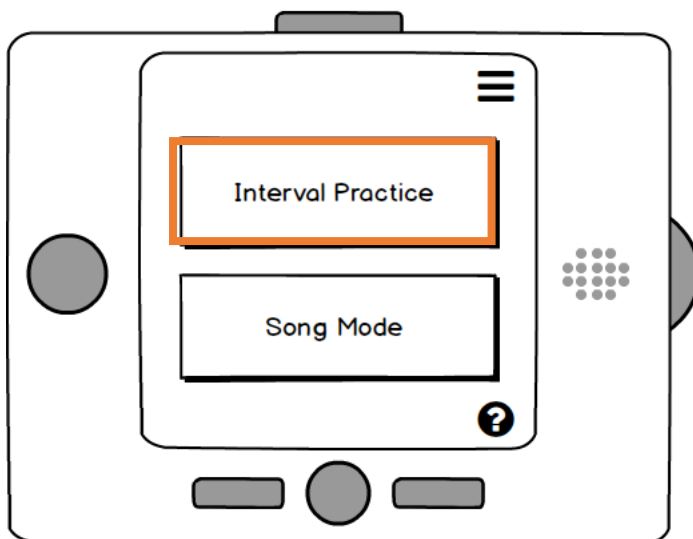# Function Development – Gabrielle Marquez

Wireframe Storyboard

Splash Screen
The splash screen is displayed when users initially power up the device. It will feature the product's logo for a few seconds before going to the home screen.
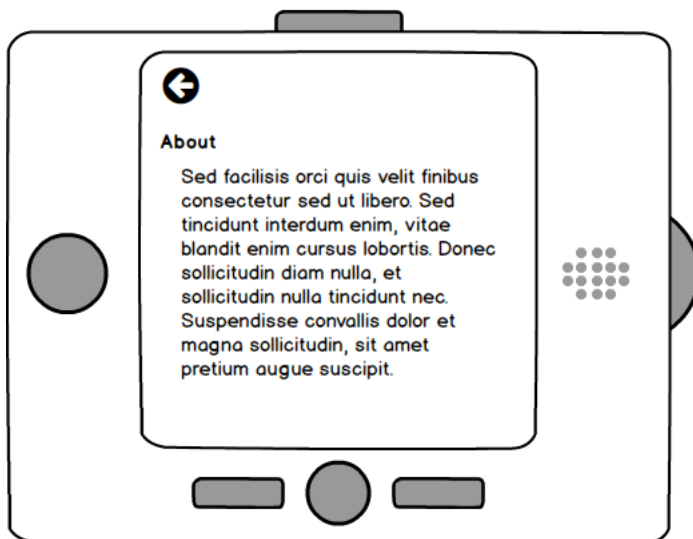

Home
The home screen immediately offers the device's two mode options: interval practice and song mode. In the top right corner is a drop-down menu bar and in the bottom right corner is a help button. The options are navigated using the two rectangular push buttons, traveling across the screen in the order of Interval Practice, Song Mode, Menu, and Help. The current option will always be indicated by an orange outline around the image or text. The center bottom button is pressed to choose an option.
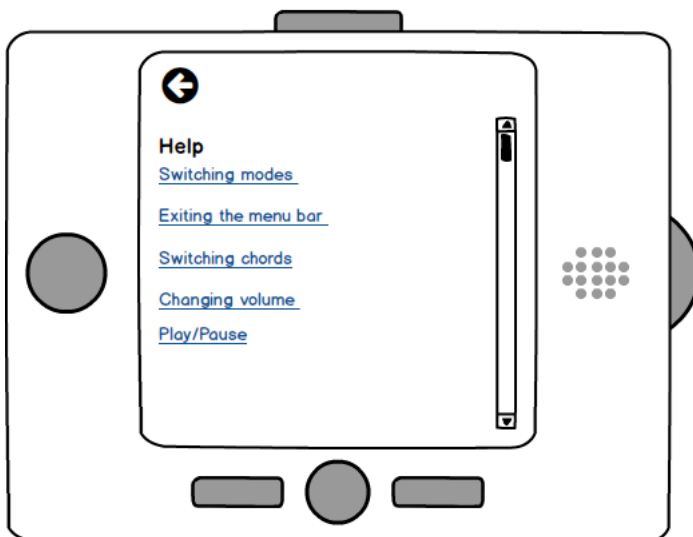

