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Music Learning Application

Software Requirements Specifications

CSCE 247: Software Engineering

Team: One Direction

February 2, 2025

Version 2.0

Requirements Part 1

Section 1 – Introduction

With it being a new year, people always have a goal and resolution they would like to achieve. Most new years' resolutions involve people wanting to learn a new skill. Some may want to learn how to successfully play a new instrument. Our music app would ultimately be the solution. The app would allow users to play the instrument they desire, while displaying sheets with the music notes on it. This app would ultimately allow users to learn how to play the desired instrument, providing proper instruction. This app would also give the users a more hands-on learning experience, increasing the quality of learning.

Scope

This document will cover:

- Personas of potential stakeholders and users invested into this project.
- Shows the requirements (functional/unfunctional) of the app.
- Any constraints that have been applied to the project.
- A competitive analysis to showcase the purpose of the project.
- A description of the app with its other uses.

Section 2 - Stakeholders

- Music hobbyists

- Students

- Teachers

- Musicians

- Music influencers

Personas:

LILY BAKER

BIO

Lily is a second-year med student who enjoys cooking, music, and hanging out with friends. As a kid, she wanted to be a famous musician, but is now on track to become a doctor.

GOALS

In her limited free time, Lily wants to practice piano and improve her skills. She can't afford lessons but would like to be able to follow along with the sheet music as she plays. She also would love visuals to see what keys need to be played for each song.

MOTIVATION

Incentive
Fear
Growth
Power
Social

FRUSTRATIONS

As a med student, Lily does not have a lot of time to spend on practicing piano. She wants an app that can work for her schedule. She wants an app that motivates her to play but doesn't make her feel guilty for not practicing either.

AGE	23
HOMETOWN	Portland, OR
OCCUPATION	Student
EDUCATION	College
CHARACTER	Social

PERSONALITY

Introvert — Extrovert
Thinking — Feeling
Sensing — Intuition
Judging — Perceiving

BRANDS AND INFLUENCERS

CINDY GARCÍA

BIO

Mrs. García is a well-loved high school music teacher. She teaches students of all kinds of backgrounds and hopes to instill a love of music in all of them. She used to play bass in a band when she was younger.

GOALS

Mrs. Garcia wants every student to practice as much as they can. It's hard to give each individual student detailed lessons and feedback. She wishes she had more resources to achieve this goal. It would be great if she had another way to track their progress.

MOTIVATION

Incentive
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Social

FRUSTRATIONS

Some students still have trouble reading sheet music, Mrs. Garcia would love if the app could help students read sheet music, or learn songs with visuals rather than sheet music alone.

AGE	38
HOMETOWN	Cambridge, MA
OCCUPATION	Music Teacher
EDUCATION	Masters
CHARACTER	Leader

PERSONALITY

Introvert — Extrovert
Thinking — Feeling
Sensing — Intuition
Judging — Perceiving

BRANDS AND INFLUENCERS

Section 3 – Constraints

-Schedule

- This project is to be completed within 3 months.

-Budget

- This project has been given a budget of $1,000.

-Software

- This project must be done in Java.
- Multiple devices must be able to access it.

-Workplace

- This project can be completed anywhere with a computer.
- Most likely be asynchronous.

Section 4 – Overall Description

Users will be able to access this app through the app/play store or on a website. The users will be split into two categories: Teachers and learners. Teachers will be able to include specializations and upload video lessons. Students can reply to those videos with questions and videos of their practices after the lesson, and they can get feedback from the teacher and other students. Each lesson will have a star rating system and if someone wants to search for a lesson, the search will primarily be sorted by the rating system.

Section 5 – Business Use Cases
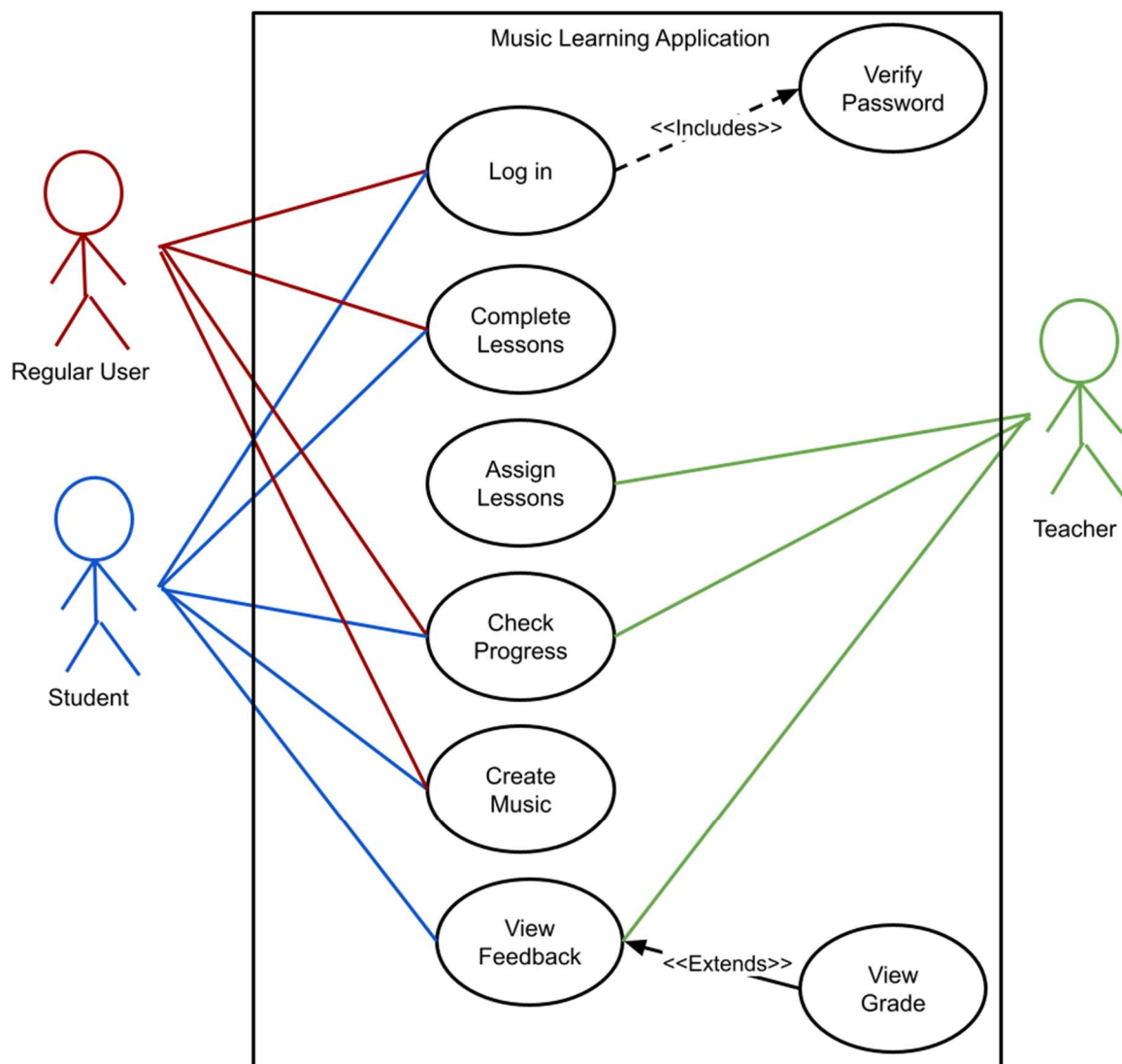
Section 6 – Functional Requirements

