Guitar Helpers Assignment 4:
Paper Prototype Testing
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Executive Summary

The aim of the Guitar Helpers application is to aid users to learn how to play the guitar and how to maintain it. To compete with other applications like PitchLab for guitar tuning functionality, the initial round of testing consisted of developing an interface for tuning a guitar as a user would want to use it. In all, the paper-prototyping exercise helped to begin the designing process and provide a means to test ideas without spending time trying to code them. This allowed for easy manipulation of the interface and overall application development. While most of the test subjects for this project would not have met the criteria for most Guitar Helpers users because of lack of guitar experience, the overall experience highlighted ways to focus future efforts to make the user interface even easier to use for users with no guitar playing background.

First Iteration

Initial Sketches and Storyboards

To start the project, the Guitar Helpers team developed a sketch for the necessary interfaces for accessing and using a tuner within the application. This can be seen in **Figure 1.**

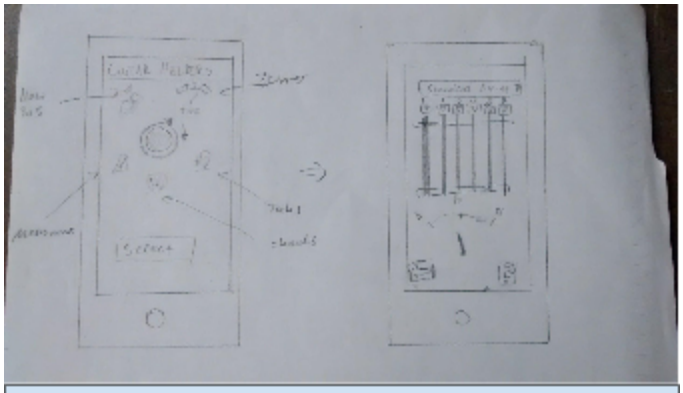

Figure 1: Initial sketches for the Guitar Helpers App, showing the main screen (left) and tuner (right).

The left image in Figure 1 outlines the primary features and layout for the opening screen, including a dial to turn to navigate between the Tuner, Tabs, Chord Charts, Metronome, and How-To Guides. For each option, a different image representing the action was used to signify the purpose of the button. The idea was that a user would turn the dial like that of an amplifier for an electric guitar to select the option he or she wanted before pushing the “Select” button at the bottom of the screen.

The right image in Figure 1 outlines the initial design for the tuner, consisting of a drop down menu for selecting overall tunings, individual drop downs for adjustment of single notes, and a graphical interface to show how a note might compare to one of the selected notes. Additionally, to help unfamiliar users, the interface includes a help button represented with a question mark to provide a brief description on how to use the tuner in relation to the guitar.

The First Testable Paper Prototype

The first paper-prototype is partially shown in **Figure 2**.

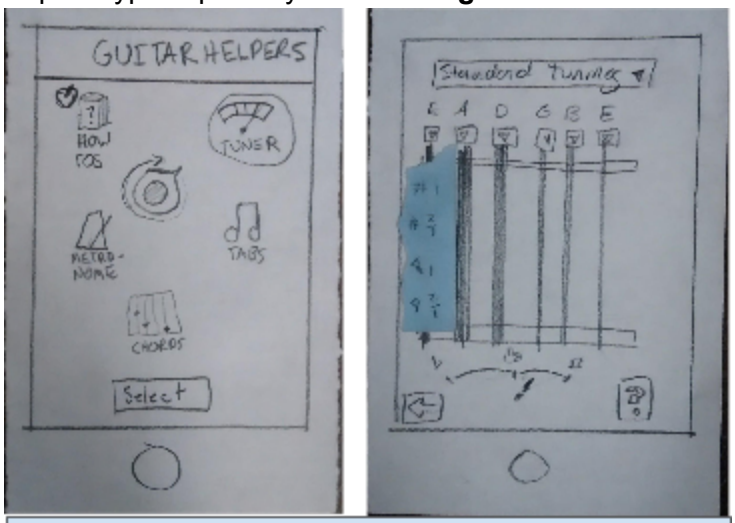

Figure 2: First testable paper-prototype

The paper prototype shown in Figure 2 only shows part of the functionality of the overall first iteration. The primary features shown in Figure 2 are the icons, the interface and a couple of the drop down menus to be used by the user. In the actual implementation of the prototype, five windows were developed for the main screen - one for each position of the dial, updating based on the user's actions - and two windows developed for the tuner screen, one for each available style of tuning. Other features in the initial prototype included drop-down menus to change the overall tuning (for all strings) and a drop-down menu on each screen to adjust a given string up or down by as much as a full step - the latter is demonstrated in Figure 2.

The Video of The Perfect Scenario

The video of the ideal scenario can be found here. The tasks being addressed will be discussed in the next section.

