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Mobile Audiometry Application

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Santa Clara University
DEPARTMENT of COMPUTER ENGINEERING

Date: June 12, 2014

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SUPERVISION BY

Kevin Nguyen and Shweta Panditrao

ENTITLED

Mobile Audiometry Application

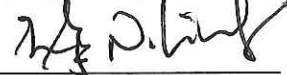
BE ACCEPTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE

DEGREE OF

BACHELOR OF SCIENCE IN COMPUTER SCIENCE AND ENGINEERING
BACHELOR OF SCIENCE IN BIOENGINEERING



THESIS ADVISOR



DEPARTMENTCHAIR

Abstract

The Mobile Audiometry Application hopes to utilize the ubiquity of the mobile device by providing a means of healthcare focused on audiometry. This application enables a mobile device to perform audiometric testing to detect a user's hearing range, and notify the user whether he or she is suffering from hearing loss. This project seeks to fulfill a social need for increased access to hearing testing by providing a portable, affordable, and reliable screening tool that is accurate. The result was sleek application that provided a calibration method, executed an audiometry test using accurate and calibrated files, displayed the results graphically, and notified the user of hearing loss. The application also let the user save their test results under created profiles, using local storage, and peruse the saved results at a later time.

Acknowledgements

Although Shweta and Kevin are responsible for creating this application, several notable individuals have been essential in its conception and establishment.

With that in mind, we would like to give a special thanks to Dr. Silvia Figueira, who has been our advisor for the duration of this project. She was the one to first approach us with this idea, and has aided us through the development process by being a source of constant feedback and always ensuring that this project continued to stay on track.

We would also like to thank Dr. Don Riccomini who has aided us tremendously in our technical writing abilities. He was a big influence in the creation of our documentation as well as the slide deck used in presenting this project.

Lastly, a special thanks to Dr. Stephane Pigeon, who is an audiologist and signal processing engineer. He has been given us so much information regarding audiology, as well as lending us his own sound files to use in our application.

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1. Problem Statement

The audiometer hearing test is a thorough assessment conducted by an audiologist to determine the hearing capacity of a patient. The patient wears earphones and sounds at various pitches and volumes are projected into ear. Diagnostic information collected from this test and analysis of a patient's medical history can assist audiometrists in determining the cause of the patient's hearing loss. Additional hearing tests are administered in order to evaluate the type of hearing loss present.

Currently, an audiometer is the initial screening in hearing loss detection. Audiometry tests are conducted by doctors and results are generally assessed by a desktop based software application. The audiometer remains immobile inside clinics requiring the patient to visit the clinic in order to have a hearing check up; this can be an inconvenience if frequent visits are required. While mobile alternatives exist, they do not accurately replicate the audiometry test. The lack of practical audiometry testing mobile solutions hinders accessibility of hearing screenings to individuals without direct access to healthcare.

Our solution to this issue aims to create a mobile solution to audiometry testing. While a mobile application cannot fully eliminate the need for testing conducted by professionals, it can provide an initial screening for individuals. This provides individuals with a tool to track their hearing progress over time, removing the need for frequent visits to a professional unless potential hearing loss is detected. This is also a practical solution for individuals for whom visits to a medical clinic are expensive and timely. This application also lowers costs created by visits as well as remove the time wasted traveling to and from the clinic. The creation of the mobile audiometry testing application will contribute to social benefit efforts for healthcare accessibility.

2. Requirements Analysis

After distinguishing the problem this project addresses, clear functional and nonfunctional requirements were established to determine the specific goals this application accomplishes. The functional requirements describe what must be implemented in the system, while nonfunctional requirements qualify or define the manner in which the functional requirements are met. Table 2.1 highlights these requirements.

	Functional	Nonfunctional
Critical	<ul style="list-style-type: none"> ● The system will be compatible on an Android mobile phone ● The system will let an individual save results, and view past results ● The system will provide a graphical visualization of test results ● The system will provide a recommendation for if further professional screening is required 	<ul style="list-style-type: none"> ● The system will be time efficient ● The system will be simple to use for various age groups (ages 10+) ● The system will demonstrate accuracy in comparison to current audiometry techniques ● The system will be easily maintainable ● The application will be affordable
Recommended	<ul style="list-style-type: none"> ● The system will assist an individual in learning more about hearing loss and prevention ● The system will allow for multiple user profiles ● The system will allow an individual to email their results ● The system will display diagnostic information pertinent to selected age group ● The system will be compatible with multiple mobile operating systems 	<ul style="list-style-type: none"> ● The system will be secure and protect personal information

Table 2.1: Table of Requirements

3. Use Cases

After listing the requirements, use cases were compiled to define the core features necessary for a user to interact with the system. The use cases provide a detailed understanding of the appropriate procedures and conditions required to complete system tasks. The defined use cases, listed below, are preceded with a use case diagram (Figure 3.1) describing all use cases a user can perform.

3.1 Use Case Diagram

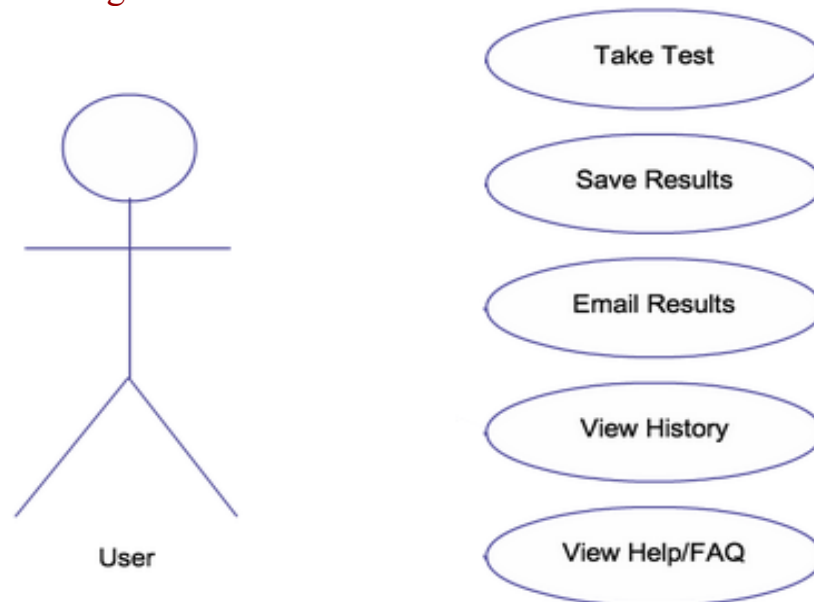


Figure 3.1: Use Case Diagram

3.2 Take Test

Actor: User

Goal: Perform the hearing test

Preconditions:

- Access to headphones
- Access to quiet environment with little distraction

Postconditions:

- Hearing test has been completed and test results are delivered

Scenario:

1. Select the “Perform Hearing Test” button on the header menu
2. Follow the instructions on screen to calibrate the device
3. Select an existing profile or create a new user
4. Plug in headphones to mobile phone
5. Answer questions to complete the test

Exceptions:

1. User exits application before test has been completed
 - a. Results not saved and user needs to perform test again

3.3 Save Results

Actor: User

Goal: Save results under a user profile

Preconditions:

- User has finished taking the test and is viewing results

Postconditions:

- Results have been saved under a new user profile

Scenario:

1. Select the “Save Results” button

Exceptions:

N/A

3.4 View History

Actor: User

Goal: Show past results

Preconditions:

- User already has a user profile created

Postconditions:

- Page that displays past test results is displayed

Scenario:

1. Select the “View History” button on the header menu
2. Select the profile with the desired history

Exceptions:

N/A

3.5 Email Results

Actor: User

Goal: Results are emailed

Preconditions:

- User is viewing test results or result history
- User has internet access on the mobile phone
- User has allowed application to interact with mail client

Postconditions:

- Results have been successfully emailed

Scenario:

1. Navigate to the bottom of the page and select “Email Results” button
2. Select one or multiple results to email
3. Application will launch mail client with attached results
4. Enter email address(es) to send results
5. Enter message if desired and send the email

Exceptions:

1. Email size is too big to send
 - a. Mail client handles exception by displaying error message
 - b. User must repeat email results process and select fewer results to email

3.6 View Help/FAQ

Actor: User

Goal: View help/FAQ page

Preconditions:

N/A

Postconditions:

- The help/FAQ page is displayed

Scenario:

1. Select the “Help/FAQ” button on the header menu

Exceptions: N/A

4. Design Platform

The design platform chosen for this project was PhoneGap, which easily allows cross-platform application to be coded in familiar languages. Once an application is written using web languages, such as HTML5, CSS3, and Javascript, it may be wrapped using Phonegap. Phonegap then translates the web languages into other native mobile languages of the developer’s choosing. Phonegap currently supports the major mobile markets today, such as Android, iOS, Windows Phone, and Blackberry. Phonegap is also open source and standards compliant, making it a reliable tool to use. The main value of Phonegap to the Mobile Audiometry Application is the ability to write code once, using familiar web languages, and execute the code an array of mobile devices.

5. System Design

After choosing Phonegap as our design platform, we investigated and chose the technologies below to accomplish the system requirements outlined below.

5.1 Technologies Used

Phonegap, HTML5, CSS3, Javascript, and jQuery are the main technologies that are used. A description of each of these technologies is provided below.

Phonegap

Phonegap is an open-source software application able to translate applications written for the web (HTML5, CSS3, Javascript, jQuery based) into native mobile code for various platforms. Phonegap currently supports two of the major smartphone operating systems: Android and iOS.

HTML5 and CSS

HTML5 and CSS aid in creating the front-end interface for the application.

Javascript and jQuery

Javascript and jQuery aid in developing the backend system including functions, storage, and dynamic content necessary for the application.

5.2 System architecture

As a mobile application, the system has a user interface that outlines the flow of screens for user interaction. An activity diagram shown in Figure 5.1 demonstrates the various screens and actions that users can take on those screens while interacting with the system.

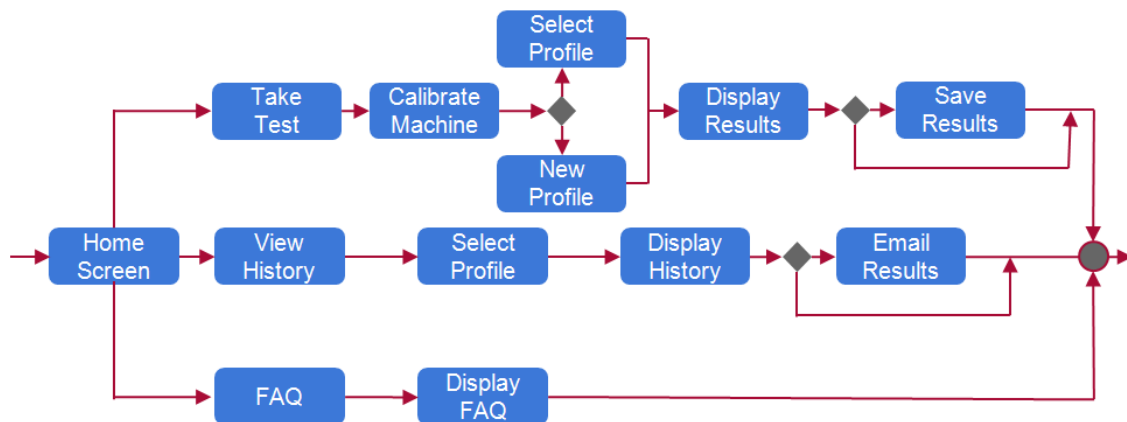


Figure 5.1: System Flow Diagram

As seen in Figure 5.1, the user will start at the home screen. From there, the user can choose to take a test, view/share his or her test history, or view the FAQ page.

Taking a test prompts the user to first calibrate his or her machine. This is done through a series of specific steps. Next, the user either creates a new profile, which would prompt the user to enter the username of the new profile or use an existing profile. After

taking the test, the results will be displayed. The user can then decide whether to save the results to the profile or return to the home screen.

If the user decides to view or share his or her history, the user selects the View History option from the header menu and then selects an existing user profile. The user cannot create a new profile if this option is selected. After selecting a profile, the user can view all saved test results in that profile. The user can choose to email results, which would prompt the user to select the results the user wants to email, and open the native email client on the device.

Viewing the FAQ displays a user manual and a list of helpful hints.

5.3 The Hearing Test

Calibration

The system will ask the user to calibrate their device before beginning a hearing test. Calibration is necessary to ensure that results are accurate and precise. In order to calibrate, a point of reference is necessary. While audiometers in the clinic use sophisticated technology to calibrate, the Mobile Audiometry Application needed to use a point of reference to be accessible to the most amount of users. The point of reference used for this system is the sound ones' hands make when they are rubbed together. Studies have found that this sound, universally, is about 65 decibels (dB). Therefore, in order to calibrate, the system will play a sound at 65 dB and prompt the user to adjust their phone's volume so that the sound their phone is making matches the sound their own hands produced when rubbed together. By following this methodology, the user can successfully calibrate their device.

Profiles

Before taking the hearing test, the system will prompt the user to create or select an existing profile. Profiles are a method for organizing data with each profile essentially acting as a folder that test results can be saved under. Profiles and the test results under those profiles will be saved using the phone's local storage. Profiles can be created when the user takes a test. A new profile will only be remembered if the user creates a new profile while taking a test then saves the results of that test. Once saved, the user can select that profile when he or she takes the test again or select that profile when deciding to view history.

Scope of the Test

Part of designing this project is determining how the actual test will be administered. The test standards will be simplified version of an audiometry test being performed in the clinic as this application's main purpose is to be a screening tool. Similar to a clinical test, this application will project tones at various frequencies; these frequencies will fall in the range of 250 Hertz (Hz) to 8000 Hertz as this scope encompasses the range of human speech. Each frequency will be played at various decibel levels to determine the boundary hearing capabilities of the user. The decibel range will be from 0 to 80 decibels hearing level (dB HL), as this is a large enough range to gauge whether a user has hearing loss or not. Table 5.1 shows the frequencies that will be played and the different decibels hearing level (dB HL) that those frequencies can be played at.

Frequencies (Hz)	250	500	1000	2000	4000	8000					
dB HL	0	5	10	15	20	30	40	50	60	70	80

Table 5.1: Frequencies and Decibel Levels

Decibels Hearing Level (dB HL)

Decibel hearing level is a special decibel scale that has its point of reference around what doctors consider to be normal hearing. All audiometers in the clinic play back their tones using this scale in order to compare the tones a person can hear from the tones a person with normal hearing can hear.

Tones

This test is administered using only warble tones, which means that each sound file is a tone whose frequency varies periodically several times per second over a small range; this is used to prevent standing-wave patterns from forming in reverberation chambers in order to improve accuracy in detection of hearing loss. Other options that audiometry test may include are frequency modded tones, in which multiple frequencies are combined to create a desired pitch through interference or amplification, or narrow band noise, which involves only a narrow band of frequencies per tone.

Up-10-Down-5 Method

The application is using a mechanism called the up-10-down-5 method to let the system know what sound it should play back to the user based on the user’s responses. For each frequency, the first tone played is at 0 decibels. The user is asked to answer yes or no if he or she can hear the tone. If the user answers “no”, the same frequency will be played with a tone that is 10 decibels higher than the previous tone. If the user answers “yes”, a tone of the same frequency will be played that is 5 decibels lower than the previous tone.

This method is only in use from the 0 to 20 dB HL range for each frequency because the sound files available only offer tones with a 5 dB HL differential within this range. While within this range, if the user answers “no”, a tone that is the same frequency but 10 dB HL higher will be played back to the user. When the user answers “yes” a tone that is the same frequency but 5 dB HL will be played back to the user. The next answer from the user determines the saved result that will determine hearing loss. If the user answers “yes” again, then the sound currently playing will be saved, and if the user answers “no”, then the sound before the 5 dB HL decrease will be saved instead. The combination of dB HL level and frequency is saved for later processing.

If the user answers “no” enough times that the sound played reaches 30 dB HL, then the up-10-down-5 method is no longer in use. Instead, the dB HL level will continue to increase by 10 each time the user answers “no”, and when the user answers “yes”, the current dB HL level and frequency will be saved.

Special cases to the test:

- The user answers “yes” at 0 dB HL; the frequency and 0 dB HL will be saved.
- The user answers “no” at eighty dB HL; the frequency and 80 dB HL will be saved.

