**Final Report**

Museum of Discovery and Science Mobile Application:

MODS Poll

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Mobile Applications for Google’s Android

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**I. Abstract**

The Museum of Discovery and Science in Fort Lauderdale hopes to be on the forefront of the technological era. The hope to employ apps to enhance the experience visitors receive while at their museum. The museum stated that one of their issues they would like to have solved is that parents do not know what exhibits would best fit their children. Since many different age groups of children visit the museum, it is essential that the different age groups receive different attention. The goal of this mobile application is to give parents and teachers a list of popular exhibits for a specific age group through the results of an in-app survey. This project will not only help confused parents and teachers find exhibits that will enhance the learning process of the children but also give the museum a resource to look into to show them which exhibits may need enhancement to target specific age ranges to make the museum a truly delightful experience for everyone.

**II. Background**

When representatives from the Museum of Discovery and Science came to talk to our Mobile Applications for Google’s Android class, they made it clear that parents and teachers did not know the best exhibits to bring their children. They also stated that different age groups of children liked different exhibits. So, to follow that theme, we decided to create an application that would address these concerns. We immediately thought of an application that would ask visitors which exhibits their children enjoyed the most in order to collect data for future visitors to use. The new visitors could use the mobile app to find out which exhibits their child would enjoy. We felt that the best way to find out which exhibits were favored by different aged children would be to simply ask them. That is the way our app development emerged.

Our app was intended to be user-friendly and simple to navigate through. For this purpose, we made the app very straight forward in its user interface and prompts. This makes our application very sleek and appealing to use. We designed this app with children in mind. Our target audience is parents and teachers. However, indirectly this app is for children. We intend for parents and teachers to use this app to help their children stay involved in their learning. When teachers and parents use the app to tailor make their trip to the Museum of Discovery and Science, they are choosing exhibits that are decided by children like their own to be the most enjoyable. By staying interested in the information presented, the children will absorb and retain more knowledge.

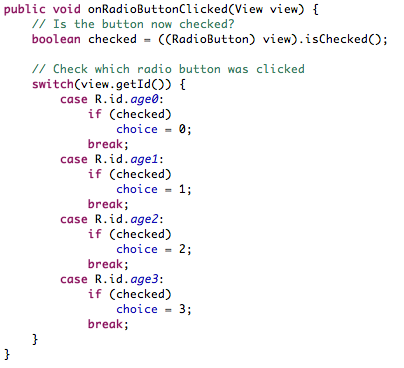
We also intend the Museum of Discovery and Science to be able to access the data we collect from the surveys in order to analyze the results. We attempted to make the database a simple representation of the opinions of the museum visitors. We expect the data to be used to further enhance the exhibits. After the renovation that was recently completed at the Museum of Discovery and Science, the exhibits may need some improvement to attract all age groups. Our app strives to help the museum staff attain attention from children of all ages.

**III. Methods**

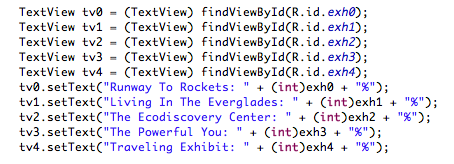
We used eclipse to develop the application, and a nexus 7 to test the application. To run the application, the minimum version requirement is API 11, and but the target version is 19.

Our MODS Poll app is meant to be simple and easy to navigate. Therefore, for our user interface, we only used many text-views, buttons, Radio Buttons, spinners, and dialogs. All classes but the Result class contain two buttons, which each bring the user to different activities. Each button has a method that is written in java, but is called in the xml with the attribute, android:onClick . In order for the dialogue to have a close app button, when each button is called, it finishes the past activity, making only one activity open at a time.

Similarly, for the Radio-Buttons, we used and OnRadioButtonClicked() method in the java, that is called in the xml. Within the method, there is a switch statement that saves which choice the user selected into a variable, as shown in the code below. We used a similar tactic for the spinner, but we used a spinner listener, rather than calling the method through the xml.



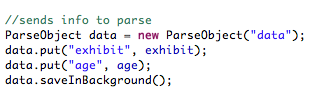
Most of the text-views are hardcoded in the xml, but in the Result activity, the text view is changed through the java. This allows the text to be changed based upon which age the user selects.



