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GNG1103 – A.R.C.

Deliverable G Prototype 2 and Customer Feedback

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1. Introduction

In this deliverable, PolarDevs expanded on their first prototype with the addition of Augmented Reality. The group also revised the 3d models and user interface to make it more user friendly and easy to use. With a good basis of the first prototype we were able to ensure the functionality for each of the features reworked. With the augmented reality we were able to display the 3d models however, for all of our other features we have not totally fulfilled it during this phase. But, having a good basis and understanding will help Polardevs to work on this feature in the future to finish all of the functionalities of augmented reality.

2. Prototype 2 Features

2.1 3D/A.R Display

This feature allows the user to go from a 3D to Augmented Reality display so that they can view their 3D model in the real world. This has been accomplished through the use of an AR camera which was attached to the 1stPersonPlayer game object. A placement indicator was then created in order to help define a position for the 3D model to appear within a virtual space. Then, with the use of ARTap, AR Raycast Manager, and AR Plane Manager scripts, a working prototype apk was created that can be downloaded onto a user's mobile phone. However, there is also an error within the AR display, which causes 3D buildings models to randomly spawn when the screen is

provided, so further work will have to be done in order to resolve it and refine the AR

component overall, as well as design it to be able to include the use of various UI

elements.

2.2 Intuitive Interface

The intuitive interface has been updated since the first prototype. We have added new interfaces into our file. Some of which include the save file, the updated main menu, and the file with the AR component which will be the main area for users to make and change models.

2.3 Directional Controls

During the implementation of the user interface, an unexpected and unfortunate challenge had occurred. The user interface components and the directional controls could work individually, but not together. After numerous iterations of potential solutions and test prototypes the controls and user interface elements were made to work in unison with the new model.