Test Results

From the hearing test, pairs of frequency and dB HL level are gathered from the user’s responses. These results are displayed in a graph with frequencies on the x-axis and dB HL on the y-axis. In addition, the user is provided with a hearing loss scale that lets the user know if he or she has hearing loss, and at what frequency and severity.

Interpreting Results

A hearing loss scale is given to the user. Levels of hearing loss include: none, mild, moderate, and severe. These levels of hearing loss are delineated by different colors, which are projected on the graph. By looking at the color in which the peaks of the graph for each frequency fall under, the user can determine his or her level of hearing loss for that particular frequency. Table 5.2 outlines the levels of hearing loss in relation to the dB HL level.

Decibels Hearing Level Range (dB HL)	Hearing Loss
0 to 20	None
30 to 40	Mild
50 to 70	Moderate
80	Severe

Table 5.2: Hearing Loss Levels

Saving Results

On the page displaying the test results, the user also has the option to save the test results. If this option is selected, the results are saved under the profile that was chosen earlier before taking the test.

Accuracy

In order for this hearing test to be a reliable tool, the sound files in use need to be accurate and comparable to the sound files used in the clinic. Currently, the sound files used are from Dr. Stephane Pigeon, an audiologist and signal processing engineer. Dr. Pigeon is a specialist on audiology and has created these sound files for use on his own website, which has an online hearing test. According to Dr. Pigeon, these sound files have been calibrated against an actual audiometer. The sound files used in this application are as accurate as the sound files generated by Dr. Pigeon.

5.4 Viewing/Sharing History

Test results can be saved under a profile and viewed at any time after. Users can scroll through past test results and also select any results to be shared. Sharing a test result will open the phone's native email client with the selected results attached as images.

5.5 FAQ Page

The Frequently Asked Questions, or FAQ, page displays common inquiries users might have about the Mobile Audiometry Application. This includes questions such as “Which headphones are compatible with the application.” This page also displays contact information so that users may contact a system administrator for further assistance.

5.6 Application Screens

A mobile application, the user navigates through a sequence of screens. Figures 5.2 to 5.9 portray the various screens present in the application that the user will interact with.

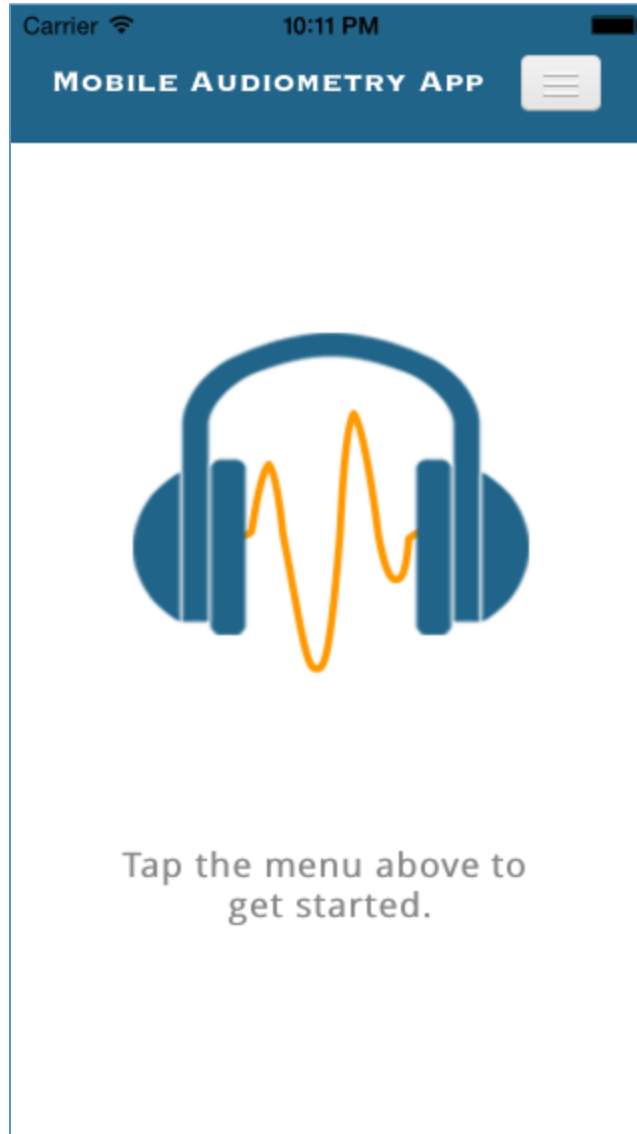


Figure 5.2: Home Screen

The Home Screen is the initial screen that the user sees when he or she starts the application, and should be something memorable, simple, and aesthetically pleasing. For this application, the Home Screen displays the application logo as well as a message directing the user to tap the menu above to begin using the application.

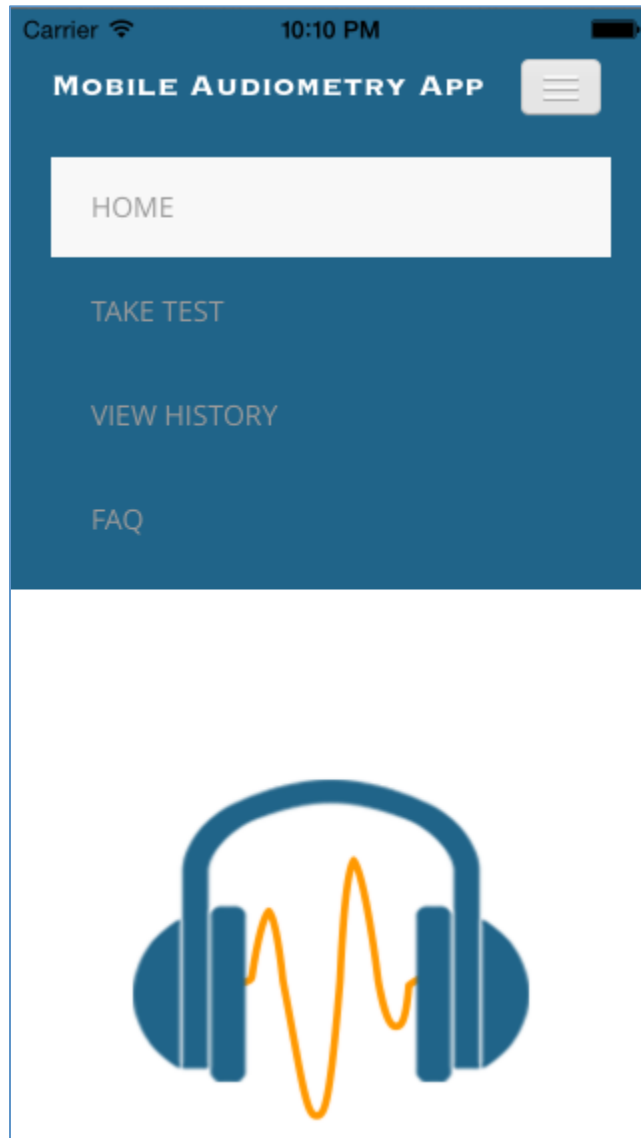


Figure 5.3: Menu Screen

As seen on all other screens, the menu bar for this application resides in the header of each screen. Upon tapping this menu, the options of "Home", "Take Test", "View History", and "FAQ" present themselves. Each option leads the user to a new page, and because the menu bar is on every page of the application, the user is free to navigate to any of these options at any time.

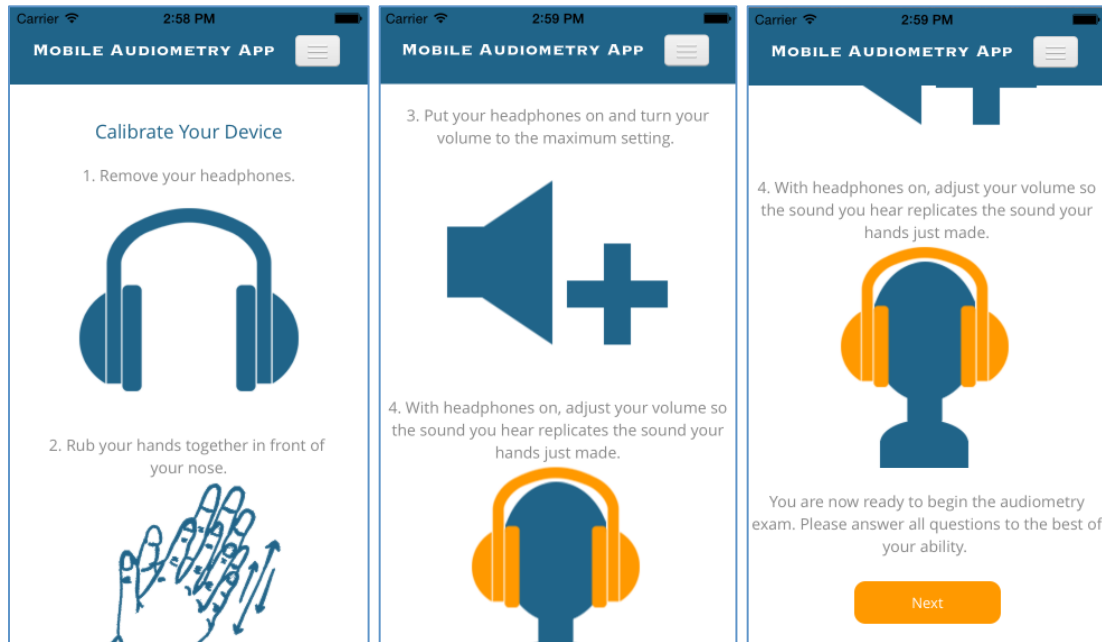


Figure 5.4: Calibration Screen

This screen holds the instructions for calibrating a user's device before taking the hearing test. The screen features a scrolling effect with the left screen being the topmost part of the screen, and the middle and rightmost screen being displayed upon the user scrolling down. The user will follow the instructions using the images as aid to calibrate the machine then tap "Next" when complete.

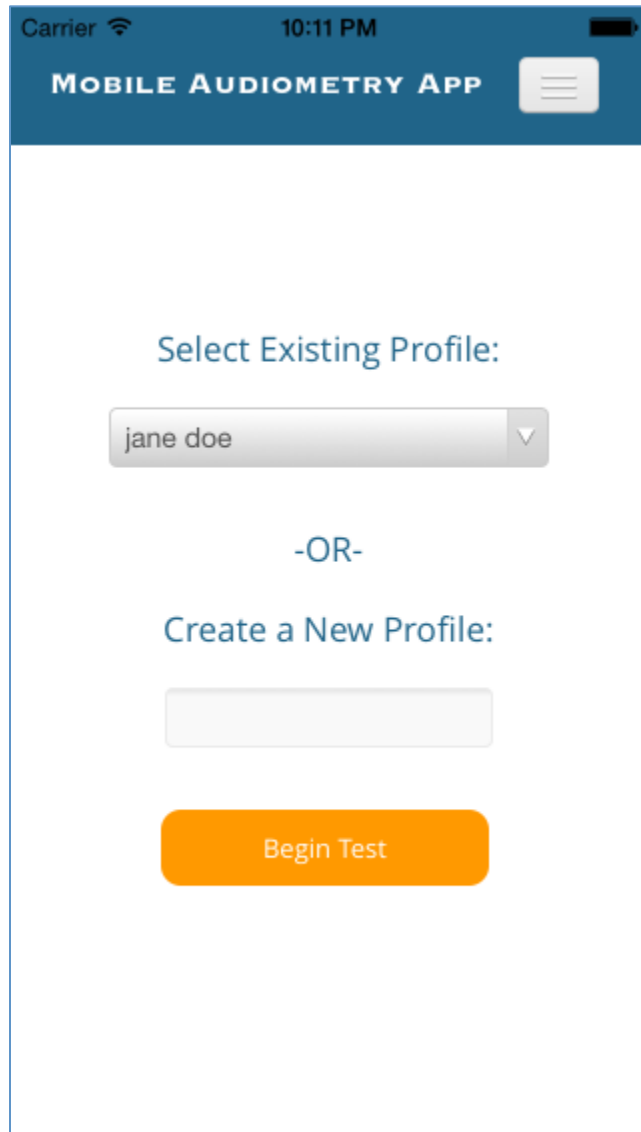


Figure 5.5: Take Test-Select User Screen

This screen allows the user to select an existing profile or create a new profile during the process of preparing to take the hearing test. The screen features a drop down menu that lists all existing profiles for selection as well as a textbox that lets the user enter in a new profile name.

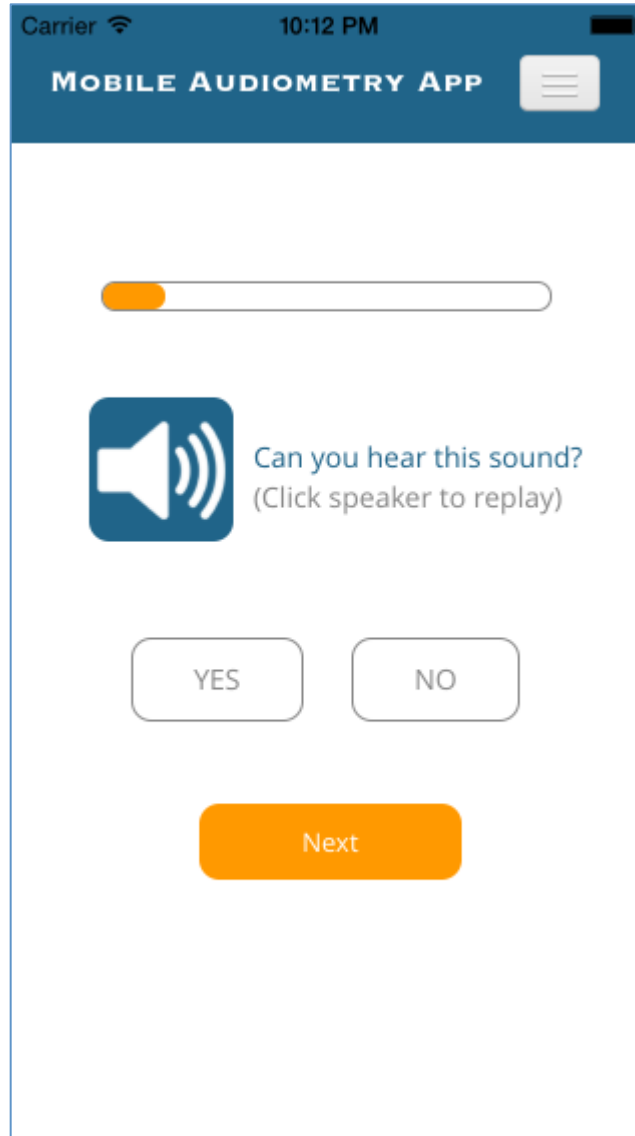


Figure 5.6: Test Question Screen

This screen represents the basic test taking screen. The user simply answers “yes” or “no” based on whether he or she can hear the sound being played on this page. A speaker icon has a small animation that notifies the user when the sound is playing and can be tapped to replay the sound. This screen also features a progress bar for the hearing test.

