connectivity and data usage.

3.4 View Lyrics

Sing along your favourite song by viewing the lyrics of the song while listening and vibing to it.

3.5 High Quality and format

Listen to music in high quality with 320 kbps audio bit rate and m4a/mp3 format support which are most common audio formats.

3.6 ID3 Tags attached

Get the metadata of the track you are listening to and find out all the necessary information about the artist, album, producer etc.

4. External Interface Requirements

4.1 User Interfaces

The UI of this web application ensures that the interface has elements that are easy to understand, access and use. This interface employs an organizational method that makes the application easy to access. The user can easily search the songs they wants to listen in the search bar, select the song and then play/pause using the button. The user can also hover to any part of the song using the in-built audio player, can download a song offline by clicking the download icon and view lyrics too.

4.2 Hardware Interfaces

The Application Programming Interface must execute on the server side computers to ensure proper functionality of the application and the user must have a device that can connect to internet and can also play audio either via the speaker or an external audio device.

4.3 Software Interfaces

This mobile application was developed on Windows 10 operating system. The softwares used to develop include Virtual Studio Code, Android Studio and Flutter. It is implemented in Flutter framework which uses Dart language. Different modules have been imported from the Dart's packages website. In this application, popular service Jio Saavn has been used as an Application Programming Interface which would store the data in JSON format. It was also tested on a physical mobile phone running Android.

Software and versions:

Flutter 1.20.4

Visual Studio Code 1.49.0

Android Studio 4.0.1

Android 9

Windows 10 Home

4.4 Communications Interfaces

As this application would require active internet connection (atleast once), therefore it would be making use of the HTTP network port (Port no. 80). While installation this application might
also require a USB Port.

5. Other Nonfunctional Requirements

5.1 Performance Requirements

The Application Programming Interface should be able to manage multiple requests at a time in case multiple users are trying to use the application at the same time. For the functioning of fetching of real time data from the API, there could be a small delay at the beginning so the user has an uninterrupted experience. All the tasks happening on the backend should be well optimised to run easily on most devices.

5.2 Safety Requirements

Although there is not much safety required while using this mobile application, but we should keep in mind that listening to loud music continuously might cause serious hearing problems. Also some people can be mentally affected from some particular type of music, it is advised for them to use this application keeping that in mind.

5.3 Security Requirements

The intent of this mobile application was to make music available easily to everyone so we do not ask for any authentications from the user. Overall there isn't much risk involved but still since it has a feature to download and store songs offline, user should ensure not to place anything personal in the folder in which offline download songs are stored. On the administrators side, we must ensure that the application has only access to a particular folder so that no one can access personal information.

5.4 Software Quality Attributes

The application has a user friendly UI/UX which makes it easy to understand and use. It is accessible on the most common mobile operating system. The data is stored in a structural manner which makes it easier to fetch. It does not require many permissions from the user and can be used without knowing any pre-requisites.

6. Other Requirements

In this application we are using the database from Jio Saavn. Everything including the softwares used in this project are legal to use for non commercial and personal use. This project is for education purpose only and should be strictly used for that only.

Appendix A: Glossary

API : Application Programming Interface

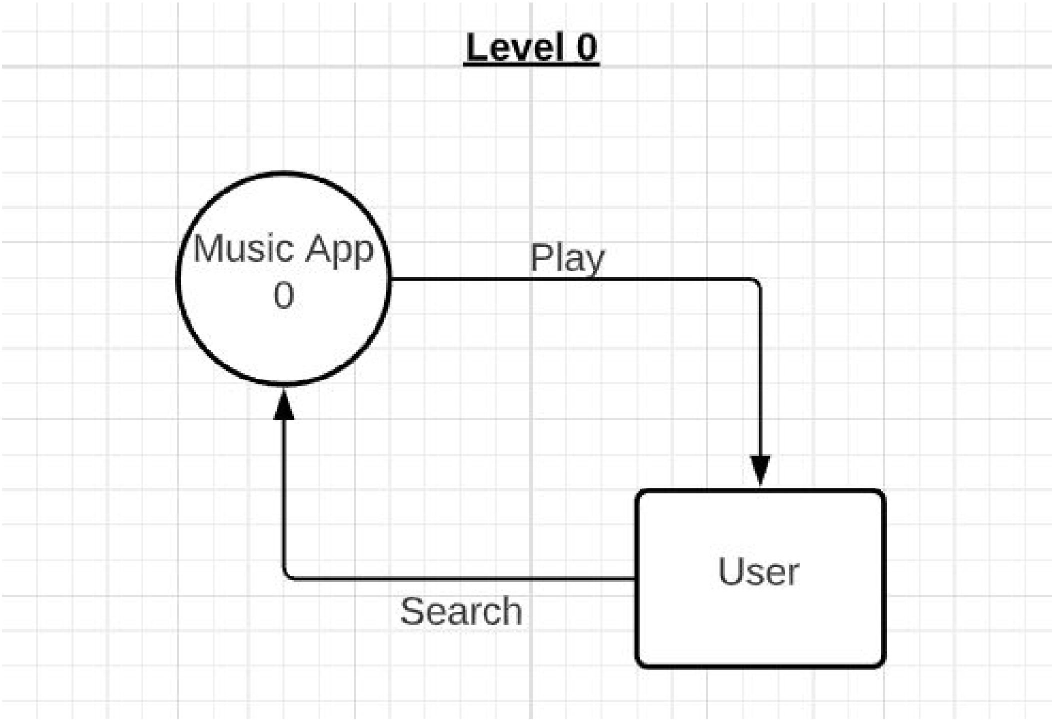
Kbps : Kilo bits per second

HTTP : Hyper Text Transfer Protocol

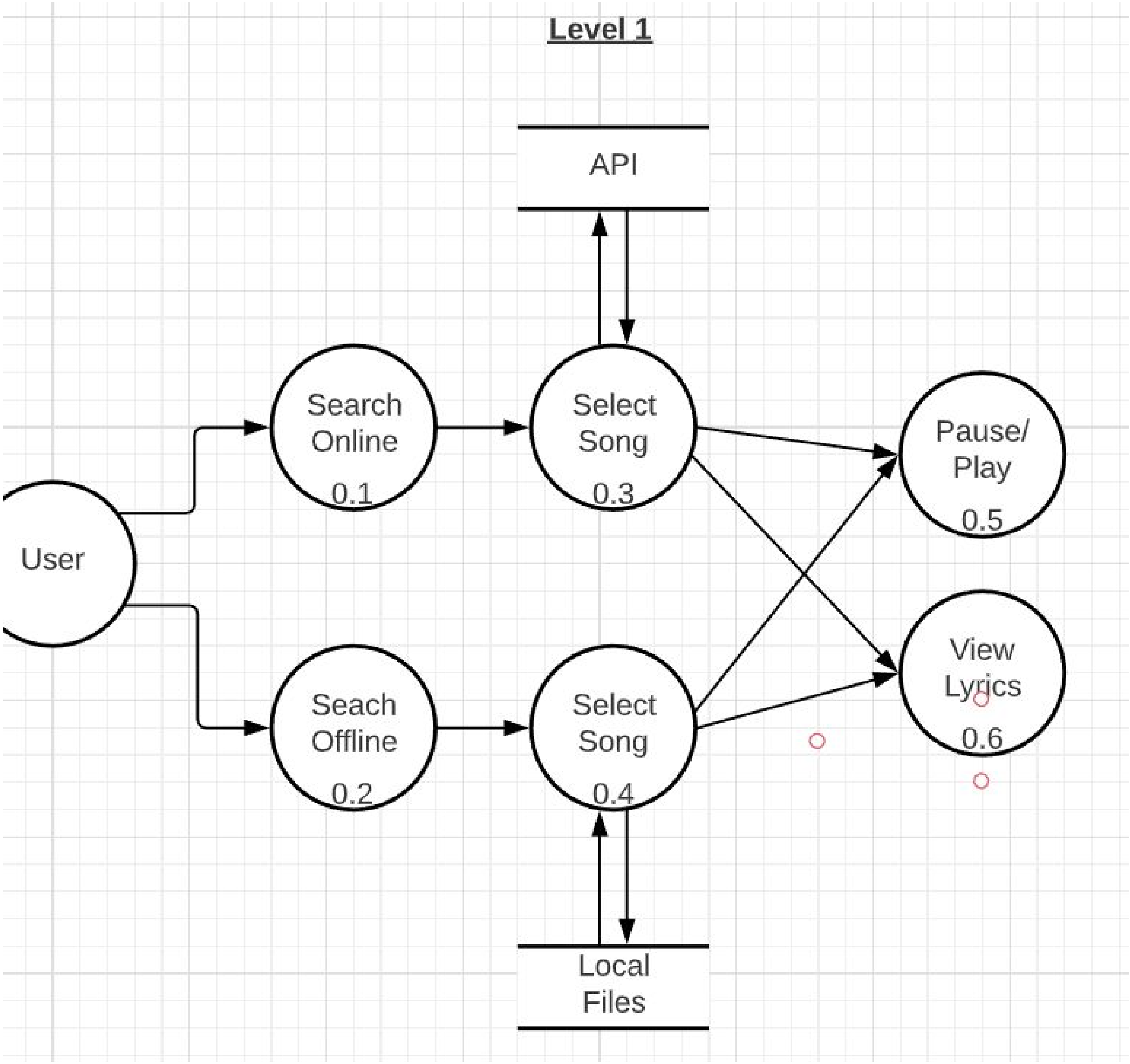
UI : User Interface

UX : User Experience

Appendix B: Analysis Models



Level 0 DFD


Level 1
API
Search
Online
0.1
Select
Song
0.3
Pause/
Play
0.5
User
Seach
Offline
0.2
Select
Song
0.4
View
Lyrics
0.6
Local
Files

