

MusicApp - Jack Chen, Sacit Gonen, Shelly Huang, Naseeb Gaffar, Rubaiyat Rashid

App Overview:

This app is for people who would like to practice singing.

On opening of the app, the user is asked to register. Input fields are email, password, first and last name. Upon registration, user is sent to the home page. On the home page user is able to choose “Practice” or “User Info” (a button on the upper right hand side of the screen).

Once “User Info” is chosen, user’s stats are displayed like name, email, highest range, lowest range, etc.

Once “Practice” is open, user is able to choose between two options: Intervals and Pitch.

If user chooses *Intervals*, user can choose between a range of intervals like *Minor 3rd*, *Major 5th*, etc. Once the user chooses an interval, user is asked how many times he wants that interval to be played.

If the user chooses *Pitch*, user enters a number. The number is how many notes will be played. A randomly generated score of music will be outputted.

When user chooses either *Pitch* or *Intervals*, a loading screen is played, and user is redirected to the game window. The game window plays the respective notes that the user inputted beforehand.

App’s features:

- **Registration/Login**
 - User is able to register and login. All user information is stored into our choice of database, Firebase. Information such as username, email, and password (which is hashed) is stored.
- **Data Analytics**
 - Other user information stored is “lowest range”, “highest range”, “overall accuracy”, “total score”, and “overall possible hits”.
 - “Lowest Range” indicates the lowest pitch that the user is able to hit. This is used to set the lower boundary of the game.
 - “Highest Range” indicates the highest pitch that the user is able to hit. This is used to set the upper boundary of the game.
 - “Overall Accuracy” is the user’s accuracy throughout their whole time using the app. This is calculated by taking all the notes the user has ever matched and dividing it by all
 - “Overall Possible Hits” is the total number of notes that has passed through the game window since the user has started using the app.
- **Game Window**
 - The game window is the bulk of the app. Here, the user matches pitch with notes that pass by the screen. The game window consists of a few functions:

- The game window's bounds are set by the user's "lowest range" and "highest range".
- An arrow that tracks the user's current input (pitch)
- a progress bar on the bottom of the window that shows the user how far through the song he has gone.
- a score (on the upper right) that shows the user's current score.
- "hint line" where when notes pass by this line, the note's pitch plays automatically.
- "pitch line" where the user is supposed to sing the note when the note comes across the line.
- touching a note on the screen will play the pitch out loud.
- "alert dialogues" that pauses the game and instructs the user on what to do.
- The game window accepts a string, *sfs*, that determines what is going to be played upon entering the scene. The *sfs* stands for score formatted string, where a note is in a specific format for us to output for the game window. For example:

"4e4 2d#4 8c#4"

Where each note is separated by space and is in the format

"4e4" -> **4** is the duration of the note (in 16th notes)
 e4 is the pitch of the note, where **4** is the octave.

- Game window "gameplay" is separated into two categories:
 - "Intervals" where user is able to choose an interval (major 3rd, minor 6th, etc.) and a certain number. Upon submitting, the user is redirected to the game window and the respective intervals are played.
 - "Pitch" where user is able to choose a certain number of pitches. Upon submitting, user is redirected to the game window and a randomly generated sequence of pitches is played.