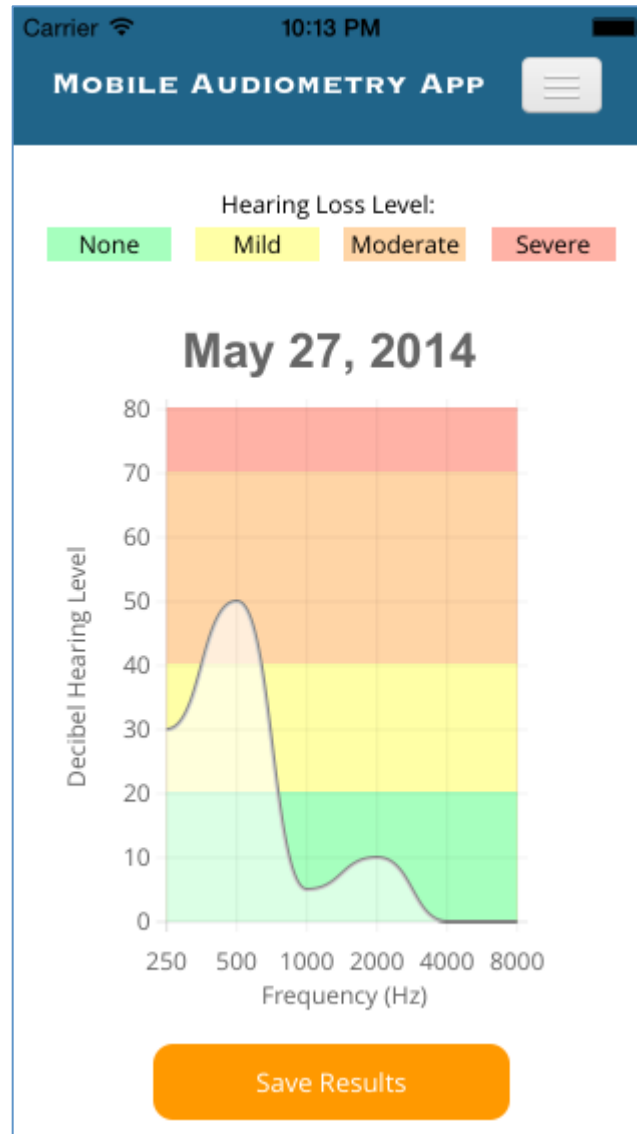


Figure 5.7: Test Results Screen

This screen displays the results of the hearing test. The graph is plotted based on the user's responses during the test with frequency on the x-axis and Decibels Hearing Level on the y-axis, and the date that the test was taken on is displayed as the graph title. This screen also features a hearing loss level scale that can be used to interpret the displayed results. A "Save Results" button allows the user to save these test results under a previously chosen profile.

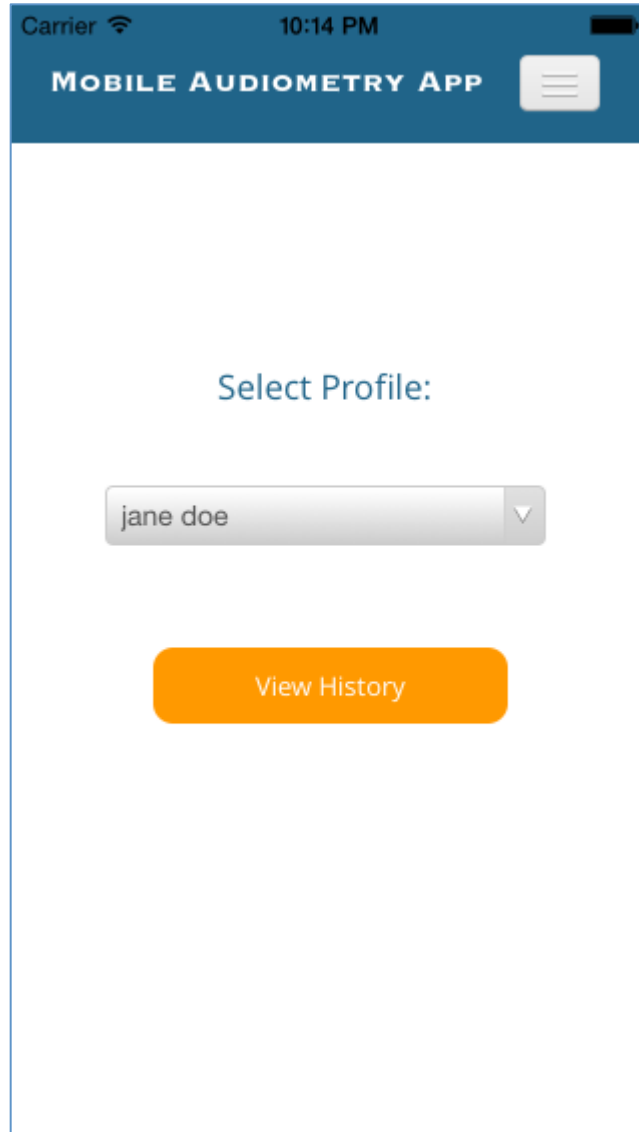


Figure 5.8: View History-Select User Screen

This screen allows the user to select an existing profile during the process of preparing to view a user's history. The screen features a drop down menu that lists all existing profiles for selection.

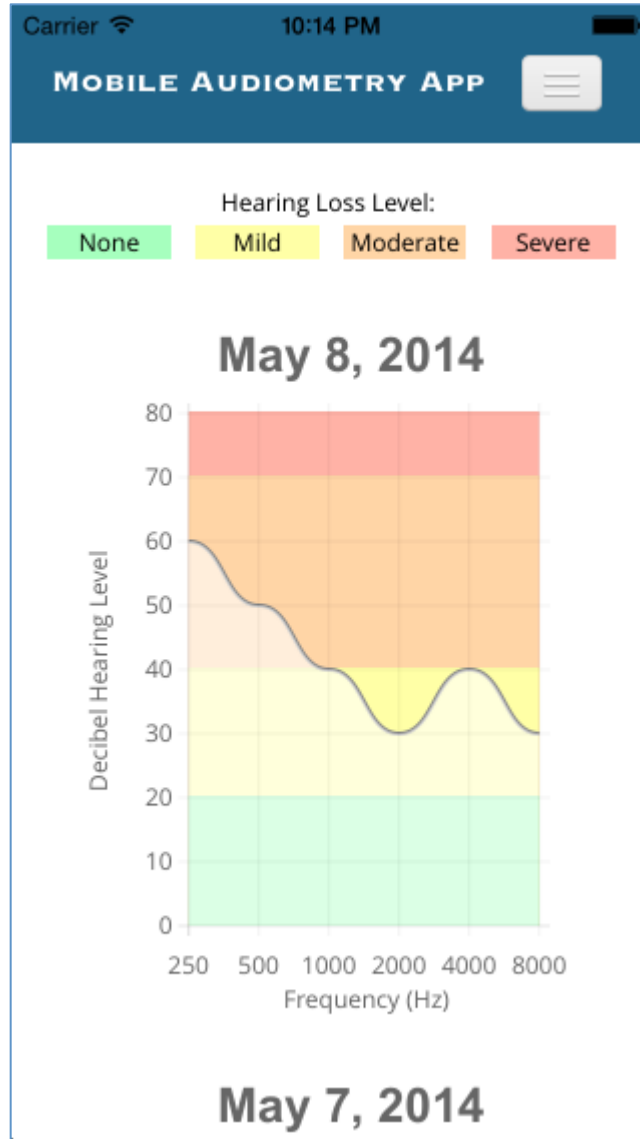


Figure 5.9: View History-Display Saved Results Screen

This screen displays all the saved test results under a selected profile. It is similar to Figure 5.7, which displays the results of a hearing test. However, this screen features scrolling effect that allows the user to browse through past hearing results conveniently with the most recent saved test at the top of the screen.

6. Project Risks

Before implementation began, there were several risks that our project may have incurred that were addressed. Table 6.1 demonstrates the risks that our team accounted for, their predicted impact, and how our team mitigated the effects of these risks.

Note: Impact = Probability * Severity → I = P * S

Risk	Consequence	P	S	I	Mitigation Strategy
Broken code right before submission	Unable to demonstrate our work	0.5	9	4.5	Run ample tests on all aspects of our work well before the due date
Missing requirements	Incomplete work	0.3	8	2.4	Prioritize tasks; assign team members to work solely on requirements first
Inaccurate Results	Un-usable system	0.4	7	2.8	Test-driven development by frequently comparing results of the system's test with actual hearing test
Not enough time to finish	Incomplete work	0.1	6	0.6	Develop a clear and organized timeline; clear tasks distributed amongst team members
Unable to fix bug	Unreliable system	0.1	3	0.3	Thoroughly research methods that will be used in our system to ensure we can achieve everything we need before implementing them

Table 6.1: Project Risk Analysis

6.1 Project Risks Results

Ample time and tests were run on the code in order to ensure that the risk with the highest impact did not occur. In order to complete all the project requirements, main functionality was targeted for early completion. The test results have proven to be relatively accurate because they use Dr. Pigeon's sound files as a baseline, but comparison to an actual hearing test has yet to be observed. The developmental timeline was useful in coordinating a sense for timely completion, and any bugs observed were easily fixed through research and experience.

7. Test Plan

Before beginning implementation, a test plan was developed in order to later gain feedback and accommodate our project to the general public. Various types of testing were planned to be administered to gain this feedback.

A comparability test between the results of the test by the application and an actual test administered by an audiometer was mandatory to verify the accuracy and legitimacy of this project. If possible, audiometry results from a clinic will be obtained to ensure that this application produces results comparable to a lab test environment.

White box testing ensured that the inner components of the application functioned properly. This includes testing each module, represented by the screens of the application, for expected functionality. Integration testing integrated multiple modules to ensure they are working together properly, such as ensuring that the results of a test are displayed based on the answers that the user has designated. In addition, the application needed to work on all versions of iOS and Windows Phones.

Black box testing subjected the application to various users to confirm that the application worked as a whole. Users differed based on the version of software, alpha or beta, with alpha testers being in-house and pre-selected, and beta testers being chosen at random. Black box testing also helped to determine usability issues of the application.

7.1 Test Plan Results

The test plan is currently in progress. In terms of a comparability test, the application has yet to be compared to an actual audiometry test to verify accuracy and legitimacy. However, the calibrated sound files from Dr. Pigeon are currently the standard for accuracy in this application.

In terms of white box testing, the application works correctly with the currently implemented main functionality. The screens flow from one to another in the correct order and the functionalities on each screen are working as intended in the design. The application has been tested for all possible scenarios in which the user interacts with the system. Currently, the application has been tested and works on an iOS emulator. The application has been tested on an Android emulator and on an Android mobile phone and although the application worked, there was an issue regarding the sound files playing back. This is due to a compatibility issue between HTML5 and the Android operating system that will hopefully be fixed in the next Android update. The application still needs to be tested on Windows Phone and on an iOS mobile device.

In terms of black box testing, the application has been given to several alpha testers. From their feedback, the application has been modified to eliminate most confusion that could arrive while using the application as well as several changes in aesthetics. The application worked as intended while being handled by each alpha tester. For the future, beta testing will begin in order to gain a larger and more unbiased audience for additional feedback on usability and possible unfound issues.

8. Ethical Considerations

While implementing this project, the ethical considerations created by the nature of the project is important to consider. Engineers are responsible for creating solutions to real life problems in the most methodical, efficient, and economical way. However, engineers are also responsible for taking into account the ethical implications of their products during its conception, production, and societal consumption. Ethical decisions oftentimes involve tradeoffs and compromises with the functionality of the product and equally important moral choices.

As an interdisciplinary project involving both computer engineering and bioengineering fields, the Mobile Audiometry Application must take ethical concerns that are applicable to both fields into account. The tables below indicates the ethical concerns that our project must address for each associated major.

Bioengineering Ethics Analysis

Principle Category	Principle Description	Methodology to Address Ethical Concerns
Production Obligations	Motivation behind the product must be to better the health and welfare of the public.	This Mobile Audiometry application enhances the health and welfare of the public by lowering the cost needed to perform a hearing test. It contributes to the welfare of the public by increasing accessibility and mobility of audiometry services.
Health Care Obligations	Concerns that deal with applications of the product in health care.	In order to provide security and limit the access of confidential patient data, this application uses local storage so that test results are stored only on a particular device. The system also tests thoroughly for accuracy in comparison to current methods before usage on actual patients.

Table 8.1: Bioengineering Ethical Considerations

Computer Engineering Ethics Analysis

Principle Category	Principle Description	Methodology to Address Ethical Concerns
Public	Act consistently with the public interest.	This application adheres to security standards, informs users of the scope of the mobile hearing test in comparison to clinical testing, and provides for the highest degree of accessibility regardless of economic status, disability, or geographic location. Additionally,
Profession	Advance the integrity and reputation of the profession consistent with the public interest.	While creating the Mobile Audiometry Application, a professional audiometrist, Dr. Stephane Pigeon, was contacted to ensure that the application met professional standards.
Colleagues	Be fair and supportive of colleagues.	All team members and advisors involved in developing this application were fairly recognized for their contributions. Additionally, tasks were divided during the creation of the project to ensure that each colleague contributed equally to the project.
Self	Participate in lifelong learning regarding the practice of the professions as well as promoting an ethical approach to the practice.	While developing this application, resources (eg. advisors, professors, audiometrists) were contacted to increase understanding of efficient ways to build a secure, scalable, maintainable, and fast mobile audiometry test.

Table 8.2: Computer Engineering Ethical Considerations

The intersection of the above tables indicates a few key ethical considerations addressed by both the Bioengineering and Computer Engineering majors. In order to address the ethical considerations surrounding patient confidentiality and security, care was given to ensure that audiometry test results could not be compromised in the development of this project through the means of local storage. By storing the test results locally, they are inaccessible by the general public. In addition, the application adhered to social ethics by increasing the accessibility of audiometry testing to all individuals with mobile phone access, regardless of economic status or location.

9. Planned Enhancements

Although the main functionality of this application is complete, there are several future enhancements that would greatly benefit the audience of this application.

Advanced Hearing Tests:

There are several other hearing tests that are employed in the clinic. In the future, our application could integrate several other types of test to better test the hearing loss of a user. The following is a possible list for future test additions:

- A procedure that determines the location of the hearing loss by playing sounds solely to the left or right ear of the user.
- A procedure that plays back speech to the user to determine the speech patterns the user's ear has trouble identifying.
- A procedure that test for Otoacoustic Emissions (OAEs). These emissions are sounds given off by the inner ear when it hears a sound. The echoed sound is nearly inaudible, but people with hearing loss do not produce these emissions. This factor can be used to determine hearing loss.

Increased Precision

The system currently tests hearing using six different frequencies ranging from 250 Hz to 8000 Hz, and plays back these frequencies in a range of 0 dB HL to 80 dB HL. In order to generate more detailed results, the application must test hearing using a greater number of frequencies and dB HL levels for each frequency. This can be implemented in the future by generating more tests sounds using a calibrated audiometer.

Email Capabilities

Due to the time constraints, email capabilities have not yet been integrated into the system. Future builds of the Mobile Audiometry Application will enable a user to select hearing test results and email them to a trusted contact or a physician.

10. Conclusion

This application is primarily made to fulfill a social need. Its goal is to provide a hearing test that is easily accessible that would allow people who do not have direct access to healthcare to test their hearing. In addition, by utilizing a mobile platform, this application will also be very portable and affordable. In addition, the application seeks to be a reliable screening tool that is accurate when compared to a test conducted by an audiometer.

11. References

Carr, Patricia I. *Development of an audiological test procedure manual for first year*

Au.D. students. Graduate School Theses and Dissertations, University of South Florida. 1 June, 2001.

URL: <http://scholarcommons.usf.edu/cgi/viewcontent.cgi?article=2534&context=etd>

This article was too technical to comprehend entirely although it did provide useful information on audiometry in the understandable segments. This article was most useful in providing an explanation of the dB HL scale as well as explaining a technique that was called the “up-5 down-10” technique, which was adapted in this application as the up-10-down-5 method.

“Guidelines on the Acoustics of Sound Field Audiometry in Clinical Audiological Applications,”

British Society of Audiology Education Committee. February 2008.

URL: <http://thebsa.org.uk/docs/Guidelines/soundfieldguidelinesfeb2008.pdf>

This article contains useful information in creating sound files. Clinics do not hand out the sound files they use in their audiometry tests but sound files on the decibel scale can easily be created using any sound processing software. This website provides information on converting from decibels to decibels hearing level that could be useful in the future when further sound files are needed.

Pigeon, Stephane. “Online Audiometry and Hearing Test.” n.d., Web. 19 May, 2014.

URL: <http://myhearingtest.net/>

This website was essential in the creation of this application. It was created by Dr. Stephane Pigeon, an audiologist and signal processing engineer. From this website, the sound files that are used in our application are gathered. In addition, the idea for a graphical results page was taken from this website although executed differently. The website was also the source for the different dB HL ranges that correspond to the different levels of hearing loss, and the calibration used on this website is also used in the application with permission from Dr. Pigeon.

“Types of Tests Used to Evaluate Hearing in Children and Adults.” *asha*. American

Speech-Language-Hearing Association, n.d. Web. 19 May, 2014.

