Project Plan

‹Music Streaming System with Mobile Music Player Application›

Industry Partner	N/A
Primary Instructor	Anjana Shah
Team Member	Chi Calvin Nguyen
Team Member	James Weber De Asis
Team Member	Simon Ung
Team Member	Aryan Luthra

Document Revision History

Revision #	Date

2.0	February 6, 2022

Table of Contents

1. Executive Summary

The following describes the project to be executed.

Objective	This project will create and deliver two products which are a music player mobile application and an online streaming system as the other half of the project. This project will solve common problems that users experience with the established music platforms.
Corporate Goals Addressed	- Provides an avenue for users to host their content online **for free**. - Allows independent creators to promote their products (music / podcasts) - Creates a base for the products, services and infrastructure which may be expanded upon at a later date.
Planned Start Date	September 20, 2021
Planned End Date	April 1, 2022

2. Project Approvers, Reviews and Distribution List

Approvers, reviewers and distribution list

Project Role	Name	E-mail	Date
Project Developer	James Weber De Asis	JamesWeber.DeAsis@georgebrown.ca	Feb 6, 2022
Project Developer	Aryan Luthra	Aryan.Luthra@georgebrown.ca	Feb 6, 2022
Project Developer	Simon Ung	simon.ung@georgebrown.ca	Feb 6, 2022
Project Developer	Chi Calvin Nguyen	chicalvin.nguyen@georgebrown.ca	Feb 6, 2022

3. Scope

Define the sum total of all of its products and their requirements or features.

In Scope	Out of Scope
Music Player Mobile Application - One of the products to be delivered by this project is a mobile application able to run on iOS and Android platforms built using Ionic / Angular frameworks. This mobile application will possess standard features for a music player app such as local playback, shuffle, repeat, playlists, equalizers and more. The app is also one half of the streaming service as it acts as the frontend and connects to the backend system for online features such as streaming.	Monetization - Project focuses on the development of the mobile application and streaming system; monetization is out of the scope of this project as it may produce legal issues which must be dealt with before it could be implemented.
Streaming System - Another of the products to be delivered by this project is a server / system built using NodeJS and its various libraries / modules such as stream and ffmpeg. This system will be the backend for the service and will allow online features which require an internet connection such as streaming, user or content management, deletion, content rating, searching for content, and sharing playlists. The	Automatic DMCA - Project will use a disclaimer for DMCA content stating the strict removal by the moderation team for any content claimed, there will also be a webpage where copyright holders can issue a claim. Other services use deep learning models to match content and find conflicts to resolve them, developing such a model will take a considerable amount of time and will be out of the scope of this project.

system will be run externally using services such as digital ocean.	
Remote Servers - Externally managed remote servers will be used to host our systems and services	Server Hardware - Internal management and procurement of server hardware is not within the scope of the project. Remote servers managed by external services / companies such as digital ocean will be used to host the service
Software - The programs which will be used to create or test the mobile application and streaming system are Android Studio, Visual Studio Code with NodeJS and Ionic / Angular framework.	Hardware - Testing of the mobile application will mainly be done using Android Studio's emulators and physical hardware will not be provided / procured. It may be tested using the project team's personal hardware at their own discretion and risk.
	Deep Learning Suggestions - Unfortunately one of the features considered on low priority has been removed from the scope of this project as the training of the DL model would have taken too many resources and time. This feature would've used DL to give content suggestions to users based on their preferences, although a simple search by title, genre, and author will still exist for users to find content.

4. Deliverables

This project will deliver the following.

Deliverable	Description
Music Player App	An application acting as the client-side for the service which is built using Ionic / Angular frameworks. It will be able to run on mobile platforms Android and iOS where it will provide various offline functions like local playback.
Streaming System	The streaming system will be the backend for the service, provide online functionalities such as streaming songs, converting songs into various quality options for quality selection (formats 320 - 128kbps mp3, 256 - 128kbps AAC, etc), user options, and lastly it will be built using NodeJS.
Streaming Service	The service is the platform where users can register and use online functionalities for the music player app such as streaming music, users uploading content, and content libraries allowing users to search for uploaded content from other users.