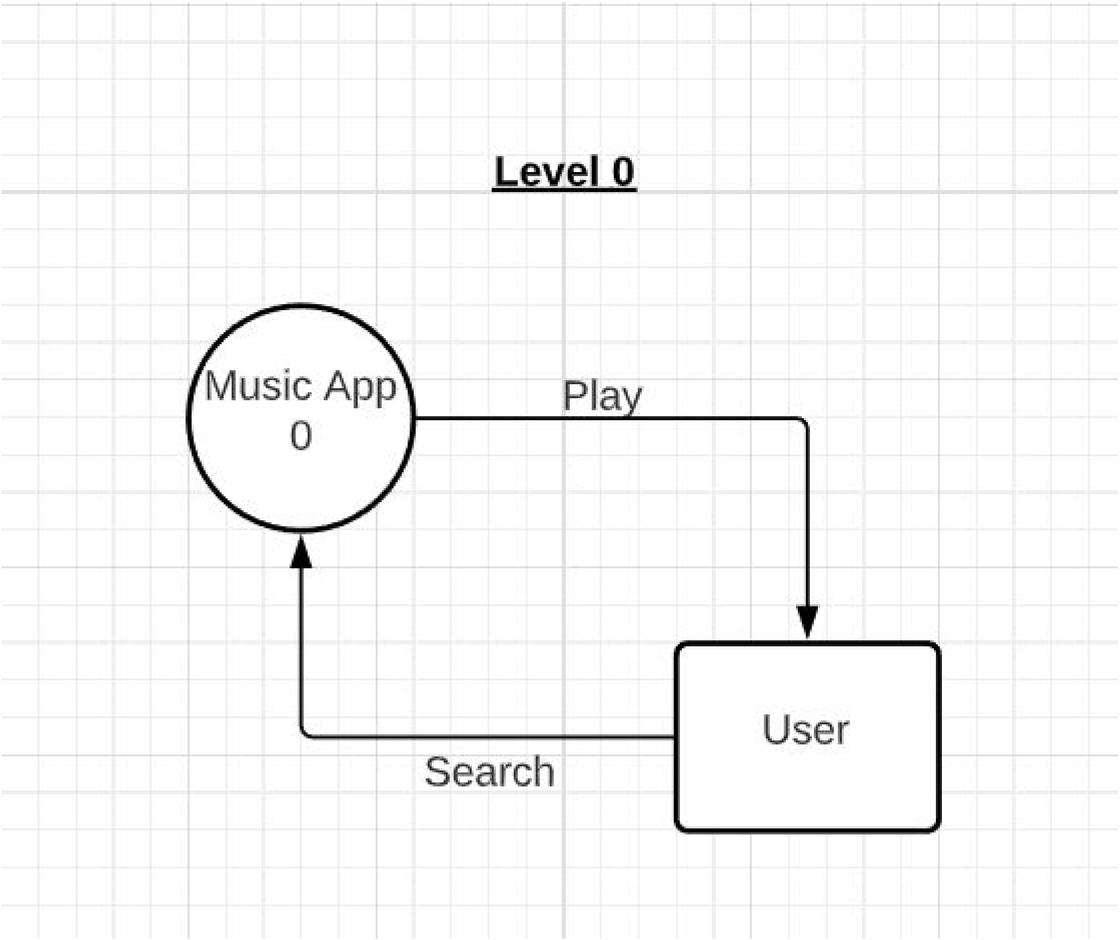
Level 1 DFD

Appendix C: Issues List

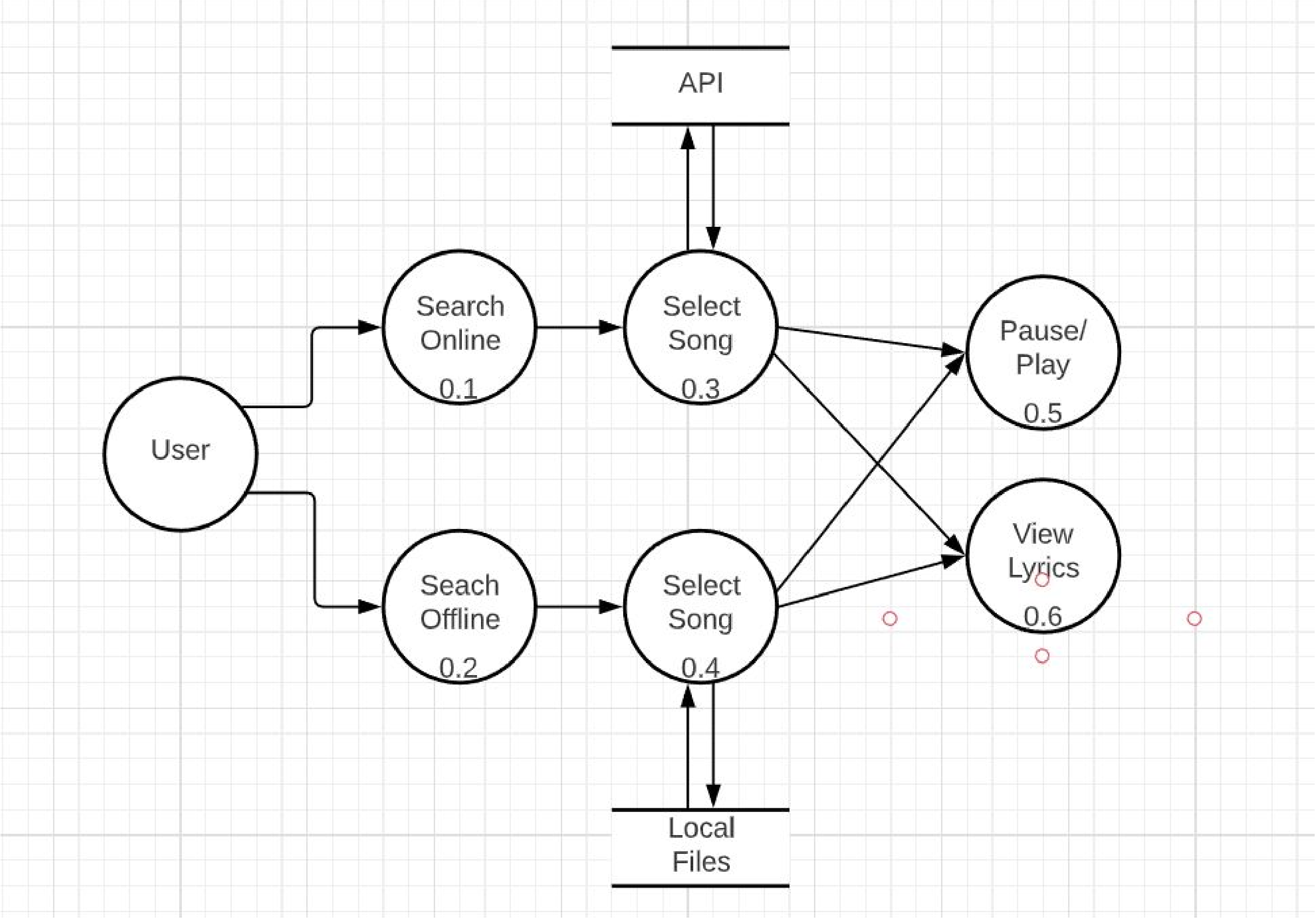
- Not supported yet for iOS and Windows (Web App)
- No feature to share songs
- No feature to create playlis