URL: <http://www.asha.org/public/hearing/types-of-tests-used-to-evaluate-hearing/>

This website was important in determining additional tests procedures that could be included in this mobile application. Out of the five listed on this page, three of the tests could possibly be integrated with the restriction of a mobile device.

Westthorp Sue, “Decibel scales in audiology.” *BATOD Magazine* November: pages 11-

12. Web.

URL: <http://www.batod.org.uk/content/resources/audiology/refreshers/general/G3-decibels.pdf>

A good tool for helping to understand the difference in the hearing scales used in the clinic when dealing with hearing issues. Also gave the insight that a range of 125 Hz to 8000 Hz was the range of frequencies found in the sounds of speech.

12. Appendices

12.1 Appendix A: Development Timeline

The development and implementation of this system will be completed by breaking down the required tasks and assigning them to individual group members. In order to ensure the system is completed on time, a Gantt chart has been developed to keep group members on task and aware of his or her responsibilities. The Gantt chart can be seen in Figure 11.1 (Fall), 11.2 (Winter), and 11.3 (Spring).

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Weeks	1	2	3	4	5	6	7	8	9	10	11	12
	Sep 22- Sep 28	Sep 29- Oct 5	Oct 6- Oct 12	Oct 13- Oct 19	Oct 20- Oct 26	Oct 27- Nov 2	Nov 3- Nov 9	Nov 10- Nov 16	Nov 17- Nov 23	Nov 24- Nov 30	Dec 1- Dec 7	Dec 8- Dec 14
Research												
Brainstorm project ideas												
Problem Statement/ Requirements - X			X									
Learn HTML 5, CSS, Javascript, JQuery												
Research audiometry test												
Design/Documentation												
Brainstorm and choose design												
Design Report - X												
Prototyping												
Design mobile audiometry test												
Revised Design Report - X												
Comprehensive Project Report - X												
Implementation												
Frontend												
a. User Interface												
b. Help/FAQ page												
Backend												
a. Phonegap integration												
b. Playing sound through mobile speaker												
d. Email integration												
e. Hearing test												
Operational System - X												
Complete Implementation - X												
Testing												
Accessibility testing												
Sound Quality testing												
Conformance testing												
White-box testing												
Black-box testing												
Configuration testing												
Stress testing												
Performance testing												
User testing												
Presentations												
Design Review - X												
Design Conference - X												
Communication with Advisor												
Discuss possible ideas												
Update advisor on design document												
Show advisor hearing test plan												
Show prototype to advisor												
Check in with advisor on implementation												

Figure 12.1: Gantt Chart for Fall Quarter

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Weeks	1	2	3	4	5	6	7	8	9	10	11	12
	Sep 22- Sep 28	Sep 29- Oct 5	Oct 6- Oct 12	Oct 13- Oct 19	Oct 20- Oct 26	Oct 27- Nov 2	Nov 3- Nov 9	Nov 10- Nov 16	Nov 17- Nov 23	Nov 24- Nov 30	Dec 1- Dec 7	Dec 8- Dec 14
Research												
Brainstorm project ideas												
Problem Statement/ Requirements - X			X									
Learn HTML 5, CSS, Javascript, JQuery												
Research audiometry test												
Design/Documentation												
Brainstorm and choose design												
Design Report - X											X	
Prototyping												
Design mobile audiometry test												
Revised Design Report - X												
Comprehensive Project Report - X												
Implementation												
Frontend												
a. User Interface												
b. Help/FAQ page												
Backend												
a. Phonegap integration												
b. Playing sound through mobile speaker												
d. Email integration												
e. Hearing test												
Operational System - X												
Complete Implementation - X												
Testing												
Accessibility testing												
Sound Quality testing												
Conformance testing												
White-box testing												
Black-box testing												
Configuration testing												
Stress testing												
Performance testing												
User testing												
Presentations												
Design Review - X												
Design Conference - X												
Communication with Advisor												
Discuss possible ideas												
Update advisor on design document												
Show advisor hearing test plan												
Show prototype to advisor												
Check in with advisor on implementation												

Figure 12.2: Gantt Chart for Winter Quarter

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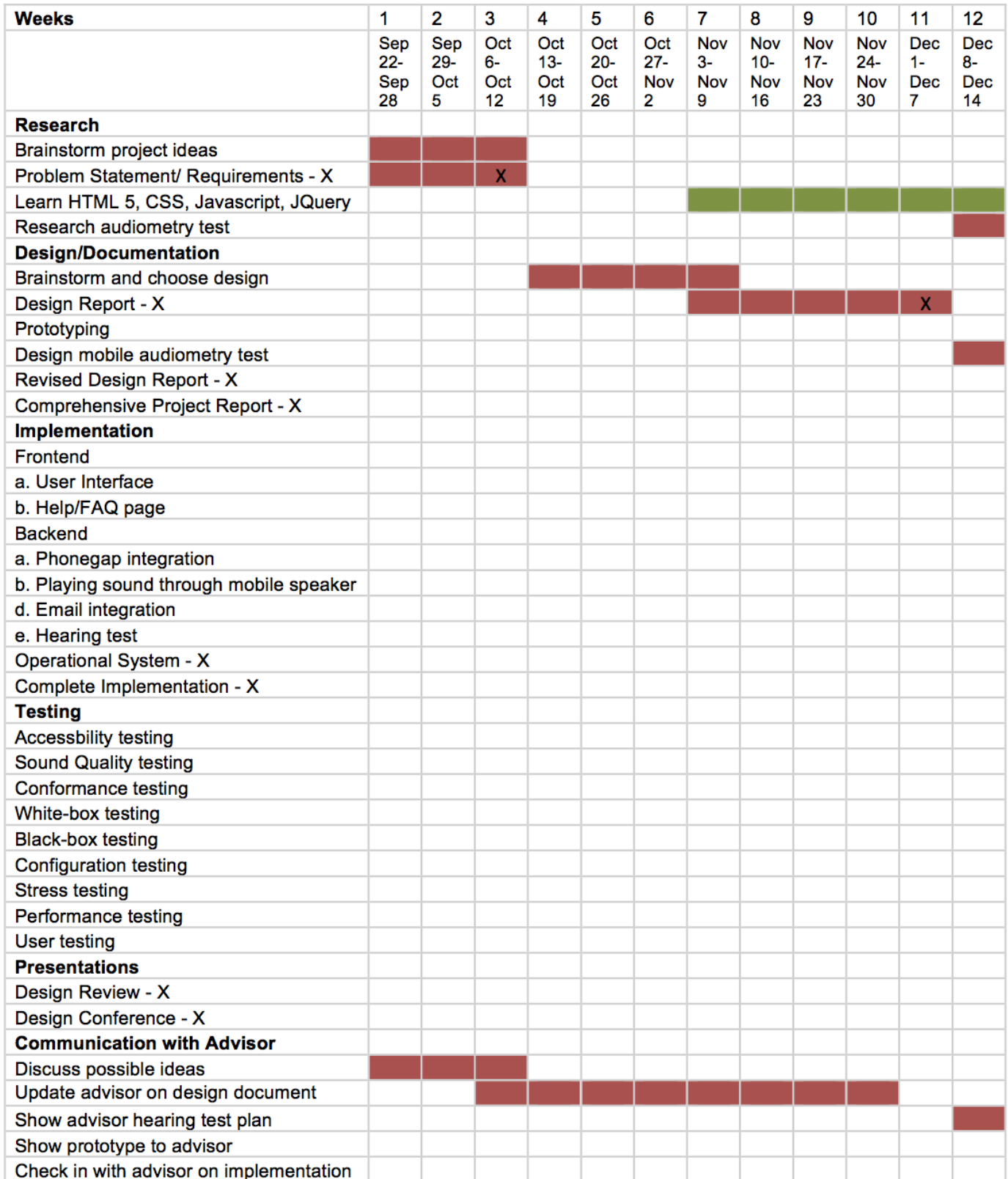


Figure 12.3: Gantt Chart for Spring Quarter

12.2 Appendix B: Source Code

FAQ.html

```
<!DOCTYPE html>
<html lang="en">

  <head>

    <meta charset="utf-8">

    <meta name="viewport" content="width=device-width,
initial-scale=1.0">
    <meta name="description" content="">
    <meta name="author" content="">

    <!-- CSS -->
    <link rel="stylesheet"
href="http://fonts.googleapis.com/css?family=Open+Sans:400italic
,400">
    <link rel="stylesheet"
href="http://fonts.googleapis.com/css?family=Droid+Sans">
    <link rel="stylesheet"
href="http://fonts.googleapis.com/css?family=Lobster">
    <link rel="stylesheet"
href="assets/bootstrap/css/bootstrap.min.css">
    <link rel="stylesheet"
href="assets/prettyPhoto/css/prettyPhoto.css">
    <link
rel="stylesheet" href="assets/css/flexslider.css">
    <link
rel="stylesheet" href="assets/css/font-awesome.css">
    <link
rel="stylesheet" href="assets/css/style.css">

    <!--
HTML5 shim, for IE6-8 support of HTML5 elements -->
    <!--[if
lt IE 9]>
    <script
src="http://html5shim.googlecode.com/svn/trunk/html5.js"></scrip
t>

    <![endif]-->

    <!--
Favicon and touch icons -->
    <link
rel="shortcut icon" href="assets/ico/favicon.ico">
    <link rel="apple-touch-icon-precomposed" sizes="144x144"
```

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```
href="assets/ico/apple-touch-icon-144-precomposed.png">

<link rel="apple-touch-icon-precomposed" sizes="114x114"
href="assets/ico/apple-touch-icon-114-precomposed.png">

<link rel="apple-touch-icon-precomposed" sizes="72x72"
href="assets/ico/apple-touch-icon-72-precomposed.png">

<link rel="apple-touch-icon-precomposed" href="assets/ico/apple-
touch-icon-57-precomposed.png">

</head>

<body>

    <!-- Header -->
    <div class="container violetbg" style="width: 320px;">
        <div class="header row" style="margin-top: 20px;">
            <div class="span12">
                <div class="navbar">
                    <div class="navbar-inner"
style="background-color:#206489">
                        <a class="btn btn-navbar" data-
toggle="collapse" data-target=".nav-collapse">
                            <span class="icon-bar"></span>
                            <span class="icon-bar"></span>
                            <span class="icon-bar"></span>
                        </a>
                        <div class="presentation container"
style="float:left; margin-top:-11px;">
                            <h2><div
style="color:white">Mobile Audiometry App</div></h2>

                                </div>
                                <div class="nav-collapse collapse">
                                    <ul class="nav pull-right" >
                                        <li>
                                            <a href="index.html"
rel="external"><i class="icon-home"></i><br />Home</a>
                                        </li>
                                        <li>
                                            <a href="takeTest.html"
rel="external"><i class="icon-camera"></i><br />Take Test</a>
                                        </li>
                                        <li >
                                            <a
href="viewHistory.html" rel="external"><i class="icon-
comments"></i><br />View History</a>
```

```
</li>
<li class="current-page">
  <a href="FAQ.html"
rel="external"><i class="icon-tasks"></i><br />FAQ</a>
</li>
</ul>
</div>
</div>
</div>
</div>
</div>
</div>

</div>
<br/>

<!-- Slider -->

<p style="font-size:14px; line-height:20px;">
<br/>

<div style="font-size: 15px; font-weight: bold;">Which
headphones is the Mobile Audiometry App compatible with?</div>
</p>

<!-- Javascript -->
<script src="assets/js/jquery-1.8.2.min.js"></script>
<script
src="assets/bootstrap/js/bootstrap.min.js"></script>
<script src="assets/js/jquery.flexslider.js"></script>
<script src="assets/js/jquery.tweet.js"></script>
<script src="assets/js/jflickrfeed.js"></script>
<script
src="http://maps.google.com/maps/api/js?sensor=true"></script>
<script src="assets/js/jquery.ui.map.min.js"></script>
<script src="assets/js/jquery.quicksand.js"></script>
<script
src="assets/prettyPhoto/js/jquery.prettyPhoto.js"></script>
<script src="assets/js/scripts.js"></script>

</body>

</html>
```

index.html

```
<!DOCTYPE html>
<html lang="en">

<head>

  <meta charset="utf-8">
    <meta name="viewport" content="width=device-
width, initial-scale=1.0">
    <meta name="description" content="">
    <meta name="author" content="">

    <!-- CSS -->
    <link rel="stylesheet"
href="http://fonts.googleapis.com/css?family=Open+Sans:400italic
,400">
    <link rel="stylesheet"
href="http://fonts.googleapis.com/css?family=Droid+Sans">
    <link rel="stylesheet"
href="http://fonts.googleapis.com/css?family=Lobster">
    <link rel="stylesheet"
href="assets/bootstrap/css/bootstrap.min.css">
    <link rel="stylesheet"
href="assets/prettyPhoto/css/prettyPhoto.css">
    <link rel="stylesheet"
href="assets/css/flexslider.css">
    <link
rel="stylesheet" href="assets/css/font-awesome.css">
    <link
rel="stylesheet" href="assets/css/style.css">

    <!-- HTML5
shim, for IE6-8 support of HTML5 elements -->
    <!--[if lt
IE 9]>
    <script
src="http://html5shim.googlecode.com/svn/trunk/html5.js"></scrip
t>
    <![endif]--
>

    <!-- Favicon
and touch icons -->
    <link
rel="shortcut icon" href="assets/ico/favicon.ico">
    <link
rel="apple-touch-icon-precomposed" sizes="144x144"
href="assets/ico/apple-touch-icon-144-precomposed.png">
    <link rel="apple-touch-icon-precomposed" sizes="114x114"
```

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```
href="assets/ico/apple-touch-icon-114-precomposed.png">

<link rel="apple-touch-icon-precomposed" sizes="72x72"
href="assets/ico/apple-touch-icon-72-precomposed.png">

<link rel="apple-touch-icon-precomposed" href="assets/ico/apple-
touch-icon-57-precomposed.png">

</head>
```

```
<body>

    <!-- Header -->
    <div class="container violetbg" style="width: 320px;">
        <div class="header row" style="margin-top: 20px;">
            <div class="span12">
                <div class="navbar">
                    <div class="navbar-inner"
style="background-color:#206489">
                        <a class="btn btn-navbar" data-
toggle="collapse" data-target=".nav-collapse">
                            <span class="icon-bar"></span>
                            <span class="icon-bar"></span>
                            <span class="icon-bar"></span>
                        </a>
                        <div class="presentation container"
style="float:left; margin-top:-11px;">
                            <h2><div
style="color:white">Mobile Audiometry App</div></h2>

                                </div>
                                <div class="nav-collapse collapse">
                                    <ul class="nav pull-right" >
                                        <li class="current-page">
                                            <a href="index.html"
rel="external"><i class="icon-home"></i><br />Home</a>
                                        </li>
                                        <li>
                                            <a href="takeTest.html"
rel="external"><i class="icon-camera"></i><br />Take Test</a>
                                        </li>
                                        <li >
                                            <a
href="viewHistory.html" rel="external"><i class="icon-
comments"></i><br />View History</a>
                                        </li>
                                        <li>
                                            <a href="FAQ.html"
```

```
rel="external"><i class="icon-tasks"></i><br />FAQ</a>
    </li>
  </ul>
</div>
</div>
</div>
</div>
</div>
</div>
</div>
</div>
<br/>
<!-- Slider -->
<p style="font-size:14px; line-height:20px;">
  <br/>
  <br/><br/>
  <br/>
  <br/><br/><br/>
  <div style="font-size: 17px; font-weight: bold;">Tap
the menu above to <br/>get started.</div>
</p>
<!-- Javascript -->
  <script src="assets/js/jquery-1.8.2.min.js"></script>
  <script
src="assets/bootstrap/js/bootstrap.min.js"></script>
  <script src="assets/js/jquery.flexslider.js"></script>
  <script src="assets/js/jquery.tweet.js"></script>
  <script src="assets/js/jflickrfeed.js"></script>
  <script
src="http://maps.google.com/maps/api/js?sensor=true"></script>
  <script src="assets/js/jquery.ui.map.min.js"></script>
  <script src="assets/js/jquery.quicksand.js"></script>
  <script
src="assets/prettyPhoto/js/jquery.prettyPhoto.js"></script>
  <script src="assets/js/scripts.js"></script>
</body>
</html>
```