5. Assumptions

This project makes the following assumptions;

- All project team members are able to complete the tasks in the estimated time.
- All project team members have the necessary resources and access to technologies to reach the goals of the project
- The external server is able to handle the load required by the streaming system / backend system.
- The proposed DMCA disclaimer and takedown are able to handle any conflicts and will not evolve into a larger issue
- The scope and products of the project will remain the same throughout the project and development cycle
- The technologies used to build the products provide the necessary resources and documentation to complete the project

6. Dependencies

The following are the internal and external dependencies that will have to be acknowledged and addressed;

1.0 Acquire development tools and documentation such as Android Studio. Visual Studio Code, NodeJS libraries, and Ionic framework. (Internal)

1.1 Procure access to external servers to host the server / system such as Digital Ocean (External)

1.2 Complete App design documents such as wireframes etc (Internal)

2.0 Development of the streaming system (Internal, 1.1 Start to Start)

2.0.1 Storage development

- create MongoDB models, ensure data is saved to the remote database

2.0.2 Streaming content development

- ensure that content is streamed to users

2.0.3 User access development

- create and delete users

2.0.4 User features development

- upload content, delete content, view data, manage content

2.1 Development of the Music Player App (Internal, 1.2 Finish to Finish, 1.1 Finish to Start, 2.0 Finish to Finish)

2.1.1 Local Playback Feature

2.1.2 Playlists

2.1.3 Equalizer

2.1.4 Login Pages

2.1.5 Integration of offline and online features

2.2 Testing of the App (Internal, 2.1 Start to Start)

2.3 Testing of the System (Internal, 2.0 Start to Start)

3.0 Implementation of the App and System (2.2, 2.3 Finish to Start)

7. Risk Management

The following are the risk associated with the project and the strategies to use to avoid risk or solve the occurrence of the problem;

Potential Risk	Severity (H/M/L)	Likelihood (H/M/L)	Management Strategy
Team member unable to work on the project (I.e. sickness, accident, jail, etc...)	M	L	Split the work of missing team members between the remaining group members. Acquire a new group member with permission from the Primary Instructor

Application Errors	H	M	Use of branches to avoid errors and only commit guaranteed working code to the master version. Using a version control software such as git would allow us to rollback to an older version. Each member would also keep a local backup as insurance if git's system is offline.
Bugs	M	H	Creation of Unit testing and extensive testing on our part to avoid bugs. Bugs that are present on the application would be dealt with by putting it on the sprint backlog based on priority.
Unrealistic Timelines	M	H	Adjust deadlines and establish clear communication on what is actually feasible. Study and work intensively over a short period of time to meet deadline if needed
Group Disagreements	M	L	Group discussion and majority votes.

8. Communication

Reporting

The following reports will be produced;

Report	Audience	Frequency
Minutes of Meeting Report	Team member / Instructor	Weekly

Meetings

The following meetings/communication will be established;

Meeting	Purpose	Attendees	Frequency
Minutes of Meeting	Group Discussion about the Project. Assigning who will work on which task. Addressing any concerns.	All Team Members	Weekly (2 hours)

Progress Meeting	Short discussion just checking progress.	All Team Members	Occasional (5 mins)

