GNG 1103

Project Deliverable H
Prototype III and Customer Feedback

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Introduction

After the completion of the previous deliverable, prototype II's feedback and suggestions for improvements, the team was able to move forward with to build a fully functional prototype III. The purpose of this deliverable is to discuss the process of building prototype III. This deliverable will discuss the third prototype, our process of finishing this prototype, customer feedback, and the final steps of the project.

Prototype III

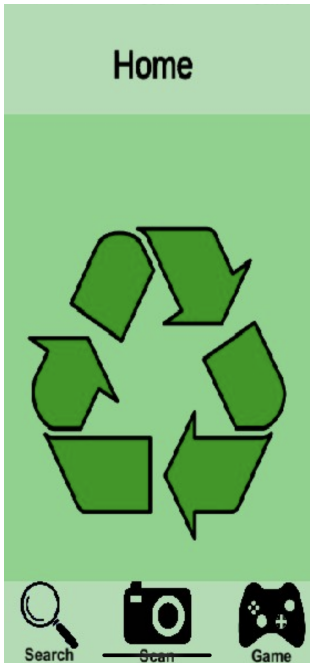


Figure 1. Home Page

The home page consists of three fully functional buttons at the bottom of the screen. Starting from the left and going right is the search, scan, and game button. Each button takes the user to another subsystem of the app.

Figure 2. Search Page

To reach this page the user clicks the search button. This page consists of two fully functional buttons. The main one "Go To Website" opens the Ottawa Waste Management search page, the other smaller one in the bottom right takes the user back to the home screen.

Figure 3. Game Homepage

To reach this page the user clicks the game button. This page consists of two fully functional buttons. The first one in the middle of the screen starts a game which consists of 60 questions, has three lifes, a score count, and a timer. The second button located at the bottom right of the screen returns the user back to the home screen.

Figure 3.1. Ingame Without Images

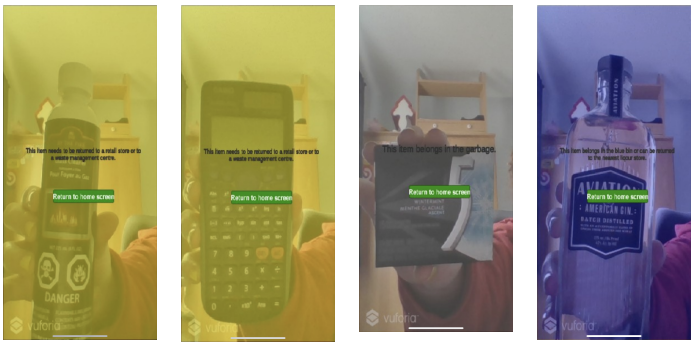
This is an example of when the game is started, there are four buttons which choices, one question, the score in the top left, number of lives in the middle, and timer on the top right. The user can return to the main page at any time by selecting the return to home button located at the bottom right of the screen.

Figure 3.2. Ingame With Images

This is the same as the above figure, but this example is one of the questions that has an image attached to the question.

Figure 4. Scan Scene

When the scan button is pressed, it opens the users camera and then the user can show the camera objects they would like to scan. When items are recognized there are a few colours that can appear, yellow means the item needs to be taken to a waste management centre, blue for blue bin, green for green bin, and grey for garbage and black bin. When the item is shown the screen will display a message about the item and which bin it should be placed in. Under the message there is a green return home button that lets the user return to the home screen. If the user wants to continue to scan more items they simply just have to remove the item from the view of the camera, then show the camera the other items. Below are examples of the screen when items are recognized.



Prototype Test Plan

Why are we doing this test?

What are the test objectives

The test objectives for the third prototype primarily consist of navigation throughout the application. This will include the users ability to switch between the various subsystems of the application using the buttons at the bottom of the page (i.e switch between the home and search page).

What is being learned or communicated with the prototype

This prototype will help us learn critical methods of programming in Unity that are ideal for connecting different programs and subsystems into one complete application.