takeTest.html

```
<!DOCTYPE html>
<html lang="en">

  <head>

    <meta charset="utf-8">
    <title>MAA</title>
    <meta name="viewport" content="width=device-width,
initial-scale=1.0">
    <meta name="description" content="">
    <meta name="author" content="">

    <!-- CSS -->
    <link rel="stylesheet"
href="http://fonts.googleapis.com/css?family=Open+Sans:400italic
,400">
    <link rel="stylesheet"
href="http://fonts.googleapis.com/css?family=Droid+Sans">
    <link rel="stylesheet"
href="http://fonts.googleapis.com/css?family=Lobster">
    <link rel="stylesheet"
href="assets/bootstrap/css/bootstrap.min.css">
    <!--<link rel="stylesheet"
href="assets/prettyPhoto/css/prettyPhoto.css">-->
    <link rel="stylesheet" href="assets/css/flexslider.css">
    <link rel="stylesheet" href="assets/css/font-
awesome.css">
    <link rel="stylesheet" href="assets/css/style.css">

    <!-- HTML5 shim, for IE6-8 support of HTML5 elements -->
    <!--[if lt IE 9]>
      <script
src="http://html5shim.googlecode.com/svn/trunk/html5.js"></scrip
t>

    <![endif]-->

    <!-- Favicon and touch icons -->
    <link rel="shortcut icon" href="assets/ico/favicon.ico">
    <link rel="apple-touch-icon-precomposed" sizes="144x144"
href="assets/ico/apple-touch-icon-144-precomposed.png">
    <link rel="apple-touch-icon-precomposed" sizes="114x114"
href="assets/ico/apple-touch-icon-114-precomposed.png">
    <link rel="apple-touch-icon-precomposed" sizes="72x72"
href="assets/ico/apple-touch-icon-72-precomposed.png">
    <link rel="apple-touch-icon-precomposed"
href="assets/ico/apple-touch-icon-57-precomposed.png">

    <script src="ChartNew.js"></script>
```

```
<!--
    <script src="flot/jquery.min.js"
type="text/javascript"></script>
    <script src="flot/jquery.flot.min.js"
type="text/javascript"></script>
    <script src="flot/excanvas.min.js"
type="text/javascript"></script>
-->

</head>

<body onLoad="document.getElementById('testSound').play();">

    <!-- Header -->
    <div class="container violetbg" style="position:
fixed !important; width: 320px;">
        <div class="header row" style="margin-top:
20px;">
            <div class="span12">
                <div class="navbar">
                    <div class="navbar-inner"
style="background-color:#206489">
                        <a class="btn btn-navbar" data-
toggle="collapse" data-target=".nav-collapse">
                            <span class="icon-
bar"></span>
                            <span class="icon-
bar"></span>
                            <span class="icon-
bar"></span>
                        </a>
                        <div class="presentation
container" style="float:left; margin-top:-11px;">
                            <h2><div
style="color:white">Mobile Audiometry App</div></h2>
                        </div>
                        <div class="nav-collapse
collapse">
                            <ul class="nav pull-right" >
                                <li>
                                    <a href="index.html"
rel="external"><i class="icon-home"></i><br />Home</a>
                                </li>
                                <li class="current-
page">
                                    <a
```



```
nose.<br/>
    <br/><br/>
    3. Put your headphones on and turn your volume to
the minimum setting. <br/>
    <br/><br/>
    4. With headphones on, adjust your volume so the
sound you hear replicates the sound your hands just made.<br/>
    

    <br/><br/>
    You are now ready to begin the audiometry exam.
Please answer all questions to the best of your ability.
    <br/><br/>
    <a href="#" onClick="newTest();" class="nextBtn"
id="calibrateBtn"> Next </a><br/><br/>
</div>

<div id="selectProfile" style="display:none">
    <br/>
    <br/><br/><br/>

    <div onClick="disableEnable('newUser',
'existingUser');">
        <div class="violet" style="font-size:
17px;">Select Existing Profile:</div>
        <br/>

            <select id="existingUser">

                </select>

    </div>
    <div class="violet" style="font-size: 17px;"><br/>-
OR-<br/></div>
    <div onClick="disableEnable('existingUser',
'newUser');">
        <div class="violet" style="font-size:
17px;"><br/>Create a New Profile:</div>
        <br/>
        <div align="center"> <input disabled
id="newUser" type="text" size="10" style=" width:150px; text-
align:center;" /> </div>
        </div>
        <br/>
        <a href="#" id="next" onClick="beginTest();"
class="nextBtn">Begin Test</a>

        <br/><br/>
    </div>
```

```
<div id="takeTest" style="display:none">

    <audio loop id="testSound"
src="sounds/calibrationFile.mp3" type="audio/mpeg"></audio>

    <br/><br/>

    <!--<div id="progressContainer" style="width:198px;
border-width:1px; border-style:solid; border-color:#F90; margin-
left:100px;"><div id="progress" style="text-align:left;
color:#206489; background-color:#F90; width:0px;">
    &nbsp;   Progress
</div></div>-->
    <progress id="progress" max="700" value="100"
color="#FFF" backgroundColor="#F90" style="width: 225px; height:
15px; -webkit-appearance: none;">Progress</progress>

    <br/><br/><br/>

    <div style="text-align:left;"><div
class="violet"><br/>Can you hear this sound? <br/></div> (Click
speaker to replay)</div>

    <br/>
    <br/><br/>

    <a href="#" id="yes"
onClick="manageSelection('yes');" class="btnUnselected"
style="margin-right:10px;margin-left:60px;">YES</a>
    <a href="#" id="no"
onClick="manageSelection('no');" class="btnUnselected"
style="margin-left:10px; margin-right:60px;">NO</a>

    <br/><br/><br/>
    <a href="#" id="next" onClick="nextQuestion();"
class="nextBtn">Next</a>

</div>

<div id="results" style="display:none">
    <br/><br/><br/><br/>

    <!--<div class="violet" style="font-size:14px">April 5th,
2014</div>-->
```

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```
<canvas id="myChart" data-type="Line" width="250"
height="350" style="margin-left: -23px; margin-top: -
3px;"></canvas>
    <div id="submitResultsDiv" style="position: relative;
top:-15px;"></div>
</div>

<!-- Javascript -->
<script>
    //$mobile.loadingMessage = false;

    var audio =
document.getElementById("testSound");
    audio.addEventListener("touchstart", function()
{ audio.play(); }, false);

    var flag;
    var sounds = new Array();
    var fileNames = ["250_-5.mp3", "250_5.mp3",
"250_15.mp3", "250_0.mp3", "250_10.mp3", "250_20.mp3",
"250_30.mp3", "250_40.mp3", "250_50.mp3", "250_60.mp3",
"250_70.mp3", "250_80.mp3",
    "500_-5.mp3", "500_5.mp3", "500_15.mp3",
"500_0.mp3", "500_10.mp3", "500_20.mp3", "500_30.mp3",
"500_40.mp3", "500_50.mp3", "500_60.mp3", "500_70.mp3",
"500_80.mp3",
    "1000_-5.mp3", "1000_5.mp3", "1000_15.mp3",
"1000_0.mp3", "1000_10.mp3", "1000_20.mp3", "1000_30.mp3",
"1000_40.mp3", "1000_50.mp3", "1000_60.mp3", "1000_70.mp3",
"1000_80.mp3",
    "2000_-5.mp3", "2000_5.mp3", "2000_15.mp3",
"2000_0.mp3", "2000_10.mp3", "2000_20.mp3", "2000_30.mp3",
"2000_40.mp3", "2000_50.mp3", "2000_60.mp3", "2000_70.mp3",
"2000_80.mp3",
    "4000_-5.mp3", "4000_5.mp3", "4000_15.mp3",
"4000_0.mp3", "4000_10.mp3", "4000_20.mp3", "4000_30.mp3",
"4000_40.mp3", "4000_50.mp3", "4000_60.mp3", "4000_70.mp3",
"4000_80.mp3",
    "8000_-5.mp3", "8000_5.mp3", "8000_15.mp3",
"8000_0.mp3", "8000_10.mp3", "8000_20.mp3", "8000_30.mp3",
"8000_40.mp3", "8000_50.mp3", "8000_60.mp3", "8000_70.mp3",
"8000_80.mp3"];

    function sound(fileName, frequency, db, result)
    {
        //result: -1 if uninitialized, 0 if
unheard, 1 if heard
        this.fileName = fileName;
        this.frequency = frequency;
    }
</script>
```

```
        this.db = db;
        this.result = result;
    }

    function testResult(frequency, db)
    {
        this.frequency = frequency;
        this.db = db;
    }

    var qAsked;
    var user;
    var testResults = new Array();
    var tempResult;
    var speakerNum;
    var interval = 0;
    var progWidth = 0;
    var database = window.openDatabase("MAAData1",
"1.0", "MobileAudiometryAppData1", 1000000);
    var storeResults;
    var storeDate;
    var flagForNewUser = 0;

    function newTest()
    {
        //alert("beginning of new test");
        //document.getElementById("testSound").stop();

        document.getElementById("testSound").loop =
false;

        document.getElementById('calibrate').style.display = 'none';

        document.getElementById('selectProfile').style.display =
'inline';

        document.getElementById('submitResultsDiv').innerHTML = '';

        database.transaction(loadNames, queryError,
openSuccess);

        qAsked = 0;
        testResults = [];
        flag = 0;
        speakerNum = 2;
        progWidth = 0;
        flagForNewUser = 0
```

```
        for(var i = 0; i<fileNames.length; i++)
        {
            fileName = fileNames[i];
            var name = fileName.split(".");
            var info = name[0].split("_");
            var frequency = info[0];
            var db = info[1];
            var newSound = new sound(fileName,
parseInt(frequency), parseInt(db), -1);
            sounds[fileName] = newSound;
        }
    }

    function endTest()
    {
        var myAlert = "";
        document.getElementById("key").style.display =
"inline-block";
        var temp = new Array();
        for(var i = 0; i < testResults.length;
i++)
        {
            myAlert += "(" +
testResults[i].frequency + ", " + testResults[i].db + ") \n";
            temp[temp.length] =
testResults[i].db;
        }

        //alert("End of Test. Results:\n\n" +
myAlert);

        document.getElementById('takeTest').style.display = "none";

        document.getElementById('results').style.display =
"inline";

        var d = new Date();
        var month=new Array();
        month[0]="January";
        month[1]="February";
        month[2]="March";
        month[3]="April";
        month[4]="May";
        month[5]="June";
        month[6]="July";
        month[7]="August";
        month[8]="September";
        month[9]="October";
        month[10]="November";
```



```
month[11]="December";

        var date = "" + month[d.getMonth()] + " "
+ d.getDate() + ", " + d.getFullYear(); //REPLACE

        var ctx =
document.getElementById("myChart").getContext("2d");

        var data = {
            labels :
["250", "500", "1000", "2000", "4000", "8000"],

            datasets : [
                {
                    fillColor :
"rgba(255,178,166,1)",
                    strokeColor :
"rgba(255,178,166,1)",
                    pointColor :
"rgba(255,178,166,1)",
                    pointStrokeColor : "#fff",
                    data : [80,80,80,80,80,80]
                },
                {
                    fillColor :
"rgba(255,213,166,1)",
                    strokeColor :
"rgba(255,213,166,1)",
                    pointColor :
"rgba(255,213,166,1)",
                    pointStrokeColor : "#fff",
                    data : [70,70,70,70,70,70]
                },
                {
                    fillColor :
"rgba(255,255,166,1)",
                    strokeColor :
"rgba(255,255,166,1)",
                    pointColor :
"rgba(255,255,166,1)",
                    pointStrokeColor : "#fff",
                    data : [40,40,40,40,40,40]
                },
                {
                    fillColor :
"rgba(166,255,190,1)",
                    strokeColor :
"rgba(166,255,190,1)",
                    pointColor :
```

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```
        pointStrokeColor : "#fff",
        data : [20,20,20,20,20,20]
    },
    {
        fillColor :
"rgba (255,255,255,0.6) ",
        strokeColor :
"rgba (136,136,136,1) ",
        pointColor :
"rgba (255,255,255,1) ",
        pointStrokeColor : "#fff",
        data : temp
    }
]
}

    var options1 = {
        scaleOverride : true,
        scaleSteps : 8,
        scaleStepWidth : 10,
        scaleStartValue : 0,
        scaleOverlay : true,
        scaleFontSize : 12,
        scaleFontFamily : "'Open Sans'",
        yAxisLeft : true,
        yAxisLabel : "Decibel Hearing Level",
        xAxisLabel : "Frequency (Hz)",
        xAxisFontFamily : "'Open Sans'",
        yAxisFontFamily : "'Open Sans'",
        xAxisFontSize : 12,
        yAxisFontSize : 12,
        pointDot : false,

        graphTitle : "    " + date
    }
    var myNewChart = new Chart(ctx).Line(data,
options1);

    //alert(temp);

    storeResults = temp.toString();
    storeDate = date;

    document.getElementById('submitResultsDiv').innerHTML +=
'<br/><a href="#" id="saveResults" onClick="saveResults();"
class="nextBtn">Save Results</a>';
```

```
    }

    function saveResults()
    {
        if(flagForNewUser == 1){
            database.transaction(insertName, queryError,
insertSuccess);
            //////////////////////////////////////////////////changed this HERE
        }

        //alert("inside save results");
        database.transaction(storeResultsFunction,
errorStoring, successStoring);
        //alert("Should have stored stuff");

document.getElementById('submitResultsDiv').innerHTML = '<br/><a
href="#" id="saveResults" void;" class="nextBtn">Save
Results</a>';

document.getElementById('saveResults').style.backgroundColor =
"#888888";

document.getElementById('saveResults').style.border = "1px solid
#888888";

    }

    function plusProg()
    {
        for(var i=0; i < 100; i++)
        {
            document.getElementById("progress").value +=
1;
        }
    }

    function nextQuestion()
    {
        if(document.getElementById("yes").className !=
"btnSelected" && document.getElementById("no").className !=
"btnSelected" && qAsked != 0)
        {
            return;
        }
    }
}
```

```
        //clearInterval(interval);
        //interval = "";
        //speakerNum=2;
        //document.getElementById("speaker").src =
"speaker1.png";
        //if(interval != 0)
        //{
            //clearInterval(interval);
            //speakerNum=2;
        //}

        qDisplay = qAsked+1;

        var file =
document.getElementById("testSound").src;
        var path = file.split("/");
        var fileName = path[path.length - 1];

        if(qAsked != 0)
        {
            //store results

            if(document.getElementById("yes").className ==
"btnSelected")
                {
                    sounds[fileName].result = 1;
                }
            else
if(document.getElementById("no").className == "btnSelected")
                {
                    sounds[fileName].result = 0;
                }

            document.getElementById("yes").className = "btnUnselected";

            document.getElementById("no").className = "btnUnselected";
        }

        if(qAsked+1 == fileNames.length)
        {
            newTest();
            //Question, if it's the last
frequency that they say yes to, are we not storing it bc of this
check?

            endTest();
        }
        else
```

```
{
    if(qAsked == 0)
    {
        //first question

        document.getElementById("testSound").src = "sounds/" +
"250_0.mp3";

        playSound();
    }
    else
    {
        //display next question
        var result =
sounds[fileName].result;
        var db = sounds[fileName].db;
        var frequency =
sounds[fileName].frequency;
        var newSoundFile;

        if(result == 1)
        {
            //alert("inside yes " +
flag);
            if(db == 0)
            {
                //alert("played 0");
                var newTestResult =
new testResult(frequency, db);

                testResults[testResults.length] = newTestResult;

                if(frequency == 8000)
                {
                    //alert("ending
test");
                    endTest();
                    return;
                }
                else
                {
                    //alert("playing new frequency bc yes on 0");
                    var
newFrequency = frequency * 2;
                    newSoundFile =
"sounds/" + newFrequency + "_0.mp3";
                    flag = 0;
                    progWidth +=
33;
                    plusProg();
                }
            }
        }
    }
}
```