3.Structured Analysis

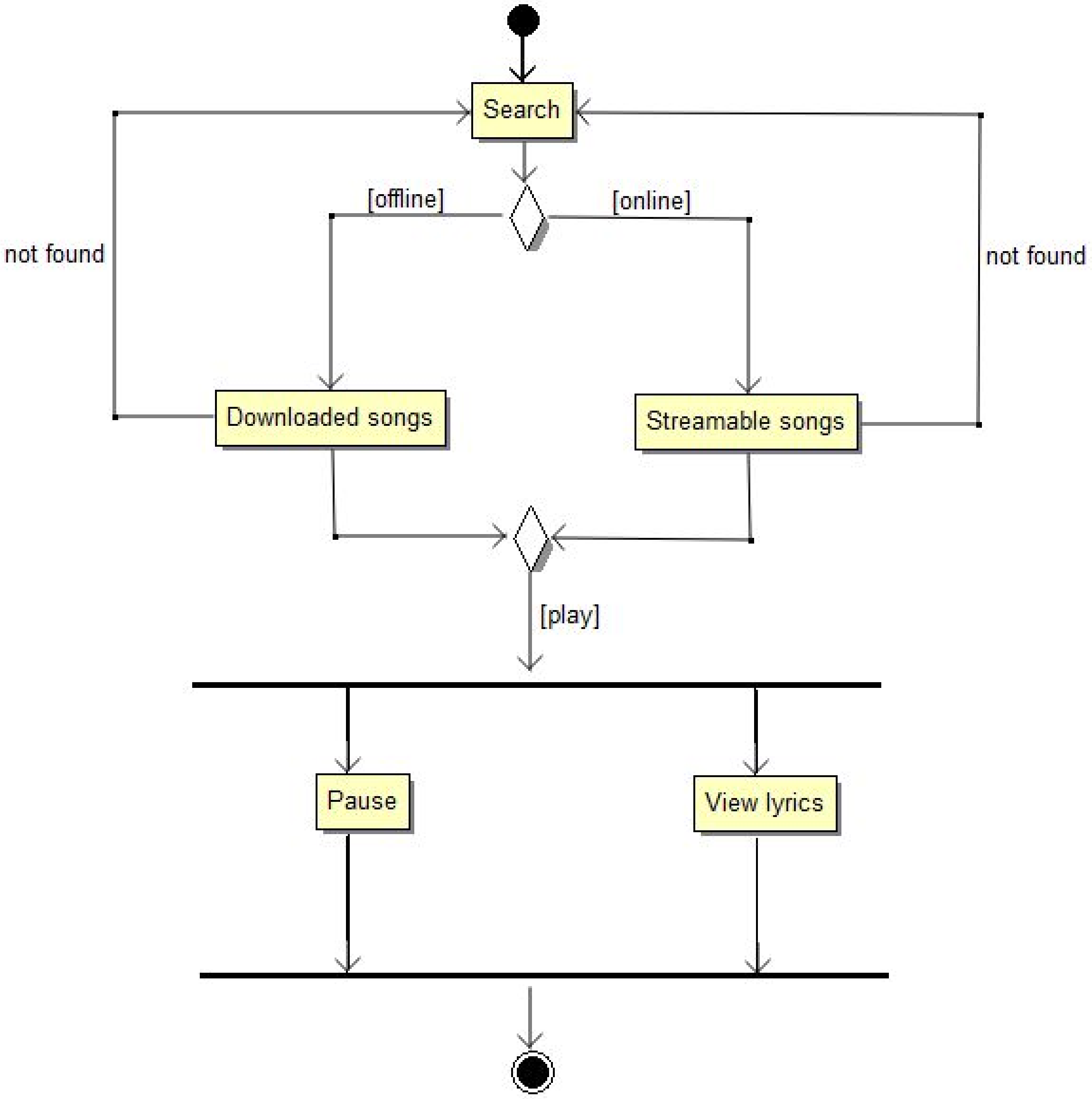
3.1) Data Flow Diagram



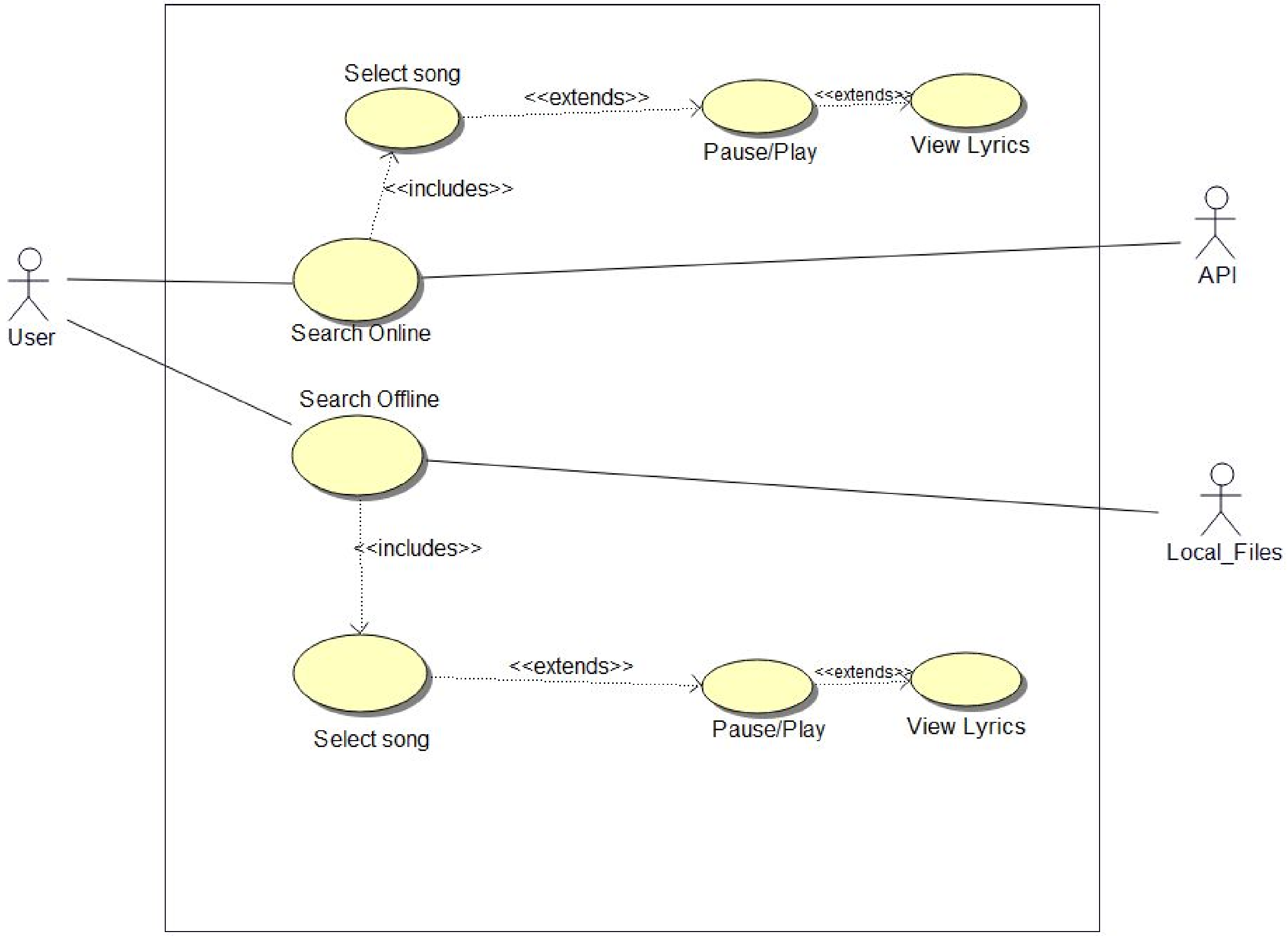
Level 1


API
User
Search Online
0.1
Select Song
0.3
Pause/ Play
0.5
Seach Offline
0.2
Select Song
0.4
View Lyrics
0.6
Local Files