What are the possible types of results

Similar to the first two prototypes, the types of results for this prototype will also be binary and qualitative. The binary results will refer to either “working” or “not working” and the qualitative results will refer to “how well it is working” using a scale from one to five (five being the best and one being the worst). For instance, if we are able to switch from the home page to the search page but cannot go back, the results will be “working” and will be rated a “3” in terms of functionality.

How will these results affect the decisions

The results from the test will help us work towards a solution that will allow the user to navigate through each of the subsystems with ease. Thus, each of the subsystems that cannot be accessed through the main application will be modified or improved. The decisions made will be based on our goal to have one application that has three fully functional subsystems that can be given a rating of 5/5.

What are the criteria for test success or failure

As mentioned in the types of results, the possible types of results include binary and qualitative results. For the binary results, the criteria for success would be “working” and the criteria for failure would be “not working”. Meanwhile, the criteria for success for the qualitative results would be a high rating (i.e 4/5 or 5/5) and the criteria for failure would be a low rating (i.e 1/5 or 2/5).

What is going on and how is it being done?

Prototype description

This prototype consisted of adding the scanning functionality to the home page, adding more items to the scanning database, and finalizing the layout of the app. The button on the home screen now takes the user to the scanning subsystem where they can scan different items to find which bin they go in. The layout had been altered to fit more of the original conceptual design and now flows more smoothly throughout the app. Fonts and sizing of letters were adjusted so they were readable when the app is being used on the phone. Lastly, more commonly misplaced items were added to expand the database.

Description of the testing process

The functionality and accuracy of the scanning subsystem and the overall layout of the app were tested using Unity and Unity Remote 5. First the scanning subsystem was added to the home page, it was then tested on whether the button was able to switch scenes in Unity and Remote 5. Once that was tested, the database had more items added and tested using Unity and testing if the camera was able to recognize the objects. After this, the final layout was created using feedback from the previous deliverable and looking back at the conceptual design we created. This process involved changing the aesthetics of the app and testing the layouts using Unity Remote 5 to make sure the sizing and layout was appropriate for an iphone.

What is being observed and how it is being recorded

The performance of the added subsystems, image recognition, and the layout were all tested using Unity Remote 5. These observations were then noted in a google document based on the scaling mentioned in the criteria for a successful or unsuccessful test. This information was then shared with the team using the google share option and over WhatsApp.

What materials are required and their approximate costs

Similar to deliverable G there are no costs for the current prototype III. The only materials that were needed were the Unity software, a computer, Unity remote 5, and an IOS running phone. The only foreseen costs will be publishing the app, which may be a $99 app development account to publish apps on the App Store for IOS devices.

When is it happening?

How long will the test take and what are the testing prerequisites

Testing length will depend on the system being tested. The scanning portion will take a few hours for one to two days to integrate it to the main app and test current items in the item

database. Then the addition and testing of new items that will be tested should take roughly two days to add the items and test the image recognition. Lastly, the testing of the layout should only take a few hours over the course of one to two days to fully finish the choosing colours, fonts, letter sizing, and maximizing the space used on the screen.

When are the required results

The results from this testing for prototype III are due by Sunday March 28, 2021. This is due to the deadline of both this deliverable, H. As well, it needs to be finished so the team can stay on track for the Design Day presentation of our app on April 8, 2021.

Feedback

Currently, testers have given mostly positive feedback regarding the changes made during this deliverable. The testers like the new layout of the app as it is more uniform throughout the app rather than different ideas being brought together. They have mentioned that they would like the item database to be expanded so they don't have to use the search subsystem of the app as much. Lastly, the testers had one issue with the scanning subsystem, which is they would like a button when the camera is open that allows them to return to home, rather than just when the item recognizes an item.

Conclusion

Overall this deliverable was successful, as it improved upon the second prototype and the team now has a completed third prototype. With this deliverable, the team can now add the final touches provided in the feedback section and publish the Unity project so it is a functional app before Design Day.