Menu
The menu screen opens a sub window with three options: Home, About, and Help. The home option will close the Menu bar, About will open the About page, and Help will open the Help page. Choices are navigated with the push buttons below the screen.
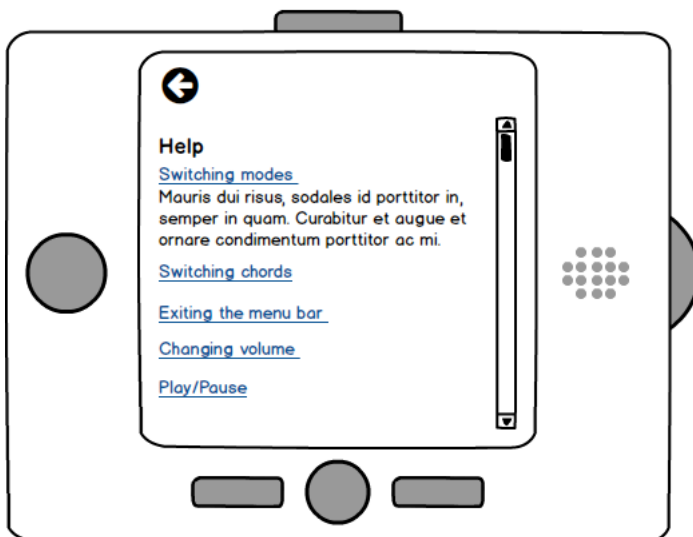
About

Sed facilisis orci quis velit finibus consectetur sed ut libero. Sed tincidunt interdum enim, vitae blandit enim cursus lobortis. Donec sollicitudin diam nulla, et sollicitudin nulla tincidunt nec. Suspendisse convallis dolor et magna sollicitudin, sit amet pretium augue suscipit.

About

The about screen outlines the devices purpose and capabilities. It gives a concise explanation of harmonizing and how the device can be used to practice singing harmony. There is also a back arrow that when clicked goes back to the home screen.
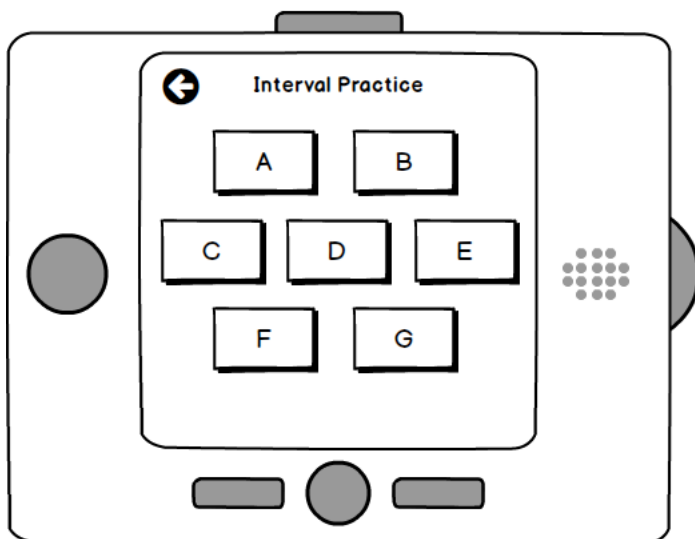
Help

Switching modes

Exiting the menu bar

Switching chords

Changing volume

Play/Pause

Help

The help screen offers links to explanations of the devices major functions and possible areas of confusion. The scroll down feature on the right helps indicate that there are more options not currently being displayed on the screen. The right rectangular button moves the highlighted option down and the left button moves the highlighted option up.
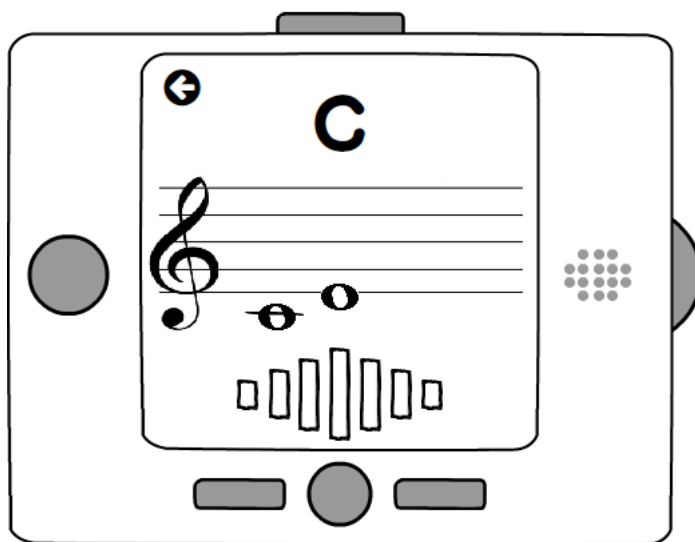
Help

Switching modes
Mauris dui risus, sodales id porttitor in, semper in quam. Curabitur et augue et ornare condimentum porttitor ac mi.