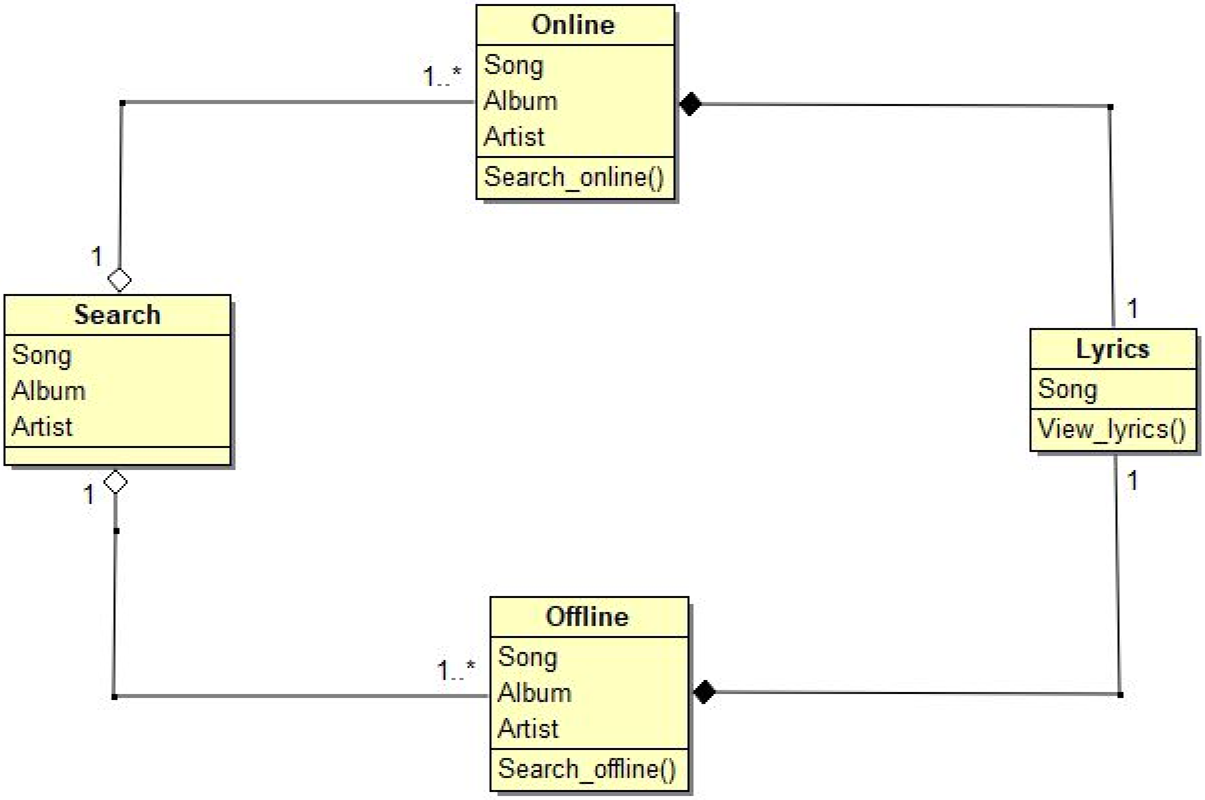
Activity Diagram



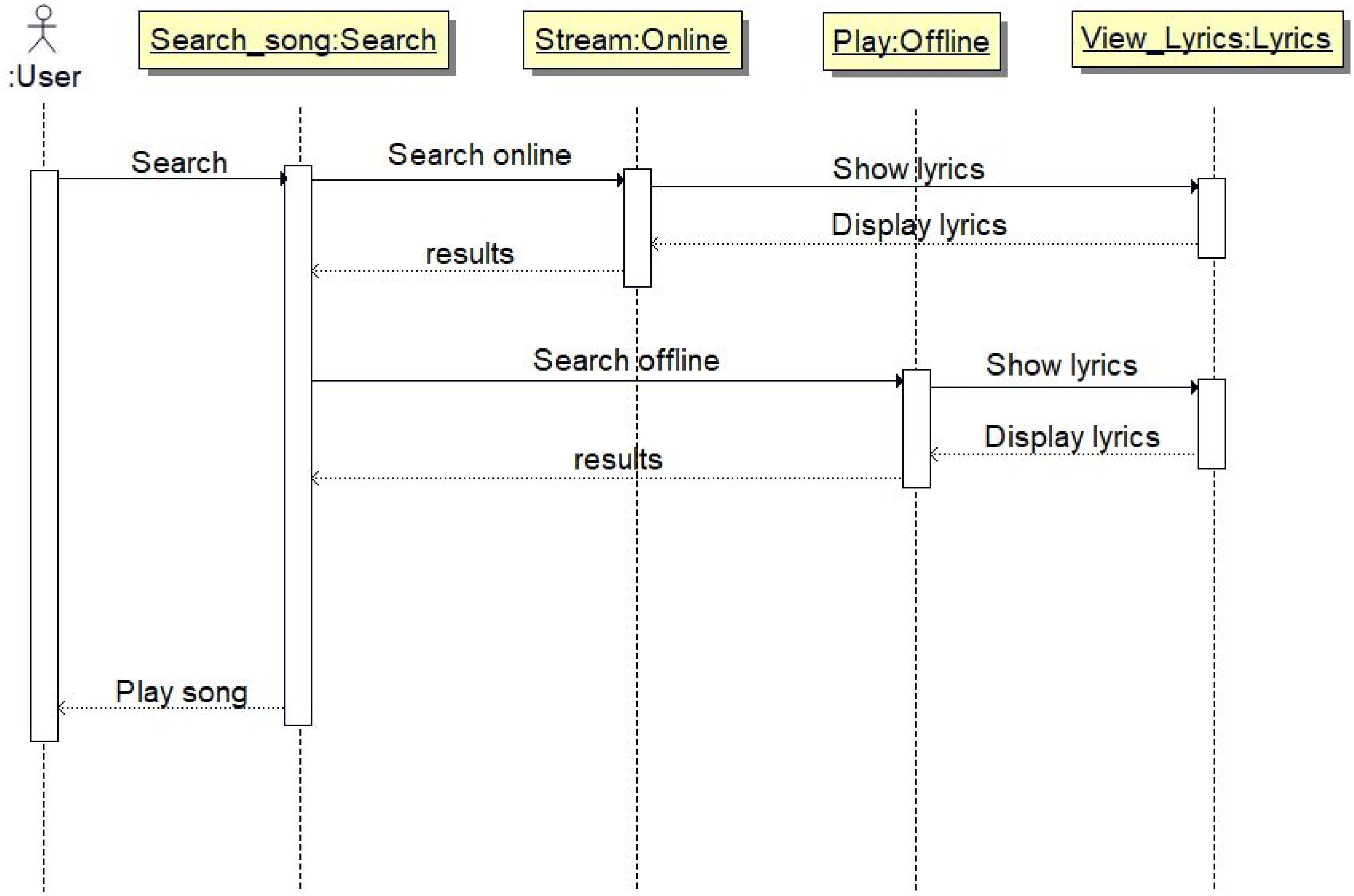
4.1) Use case Diagram



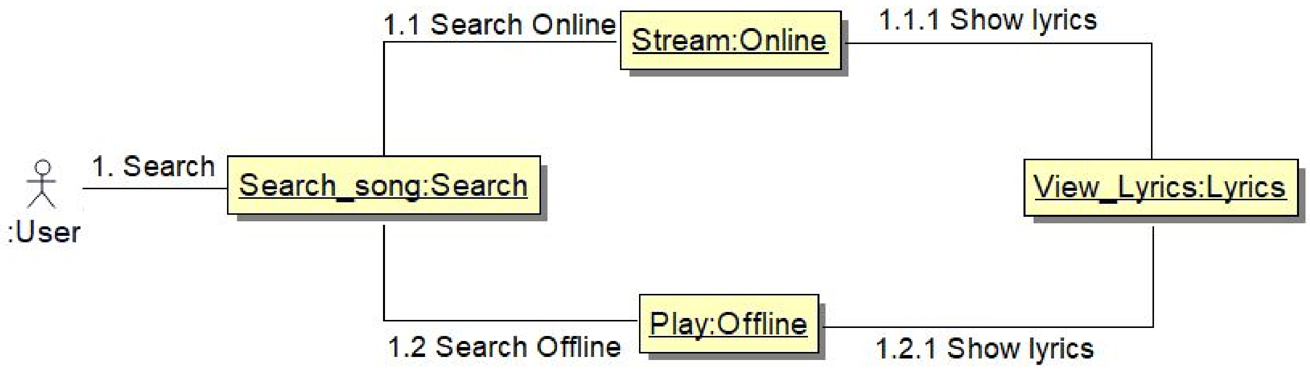
4.3 Class Diagram:



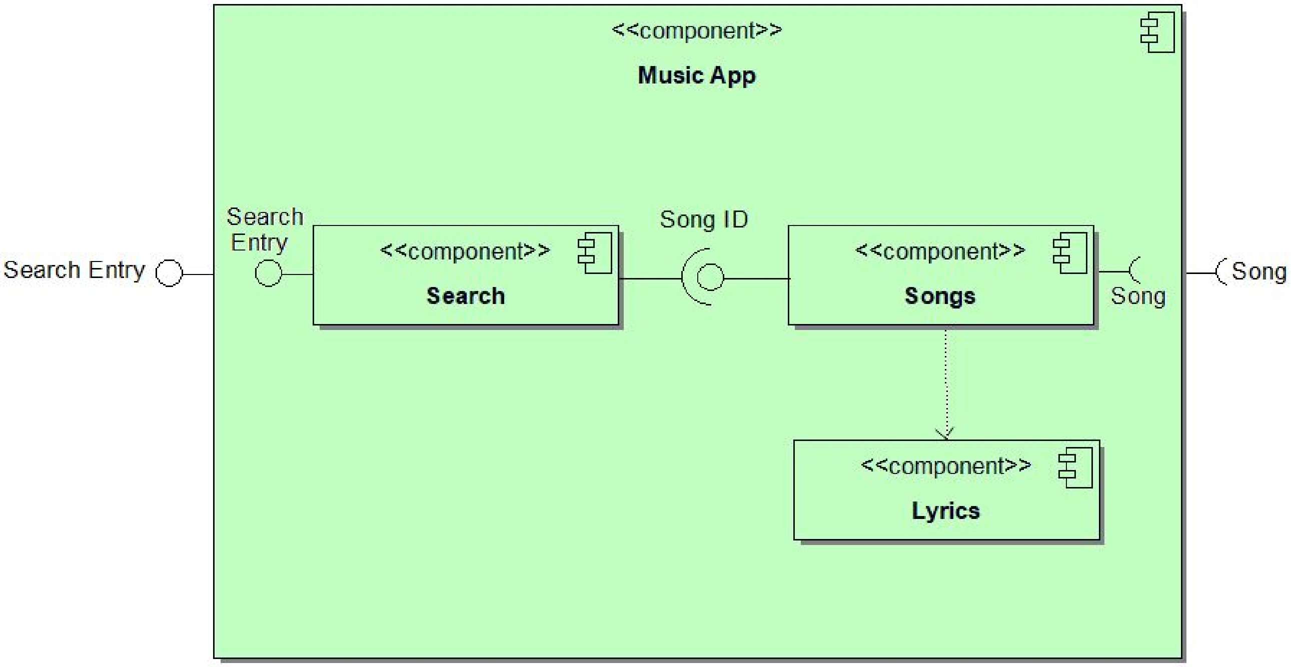
4.4 Sequence Diagram:



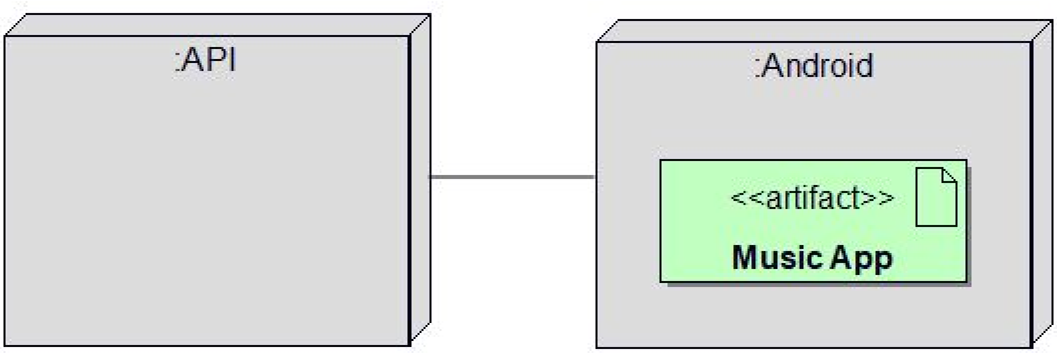
4.5 Collaboration Diagram:



4.6 Component Diagram



4.6 Deployment Diagram



4.TESTING

Test case report:

Test Case #:1	**Test Case Name: Search Song online**
System: MUSIC SHARING APP	**Subsystem: recruiter_ID and Password**
Designed by: AMITOJ SIDHU	**Design Date: 10/11/20**
Executed by: JUS PRATAP	**Execution date:10/11/20**
Short description: Test the searching of song	

PRECONDITIONS: App should be opened on user's device

Step	Action	Expected system response	Pass/Fail
1.	Click on search bar		PASS

2.	Type in the song name	Shows results for songs	PASS

POSTCONDITIONS:
Song results have been shown to the users

Test Case #:2	**Test Case Name: Search Artist online**
System: MUSIC SHARING APP	**Subsystem: recruiter_ID and Password**
Designed by: AMITOJ SIDHU	**Design Date: 10/11/20**
Executed by: JUS PRATAP	**Execution date:10/11/20**
Short description: Test the Searching of the artist online	

PRECONDITIONS:
App should be opened on user's device

Step	Action	Expected system response	Pass/Fail
1.	Click on the search bar		PASS
2.	Type in the name of the artist	Shows results for artists	PASS

POSTCONDITIONS:
Artist results have been shown to the users

Test Case #:3	**Test Case Name: Search Album online**
System: MUSIC SHARING APP	**Subsystem: recruiter_ID and Password**
Designed by: AMITOJ SIDHU	**Design Date: 10/11/20**
Executed by:JUS PRATAP	**Execution date:10/11/20**
Short description: Test the Searching of the album online	

PRECONDITIONS: App should be opened on user’s device

Step	Action	Expected system response	Pass/Fail
1.	Click on the search tab		PASS
2.	type in the album name	shows the results for albums	PASS

POSTCONDITIONS:
Album results have been shown to the user

Test Case #:4	**Test Case Name: Play/Pause button**
System: MUSIC SHARING APP	**Subsystem: recruiter_ID and Password**
Designed by: AMITOJ SIDHU	**Design Date: 10/11/20**
Executed by: JUS PRATAP	**Execution date:10/11/20**
Short description: Test the play and pause button)	

PRECONDITIONS:
App should be opened on user's device

Step	Action	Expected system response	Pass/Fail
1.	Click on the song icon	song images with buttons is shown	PASS
2.	click on the play/pause button	songs plays/pauses	PASS

POSTCONDITIONS:
Song has been played/paused

Test Case #:5	**Test Case Name: Download song**
System: MUSIC SHARING APP	**Subsystem: recruiter_ID and Password**
Designed by: AMITOJ SIDHU	**Design Date: 10/11/20**
Executed by: JUS PRATAP	**Execution date:10/11/20**
Short description: Test the downloading of song	

PRECONDITIONS:
App should be opened on user’s device

Step	Action	Expected system response	Pass/Fail
1.	Click on the song icon	song image with buttons is shown	PASS
2.	Click on the download button	download option types offered	PASS
3.	Select to download on cloud or device	downloading starts taking place	PASS

POSTCONDITIONS:
Song has been downloaded for the user

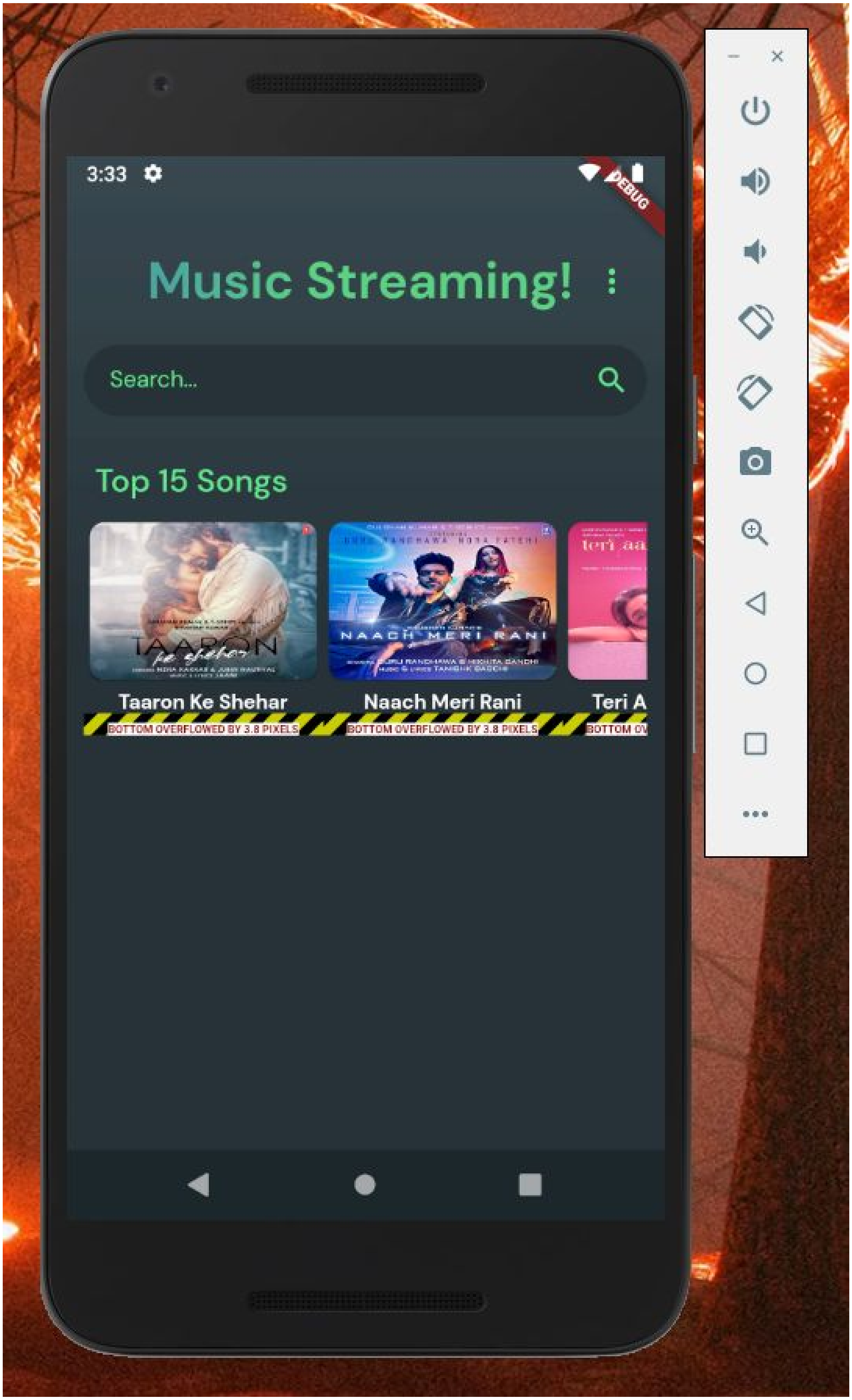
Test Case #:6	**Test Case Name: Search song offline**
System: MUSIC SHARING APP	**Subsystem: recruiter_ID and Password**
Designed by: AMITOJ SIDHU	**Design Date: 10/11/20**
Executed by: JUS PRATAP	**Execution date:10/11/20**
Short description: Test the search of the song offline	