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```

}
else if(db <= 20 && flag
== 0)
{
    //alert("first time
    tempResult = new
    //Question: algorithm
    needs to be checked for how temp result is being handled
    var newDb = db-5;
    newSoundFile =
    "sounds/" + frequency + "_" + newDb + ".mp3";
    flag = 1;
    //alert("changed flag
to " + flag);
}
else if(db <= 20 && flag
== 1)
{
    //alert("second time
    //save result of
    current
    var newTestResult =
    new testResult(frequency, db);
    testResults[testResults.length] = newTestResult;
    if(frequency == 8000)
    {
        //alert("ending
        endTest();
        return;
    }
    //alert("playing new
    frequency");
    var newFrequency =
    frequency * 2;
    newSoundFile =
    "sounds/" + newFrequency + "_0.mp3";
    flag = 0;
    progWidth+=33;
    plusProg();
}
else if(db > 20)
{
    //alert("yes on db
above 20");
}
```

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```
new testResult(frequency, db);

    testResults[testResults.length] = newTestResult;

    if(frequency == 8000)
    {
        //alert("ending
        endTest();
        return;
    }

    //alert("playing new
    var newFrequency =
    newSoundFile =

    flag = 0;
    progWidth += 33;
    plusProg();
}
}
else if(result == 0)
{
    //alert("inside no");

    if(flag == 1)
    {
        //alert("flag = 1
        //alert("saving
        results " + tempResult.frequency + " " + tempResult.db);

        testResults[testResults.length] = tempResult;

        if(frequency == 8000)
        {
            //alert("ending

            endTest();
            return;
        }

        //alert("playing new
        var newFrequency =
        newSoundFile =

        test");

        frequency bc flag=1 in no");

        frequency * 2;
```

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```
"sounds/" + newFrequency + "_0.mp3";

        flag = 0;
        progWidth += 33;
        plusProg();
    }
    else
    {
        if(db == 80)
        {
            var
newTestResult = new testResult(frequency, db);

            testResults[testResults.length] = newTestResult;
            if(frequency ==
8000)
            {
                endTest();
                return;
            }
            else
            {

                //alert("playing new frequency bc db=80");
                var
newFrequency = frequency * 2;

                newSoundFile = "sounds/" + newFrequency + "_0.mp3";
                flag = 0;
                progWidth
+= 33;

                plusProg();

            }
        }
        else
        {

            //alert("playing new tone with db +10");
            var newDb = db
+ 10;

            newSoundFile =
"sounds/" + frequency + "_" + newDb + ".mp3";
        }
    }
}
else {alert("error: the result
is still undefined");}

//alert(newSoundFile);
```


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```
document.getElementById("testSound").src = newSoundFile;
        playSound();
    }
    qAsked++;
}

}

function playSound()
{
    if(interval != 0)
    {
        clearInterval(interval);
        speakerNum=2;
        flag1 = 0;
    }
    document.getElementById("speaker").src =
"speaker1.png";

    document.getElementById("testSound").play();

    interval=setInterval(function(){animate()},400);
}

var flag1 = 0;

function animate()
{
    if(flag1 == 7)
    {
        clearInterval(interval);
        speakerNum=2;
        interval = 0;
        flag1 = 0;
        return;
    }

    document.getElementById("speaker").src =
"speaker" + speakerNum + ".png";
    speakerNum++;
    flag1++;
    if(speakerNum == 5)
    {
        speakerNum = 1;
    }
}

function beginTest()
{
    if(document.getElementById('existingUser').disabled ==
```

```
false)
    {
        var inputBox =
document.getElementById("existingUser");
        user =
inputBox.options[inputBox.selectedIndex].text;
document.getElementById('selectProfile').style.display = "none";
document.getElementById('takeTest').style.display = "inline";
        nextQuestion();
    }
    else
    {
        user =
document.getElementById("newUser").value;
        if(user=="")
        {
            alert("Error: User name cannot be
blank");
            return;
        }
        flagForNewUser = 1;
        user = user.toLowerCase();
        // database.transaction(insertName,
queryError, insertSuccess);
document.getElementById('selectProfile').style.display = "none";
document.getElementById('takeTest').style.display = "inline";
        nextQuestion();
    }
}

function disableEnable(dis, en)
{

document.getElementById(dis).disabled=true;

document.getElementById(en).disabled=false;
}

function manageSelection(btnid)
{
    var other;
    if(btnid=="yes")
    { other = "no";
```

```
        }
        else
        {other = "yes";

        }
        document.getElementById(btnid).className =
"btnSelected";
        document.getElementById(other).className =
"btnUnselected";
    }

    //beginning of database stuff

    function storeResultsFunction(tx)
    {
        //alert("inside storeResultsFunction(tx)");
        tx.executeSql("SELECT dates, data FROM maa WHERE
name='" + user + "'", [], findStoredSuccess,findStoredError);
        //alert("end of storeResults(tx)");
    }

    function findStoredSuccess(tx, results)
    {
        //alert("inside findStoredSuccess");
        var dates =
(storeDate.concat(".")).concat(results.rows.item(0).dates);
        var data =
(storeResults.concat(".")).concat(results.rows.item(0).data);
        tx.executeSql("UPDATE maa SET dates='" + dates + "',
data='" + data + "' WHERE name='" + user + "'");
        //alert("end of findStoredSuccess");
    }

    function findStoredError(err)
    {
        //alert("Error: Could not access stored results " +
err);
    }

    function errorStoring(err)
    {
        alert("Error: Cannot store results" + err);
    }

    function successStoring()
    {
        //alert("Successfully stored Results");
    }
}
```

```
function openSuccess()
{
    //alert("success!");
}

function insertSuccess()
{
    //alert("insert success!");
}

function insertName(tx)
{
    tx.executeSql('INSERT INTO maa (name) VALUES (" +
user + "')');
}

function loadNames(tx)
{
    //alert("0");
    tx.executeSql('CREATE TABLE IF NOT EXISTS maa (name
varchar(255) NOT NULL PRIMARY KEY, dates varchar(8000), data
varchar(8000))');
    tx.executeSql('SELECT name FROM maa', [],
querySuccess, queryError);
}

function querySuccess(tx, results)
{
    var divContent =
document.getElementById("existingUser");
    var len = results.rows.length;
    for(var i = 0; i<len; i++)
    {
        var option = document.createElement("option");
        option.text = results.rows.item(i).name;
        option.value = results.rows.item(i).name;
        divContent.add(option);
    }
}

function queryError(err)
{
    alert("Error: Name Already Exists");
}
```

```
        </script>
        <script src="assets/js/jquery-1.8.2.min.js"></script>
        <script
src="assets/bootstrap/js/bootstrap.min.js"></script>
        <script src="assets/js/jquery.flexslider.js"></script>
        <script src="assets/js/jquery.tweet.js"></script>
        <script src="assets/js/jflickrfeed.js"></script>
        <script
src="http://maps.google.com/maps/api/js?sensor=true"></script>
        <script src="assets/js/jquery.ui.map.min.js"></script>
        <script src="assets/js/jquery.quicksand.js"></script>
        <script
src="assets/prettyPhoto/js/jquery.prettyPhoto.js"></script>
        <script src="assets/js/scripts.js"></script>

    </body>

</html>
```

viewHistory.html

```
<!DOCTYPE html>
<html lang="en">

  <head>

    <meta charset="utf-8">

    <meta name="viewport" content="width=device-width,
initial-scale=1.0">
    <meta name="description" content="">
    <meta name="author" content="">

    <!-- CSS -->
    <link rel="stylesheet"
href="http://fonts.googleapis.com/css?family=Open+Sans:400i
talic,400">
    <link rel="stylesheet"
href="http://fonts.googleapis.com/css?family=Droid+Sans">
    <link rel="stylesheet"
href="http://fonts.googleapis.com/css?family=Lobster">
    <link rel="stylesheet"
href="assets/bootstrap/css/bootstrap.min.css">
    <link rel="stylesheet"
href="assets/prettyPhoto/css/prettyPhoto.css">
    <link rel="stylesheet"
href="assets/css/flexslider.css">
    <link rel="stylesheet" href="assets/css/font-
awesome.css">
    <link rel="stylesheet" href="assets/css/style.css">

    <!-- HTML5 shim, for IE6-8 support of HTML5
elements -->
    <!--[if lt IE 9]>
      <script
src="http://html5shim.googlecode.com/svn/trunk/html5.js"></
script>
    <![endif]-->

    <!-- Favicon and touch icons -->
    <link rel="shortcut icon"
href="assets/ico/favicon.ico">
    <link rel="apple-touch-icon-precomposed"
sizes="144x144" href="assets/ico/apple-touch-icon-144-
precomposed.png">
    <link rel="apple-touch-icon-precomposed"
sizes="114x114" href="assets/ico/apple-touch-icon-114-
```

```
precomposed.png">
    <link rel="apple-touch-icon-precomposed"
sizes="72x72" href="assets/ico/apple-touch-icon-72-
precomposed.png">
    <link rel="apple-touch-icon-precomposed"
href="assets/ico/apple-touch-icon-57-precomposed.png">

    <script src="jquery-mobile/jquery-1.6.4.min.js"
type="text/javascript"></script>
    <script src="jquery-mobile/jquery.mobile-
1.0.min.js" type="text/javascript"></script>

    <script src="ChartNew.js"></script>

</head>

<body onLoad="populateUsers();">

    <!-- Header -->
    <div class="container violetbg" style="position:
fixed !important; width: 320px;">
        <div class="header row" style="margin-top:
20px;">
            <div class="span12">
                <div class="navbar">
                    <div class="navbar-inner"
style="background-color:#206489">
                        <a class="btn btn-navbar" data-
toggle="collapse" data-target=".nav-collapse">
                            <span class="icon-
bar"></span>
                            <span class="icon-
bar"></span>
                            <span class="icon-
bar"></span>
                        </a>
                        <div class="presentation
container" style="float:left; margin-top:-11px;">
                            <h2><div
style="color:white">Mobile Audiometry App</div></h2>
                        </div>
                        <div class="nav-collapse
collapse">
                            <ul class="nav pull-right"
>
                                <li>
                                    <a
```



```
5px; padding-bottom: 5px; display: none; width: 100%;  
padding-left: -100px;">Hearing Loss Level: <br/><font  
style="background-color:  
#000000;">&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;None&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;  
</font>  
    <font style="background-color:  
#000000;">&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;Mild&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;  
</font>  
    <font style="background-color:  
#000000;">Moderate</font>  
    <font style="background-color:  
#000000;">&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;Severe&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;</font>  
<br/></div>-->
```

```
<div id="selectProfile" class="violet"  
style="height: 430px; font-size: 17px;">  
    <br/><br/><br/>  
    Select Profile:  
    <br/><br/><br/>  
    <select id="theUser">  
  
    </select>  
  
    <br/><br/><br/>  
    <a href="#" onClick="viewHistory();" <br/>  
class="nextBtn">View History</a>  
</div>
```

```
<div id="results" style="display:none">
```

```
</div>
```

```
<div id="footer" class="row"> </div>
```

```
<!-- Javascript -->
```

```
<script>
```

```
    $.mobile.loadingMessage = false;
```

```
        var user;
```

```
        var database =
```

```
window.openDatabase("MAAData1", "1.0",  
"MobileAudiometryAppData1", 1000000);
```

```
        function populateUsers()
```

```
{  
  
document.getElementById("key").style.display="none";  
        database.transaction(loadNames, queryError,  
openSuccess);  
    }  
  
    function loadNames(tx)  
    {  
        //alert("0");  
        tx.executeSql('CREATE TABLE IF NOT EXISTS  
maa (name varchar(255) NOT NULL PRIMARY KEY, dates  
varchar(8000), data varchar(8000))');  
        tx.executeSql('SELECT name FROM maa', [],  
querySuccess, queryError);  
    }  
  
    function querySuccess(tx, results)  
    {  
  
        var divContent =  
document.getElementById("theUser");  
        var len = results.rows.length;  
        for(var i = 0; i<len; i++)  
        {  
            var option =  
document.createElement("option");  
            option.text =  
results.rows.item(i).name;  
            option.value =  
results.rows.item(i).name;  
            divContent.add(option);  
        }  
  
    }  
  
    function queryError(err)  
    {  
        alert("Error: " + err);  
    }  
  
    function openSuccess()  
    {  
        //alert("success!");  
    }  
  
}
```

```
function displayResults(tx)
{
    //alert("in displayResults");
    tx.executeSql("SELECT dates, data FROM maa
WHERE name='" + user + "'", [], findResults, queryError);
    //alert("finished dispaly results");
}

function findResults(tx, results)
{
    // var length = results.length;
    var data1 = results.rows.item(0).data;
    var dates1 = results.rows.item(0).dates;
    var myData = data1.split('.');
    var myDate = dates1.split('.');

    for(var i = 0; i<myData.length-1; i++)
    {
        var chartName = "myChart" + i;

document.getElementById("results").innerHTML +=
'<br/><br/><canvas id="" + chartName + ' data-type="Line"
width="250" height="350"></canvas>';
    }

    for(var i = 0; i < myData.length - 1; i++)
    {
        var myDataI = myData[i].split(",");
        var myDateI = myDate[i];
        var chartName = "myChart" + i;

//document.getElementById("results").innerHTML +=
'<br/><br/><canvas id="" + chartName + ' data-type="Line"
width="250" height="350"></canvas>';

        var ctx =
document.getElementById(chartName).getContext("2d");

        //alert(myDataI);

        var data = {
            labels :
["250", "500", "1000", "2000", "4000", "8000"],
            datasets : [
                {
                    fillColor :
"rgba(255,178,166,1)",
                    strokeColor :
```

```
"rgba (255,178,166,1) ",  
"rgba (255,178,166,1) ",  
"#fff",  
[80,80,80,80,80,80]  
  
"rgba (255,213,166,1) ",  
"rgba (255,213,166,1) ",  
"rgba (255,213,166,1) ",  
"#fff",  
[70,70,70,70,70,70]  
  
"rgba (255,255,166,1) ",  
"rgba (255,255,166,1) ",  
"rgba (255,255,166,1) ",  
"#fff",  
[40,40,40,40,40,40]  
  
"rgba (166,255,190,1) ",  
"rgba (166,255,190,1) ",  
"rgba (166,255,190,1) ",  
"#fff",  
[20,20,20,20,20,20]  
  
"rgba (255,255,255,0.6) ",
```

```
pointColor :  
pointStrokeColor :  
data :  
},  
{  
fillColor :  
strokeColor :  
pointColor :  
pointStrokeColor :  
data :  
},  
{  
fillColor :  
strokeColor :  
pointColor :  
pointStrokeColor :  
data :  
},  
{  
fillColor :  
strokeColor :  
pointColor :  
pointStrokeColor :  
data :  
},  
{  
fillColor :
```

```
strokeColor :
pointColor :
pointStrokeColor :
data : myData1
}
]
}

var options1 = {
  scaleOverride : true,
  scaleSteps : 8,
  scaleStepWidth : 10,
  scaleStartValue : 0,
  scaleOverlay : true,
  scaleFontSize : 12,
  scaleFontFamily : "'Open Sans'",
  yAxisLeft : true,
  yAxisLabel : "Decibel Hearing
Level",
  xAxisLabel : "Frequency (Hz)",
  xAxisFontFamily : "'Open Sans'",
  yAxisFontFamily : "'Open Sans'",
  xAxisFontSize : 12,
  yAxisFontSize : 12,
  pointDot : false,
  graphTitle : " " + myDate1
}

//alert();
var myNewChart = new
Chart(ctx).Line(data, options1);

document.getElementById("key").style.display="inline-
block";
}

//alert("end of findResults");

}

function viewHistory()
```

```
        {
            var inputBox =
document.getElementById("theUser");
            user =
inputBox.options[inputBox.selectedIndex].text;

            document.getElementById('selectProfile').style.display
= "none";

            document.getElementById('results').style.display =
"inline";
                // alert("User: " + user);
                database.transaction(displayResults,
queryError, openSuccess)
            }