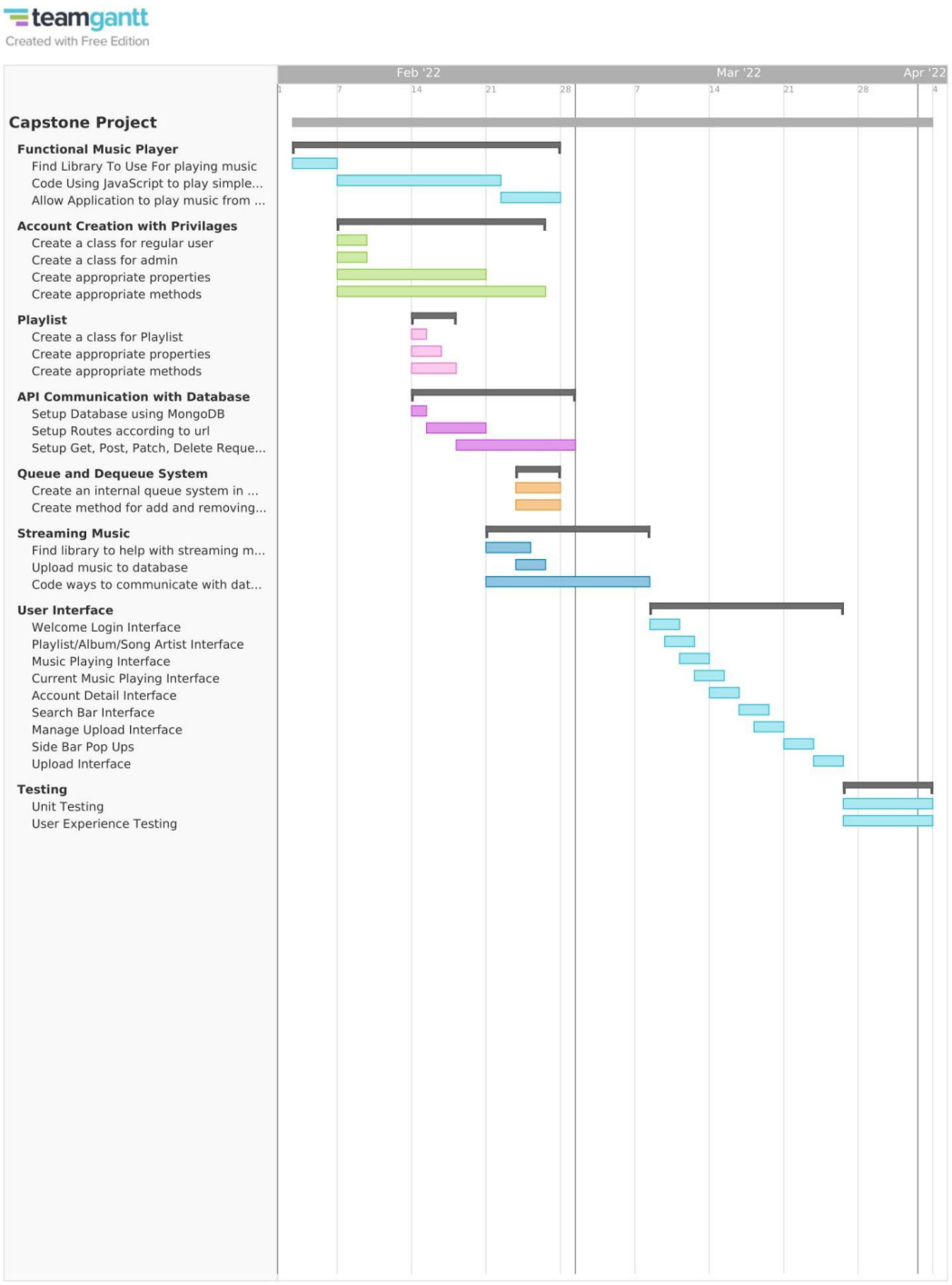
9. Task Listing (WBS- Work Breakdown Structure)

The following resource proposal template summarizes the resource hours committed to this project, upon final approval of this document.