Requirements Spreadsheet

Section 7 – Nonfunctional Requirements

- The app shall have a fun and welcoming feel.
- The app shall have accessibility options for colorblind users.
- The app shall be accessible without internet connection to an extent.
- The app shall have 2-factor authentication when the user forgets their password.
- The app shall allow the user to reset their password through email
- The app shall be run on Windows, Linux, and Mac systems.

Section 8 – Definitions and Acronyms

Tab - noun - short for tablature, a notational system used to give detailed information as to where notes should be played on the fretboard.

Equalizer - noun - A tone control system designed to compensate for frequency distortion in audio systems.

Metronome – noun - An instrument consisting of a short pendulum with a sliding weight. It is set in motion by clockwork, and serves to measure time in music.

Section 9 – Competitive Analysis

	Fender Play
Strengths	Modern and clean design This app should allow users to access it. gn with an easy-to-use interface. Offers in-depth lessons for beginner and intermediate players. These include video lessons, often short, and practice exercises. The videos include several angles to show exactly what the player's hand is doing. Offers lessons for acoustic guitars, electric guitars, bass guitars, and ukuleles. These lessons include scrolling TAB sheets with a built-in metronome for practice.

	Offers a wide array of music to select, with hundreds of songs including old rock, blues, modern pop, country, and more. The song library is constantly updated. Each song is also rated by difficulty. Creates a five to seven level learning path based off of certain preferences, such as the type of instrument and the genre of music you want to play. The program saves your progress. A subscription to the learning service comes with a %10 discount on any Fender products.
Weaknesses	Costs $19.99/month or $149.99/year, a high price that would likely drive many initial interests away if they aren't serious about the program. Does not feature standard notation (traditional sheet music) but instead uses TAB notation only. Focuses on guitars and ukulele, with no support for any other kind of instrument. Fender has a large focus on beginner players. There is little content for more-advanced players and much of the content explored on the app is considered simple and basic.
Audience/focus	The app was clearly designed for beginners with little to no experience with their instrument. It is also targeted to those interested in guitar/ukulele.

	Yousician
Strengths	Yousician is really simple. All you have to do is it the note at the right time. Similar to something like Guitar Hero. Really simple to follow along and play with it. There are multiple difficulties so you can see your improvement. You can adjust the speed of the song and loop certain parts if you want to. You can learn step by step and at your own pace. There is immediate feedback based on what note you played: early, late, etc. You can play almost any genre. Tons of songs to choose from. There are lessons for guitar, piano, bass, ukulele and singing

Weaknesses	It is a subscription-based service. $139.99 per year or $29.99 per month. No other lessons other than guitar, piano, bass, ukulele and singing. If you only use this, then it will almost guarantee that you won't become a great musician. You don't learn how to play the instruments, you learn how to play Yousician. Yousician isn't for people trying to take their music talents to the next level.
Audience/focus	Yousician is pretty much for beginners/novices only.

	Chordify
Strengths	Simple interface, almost like a social media that recommends songs you can play on guitar based on your skill level. Has a tuning feature to help users tune their own instrument, as well as a way to practice their cords. Most features are free, with a few ads between each of the songs you can learn from. Allows you to make playlists of songs and has a History so you can look back at all the songs you played. Has an offline mode for when a User can't access wi fi
Weaknesses	Some songs are locked behind the premium version of the app The ads take up a large amount of the screen, even when the graphics used for songs can be small. Live Chord detection is locked behind the premium. They only offer Guitar, Ukelele, Piano and Mandolin lessons for songs.
Audience/focus	The focus seems to be on musicians of all levels, from beginners who are just starting out to pros who want to hone their skills.