```

```
        </script>
        <script src="assets/js/jquery-
1.8.2.min.js"></script>
        <script
src="assets/bootstrap/js/bootstrap.min.js"></script>
        <script
src="assets/js/jquery.flexslider.js"></script>
        <script src="assets/js/jquery.tweet.js"></script>
        <script src="assets/js/jflickrfeed.js"></script>
        <script
src="http://maps.google.com/maps/api/js?sensor=true"></scri
pt>
        <script
src="assets/js/jquery.ui.map.min.js"></script>
        <script
src="assets/js/jquery.quicksand.js"></script>
        <script
src="assets/prettyPhoto/js/jquery.prettyPhoto.js"></script>
        <script src="assets/js/scripts.js"></script>

    </body>

</html>
```

style.css

```
progress::-webkit-progress-bar {
    background: white;
    border-radius: 50px;
    border: 1px solid #888888;
}

/* Now the value part */
progress::-webkit-progress-value {
    border-radius: 50px;
    background: -webkit-linear-gradient(left, #FF9900,
#FF9900);
}

body {
    background: #fff;
    text-align: center;
    font-family: 'Open Sans', Helvetica, Arial, sans-serif;
    color: #888;
    font-size: 14px;
}

.violet { color: #206489; }
.violetbg {background-color:#206489; }

.speaker {
    -moz-border-radius:10px;
    -webkit-border-radius:10px;
    border-radius:10px;
    background-color: #206489;
    margin-right: 30px;
}

.btnUnselected {
    background-color:#ffffff;
    -moz-border-radius:10px;
    -webkit-border-radius:10px;
    border-radius:10px;
    border:1px solid #888888;
    display:inline-block;
    cursor:pointer;
    color:#888888;
    padding:10px 30px;
```

```
        text-decoration:none;
    }
    .btnUnselected:hover {
        background-color:#206489;
        color:#FFF;
        border:1px solid #206489;
    }
    .btnUnselected:active {
        position:relative;
        top:1px;
    }

    .btnSelected {
        -moz-border-radius:10px;
        -webkit-border-radius:10px;
        border-radius:10px;
        background-color:#206489;
        color:#FFF;
        border:1px solid #206489;
        display:inline-block;
        cursor:pointer;
        padding:10px 30px;
        text-decoration:none;
        position:relative;
        top:1px;
    }
    .btnSelected:hover {
        background-color:#206489;
        color:#FFF;
        border:1px solid #206489;
    }

    .nextBtn {
        -moz-border-radius:10px;
        -webkit-border-radius:10px;
        border-radius:10px;
        background-color: #F90;
        color:#FFF;
        border:1px solid #F90;
        display:inline-block;
        cursor:pointer;
        padding:8px 50px;
        text-decoration:none;
        position:relative;
        top:1px;
        font-size:13px;
    }
}
```



```
.nextBtn:hover {
    background-color:#F90;
    color:#FFF;
    border:1px solid #F90;
}

a {
    color: #206489;
    text-decoration: none;
    -o-transition: all .3s;
    -moz-transition: all .3s;
    -webkit-transition: all .3s;
    -ms-transition: all .3s;
}

a:hover { color: #888; text-decoration: none; }

strong { font-weight: bold; }

/* ----- Header ----- */

.header .navbar {
    margin-bottom: 0;
}

.header .navbar-inner {
    background: #fff;
    border: 0;
    -moz-border-radius: 0;
    -webkit-border-radius: 0;
    border-radius: 0;
    -moz-box-shadow: none;
    -webkit-box-shadow: none;
    box-shadow: none;
}

.header h1 {
    float: left;
    margin: 0;
    text-align: left;
}

.header a.brand {
    display: inline-block;
    text-indent: -9999px;
    width: 280px;
}
```

```
    height: 63px;
    padding: 30px 0;
    background: url(../img/logo.png) 20px center no-repeat;
}

.header ul.nav {
    font-size: 14px;
    text-transform: uppercase;
}

.header ul.nav li a {
    padding: 30px 20px 10px 20px;
    color: #9C9C9C;
    text-shadow: none;
}

.header ul.nav li.current-page a {
    padding-top: 25px;
    border-top: 5px solid #206489;
    background: #f8f8f8;
}

.header ul.nav li a:hover {
    background: #206489;
    color: #fff;
}

.header ul.nav li a i {
    line-height: 35px;
    color: #aaa;
}

.header ul.nav li a:hover i { color: #fff; }

/* ----- Slider ----- */

.slider {
    margin: 0 auto;
    background: #f8f8f8 url(../img/pattern.jpg) left top
repeat;
    -moz-box-shadow:
        0 5px 15px 0 rgba(0,0,0,.05) inset,
        0 -5px 15px 0 rgba(0,0,0,.05) inset;
    -webkit-box-shadow:
        0 5px 15px 0 rgba(0,0,0,.05) inset,
        0 -5px 15px 0 rgba(0,0,0,.05) inset;
    box-shadow:
```

```
    0 5px 15px 0 rgba(0,0,0,.05) inset,  
    0 -5px 15px 0 rgba(0,0,0,.05) inset;  
}  
  
.flexslider {  
    margin-top: 45px;  
    margin-bottom: 55px;  
    border: 6px solid #fff;  
    -moz-border-radius: 0;  
    -webkit-border-radius: 0;  
    border-radius: 0;  
    -moz-box-shadow:  
        0 5px 15px 0 rgba(0,0,0,.05),  
        0 -5px 15px 0 rgba(0,0,0,.05);  
    -webkit-box-shadow:  
        0 5px 15px 0 rgba(0,0,0,.05),  
        0 -5px 15px 0 rgba(0,0,0,.05);  
    box-shadow:  
        0 5px 15px 0 rgba(0,0,0,.05),  
        0 -5px 15px 0 rgba(0,0,0,.05);  
}  
  
.flex-caption {  
    position: absolute;  
    bottom: 20px;  
    max-width: 920px;  
    padding: 10px 20px;  
    margin: 0;  
    background: #1d1d1d; /* browsers that don't support  
rgba */  
    background: rgba(0, 0, 0, .7);  
    font-size: 14px;  
    line-height: 24px;  
    color: #eaeaea;  
    text-align: left;  
    font-style: italic;  
}  
  
/* ----- Presentation ----- */  
  
.presentation {  
    margin-top: 30px;  
}  
  
.presentation h2 {  
    font-family: 'CopperPlate', normal;  
    font-size: 18px;
```

```
    color: #5d5d5d;
}

.presentation p {
    font-size: 18px;
    font-style: italic;
}

/* ----- What we do ----- */

.what-we-do {
    margin-top: 50px;
}

.what-we-do .service {
    padding-bottom: 23px;
    background: #f8f8f8;
    border-bottom: 2px solid #206489;
}

.what-we-do .service:hover {
    box-shadow:
        0 5px 15px 0 rgba(0,0,0,.05),
        0 1px 25px 0 rgba(0,0,0,.05) inset,
        0 -1px 25px 0 rgba(0,0,0,.05) inset;
    -o-transition: all .5s;
    -moz-transition: all .5s;
    -webkit-transition: all .5s;
    -ms-transition: all .5s;
}

.what-we-do .service .icon-awesome {
    margin-top: 15px;
    font-size: 50px;
    line-height: 50px;
    color: #5d5d5d;
}

.what-we-do .service h4 {
    margin-top: 5px;
    font-family: 'Droid Sans', Helvetica, Arial, sans-
serif;
    font-size: 14px;
    color: #5d5d5d;
    text-transform: uppercase;
    text-shadow: 0 1px 0 rgba(255,255,255,.7);
}
```

```
.what-we-do .service p {
    padding-bottom: 10px;
    line-height: 24px;
}

.what-we-do .service a {
    padding: 5px 22px;
    background: #206489;
    color: #fff;
    font-style: italic;
    text-decoration: none;
    -moz-box-shadow:
        0 1px 25px 0 rgba(0,0,0,.05) inset,
        0 -1px 25px 0 rgba(0,0,0,.05) inset;
    -webkit-box-shadow:
        0 1px 25px 0 rgba(0,0,0,.05) inset,
        0 -1px 25px 0 rgba(0,0,0,.05) inset;
    box-shadow:
        0 1px 25px 0 rgba(0,0,0,.05) inset,
        0 -1px 25px 0 rgba(0,0,0,.05) inset;
}

.what-we-do .service a:hover {
    -moz-box-shadow: none;
    -webkit-box-shadow: none;
    box-shadow: none;
}

.what-we-do .service a:active {
    -moz-box-shadow:
        0 5px 10px 0 rgba(0,0,0,.15) inset,
        0 -1px 25px 0 rgba(0,0,0,.05) inset;
    -webkit-box-shadow:
        0 5px 10px 0 rgba(0,0,0,.15) inset,
        0 -1px 25px 0 rgba(0,0,0,.05) inset;
    box-shadow:
        0 5px 10px 0 rgba(0,0,0,.15) inset,
        0 -1px 25px 0 rgba(0,0,0,.05) inset;
}

/* ----- Portfolio ----- */

.portfolio {
    margin-top: 50px;
}
```

```
.portfolio-title {
  background: url(../img/line.png) left center repeat-x;
}

.portfolio-title h3 {
  width: 220px;
  margin: 0 auto;
  background: #fff;
  font-family: 'Lobster', cursive;
  font-size: 24px;
  color: #5d5d5d;
}

.portfolio .work {
  margin-top: 40px;
  padding-bottom: 20px;
  background: #f8f8f8;
  border-bottom: 2px solid #206489;
}

.portfolio .work:hover img {
  opacity: 0.7;
  -o-transition: all .3s;
  -moz-transition: all .3s;
  -webkit-transition: all .3s;
  -ms-transition: all .3s;
}

.portfolio .work:hover {
  box-shadow:
    0 5px 15px 0 rgba(0,0,0,.05),
    0 1px 25px 0 rgba(0,0,0,.05) inset,
    0 -1px 25px 0 rgba(0,0,0,.05) inset;
  -o-transition: all .5s;
  -moz-transition: all .5s;
  -webkit-transition: all .5s;
  -ms-transition: all .5s;
}

.portfolio .work .icon-awesome {
  margin-top: 15px;
  font-size: 22px;
  line-height: 22px;
}

.portfolio .work .icon-awesome a {
  display: inline-block;
  padding: 5px 9px;
}
```

```
background: #206489;
color: #fff;
-moz-border-radius: 19px;
-webkit-border-radius: 19px;
border-radius: 19px;
-moz-box-shadow:
    0 1px 25px 0 rgba(0,0,0,.05) inset,
    0 -1px 25px 0 rgba(0,0,0,.05) inset;
-webkit-box-shadow:
    0 1px 25px 0 rgba(0,0,0,.05) inset,
    0 -1px 25px 0 rgba(0,0,0,.05) inset;
box-shadow:
    0 1px 25px 0 rgba(0,0,0,.05) inset,
    0 -1px 25px 0 rgba(0,0,0,.05) inset;
}

.portfolio .work .icon-awesome a:hover {
background: #5d5d5d;
-moz-box-shadow: none;
-webkit-box-shadow: none;
box-shadow: none;
}

.portfolio .work .icon-awesome a:active {
-moz-box-shadow:
    0 5px 10px 0 rgba(0,0,0,.15) inset,
    0 -1px 25px 0 rgba(0,0,0,.05) inset;
-webkit-box-shadow:
    0 5px 10px 0 rgba(0,0,0,.15) inset,
    0 -1px 25px 0 rgba(0,0,0,.05) inset;
box-shadow:
    0 5px 10px 0 rgba(0,0,0,.15) inset,
    0 -1px 25px 0 rgba(0,0,0,.05) inset;
}

.portfolio .work h4 {
margin-top: 20px;
font-family: 'Droid Sans', Helvetica, Arial, sans-
serif;
font-size: 14px;
color: #5d5d5d;
text-transform: uppercase;
text-shadow: 0 1px 0 rgba(255,255,255,.7);
}

.portfolio .work p {
line-height: 24px;
```

```
        font-style: italic;
    }

/* ----- Testimonials ----- */

.testimonials {
    margin-top: 50px;
    padding-bottom: 50px;
}

.testimonials-title {
    background: url(../img/line.png) left center repeat-x;
}

.testimonials-title h3 {
    width: 180px;
    margin: 0 auto;
    background: #fff;
    font-family: 'Lobster', cursive;
    font-size: 24px;
    color: #5d5d5d;
}

.testimonial-list {
    margin-top: 30px;
    text-align: left;
}

.testimonial-list img {
    float: left;
    margin: 10px 0 0 60px;
    border: 3px solid #eaeaea;
}

.testimonial-list p {
    padding: 0 60px 0 150px;
    font-size: 14px;
    line-height: 30px;
    font-style: italic;
}

.testimonial-list .nav-tabs {
    width: 200px;
    float: right;
    border: 0;
}
```



```
.testimonial-list .nav-tabs li {
    margin-right: 6px;
}

.testimonial-list .nav-tabs li a {
    width: 12px;
    height: 12px;
    padding: 0;
    background: #eaeaea;
    border: 0;
    -moz-border-radius: 0;
    -webkit-border-radius: 0;
    border-radius: 0;
}

.testimonial-list .nav-tabs li a:hover { border: 0;
background: #ddd; }
.testimonial-list .nav-tabs li.active a { background:
#206489; }

/* ----- Footer ----- */

footer {
    margin: 0 auto;
    padding-bottom: 10px;
    background: #f8f8f8 url(..img/pattern.jpg) left top
repeat;
    -moz-box-shadow: 0 5px 15px 0 rgba(0,0,0,.05) inset;
    -webkit-box-shadow: 0 5px 15px 0 rgba(0,0,0,.05) inset;
    box-shadow: 0 5px 15px 0 rgba(0,0,0,.05) inset;
}

footer .widget {
    margin-top: 20px;
    text-align: left;
}

footer .widget h4 {
    margin-top: 20px;
    font-family: 'Droid Sans', Helvetica, Arial, sans-
serif;
    font-size: 14px;
    color: #5d5d5d;
    text-transform: uppercase;
    text-shadow: 0 1px 0 rgba(255,255,255,.7);
}
```

```
footer .widget p {
    line-height: 24px;
}

footer .widget i {
    padding-right: 7px;
}

/* Twitter feed */
.show-tweets {
    margin: 0;
    overflow-y: hidden;
}

.tweet_list {
    height: 10em;
    margin: 0;
    padding: 0;
    overflow-y: hidden;
    list-style: none;
}

.tweet_list li {
    height: 100%;
    overflow-y: auto;
    overflow-x: hidden;
    list-style-type: none;
    line-height: 24px;
}

.tweet_list .tweet_avatar {
    float: left;
}

.tweet_list .tweet_avatar img {
    vertical-align: middle;
}

/* Flickr feed */
.flickr-feed {
    margin: 16px 0 0 0;
    overflow: hidden
}

.flickr-feed li {
    float: left;
    padding: 0 4px 4px 0;
    list-style: none;
```

```
}

.flickr-feed li img {
    width: 50px;
    border: 2px solid #eaeaea;
}

.flickr-feed a:hover {
    opacity: 0.7;
}

footer .footer-border {
    margin-top: 30px;
    border-top: 1px dashed #ddd;
}

footer .copyright {
    margin-top: 15px;
    text-align: left;
}

footer .social {
    margin-top: 10px;
    text-align: right;
}

footer .social a { display: inline-block; width: 24px;
height: 24px; margin: 0 0 0 8px; vertical-align: middle; }

footer .social a.twitter { background: url(../img/social-
icons/twitter.png) left bottom no-repeat; }
footer .social a.dribbble { background: url(../img/social-
icons/dribbble.png) left bottom no-repeat; }
footer .social a.rss { background: url(../img/social-
icons/rss.png) left bottom no-repeat; }
footer .social a.pinterest { background: url(../img/social-
icons/pinterest.png) left bottom no-repeat; }
footer .social a.flickr { background: url(../img/social-
icons/flickr.png) left bottom no-repeat; }
footer .social a.forrst { background: url(../img/social-
icons/forrst.png) left bottom no-repeat; }
footer .social a.vimeo { background: url(../img/social-
icons/vimeo.png) left bottom no-repeat; }
footer .social a.linkedin { background: url(../img/social-
icons/linkedin.png) left bottom no-repeat; }
footer .social a.facebook { background: url(../img/social-
icons/facebook.png) left bottom no-repeat; }
```

```
footer .social a.email { background: url(../img/social-
icons/email.png) left bottom no-repeat; }
footer .social a.github { background: url(../img/social-
icons/github.png) left bottom no-repeat; }