The Tasks to be Assessed

For the prototypes being focused on in this project, there were three primary tasks:

1. Tune low E String using Standard Tuning
2. Tune Low String using Open G Tuning
3. Drop single string down half step for tuning

The first task addresses the most basic function of the tuner: tuning an open string to a standard tuning. The ideal user would simply navigate to the Tuner from the home screen and be able to start plucking the low E string for tuning without any further navigation or adjustment.

The second task outlines how a user would change the overall tuning of the guitar to be one of the more common non-standard tunings. For simplicity, the available options were reduced to a single other option: Open G tuning. The ideal user would navigate to the Tuner from the home screen, click the upper drop-down menu, and select "Open G Tuning" before proceeding to tune the guitar.

The third task outlines how a user would customize the tuning for a single string. The ideal user would navigate to the Tuner from the home screen, click the down arrow above the string in question, and click the whole step down option.

Findings and Issues

The first round of tests consisted of three test subjects - Daniel R., Derek H., and Michael M. Unfortunately, none of the test subjects had even a rudimentary level of experience playing the guitar, so the concepts behind tuning had to be explained prior to the tests. Instead of designating one task per user, each user was instructed to perform each task, albeit one at a time. All three subjects demonstrated a lack of understanding of how a tuner actually works, attempting to push in the middle of the strings to change the individual notes. Additionally, the subjects were unable to select the right option for the full step drop in tuning for the third task; however, they were able to reach the right drop-down, suggesting that the lack of knowledge - not the interface - made the overall task more difficult.

Revision Plan

Because of the limitation in the test subjects knowledge about guitars and musical instruments, it was difficult to determine what parts of the interface needed adjusting for usability. However, the subjects were able to point out that it would be easier if - instead of a drop down consisting of sharps and flats to represent raises/drops in notes - the drop-down consisted of available notes specific to that string. To address this suggestion, a new drop down will be designed consisting of clearer options. Additionally, The initial implementation did not adjust notes individually, so text will be developed to be able to change the note name listed above each string in real time. Also, since the tuner dial was unable to move in the original implementation, a movable dial will be added to the second iteration of paper-prototyping.

Second Iteration

The Second Testable Paper-Prototype

Using the revision plan outlined in the previous section, the second paper-prototype was developed using the parts shown in **Figure 3** below.

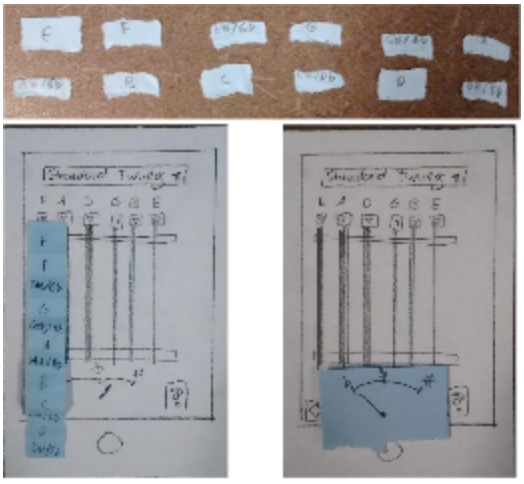

Figure 3: Second testable paper-prototype

The second paper-prototype added dynamically changing note names shown in the top picture in Figure 3; each note put on a piece of paper small enough to overlap the existing note names but not cover any of the adjacent notes. Additionally, the drop-down for each individual

note was re-designed to have each available note that the selected note could be adjusted to by name (shown in the bottom left image of Figure 3). While most of the interface remained the same from the first iteration, these changes along with a movable dial at the bottom of the page (shown in the bottom right image of Figure 3) aimed to make the interface clearer to use for users with little to no experience playing the guitar.

Findings and Issues

In the second round of testing, only two tests were conducted. The subjects - Noah S. and Shawn P. - fit better to the preferred user profile for using the app as both subjects had some experience playing the guitar and knew some of the basic structures in music. Given the same tasks as the first round of testing, these users were able to better change individual notes and interact with the interface as desired. However, since these users didn't struggle as much with grasping the idea of a guitar tuner, they were able to provide better feedback about the design as a whole, indicating that the turn dial on the home page made navigation more difficult unnecessarily.

Revision Plan

In a third round of testing, the paper prototype would be adjusted to do-away with the turn dial for selecting options on the home screen and replaced with the Guitar Helpers logo. Additionally, instead of selecting an option then pushing the "Select" button, the icons for each use of the application would be turned into buttons. Because of the positive feedback by all five users, additional tasks would be developed, including tasks involving finding chords in the chord charts, finding tabs in the tab section, and selecting between more options for different kinds of tuning.

Contributions

Michael DeBolt - Filmed the project and uploaded to Slack, assisted in putting paper-prototypes together, acted as computer during tests

Shane Sarnac - Took all pictures and prepared most of the paper-prototypes along with Michael DeBolt, completed all sections of the team assignment above, uploaded video to YouTube, and observed during the tests

Patrick Hemmer - Observed during second set of tests