

# Music Learning App

Software Requirements Specification



Evil Gnome Clan

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## 1. Introduction

### Purpose

Learning to play a musical instrument or improve musical skills is a goal shared by millions worldwide, but accessing effective and personalized instruction can often be challenging, expensive, and inconvenient. Traditional learning requires in-person meetings, fixed schedules, and often significant financial investment that creates a tough barrier of entry for people who are looking to learn. This is why we want to create an application to make learning instruments accessible, flexible, and fun. Users will be engaged through learning songs that they know in an interactive way. Whether the user is a beginner looking to start their music journey or an experienced musician looking to refine their skills, the app will provide a cost-efficient solution for people to practice music.

### 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 website/app along with its business use cases.
- Shows both the functional and nonfunctional requirements of the app.
- A competitive analysis to outline the purpose of the project.


## 2. Stakeholders

- Music Learners
  - Educational Institution Students
  - Self learners

- Musicians with popular songs

## Personas:

### Marcus Jones



**AGE:** 11

**LOCATION:** Kalamazoo, MI

**OCCUPATION:** Student

**MUSIC EXPERIENCE:** Beginner

**INCOME:** None

**BIO**

Marcus is a 5th grader at the local elementary school. He plays on the school soccer team and loves music class. In his free time he like to play basketball with his friends.

**Goals**

Marcus's music teacher is having him learn the guitar for the school band. His parents also want him to learn the piano. He wants to find a way to practice his instruments that is fun and does not feel boring. He would also like to learn to play songs that he hears on the radio to impress his friends.

**Frustrations**

Practicing his instruments is boring. Marcus's teacher just gives his sheet music to practice at home. His parents have hired an old lady to try and teach him the piano. He is feeling overwhelmed at having to learn two instruments and is not having fun.

**Personality**

Introvert	Extrovert
<div></div>	
Sensing	Intuition
<div></div>	
Thinking	Feeling
<div></div>	
Judging	Perceiving
<div></div>	

**Motivations**

Fear	<div></div>
Growth	<div></div>
Power	<div></div>
Social	<div></div>

## Hands-on-User

## Reagan Smith



**AGE:** 28

**LOCATION:** Spokane, WA

**OCCUPATION:** Guest Relations Manager

**MUSIC EXPERIENCE:** Novice

**INCOME:** \$50,000 yearly

### BIO

Reagan has been working at her position as a Guest Relations manager for almost a year. She has settled in to her new life and wants to revive old passions.

### Goals

Reagan wants to reignite her passion for music she once had in her youth when her parents made her take violin lessons. She wants to be able to practice at inconsistent times to leave room for when she is needed at work. She wants to relearn the songs she once knew how to play as well as new songs she has found since growing up.

### Frustrations

Reagan is often busy with work even outside normal hours which makes scheduling music lessons difficult. She is upset that she can no longer play the songs she was able to when she originally learned the violin.

### Personality

Introvert      Extrovert



Sensing      Intuition



Thinking      Feeling



Judging      Perceiving



### Motivations

Fear



Growth



Power



Social



Hands-on-User

## Jonny Steele



AGE: 32

LOCATION: Nashville, TN

OCCUPATION: Music Writer

Music Experience: Expert

INCOME: 40,000

### BIO

Jonny is a musician that creates easy songs that he posts on youtube to teach people how to play guitar. In his free time he plays for some music clubs in downtown Nashville.

### Goals

Jonny wants to make more money off his songs. He has been trying to get a music learning app to include his songs in their library. He also wants more people to become interested in music because he knows how beneficial it can be to brain health.

### Frustrations

No large music apps have taken Jonny's songs. Instead of focusing on easy music that teaches people how to play, they choose popular songs that are hard to play. He wishes that these apps were more focused on actual learning rather than short term fun playing popular songs.

### Personality

Introvert      Extrovert



Sensing      Intuition



Thinking      Feeling



Judging      Perceiving



### Motivations

Fear



Growth



Power



Social



## 3. Constraints

### Time Constraints

- This project is to be completed within the current semester.

### Monetary Constraints

- This project's development has been allocated a budget of \$0.

