MUSIC APP PROPOSAL

SOFTWARE REQUIREMENTS SPECIFICATION

CSCE 247: SOFTWARE ENGINEERING

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I. INTRODUCTION

PROJECT TITLE: MUSIC APP
PROJECT MEMBERS: DAMIEN DOBBINS, HARRISON YIM, LILY DELLER, TAMAZYE' BEEKS

Summary

The purpose of creating a music learning app is to bridge the gap between traditional music education and the convenience of modern technology. This app is designed to provide an accessible and engaging platform for learners of all skill levels to explore, practice, and master musical concepts at their own pace. By combining interactive lessons, real-time feedback, and personalized learning paths, the apps goal is to make music education more enjoyable. Users who are picking up an instrument for the first time or wanting to refine their skills, this app offers a necessary toolkit to support everyones musical journey, fostering creativity and confidence in a way that is flexible and tailored to individual goals.

Project Scope /This document will cover:

- The personas of potential users and stakeholders invested into this project
- any constraints that have been applied to this project
- A description of the app along with its business use cases
- both the functional and nonfunctional requirements of the app
- A competitive analysis to outline the purpose of the project

II. STAKEHOLDERS

Key Stakeholders

Learners: The primary stakeholders who use the app to learn and practice music, including beginners, intermediate learners, and advanced musicians. They rely on the app to provide effective, engaging, and personalized learning experiences.

Music Teachers and Educators: Professionals who may use the app to complement their teaching, assign lessons, or track students' progress. Their input can shape the app's features to align with real-world teaching practices.

Parents/Guardians: For younger learners, parents or guardians often act as decision-makers and might monitor their child's progress or engagement through the app.

Curriculum Designers: Individuals or teams responsible for creating lessons, exercises, and other instructional materials in the app.

App Developers and Designers: The technical team responsible for designing, developing, and maintaining the app, ensuring it is user-friendly, visually appealing, and functions effectively.

OLIVIA KRANTZ

AMATEUR LEARNER

GENERAL:

olivia is motivated by her desire to learn a new hobby and help express herself more creatively. as a busy college sophomore she wants to fit music into her schedule without feeling too overwhelmed. She wants to learn her favorite song on the guitar, but she struggles staying motivated

GOALS:

olivia wants an app that makes learning more fun and rewarding. Like gamified elements to help keep her engaged and more structured help to make her progress easier.

PERSONAL:

- **AGE: 19**
- **OCCUPATION: COLLEGE SOPHOMORE**
- **MUSIC INTERESTS: LEARNING GUITAR AND BASIC MUSIC THEORY FOR FUN**
- **TECH HABITS: FREQUENTLY USES HER PHONE FOR EDUCATIONAL APPS. PREFERS SHORT, INTERACTIVE LESSONS SHE CAN FIT INTO HER BUSY SCHEDULE.**

KEY POINTS

- **LEARN POPULAR SONG QUICKLY ON GUITAR**
- **FUN EXERCISES**
- **OVERWHELMED BY TOO ADVANCED OF TERMINOLOGY**
- **FINDS NORMAL METHODS ON LEARNING TO BE UNMOTIVATING**

JACKSON CLAPP

GENERAL:

Music is jackson's profession - his motivation stems from commitment to be improving his skills and having more tools to teach his students. He wants to refine his techniques and find different teaching strategies.

GOALS:

He wants an app that can challenge him at a higher level and have tools to help his student's learning

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PERSONAL:

- **AGE: 29**
- **OCCUPATION: MUSIC INTRUCTOR**
- **MUSIC INTERESTS: ADVANCED PIANO AND COMPOSING**
- **TECH HABITS: USES APPS FOR COMPOSITION TOOLS AND PREFERS MORE IN DEPTH CONTENT AND CUSTIMZATION**

KEY POINTS

- **ACCESS SHEET MUSIC AND BE ABLE TO ARRANGE IT FOR HIS STUDENTS**
- **FIND NEW TEACHING STRATEGIES**
- **TOOLS FOR CUSTOMIZING SHEET MUSIC**
- **TEACHER FEATURES LIKE TRACKING STUDENTS**

LAUREN GALLICK

PARENT

GENERAL:

Lauren's motivation is tied to her role as a supportive parent. Her daughter wants to learn piano, and gain confidence in music.