Reference	Tasks	Duration	Dependency
A	Project Planning	Start of project - October 10, 2021	
A.1	Sprint 1 (Project Summary, High Level Requirement, User Stories, Persona, Project Vision)	Start of project - October 1, 2021	
A.2	Sprint 2 (Project Plan, Sprint Backlog, Project Backlog, Team Charter)	October 1,2021 - October 10, 2021	Dependent on A.1
B	Design Application	October 12, 2021 - November 27, 2021	Dependent on A
B.1	Sprint 3 (Requirement Analysis)	Oct 12, 2021 - November 5, 2021	Dependent on A.1
B.2	Sprint 4 (Wireframes, Technological Requirement, Mock Up)	November 5, 2021 - November 27, 2021	Dependent on A.2
C	Coding of the Application	January 10, 2022 - March 11, 2022	Dependent on B
C.1	Play music locally through application	Approximately 1 week	
C.2	Accounts with privileges (authorization)	Approximately 2 weeks	
C.3	Setup Database with corresponding models. (Data Classes)	Approximately 2 weeks	
C.4	API communication with the Database	Approximately 2 weeks	Dependent on C.3
C.5	Stream music online through application	Approximately 2 weeks	Dependent on C.3
C.6	Create a playlist system	Approximately 3 days	
C.7	Create a Queue and Dequeue system	Approximately 3 days	
C.8	Upload music to database	Approximately 1 week	Dependent on C.4
C.9	Implement Search Bar	Approximately 1 week	Dependent on C.4
C.10	Implement Music Quality Manipulation	Approximately 1 month	Dependent on C.1 and C.5
D	Building User Interface	March 11, 2022 - March 25, 2022	Dependent on B.2 and C

D.1	Welcome Login Page (Username, Password, Login Button)	Approximately 2 days	
D.2	Playlist Interface / Album Interface	Approximately 2 days	
D.3	Music Playing Interface (Play, Stop, Forward/Backwards/ Speed Buttons)	Approximately 2 days	
D.4	Account Detail Interface	Approximately 2 days	
D.5	Search Bar Result Interface	Approximately 2 days	Dependent D.6
D.6	Search Bar	Approximately 1 day	
D.7	Side Pop ups (Contains shortcuts to account, logout, artist, playlist)	Approximately 3 days	
D.8	Manage Upload Interface (Delete/Edit/Upload)	Approximately 2 days	
D.9	Upload Interface (Including ways to edit)	Approximately 2 days	
E	Testing / Fixes	March 25, 2022 - April 1, 2022	Dependent on C and D
E.1	Unit Testing	Approximately 1 week	Dependent on C and D
E.2	User Experience Testing	Approximately 1 week	Dependent on C and D

10. Gantt Chart



11. Milestones

Major Activity or Milestone	Estimated Milestone Target date

Environment Setup	January 21, 2022
Research Packages	January 24, 2022
Setting Up Database	February 25, 2022
Play Music from Local Files	February 25, 2022
Playlist Function	February 25, 2022
Queue/Dequeue System	February 25, 2022
Functional Music Player	February 26, 2022
Account Creation with Privileges	February 27, 2022
Communicate to Database	February 28, 2022
Streaming Music	March 6, 2022
Search System	March 11, 2022
User Interface	March 25, 2022
Final Testing / Fixes (Complete Project)	April 1, 2022

12. RAM – Responsibility Assignment Matrix

Project Team Responsibilities				
Project Name: Music Streaming System with Mobile Music Player Application				
Task	**Calvin**	**James**	**Simon**	**Aryan**
Assess Requirements	P	S	S	S
Streamline Working Environment	S	P	S	S
Design Application	S	S	P	S
Coding	S	S	S	P
Testing	P	S	S	S
P = Primary S = Secondary				

13. Approval

The signatures below indicate their approval of the contents of this document.

Project Role	Name	Signature	Date
Project Developer	Chi Calvin Nguyen	CCNguyen	Feb 6, 2022
Project Developer	James Weber De Asis	JWDA	Feb 6, 2022
Project Developer	Simon Ung	SimonU	Feb 6, 2022
Project Developer	Aryan Luthra	AryanL	Feb 6, 2022