Furthermore in percentages in the result class are stored into doubles as a bug in the code displayed 0.0 whenever the values where integers.

Macintosh HD:Users:dfeldan:Desktop:Screen Shot 2014-06-30 at 5.50.38 PM.png

To store all the data, we used Parse.com. In the leaving class, we created a Parse Object, which puts data onto parse like shown in the picture below.



In order to retrieve the data in the Result.java class, we created a Parse Query that retrieves only the data with the selected age. It then calculates the percentage of how many kids like each exhibit. The code for this is shown in Appendix A.

**IV. Results**

Appendix B shows the screen that appears when the app is launched.

Appendix C shows the Entering Screen which is displayed when the “Entering” button is tapped on the menu screen.

Appendix D shows the Results Screen which displays the most popular exhibits for the selected age group on the Entering Screen.

Appendix E shows the Leaving Screen which is displayed when the “Leaving” button is tapped on the menu screen.

The main menu has buttons named Entering and Leaving (made in Photoshop) which correspond to whether the user just arrived at the Museum of Discovery and Science or if the user is now exiting the museum. When the “Entering” button is pressed the user is taken to the Entering Screen where the user is prompted to enter the age of the child of interest. When the user clicks submit on this screen, he/she is taken to the Results Screen which displays the most popular exhibits for the age submitted. The data displayed is found through the surveys that are submitted in the Leaving Screen. The data is downloaded from the database at Parse.comand is given in percentages1.

The Leaving Screen is accessed when the “Leaving” button is tapped on at the Menu Screen. The Leaving Screen prompts the user to enter the age group of the child from which the survey will be taken and to click the exhibit the child found the most interesting on their visit. When the user clicks the “Submit” button on the Leaving Screen, the data entered is uploaded to the database on Parse.com and can now be used to give information on the aforementioned Results Screen.

The background pictures came out very nicely and the text is clear and easily read. All functions we intended to apply are able to use. The app as a whole is exactly the idea we had in mind. Each page is easy to find and there are no confusing buttons or directions.

1These percentages are found by dividing the number of children in the age group who voted for each exhibit respectively by the total number of children in that age group who participated in the survey

**V. Discussion**

Working in a group comes with many challenges. You have to get to know the people and learn to work with them. This could take 10 minutes or 10 years. Thankfully, our group was able to put our differences aside and accomplish the task at hand. This project came with the same thing every project has; issues. One of our biggest problems was having to learn Processing and being able to implement that into our app. Luckily, with guidance from Dr. Shankar and our TA’s we were able to push through this challenge. Our app does what our original idea was. The only thing we could improve on is a better interface and perhaps innovate more and add to the app. Another problem was sorting out all of the Parse code and database integration. This was the first time any of us had heard of Parse, but with in-depth tutorials we got it done.

**VI. Conclusion**

MODS Poll not only accomplishes our goals, but is also versatile for improvement and expansion. Integration with social networks would allow people to post and recommend their favorite exhibits for all to see. A better UI would give people a better app experience. The app gives parents something invaluable. It gives them a starting spot which was previous defined as the first thing that caught their eye. The app has the ability to improve the experience of the user and his/her child at the museum. In the end, we finished what we started and completed what we wanted.

**VII. References**

Exhibits. (n.d.). Retrieved from Museum of Discovery and Science: http://www.mods.org/

**VIII. Appendices**

***Appendix A: MODS Poll Code***

This is the code that we used to run our application, MODS Poll.

***Appendix B: Main Menu Screen***

This is the main screen which appears when the user launches the application from their android device. It has two buttons: Entering and Leaving. They route the user to their screens, Appendix C and Appendix E, respectively.

***Appendix C: Entering Screen***

This screen is displayed when the user taps on the “Entering” button located on the Main Menu Screen. It prompts the user to select the age range of the child they wish to obtain information about.

***Appendix D: Results Screen***

This screen is accessed when the user submits the age range of the child he/she is interested in learning about on the Entering Screen. It displays the popular exhibits in the age range selected on the Entering Screen.

***Appendix E: Leaving Screen***

This screen is displayed when the user taps the “Leaving” button located on the Main Menu Screen. It prompts the user to complete a brief survey about their child’s experience at the Museum of Discovery and Science.

All of the appendices can be found in the zip folder provided with this final paper.