

## Anthony Russo - Assignment 3 Proposal

Project Title: Music Notes

Social Issue: Music Education In Low Income Communities

### Option 2

I will be implementing an Android application, using Android Studio. The application will be written natively in Java and will follow the Android Studio framework. Android Studio is a powerful development suite with many tools to help create this application, and allow it to perform at the best level it can.

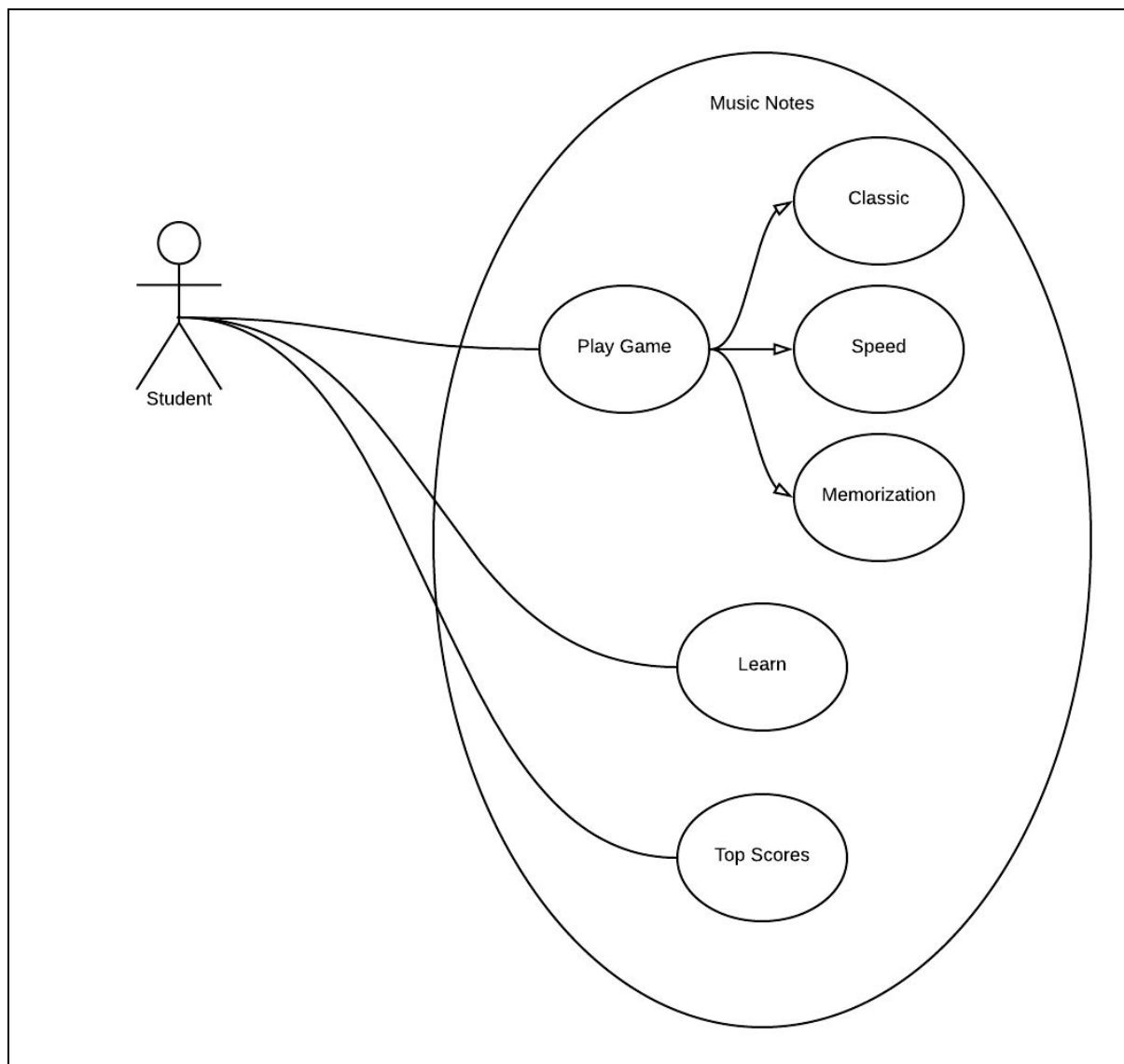
Music Notes will be an android application designed to give low income communities, or anyone who does not own a music instrument the ability to enjoy and learn music through an interactive fun experience.

Music Notes will be an innovative solution to bring music education into areas where people may not have the extra money to spend on music equipment, or schools that don't have the resources to provide musical education courses in schools. The free app will allow not just kids or students to learn music, but anyone who wishes to download it. However the app will focus mainly towards younger children with its interactive and enjoyable game-like design. Smartphones are a huge part of people's everyday lives now and this app will just be another outlet for them to be able to learn something that they may not have previously had access to. The app will provide functions to allow people to familiarize themselves with the structure of sheet music, and reading music notes. The app will also allow users to learn the notes on the piano using fun games with varying game modes. Learning the placement of the different keys on the piano alongside learning how to read the sheet music will benefit users more than doing the two skills separately. This design will help them to remember and learn how to play the music much easier than trying to study the music, and then play the piano. This app is also incredibly beneficial because it can be brought around anywhere since smartphones are super portable.

The application will implement algorithms to play certain music notes on the screen and allow the users to follow along in three different game modes. The first "Classic" mode will show the notes on the screen, and the user will play the correct note on the piano for the duration of the song. The second mode, "Speed" will show notes on the screen, same as classic, however the speed that the notes appear will increase over time, increasing the difficulty of play. The third mode "Memorization" will challenge the user to remember a set of notes which will disappear. Once the notes disappear the user will have to repeat these notes in the same order. Each one of these different game modes will have different scoring algorithms depending on the difficulty.

Data structures that will be used in this project will most likely include arrays, arraylists, and different types of classes to store a variety of information including the note information and top scores, as well as other miscellaneous info such as music facts. Other storage and organizational factors to consider are the sound files and different graphics I might use.

Some of the major software engineering concepts I expect to reinforce are the overall design process and the attention to key design details such as the overall ease of use of the UI. The UI will be a big design consideration for this project considering nobody will want to use the app if it is difficult to navigate or it does not flow smoothly. This should be the biggest consideration in the design of the app because the UI is the first thing that the users will see and interact with while using the app. Working with the design process skills that we have learned in class will also help me to stay on track while designing, building, implementing, and testing.



**Figure 1:** Simple Use Case Diagram For A Student

#### Timeline:

- I already have experience using Android Studio so I will focus the majority of my time designing the functionalities and robust features of the app.
- I expect to have a basic outline of the projects requirements and needs by the beginning of spring break.
- Following this I will spend the majority of my time working through iterations of the app until I reach a product that I feel delivers on my expectations.
- After this I will attempt to receive feedback from students and friends that I have in the music education department and see what their feedback on the app is.

#### Resources:

Android Studio Documentation

<https://developer.android.com/docs>

Java Documentation

<https://docs.oracle.com/en/java/>

Music Theory

<https://www.musictheory.net/lessons>