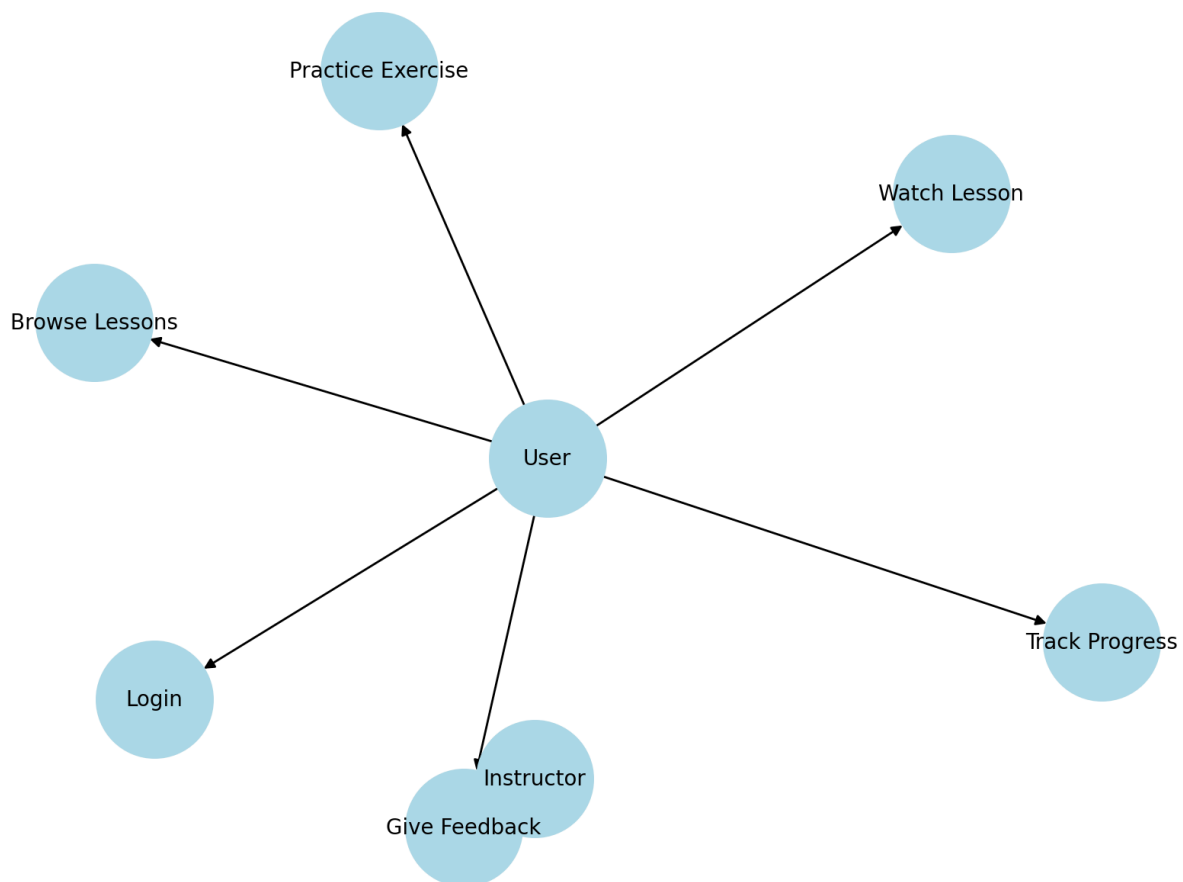
### Technical Constraints

- The code must be done in Java.
- The website must be accessible on a variety of different devices including PC, laptops, and mobile devices.

#### 4. Overall Description

This app must be able to display sheet music in a way which benefits learning the song shown. This must be accessible from mobile devices as well as computers. Users will be able to learn music at their own pace in an accessible way. The user will be able to input which instrument(s) they are learning, and their desired pace for how often they wish to teach themselves. The application must be programmed using java and will only interact with the user's device while in the application.

#### 5. Business Use Cases



## 6. Functional Requirements

Functional Requirements Spreadsheet:

[https://docs.google.com/spreadsheets/d/1wHMhWnXLRx7vFVkdXte5YHhX\\_mdKcU0BVuuYVI1yCsY/edit?gid=0#gid=0](https://docs.google.com/spreadsheets/d/1wHMhWnXLRx7vFVkdXte5YHhX_mdKcU0BVuuYVI1yCsY/edit?gid=0#gid=0)

## 7. Non-Functional Requirements

### Look and Feel Requirements

- The system shall be easily navigated by users.

### Usability Requirements

- The system shall be used by users with a variety of musical skill levels.
- The users shall be able to use every aspect of the app regardless of prior experience.

### Performance Requirements

- The system shall be able to run on devices when not connected to the internet.

### Maintainability and support requirements

- The system shall be able to run on Android, iOS, Windows, and Mac systems.

### Security requirements

- The user's information shall be protected.

### Legal Requirements

- The system will comply with all local, state, and federal laws.

## 9. Competitive Analysis

	Yousician
Strengths	One strength of the Yousician app which can be found immediately after visiting their website is the types of instruments it can be used with. It supports not just the piano and guitar, but also bass, ukulele and singing. As these are the more commonly learned instruments, they are able to provide services for the majority of novices in search of a place to learn music.