PRECONDITIONS:
App should be opened on user’s device

Step	Action	Expected system response	Pass/Fail
1.	Go to downloads	Downloads tab is opened	PASS
2.	Click on search bar		PASS
3.	Type in the song name	Song results are shown	PASS

POSTCONDITIONS:
Offline song results are shown to the user

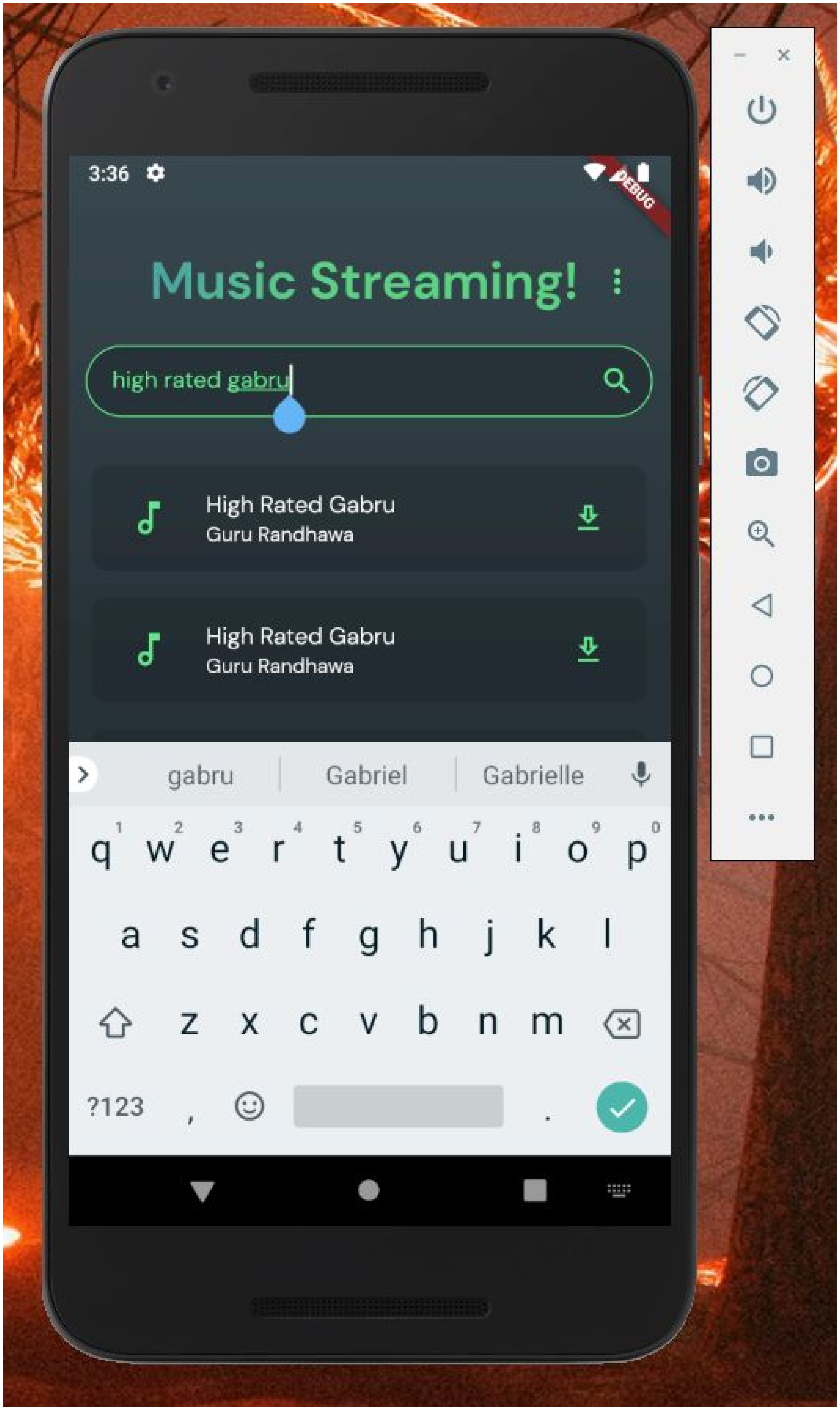
4. GUI Screenshots



BOTTOM OVERFLOWED BY 3.8 PIXELS

BOTTOM OVERFLOWED BY 3.8 PIXELS

BOTTOM OV



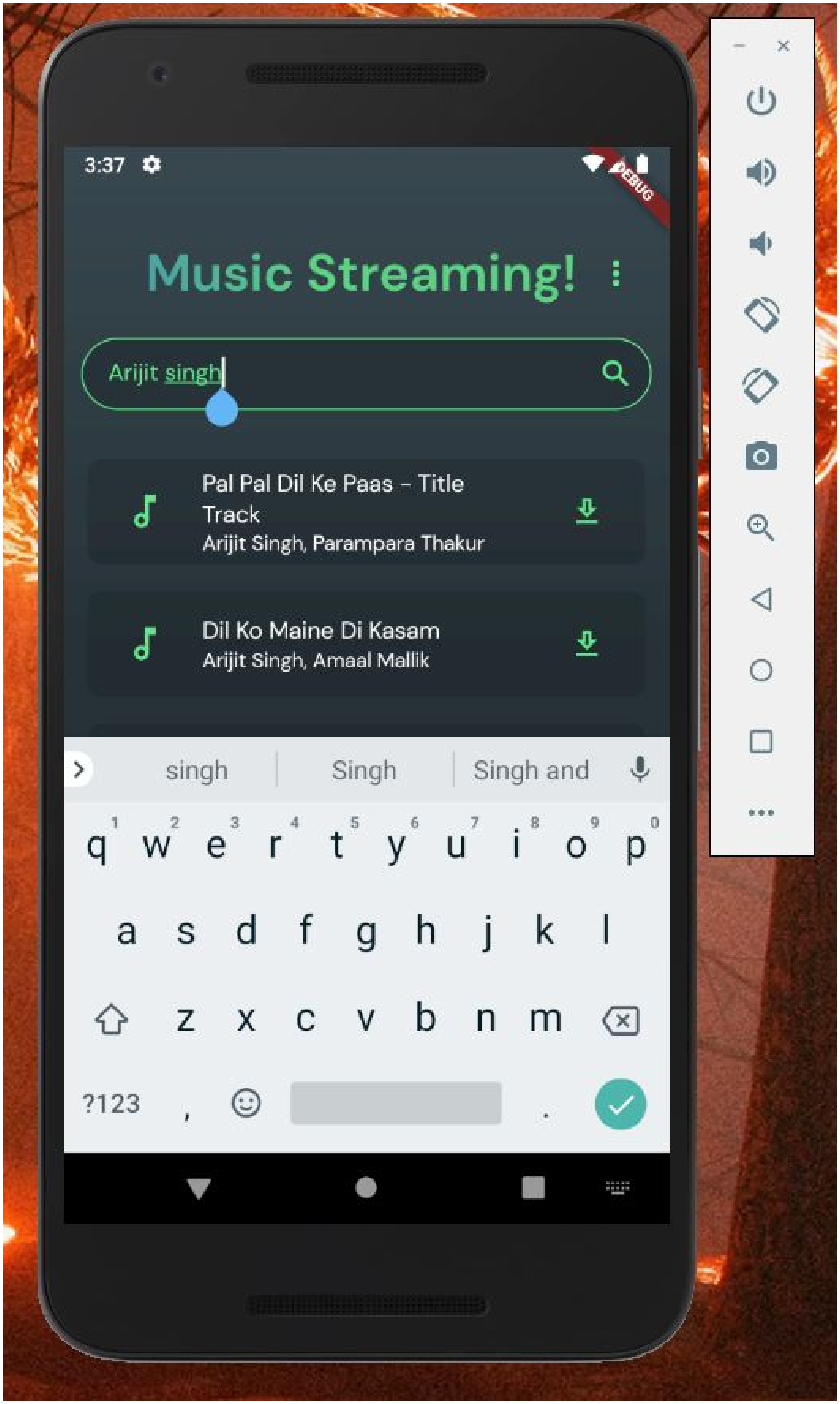
3:36

Music Streaming!