footer .social a.behance { background: url(../img/social-
icons/behance.png) left bottom no-repeat; }
footer .social a.googleplus { background:
url(../img/social-icons/googleplus.png) left bottom no-
repeat; }
footer .social a.youtube { background: url(../img/social-
icons/youtube.png) left bottom no-repeat; }
footer .social a.skype { background: url(../img/social-
icons/skype.png) left bottom no-repeat; }
footer .social a.tumblr { background: url(../img/social-
icons/tumblr.png) left bottom no-repeat; }

footer .social a:hover { background-position: left top; }

/* ----- Page title ----- */

.page-title {
    margin: 0 auto;
    padding: 30px 0 35px 0;
    background: #f8f8f8 url(../img/pattern.jpg) left top
repeat;
    -moz-box-shadow:
        0 5px 15px 0 rgba(0,0,0,.05) inset,
        0 -5px 15px 0 rgba(0,0,0,.05) inset;
    -webkit-box-shadow:
        0 5px 15px 0 rgba(0,0,0,.05) inset,
        0 -5px 15px 0 rgba(0,0,0,.05) inset;
    box-shadow:
        0 5px 15px 0 rgba(0,0,0,.05) inset,
        0 -5px 15px 0 rgba(0,0,0,.05) inset;
    text-align: left;
}

.page-title h2 {
    display: inline;
    margin-left: 10px;
    font-family: 'Lobster', cursive;
    font-size: 24px;
    color: #5d5d5d;
    text-shadow: 0 1px 0 rgba(255, 255, 255, .7);
    vertical-align: middle;
}
```

```
.page-title p {
    display: inline;
    margin-left: 5px;
    font-size: 14px;
    font-style: italic;
    vertical-align: middle;
}

.page-title-icon {
    margin-left: 20px;
    font-size: 46px;
    color: #ccc;
    vertical-align: middle;
}

/***** ----- ABOUT PAGE ----- *****/

/* ----- About us text ----- */

.about-us {
    margin-top: 20px;
}

.about-us-text {
    padding: 10px 0;
    text-align: left;
}

.about-us-text h4 {
    margin-top: 25px;
    padding: 0 20px;
    font-family: 'Droid Sans', Helvetica, Arial, sans-
serif;
    font-size: 16px;
    color: #5d5d5d;
    text-transform: uppercase;
    text-shadow: 0 1px 0 rgba(255,255,255,.7);
}

.about-us-text p {
    padding: 0 20px;
    line-height: 28px;
    font-size: 13px;
}

/* ----- Meet our team ----- */
```

```
.team {
    margin-top: 30px;
}

.team-title {
    background: url(../img/line.png) left center repeat-x;
}

.team-title h3 {
    width: 220px;
    margin: 0 auto;
    background: #fff;
    font-family: 'Lobster', cursive;
    font-size: 24px;
    color: #5d5d5d;
}

.team-text {
    margin-top: 40px;
    padding-bottom: 20px;
    background: #f8f8f8;
    border-bottom: 2px solid #206489;
}

.team-text:hover img {
    opacity: 0.7;
    -o-transition: all .3s;
    -moz-transition: all .3s;
    -webkit-transition: all .3s;
    -ms-transition: all .3s;
}

.team-text:hover {
    box-shadow:
        0 5px 15px 0 rgba(0,0,0,.05),
        0 1px 25px 0 rgba(0,0,0,.05) inset,
        0 -1px 25px 0 rgba(0,0,0,.05) inset;
    -o-transition: all .5s;
    -moz-transition: all .5s;
    -webkit-transition: all .5s;
    -ms-transition: all .5s;
}

.team-text .social-links {
    margin-top: 15px;
}

.team-text .social-links a { display: inline-block; width:
```

```
24px; height: 24px; margin: 0 4px; vertical-align: middle;
}

.team-text .social-links a.twitter { background:
url(..../img/social-icons/twitter.png) left top no-repeat; }
.team-text .social-links a.dribbble { background:
url(..../img/social-icons/dribbble.png) left top no-repeat; }
.team-text .social-links a.pinterest { background:
url(..../img/social-icons/pinterest.png) left top no-repeat;
}
.team-text .social-links a.flickr { background:
url(..../img/social-icons/flickr.png) left top no-repeat; }
.team-text .social-links a.forrst { background:
url(..../img/social-icons/forrst.png) left top no-repeat; }
.team-text .social-links a.vimeo { background:
url(..../img/social-icons/vimeo.png) left top no-repeat; }
.team-text .social-links a.linkedin { background:
url(..../img/social-icons/linkedin.png) left top no-repeat; }
.team-text .social-links a.facebook { background:
url(..../img/social-icons/facebook.png) left top no-repeat; }
.team-text .social-links a.email { background:
url(..../img/social-icons/email.png) left top no-repeat; }
.team-text .social-links a.behance { background:
url(..../img/social-icons/behance.png) left top no-repeat; }
.team-text .social-links a.googleplus { background:
url(..../img/social-icons/googleplus.png) left top no-repeat;
}
.team-text .social-links a.youtube { background:
url(..../img/social-icons/youtube.png) left top no-repeat; }
.team-text .social-links a.skype { background:
url(..../img/social-icons/skype.png) left top no-repeat; }
.team-text .social-links a.tumblr { background:
url(..../img/social-icons/tumblr.png) left top no-repeat; }

.team-text .social-links a:hover { background-position:
left bottom; }

.team-text h4 {
margin-top: 20px;
font-family: 'Droid Sans', Helvetica, Arial, sans-
serif;
font-size: 14px;
color: #5d5d5d;
text-transform: uppercase;
text-shadow: 0 1px 0 rgba(255,255,255,.7);
}
```

```
.team-text p {
    line-height: 24px;
    font-style: italic;
}

/***** ----- CONTACT PAGE ----- *****/

/* ----- Form ----- */

.contact-us {
    margin-top: 20px;

    text-align: left;
}

.contact-us h4 {
    margin-top: 25px;
    padding: 0 20px;
    font-family: 'Droid Sans', Helvetica, Arial, sans-
serif;
    font-size: 16px;
    color: #5d5d5d;
    text-transform: uppercase;
    text-shadow: 0 1px 0 rgba(255,255,255,.7);
}

.contact-us p {
    padding: 0 20px;
    line-height: 28px;
    font-size: 13px;
}

.contact-form {
    padding: 10px 0;
}

.contact-form p {
    margin-top: 15px;
}

.contact-us form {
    margin-top: 25px;
    padding: 0 20px;
}

.form input, .contact-us form textarea {
    width: 90%;
```



```
height: 12px;  
border: 1px solid #ddd;  
-moz-border-radius: 0;  
-webkit-border-radius: 0;  
border-radius: 0;  
-moz-box-shadow: none;  
-webkit-box-shadow: none;  
box-shadow: none;  
font-family: 'Open Sans', Helvetica, Arial, sans-serif;  
color: #888;  
font-size: 12px;  
}
```

```
.textarea {  
    height: 160px;  
}
```

```
.button {  
    width: 120px;  
    height: 30px;  
    margin-top: 15px;  
    background: #206489;  
    border: 0;  
    font-family: 'Open Sans', Helvetica, Arial, sans-serif;  
    font-size: 13px;  
    color: #fff;  
    -moz-box-shadow:  
        0 1px 25px 0 rgba(0,0,0,.05) inset,  
        0 -1px 25px 0 rgba(0,0,0,.05) inset;  
    -webkit-box-shadow:  
        0 1px 25px 0 rgba(0,0,0,.05) inset,  
        0 -1px 25px 0 rgba(0,0,0,.05) inset;  
    box-shadow:  
        0 1px 25px 0 rgba(0,0,0,.05) inset,  
        0 -1px 25px 0 rgba(0,0,0,.05) inset;  
    -o-transition: all .3s;  
    -moz-transition: all .3s;  
    -webkit-transition: all .3s;  
    -ms-transition: all .3s;  
}
```

```
.button:hover {  
    -moz-box-shadow: none;  
    -webkit-box-shadow: none;  
    box-shadow: none;  
}
```

```
.button:active {
    -moz-box-shadow:
        0 5px 10px 0 rgba(0,0,0,.15) inset,
        0 -1px 25px 0 rgba(0,0,0,.05) inset;
    -webkit-box-shadow:
        0 5px 10px 0 rgba(0,0,0,.15) inset,
        0 -1px 25px 0 rgba(0,0,0,.05) inset;
    box-shadow:
        0 5px 10px 0 rgba(0,0,0,.15) inset,
        0 -1px 25px 0 rgba(0,0,0,.05) inset;
}

.contact-us form label {
    margin-top: 10px;
    font-size: 13px;
}

.contact-us form input:-moz-placeholder, .contact-us form
textarea:-moz-placeholder { color: #ccc; }
.contact-us form input:-ms-input-placeholder, .contact-us
form textarea:-ms-input-placeholder { color: #ccc; }
.contact-us form input::-webkit-input-placeholder,
.contact-us form textarea::-webkit-input-placeholder {
color: #ccc; }

/* ----- Google maps ----- */

.map {
    margin: 20px 20px 40px 20px;
    height: 300px;
    border: 5px solid #f8f8f8;
}

/***** ----- SERVICES PAGE ----- *****/

/* ----- Services full width text ----- */

.services-full-width {
    margin-top: 20px;
}

.services-full-width-text {
    padding: 10px 0 0 0;
    text-align: left;
}
```

```
.services-full-width-text h4 {
    margin-top: 25px;
    padding: 0 20px;
    font-family: 'Droid Sans', Helvetica, Arial, sans-
serif;
    font-size: 16px;
    color: #5d5d5d;
    text-transform: uppercase;
    text-shadow: 0 1px 0 rgba(255,255,255,.7);
}

.services-full-width-text p {
    padding: 0 20px;
    line-height: 28px;
    font-size: 13px;
}

/* ----- Services half width text ----- */

.services-half-width {
    margin-top: 20px;
}

.services-half-width-text {
    padding: 10px 0;
    text-align: left;
}

.services-half-width-text h4 {
    margin-top: 25px;
    padding: 0 20px;
    font-family: 'Droid Sans', Helvetica, Arial, sans-
serif;
    font-size: 16px;
    color: #5d5d5d;
    text-transform: uppercase;
    text-shadow: 0 1px 0 rgba(255,255,255,.7);
}

.services-half-width-text p {
    padding: 0 20px;
    line-height: 28px;
    font-size: 13px;
}

/* ----- Call to action ----- */

.call-to-action {
```

```
margin-top: 20px;
padding-bottom: 50px;
}

.call-to-action-text {
padding: 25px 0 20px 0;
text-align: left;
background: #f8f8f8;
overflow: hidden;
}

.call-to-action-text:hover {
box-shadow:
    0 3px 10px 0 rgba(0,0,0,.05),
    0 1px 25px 0 rgba(0,0,0,.05) inset,
    0 -1px 25px 0 rgba(0,0,0,.05) inset;
-o-transition: all .5s;
-moz-transition: all .5s;
-webkit-transition: all .5s;
-ms-transition: all .5s;
}

.call-to-action-text .ca-text, .call-to-action-text .ca-
button {
float: left;
padding: 0 0 0 35px;
line-height: 30px;
font-size: 18px;
font-style: italic;
}

.call-to-action-text .ca-button {
float: right;
padding: 0 35px 0 0;
}

.call-to-action-text .ca-button a {
padding: 5px 22px;
background: #206489;
color: #fff;
text-decoration: none;
-moz-box-shadow:
    0 1px 25px 0 rgba(0,0,0,.05) inset,
    0 -1px 25px 0 rgba(0,0,0,.05) inset;
-webkit-box-shadow:
    0 1px 25px 0 rgba(0,0,0,.05) inset,
    0 -1px 25px 0 rgba(0,0,0,.05) inset;
box-shadow:
```

```
    0 1px 25px 0 rgba(0,0,0,.05) inset,  
    0 -1px 25px 0 rgba(0,0,0,.05) inset;  
}  
  
.call-to-action-text .ca-button a:hover {  
  -moz-box-shadow: none;  
  -webkit-box-shadow: none;  
  box-shadow: none;  
}  
  
.call-to-action-text .ca-button a:active {  
  -moz-box-shadow:  
    0 5px 10px 0 rgba(0,0,0,.15) inset,  
    0 -1px 25px 0 rgba(0,0,0,.05) inset;  
  -webkit-box-shadow:  
    0 5px 10px 0 rgba(0,0,0,.15) inset,  
    0 -1px 25px 0 rgba(0,0,0,.05) inset;  
  box-shadow:  
    0 5px 10px 0 rgba(0,0,0,.15) inset,  
    0 -1px 25px 0 rgba(0,0,0,.05) inset;  
}  
  
/***** ----- PORTFOLIO PAGE ----- *****/  
  
.portfolio-page {  
  margin-top: 20px;  
  padding-bottom: 50px;  
}  
  
.portfolio-page h4.filter-portfolio {  
  margin-top: 35px;  
  padding: 0 20px;  
  font-family: 'Droid Sans', Helvetica, Arial, sans-  
serif;  
  font-size: 16px;  
  color: #5d5d5d;  
  text-align: left;  
  text-transform: uppercase;  
  text-shadow: 0 1px 0 rgba(255,255,255,.7);  
}  
  
ul.portfolio-img {  
  margin: 0;  
  overflow: hidden;  
}  
  
ul.portfolio-img li {
```

```
    list-style: none;
}

.filter-portfolio a { color: #5d5d5d; text-decoration:
none; }
.filter-portfolio a:hover { color: #206489; text-
decoration: none; }

.filter-portfolio a#active-imgs { color: #206489; }
.filter-portfolio a#active-imgs:hover { color: #5d5d5d; }

/* ----- Media queries ----- */

@media (min-width: 980px) and (max-width: 1200px) {

    .flex-caption {
        max-width: 700px;
    }

    .what-we-do .service p, .portfolio .work p {
        padding-left: 10px;
        padding-right: 10px;
    }

    .call-to-action-text {
        padding-bottom: 30px;
    }

    .call-to-action-text .ca-text {
        padding: 0 35px;
    }

    .call-to-action-text .ca-button {
        margin-top: 10px;
    }

}

@media (min-width: 768px) and (max-width: 979px) {

    .header ul.nav li a {
        padding: 15px 20px 15px 20px;
        font-weight: normal;
        text-align: left;
        -moz-border-radius: 0;
    }
}
```

```
        -webkit-border-radius: 0;
        border-radius: 0;
    }

    .header ul.nav li.current-page a {
        padding-top: 15px;
    }

    .header ul.nav li a i, .header ul.nav li a br {
        display: none;
    }

    .flex-caption {
        max-width: 500px;
    }

    .what-we-do .service p, .portfolio .work p {
        padding-left: 10px;
        padding-right: 10px;
    }

    .call-to-action-text {
        padding-bottom: 30px;
    }

    .call-to-action-text .ca-text {
        padding: 0 35px;
    }

    .call-to-action-text .ca-button {
        margin-top: 10px;
    }
}

@media (max-width: 767px) {

    body {
        padding-left: 0;
        padding-right: 0;
    }

    .slider, .what-we-do, .portfolio {
        padding: 0 20px;
    }

    .what-we-do {
        margin-top: 30px;
    }
}
```

```
}

.header ul.nav li a {
  padding: 15px 20px 15px 20px;
  font-weight: normal;
  text-align: left;
  -moz-border-radius: 0;
  -webkit-border-radius: 0;
  border-radius: 0;
}

.header ul.nav li.current-page a {
  padding-top: 15px;
}

.header ul.nav li a i, .header ul.nav li a br {
  display: none;
}

.flex-caption {
  display: none;
}

.presentation, footer, .testimonials {
  padding-left: 20px;
  padding-right: 20px;
}

.presentation p {
  line-height: 30px;
}

.what-we-do .service p, .portfolio .work p {
  padding-left: 10px;
  padding-right: 10px;
}

.what-we-do .service .icon-awesome {
  padding-top: 10px;
}

.page-title p {
  display: block;
  margin-top: 10px;
  margin-left: 20px;
}

.call-to-action-text {
```



```
        padding-bottom: 30px;
    }

    .call-to-action-text .ca-text {
        padding: 0 35px;
    }

    .call-to-action-text .ca-button {
        margin-top: 10px;
    }

    .portfolio-page {
        padding-bottom: 50px;
    }

    .tweet_list {
        height: 6em;
    }
}

@media (max-width: 480px) {

    .tweet_list {
        height: 10em;
    }
}
```