	<p>Yousician also promotes an average session length of 17 minutes which is desirable for many people who seek out an app to learn music. Both adults and students with busy work schedules are able to practice music on their own time when convenient.</p> <p>Highly advertised on Yousician's homepage are well known artists whose music are available to learn through the app such as Billie Eilish and Metallica. This can be a big draw for people looking to learn music as recognizable songs may help them to stay engaged.</p> <p>Available on Android, iOS, and PC.</p>
Weaknesses	<p>While the available instruments may cover the majority of new learners, it may leave some experienced or returning music learners unhappy as the selection is limited. Adults returning to an instrument they learned in their youth, or band students who specialize in an instrument would be unable to practice or learn songs fit for their instruments.</p> <p>There is no feature to upload your own music to Yousician meaning you are limited to the selection of songs available on the app.</p>
Audience/Focus	<p>The main focus of Yousician is teaching beginner musicians how to play the more common instruments. While they claim to be for all skill levels, the instrument selection and the songs on their platform cater towards novices getting into playing music rather than musicians trying to create music or significantly improve their skill level.</p>
	Fender Play
Strengths	<p>Those who are experienced in the music industry will instantly recognize the name Fender. As one of the top electric guitar companies, the Fender name carries a lot of weight. Creating an app for music learning that can be promoted whenever someone purchases one of their guitars allows for musicians to have a personalized experience with their guitar.</p> <p>Fender play has two options for the user's learning path. The first is a play at your own pace through video lessons that allows you to choose your own schedule or learn when you have time. The second is Fender Play 1:1 which allows the user to learn through live lessons and follow up practice plans.</p> <p>The app also does not focus solely on learning guitar. The app offers courses on music reading, knowing your guitar, theory, amp and tone.</p>

	<p>Not only teaching you how to play the instrument, but how to become a guitarist.</p> <p>Available on Android, iOS, and Web.</p>
Weaknesses	<p>The most obvious weakness of the Fender Play app is its sole focus on learning guitar. While it does a good job of thoroughly teaching every aspect of the guitar, it misses out on the whole market of other instruments.</p> <p>The pricing on the app is also relatively high. A monthly subscription costs \$20 per month while an annual subscription costs \$12.50 per month. \$240 per year is cheaper than what an in-person teacher or school would charge, but for a self guided, video based platform, it seems too expensive when you consider other options.</p>
Audience/Focus	<p>The main focus of Fender Play is for people who buy Fender guitars to have a place to learn to play/about their guitar. Offering people traditional face to face lessons over the app or allowing them to self learn through their videos.</p>
	GarageBand
Strengths	<p>GarageBand is a music creation/editing app that also has built-in lessons and instruments. It is a beginner-friendly software with introductory music lessons and an easy-to-use interface, and it also has features for more experienced musicians. It has a few built-in virtual musical instruments, such as a piano/keyboard, guitar, strings, and bass. MIDI devices can also be connected and other instruments can be downloaded in the app library. The app is focused more on recording and editing music, with loop features and extensive tools for audio editing.</p>
Weaknesses	<p>The main weakness of this app is that it is Apple device exclusive, meaning only Apple users can download it. It comes pre-installed on Apple computers. The app also has limited tools and customization features in comparison to other music creation/learning apps. The app does not have cross-compatibility with other apps, which limits collaboration. The app is mainly focused on audio and music editing rather than learning. Although it does have some basic lessons, that is not the main focus of the app. It also has file format restrictions, which makes it difficult to download, export and share files.</p>
Audience/Focus	<p>The main audience of GarageBand is beginner music producers/creators, students and educators, and podcast creators/other types of audio recorders. The app is useful for those who are in need of basic music lessons and audio editing and recording.</p>

## Summary

	Strengths	Weaknesses	Focus
Yousician	+Beginner Friendly +Convenient to use +Popular Songs	-Minimal Instruments -Limited (albeit large) selection	Beginner musicians who wish to learn popular instruments/songs
Fender Play	+Fender Brand +Real Teachers or Video lessons +Guitar Peripheral Lessons	-Limited to only guitar -Expensive	Fender guitar users who want to learn or improve on their guitar skills.
<Product 3>	+ Beginner-friendly +Built-in instruments (and ability to download more) +Music lessons for beginners	-Apple device exclusive -Limited tools and instruments -No cross-compatibility -More focused on recording and editing	Beginner music producers/creators, users in need of basic music lessons and editing/recording software.

Based on the competitive analysis, we've learned important lessons from other music learning apps. Yousician is great for beginners but lacks variety in instruments and custom song uploads. Fender Play is focused on guitar but limits its audience and is expensive. GarageBand offers useful tools but is only available on Apple devices and focuses more on music production than learning. Our app will fill these gaps by offering a flexible, user-friendly platform that supports various instruments and allows users to learn at their own pace. It will focus on accessibility, affordability, and interactivity, creating a fun and engaging learning experience for both beginners and more experienced musicians.