high rated gabru

High Rated Gabru
Guru Randhawa

High Rated Gabru
Guru Randhawa

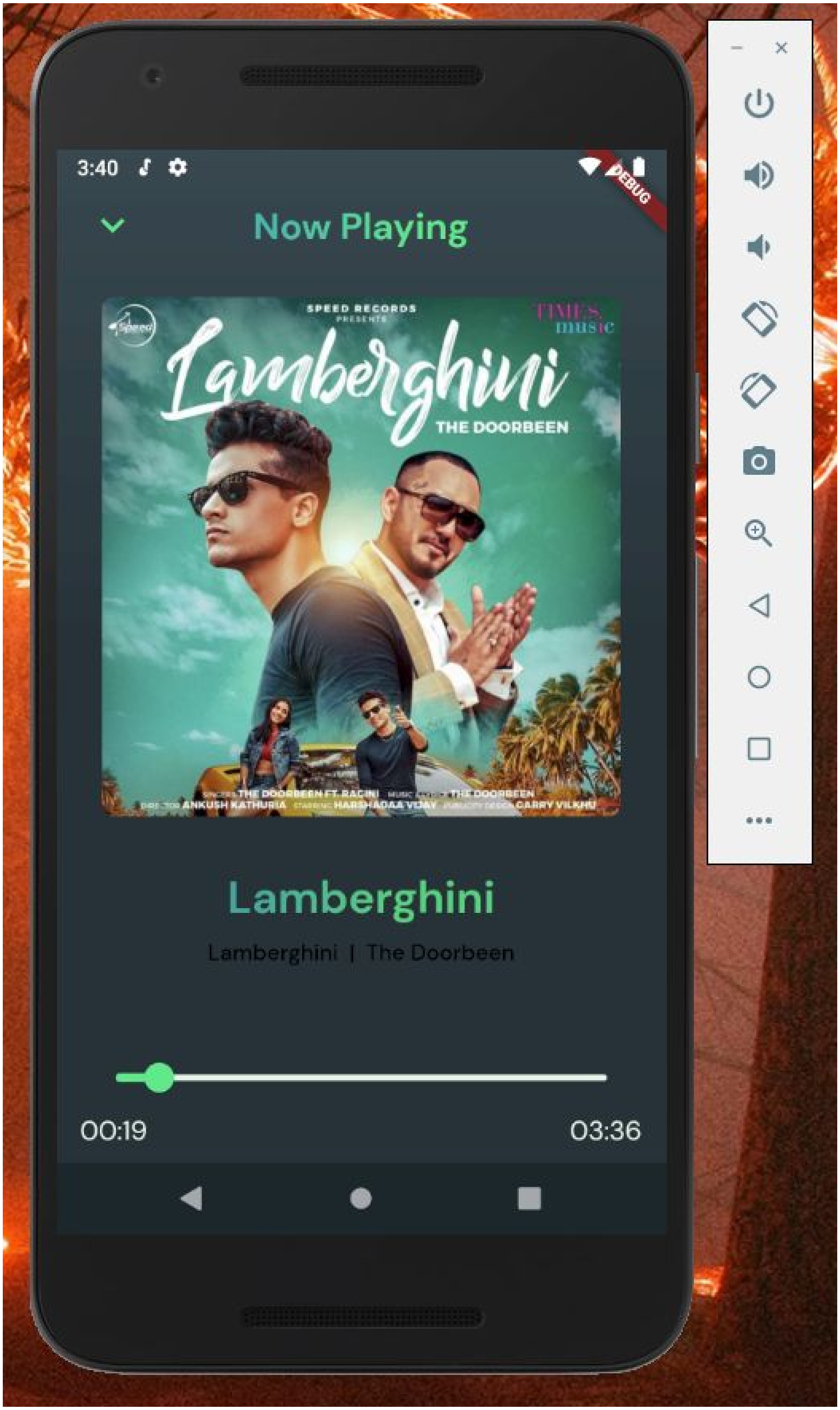


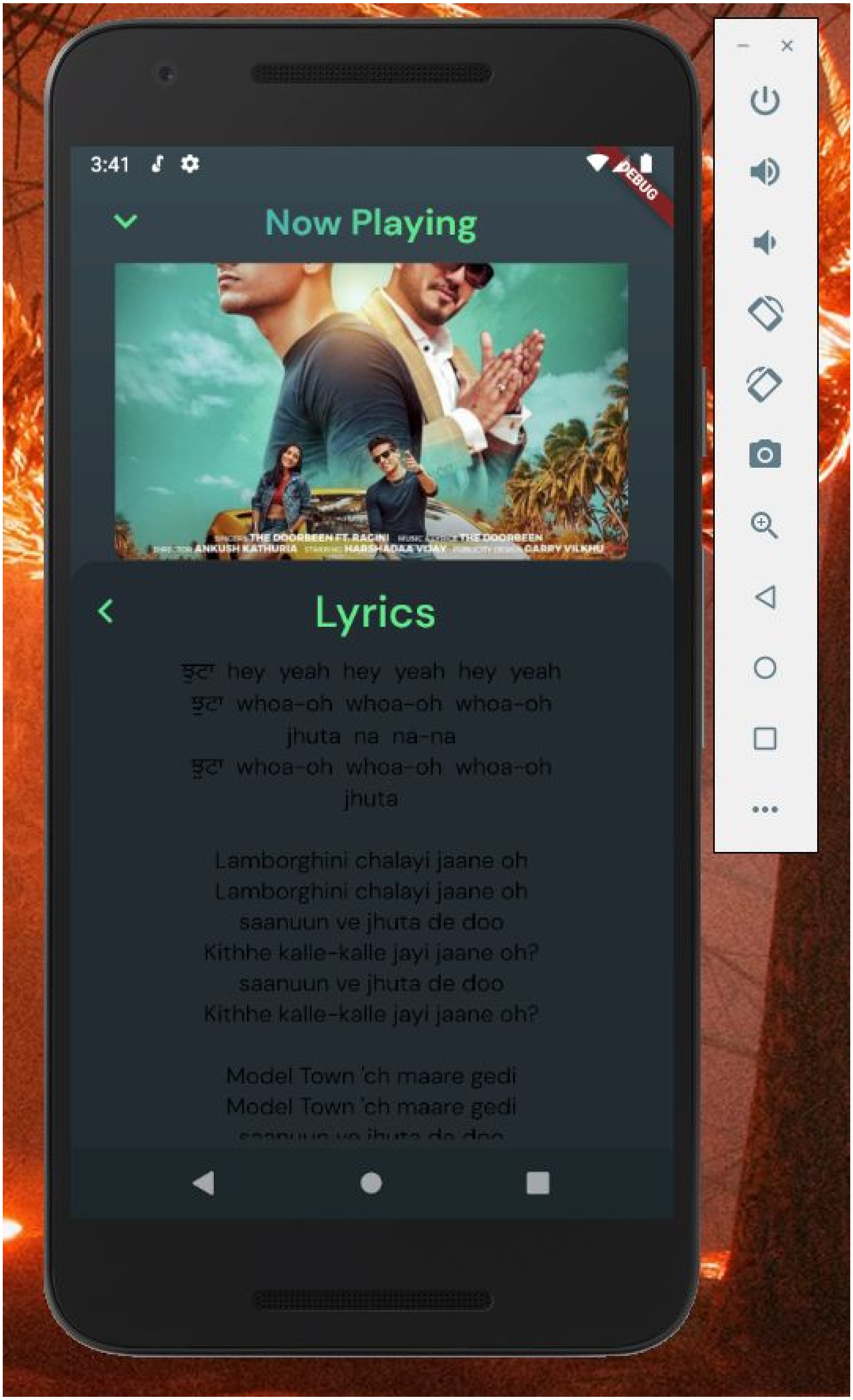
Music Streaming!