Switching chords

Exiting the menu bar

Changing volume

Play/Pause

Help Cont.

When one of the links is chosen, an explanation is revealed below the subject line. Clicking on the link again will close the explanation.
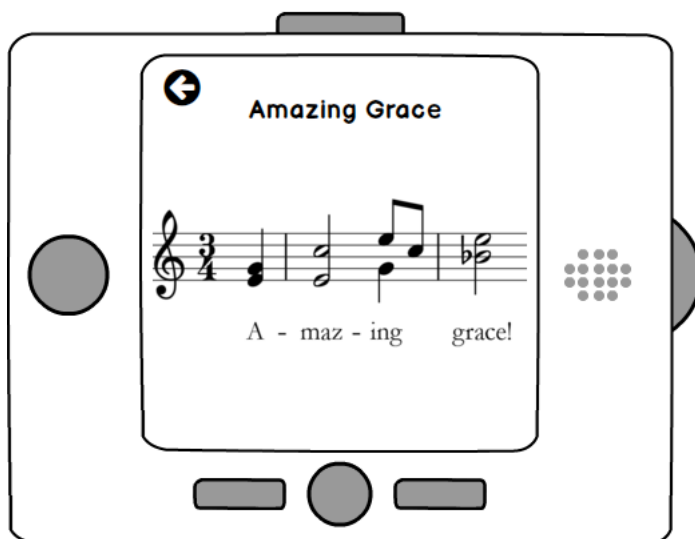
Interval Practice

The interval practice screen offers 7 different chords for users to practice harmonizing with. Using the two rectangular push buttons navigates through the options in the order of: A, B, C, D, E, F, G, back arrow, and then back to A again. The back arrow returns users to the home screen.
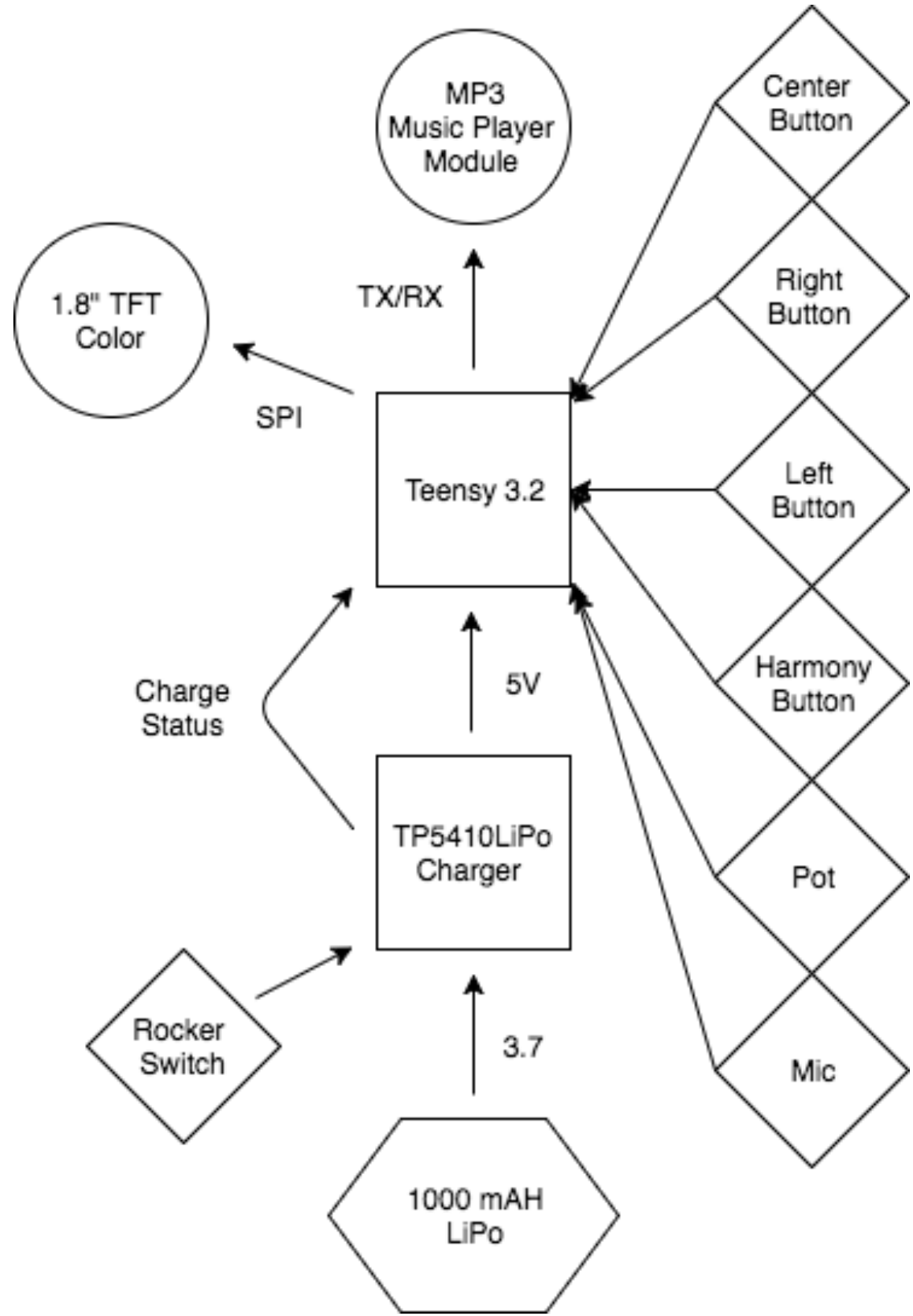