GOALS:

sHe wants an app that provides clear progress reports and safe content/ tools to help her daughter's growth in music. She herself is interested in learning some basic concepts to help connect better with her kid's journey.

PERSONAL:

- **AGE: 40**
- **OCCUPATION: PARENT**
- **MUSIC INTERESTS: SUPPORTING HER DAUGHTER**
- **TECH HABITS: PREFERS APPS WITH EASY NAVIGATION AND PARENTAL CONTROLS.**

KEY POINTS

- **CHILD FRIENDLY TUTORIALS WITH THINGS LIKE ANIMATED VISUALS**
- **WEEKLY REPORTS FOR PARENTS**
- **FIND BEGINNER PIANO LESSONS THAT ARE ENGAGING**
- **BE ABLE TO LEARN ALONG SIDE ABOUT BASIC MUSIC CONCEPTS**

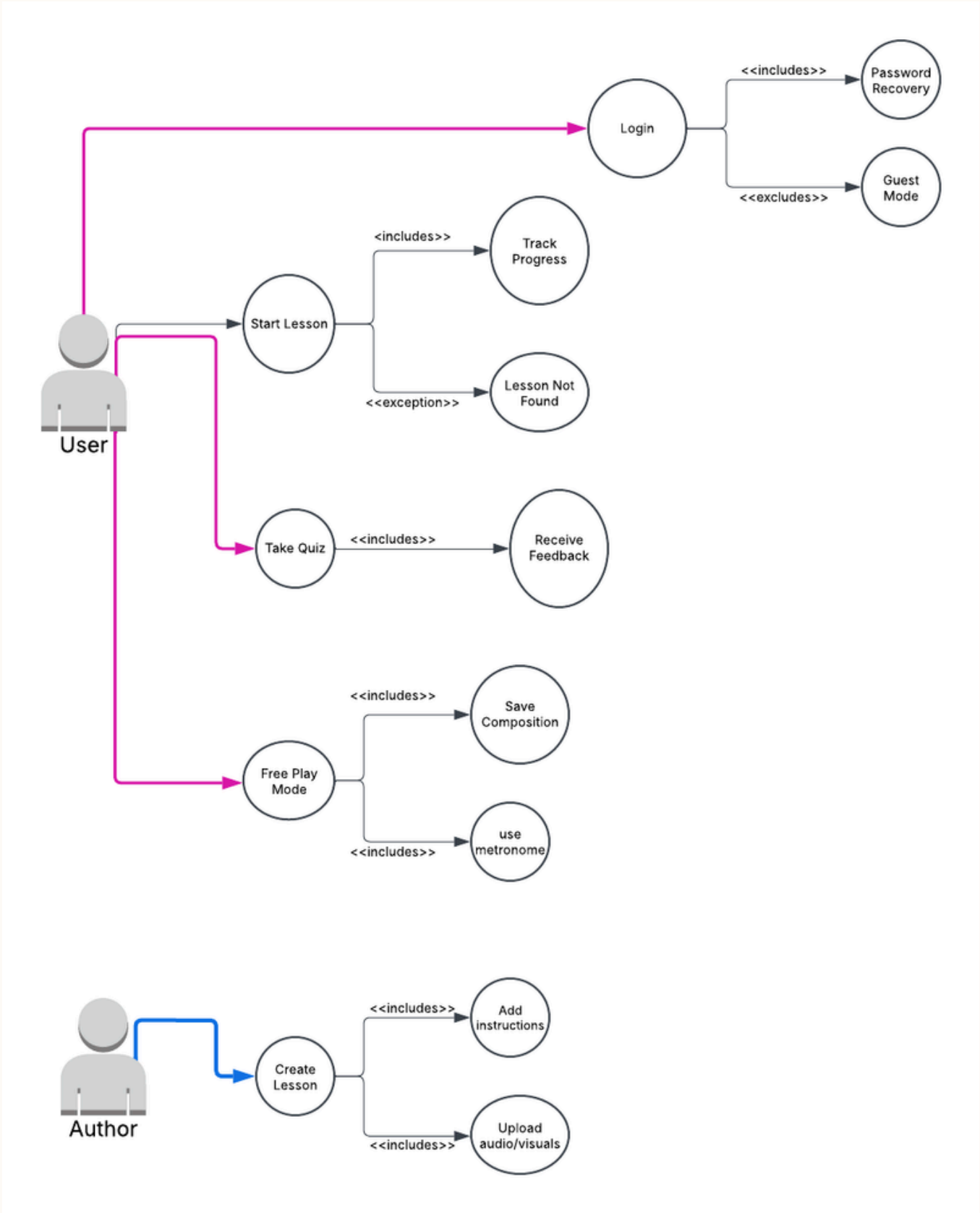
III. CONSTRAINTS

Time Constraint: The project must be completed within the semester, leaving limited time for development, testing. This might restrict the complexity of the app's features.
No Budget: With no financial resources, all tools, frameworks, and technologies used must be free or open source. Paid services like premium design tools cannot be used.
Team Resources: The project relies solely on the skills and time availability of our team, who may still be learning relevant concepts, which could potentially limit expertise in areas like app development and design.
Technology Limitations: Access to advanced technologies may be limited by available resources, such as hardware, software, or platforms provided by the school or course.
Scope of Features: The app's functionality must be carefully prioritized to fit within the semester's timeframe. Advanced or resource-intensive features, such as real-time pitch recognition or complex AI-driven personalization, may need to be excluded.

IV. OVERALL DESCRIPTION

This app must be accessible to users within the music learning community, including educators/teachers and independent learners. Users will be able to access the app from their mobile devices and desktops to be able to learn on the go or at home. The app will collect data on user progress, such as completed lessons, practice hours, and skill levels, enabling personalized recommendations based on their preferences like learning pace. the app will include a database of user reviews and feedback. This system ensures a supportive and engaging environment for music learners of all levels.

V. BUSINESS CASE USES



VI. FUNCTIONAL REQUIREMENTS

Link to Functional Requirements

VII. NONFUNCTIONAL REQUIREMENTS

Looks and Feels Requirements : The app shall have bright UI to appeal to a younger audience. The design shall be consistent across all screens. The app shall have engaging visuals.
Usability Requirements: The app shall be easy to navigate. App shall have simple interface for selecting lessons and free play. Feedback will be clear and immediate with visual cues.