2.4 Comprehensive Demonstration Model and Upgraded Layer Control

Another setback that has persisted during product development has been the lack of detailed building models, and in manageable sizes when provided. To address this a mock building model was constructed from scratch using Onshape. Although this was a laborious task, it allows us additional freedom and control over the model throughout the development process. The other option that was examined was deciphering the BIM file that was provided to discern which parts were which, and then find a means of reducing the files down to a more reasonable file size. This is essential when working with the average cell phone user, as space is valuable and large files can be taxing to a device that is already computing Augmented Reality. Going forward methods of utilizing the provided BIM file will be explored, and pursued when a solution has been deemed feasible. Below are some screenshots of the 3D environment where we have been developing along with the upgraded layer control interface.
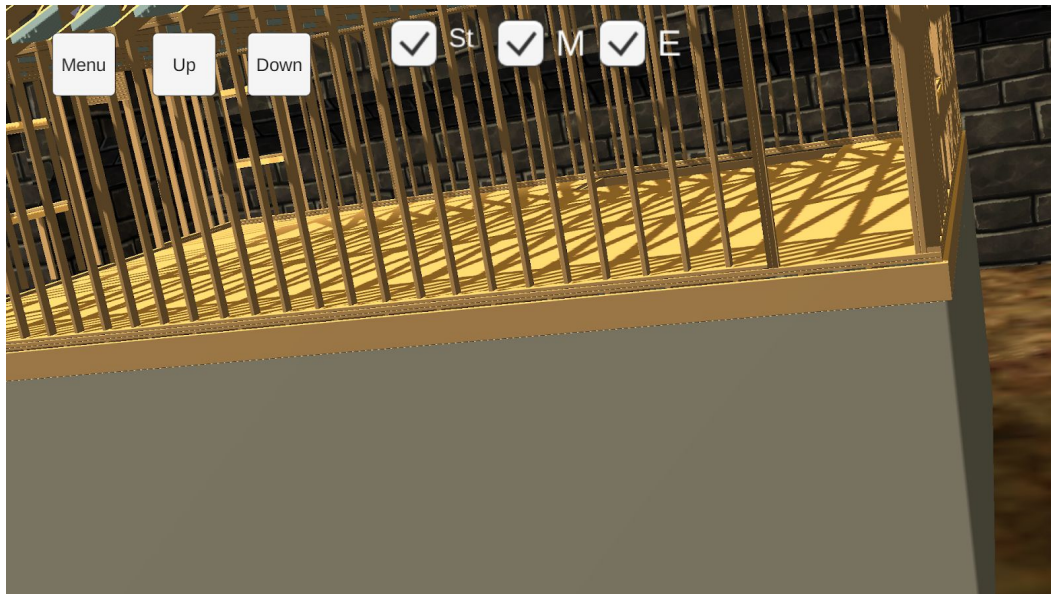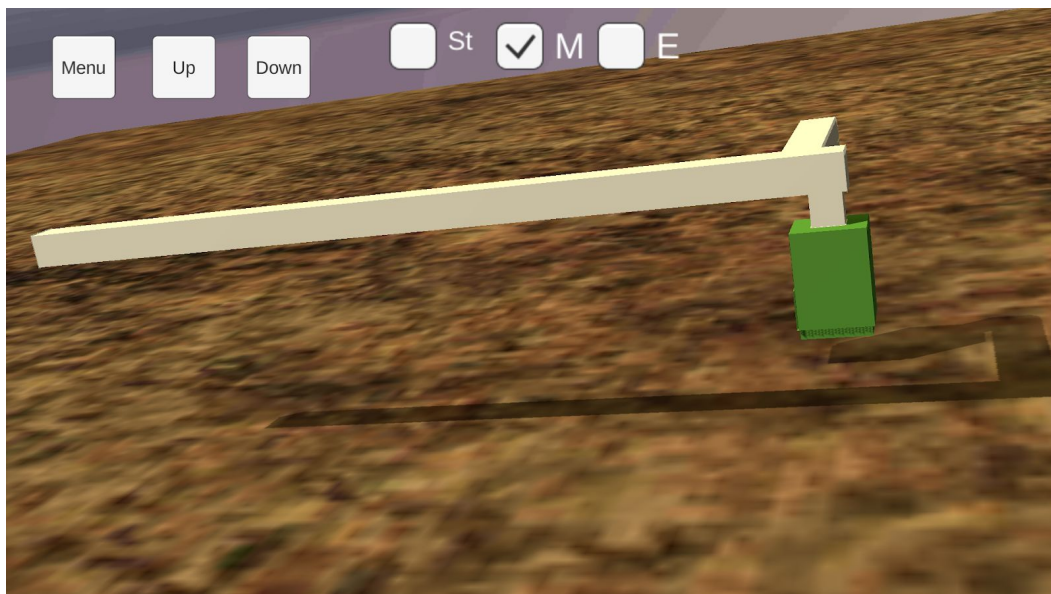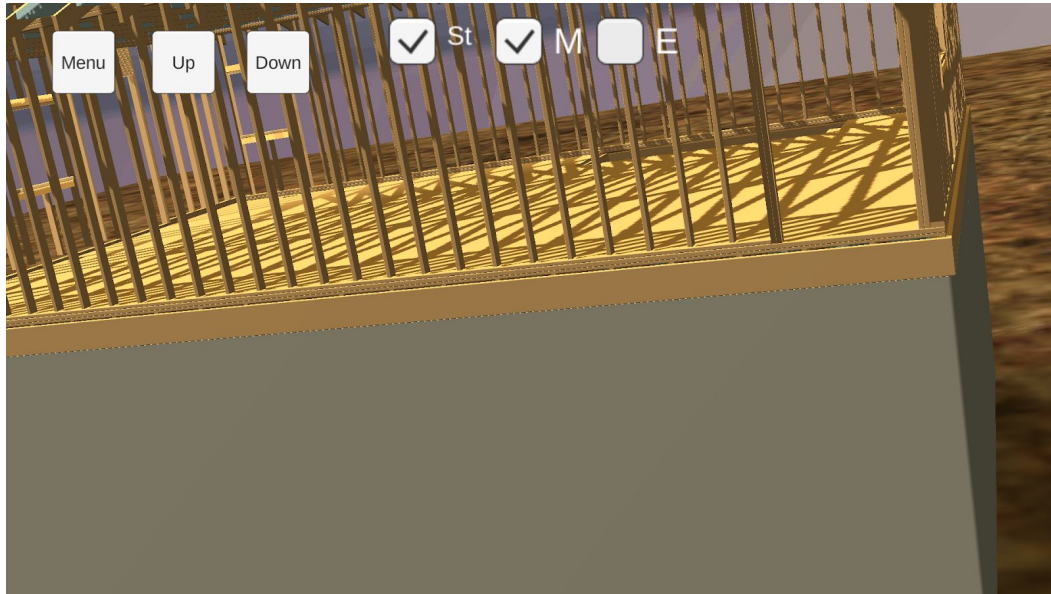
2.5 Update/Save Models