Chord Display

The chord display screen shows what chord the device is currently on (in this case, C). On the staff, the bass note (melody) and its 3rd above that (harmony) are shown. The vertical bars at the bottom indicate how in tune the person is with the harmony that they are supposed to be singing. Bars to the left indicate that they are flat, bars to the right that they are sharp, and the bar in the center indicates that they are in tune. The return arrow will return users to the interval practice page. If the circular button to the left is held down, the harmony will be heard over the melody. The center button can also be used to play/pause the melody being played when the chord name is highlighted.

Song Mode

Song mode will play the melody for a well-known song and display the lyrics, the melody, and the harmony above that on the staff. The center button can be used to pause or play the song when the song title is highlighted. The return arrow will take users back to the home screen. The left push button will play the harmony so long as the button is being pressed.

Component Sketch

MP3 Music Player Module

1.8" TFT Color

TX/RX

Center Button

Right Button

SPI

Teensy 3.2

Left Button

Harmony Button

Charge Status

5V

Pot

TP5410LiPo Charger

Mic

Rocker Switch

3.7

1000 mAH LiPo

Bill of Materials

Name	Source	URL	Qty	Cost
Pushbuttons	Amazon	https://www.amazon.com/Cylewet-12x12	4	$8.79
Mic MAX9814	Amazon	https://www.amazon.com/WINGONEER-M	1	$7.99
TL082 OP-AMP	Amazon	https://www.amazon.com/TL082CP-TL082	1	$10.00
22K Resistor	Amazon	https://www.amazon.com/Projects-10EP5	1	$0.58
100K Resistor	Amazon	https://www.amazon.com/s/ref=nb_sb_no	3	$1.73
9V battery	Amazon	https://www.amazon.com/Energizer-Ultin	2	$13.98
10 microFarad capacitor	Amazon	https://www.amazon.com/Hilitchi-0-1uF-1	1	$0.03
100 nanoFarad Capacitor	Amazon	https://www.amazon.com/Hilitchi-Monolit	1	$0.03
Mini Rocker Switch	Amazon	https://www.amazon.com/FBApayipa-Sol	1	$0.47
1000 mAH LiPo	eBay	https://www.ebay.com/i/181689356203?d	1	$8.90
MP3 Module YX5300	Amazon	https://www.amazon.com/gp/product/B07	1	$6.99
TP5410 LiPo Charger	eBay	https://www.ebay.com/itm/19199040112	1	$2.19
Micro SD Card	Amazon	https://www.amazon.com/SanDisk-Ultra-l	1	$9.95
10K Resistor	Amazon	https://www.amazon.com/30Value-600PC	3	$0.04
1.8" TFT Color Screen	Amazon	https://www.amazon.com/gp/product/B0(	1	$18.99
Teensy 3.2	Amazon	https://www.amazon.com/PJRC-6485230-	1	$24.44
Potentiometer	Digi-Key	https://www.digikey.com/product-detail/e	1	$1.53
Total				$116.63

- o Breadboard Model - Create a breadboard model in **Fritzing** simulating your circuit. Components should be well spaced and wire jumpers should be discernible.
- o Electronic Schematic - Create an electronic schematic in **Fritzing** showing your circuit with appropriate connections made in a well organized manner.