Arijit singh

Pal Pal Dil Ke Paas - Title Track
Arijit Singh, Parampara Thakur

Dil Ko Maine Di Kasam
Arijit Singh, Amaal Mallik

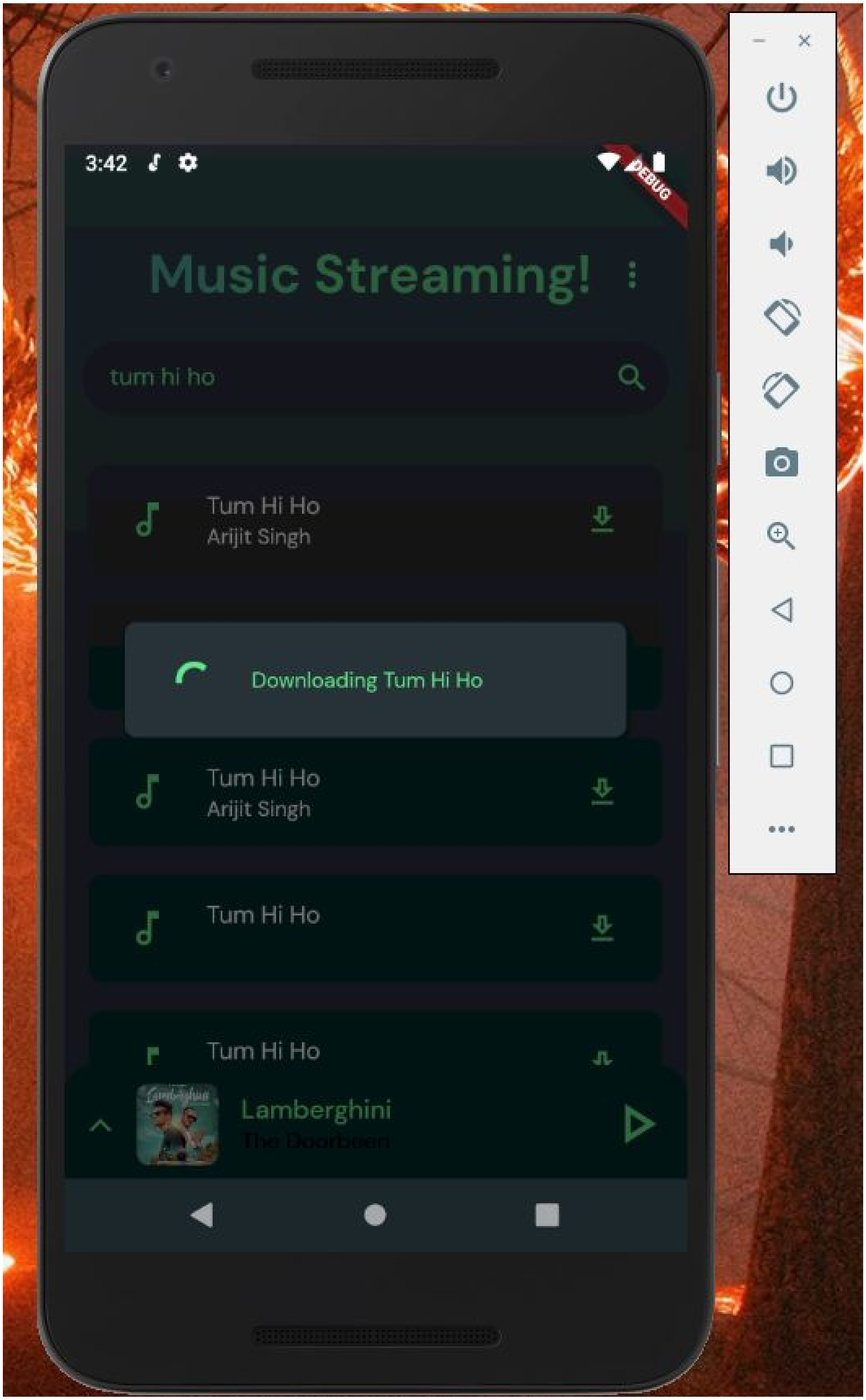

3:40
DEBUG
Now Playing
SPEED RECORDS PRESENTS
TIMES music
Lamberghini
THE DOORBEEN
Lamberghini
Lamberghini | The Doorbeen
00:19
03:36



ਝੁਟਾ hey yeah hey yeah hey yeah
ਝੁਟਾ whoa-oh whoa-oh whoa-oh
jhuta na na-na
ਝੁਟਾ whoa-oh whoa-oh whoa-oh
jhuta

Lamborghini chalayi jaane oh
Lamborghini chalayi jaane oh
saanuun ve jhuta de doo
Kithhe kalle-kalle jayi jaane oh?
saanuun ve jhuta de doo
Kithhe kalle-kalle jayi jaane oh?

Model Town 'ch maare gedi
Model Town 'ch maare gedi
saanuun ve jhuta de doo



tum hi ho

Tum Hi Ho
Arijit Singh

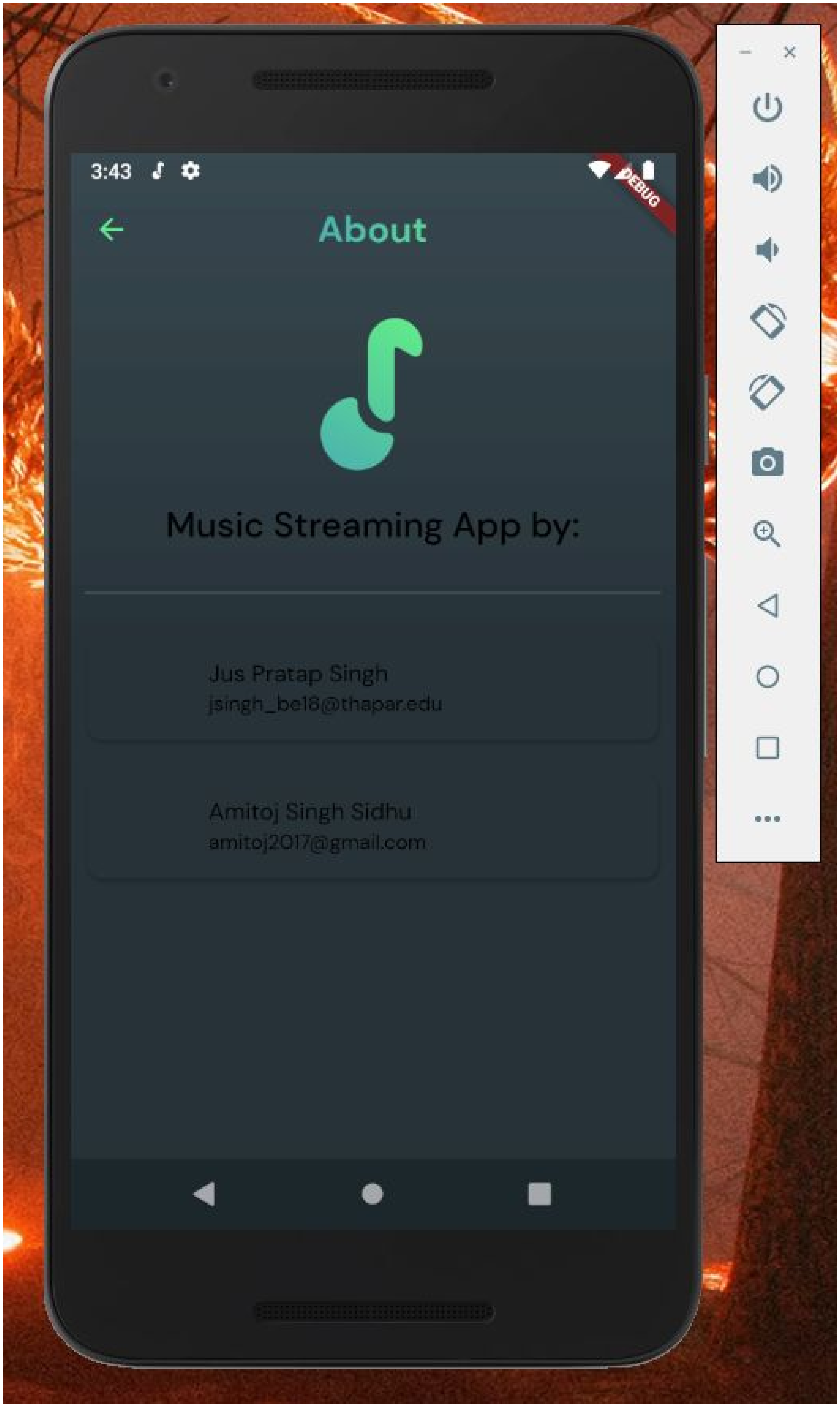
Downloading Tum Hi Ho

Tum Hi Ho
Arijit Singh

Tum Hi Ho

Tum Hi Ho

Lamberghini
The Doorbeen



About

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