

Project Deliverable H: Prototype III and Customer Feedback

GNG 1103 – Engineering Design

 $Faculty\ of\ Engineering-University\ of\ Ottawa$

Team C01-1

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Abstract

The purpose of this deliverable is to reflect on prototype III and the changes made between this and prototype II. This is the final prototype before presenting the product to the client Mitch Bouchard. Feeding and testing results were integrated to give the best possible product.



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1. Introduction

In the previous deliverable, prototype II underwent development, testing, and was subject to client feedback to design the final prototype. The purpose of this deliverable is to further elaborate on prototype II as per feedback and redesign it to create prototype III.

This deliverable will be divided into three parts: Presenting Prototype III, discussing customer feedback, and setting forth objectives for the final prototype.

2. Prototype 3

2.1. UI Design

2.1.1. Home Screen

Prototype III features a changed UI with a more pleasing aesthetic to users. The green background has instead been replaced with a photo of lake with mountains in the background. The Buttons has now been replaced with images of items that would represent them. The Camera Icon takes users to the Item Scanner, the game controller takes users to games, and the Book Icon will take users to the Learn More Section.



Figure 1- Home Screen



2.1.2. Information Page

The Information Page has had the background changed to a different mountain scene than others used before. The Buttons have also been changed to leaves as also seen in the Games Page. The font has also been changed to match the Games Page. This is to keep consistency between application pages. The Sustainable Habits and Ways you can help, buttons still are not functional, but infographics for them will be added soon.



Figure 2- Information Page

2.1.3. Sorting Game

The Recycling Madness! mini game now has a total of three scenes, showcasing different locations around a household: a kitchen, a bedroom, and a study area. The buttons in the sorting game section shown in figure 3 have a picture for each corresponding location. We will further improve the figure 3 scene by adding a nice background to compliment the app's aesthetics. Dragging issues experienced in prototype II are now resolved. More items were added to the kitchen scene and the other two, which results in an approximation of ten items to sort per location. Back buttons have been added to each of the scenes to return to the sorting mini-game section.





Figure 3- Sorting Game

2.1.4. Trivia Game

This Trivia game has seen some improvements since the last deliverable. The colours have been changed to make the game more appealing. Button sizes have also changed to better accommodate various phone screens.

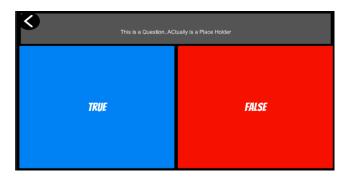


Figure 4- Trivia Game



2.2. Item Scanner

Substantial time was spent on finishing the item scanner since the last prototype. It is now connected to a permanent website which is linked to the button within the app. It is now also able to adjust to fit whichever screen the user opens the link on. Additionally, the scanner can inform the user of the item in their hand and where to properly dispose of it. Slight adjustments were also made to the scanner for esthetics, which will likely continue until design day. The item scanner is now basically finished; however, it is very simple to make adjustments as needed because the changes in the code just need to be pushed to GitHub in order to update the website. One thing that will continuously be worked on is the accuracy. In order to improve criteria, the group is going to search for a larger database of recycling materials to add to the existing ~3500 images. If this is added, it will help with the accuracy of the scanner. One important note is that since the scanner opens in a browser, the browser asks for camera access, so the app does not need to have this feature.

3. Testing

3.1. General App Features

The Application was tested using an Android Google Pixel 4. All functions of the application work well on the chosen phone. The look of the application was slightly disordered on the phone it was tested on. The screens would now stretch the size of the screen being used, but there was a distortion of what appears to be the same scene rendered over top of each other. After changing camera settings in unity and rebuilding those scenes they now display correctly to users.





Figure 5- Game Screen Pixel 4



Figure 6- Home Screen Pixel 4





Figure 7- Educational Page Pixel 4

3.2. Games

The mini game section was similarly tested with the Android Google Pixel 4. All dragging items were fully functioning (for all three scenes), and correctly sorted to its corresponding bins. Sound effects and back buttons were also noted to be working correctly. Some upper and bottom items seemed to be partially cut-off by the phone's screen, which was later adjusted in unity to fit all items into the phone screen size. The 'game over' panel for all three sorting scenes is still a work in progress to be ready for the final presentation. The three figures down below show each of the sorting locations displayed in our app.



Figure 8- Kitchen



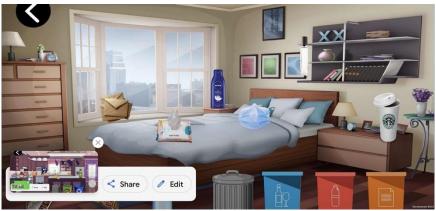


Figure 9- Bedroom



Figure 10- Office

3.3. Scanner

Since the scanner is now linked to an official website, it can be tested on all kinds of devices. So far, it has been tested on a laptop and a cell phone. After doing this test, some adjustments were made to ensure that all of the words could be readable on both kinds of devices. The scanner will also continually be checked for accuracy to ensure that the scanner is as good as possible. Other than that, the scanner is fully functional as well as an independent entity.



4. Feedback and Stopping Criteria

4.1. Feedback

Some feedback was obtained from family, friends, and lab coordinators about the different components of the app. Regarding the scanner, feedback included making things more colourful and aesthetically pleasing. Individuals also suggested that emojis would be a good addition to make the page look more welcoming. It was also mentioned that it would be ideal if the scanner was slightly more accurate. Presently, the scanner opens up the forward-facing camera, so there was also a comment about making it optional to use the other camera.

Regarding the UI system, individuals thought that the app pages looked welcoming and captured desired theme nicely. There was some feedback about making the app slightly more esthetically pleasing. The lab coordinators also mentioned that there should not be any more additions to the app in this stage of the design process, and that the sections that are already created should be focused on and perfected. All of this feedback has been taken into consideration and will be looked at in the final weeks before design day.

4.2. Stopping Criteria

Since this is the final prototype, it is important to include criteria about when an aspect of the app has been created to satisfaction. Right now, the scanner is fully functional and could be marked as completed at any time. However, it was decided that the scanner section will be considered done after the final things mentioned in this deliverable have been considered and potentially implemented. For the general app features, the app is also basically complete. Final considerations include making sure that there are no malfunctions when run on a cell phone. For the mini games,



there are a few minor kinks that need to be sorted. After these things are fixed, then the mini games will be completed to satisfaction.

5. Conclusion

In general, our application is almost done, features for our final prototype have been implemented and tested. All aspects are fully functioning, with small issues discussed in this deliverable, that will be resolved before design day.