Legal Requirements: The app shall comply with all state and local law
Security Requirements: The user's information shall be stored in a secure manner.
Performance Requirements: The app shall be able to run on any device that is connected to the internet

IX. COMPETITIVE ANALYSIS

Yousician:

STRENGTHS	WEAKNESSES
• Offers interactive lessons with real-time feedback. • Covers multiple instruments (guitar, piano, ukulele, bass, singing). • Gamified features like daily challenges keep users engaged. • Well-designed interface, making it user-friendly for beginners. • Extensive song library with popular tracks for practice.	• Limited features in the free version; most valuable content is locked behind a subscription. • Heavy reliance on pre-recorded exercises, which may lack personalization for advanced learners. • No direct teacher interaction or feedback beyond the app's AI.

Simply Piano by JoyTunes

STRENGTHS	WEAKNESSES
• Tailored specifically for piano learners, providing step-by-step tutorials. • Uses real-time audio input to assess progress, requiring no additional equipment. • Beginner-friendly with gradual progression. • Integrates popular songs for practice.	• Advanced players may find lessons too basic. • High subscription cost for full access. • Limited flexibility in customizing lessons or learning paths.

Fender play

STRENGTHS	WEAKNESSES
• Focused on guitar, bass, and ukulele. • Professionally crafted lessons by Fender experts. • Structured curriculum based on skill levels and goals. • Great for beginners with its simplified and clear approach.	• Limited instrument focus; no options for piano, singing, or broader music theory. • Advanced players may find the content too restrictive or elementary. • Subscription required to unlock most content.

The competitive analysis shows the importance of creating and designing a music learning app that stands out by addressing common limitations in existing apps while using their strengths. To develop a successful app, we should focus on creating a comprehensive platform that balances affordability, accessibility, and engagement. Personalized learning paths that adapt to both beginners and advanced learners. Using gamification, interactive tools, and meaningful feedback will enhance user engagement and motivation, while offering a broader range of instruments and music theory lessons can attract a diverse audience. Using collaborative features, such as group challenges or duet options, can create community among users. By prioritizing these aspects, our app can fix some of the gaps in the market and provide an impactful music learning experience.