WIth this prototype we have updated the save and update feature. With this we included a File Explorer which is now fully functional with touch controls and now users can go back and forth between a file menu to select different files to open and work on them.

This was accomplished by creating several buttons, one which is scripted to take touch input to open up the menu, and the other additional buttons within the menu can take the user to different files saved within the app. Which depends on which file is selected by the user.
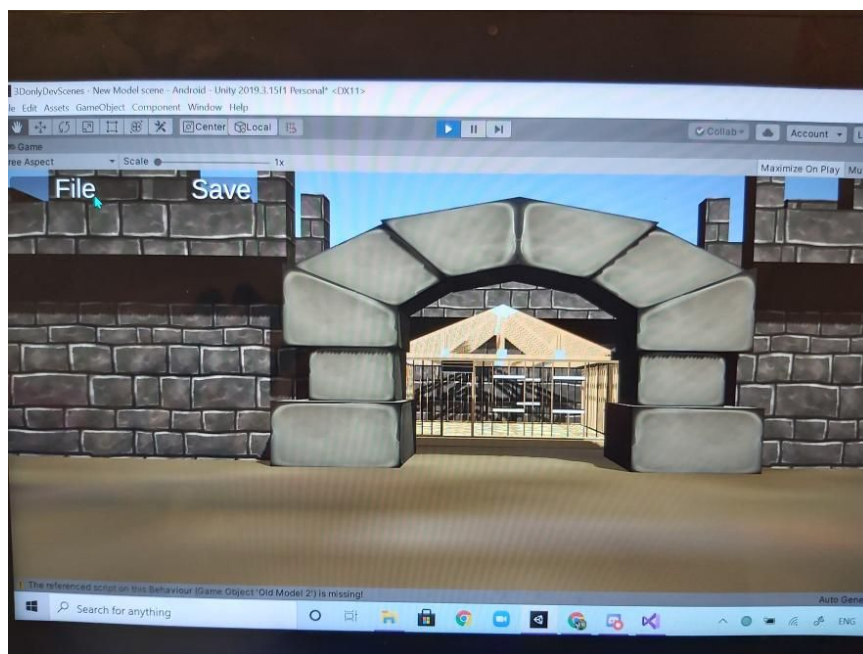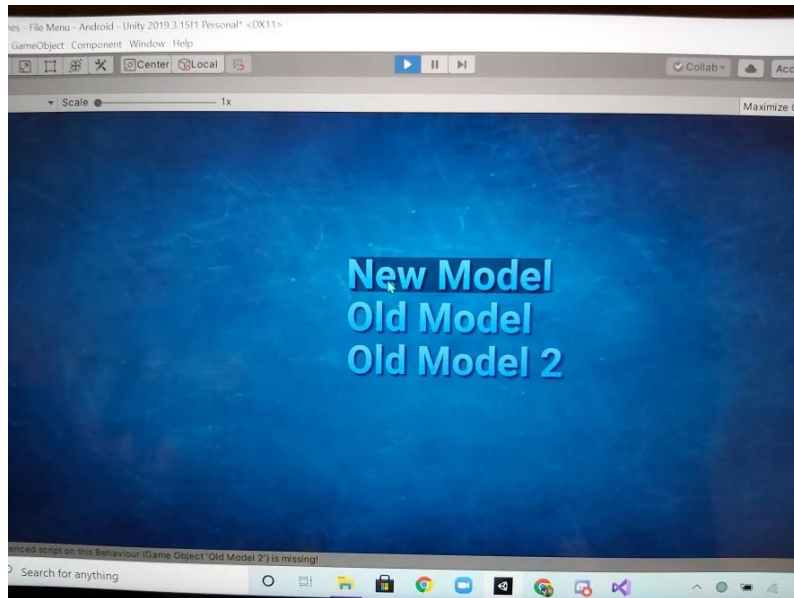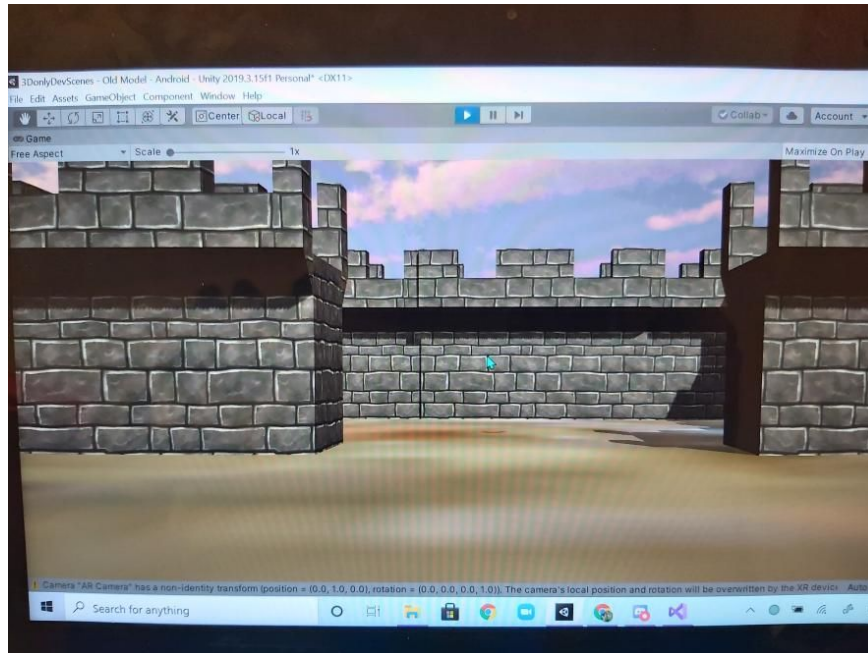
3. Prototype 2 Test Results

Task	Pass/Fail Condition	Result
3D/A.R Display	Ability to use AR component on the phone to see 3D display of the model	Pass
Intuitive Interface	Implement functional toggle buttons opposed to manual scripts	Pass
Directional Controls	User is able to move around with joysticks while viewing the model in 3D	Pass
Updated/Save Models	Be able to open up new files and be able to edit on selected file	Pass

4. Reviews/Feedback

<u>Prototype 0.1</u>

Anonymous Tester #1: "The models still seems kinda dark"

Anonymous Tester #2: "Controls are easy to understand, but very sensitive"

Patrick Lalonde: "You guys seem to be heading in the right direction."

5. Conclusion

Prototype 2 has been developed and tested using the criteria table seen on section 3 Prototype 2 test results.The test cases for each feature have passed the testing phase.This will allow us to implement them into our app and can be improved on with later prototypes. Even though all features are not set to augmented reality, having the base foundation of being able to see 3d models in augmented reality sets us up for the future deliverables.