Project Deliverable G: Prototype II and Customer Feedback

University of Ottawa

GNG 1103: Engineering Design

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1.0 Client Feedback

From the previous client meeting, we have received more feedback and comments from the clients. On top of the suggestions and feedback they already provided us in the first client meeting, they stressed the concern of having too many ideas and concepts that can be executed. There was a big emphasis on making sure the big ideas of our design were going to be done on time for design day. This led to the suggestion of removing the incorporation of having physical children run into the school during the robot safety drill and just an audio of the drill played on speaker in the background. This would insure that there would be less to program to help reduce the amount of work that needs to be done. If there is time after all the big ideas and concepts have been finalized, we can add the children around the school.

2.0 Prototype 2

2.1 Test Plan:

The objective of this plan was to create a basic movement system that we can add upon in our next prototype to fully integrate the VR headset into our game. We also needed to test the scale of the game further, by timing the amount of time that it takes to reach each important point of the map. This test involved creating a placeholder player model with proper collisions, as well as ensuring that the relevant buildings/ surfaces also interact properly with the player.

2.2 Results of Test:

The first objective was successful, as we now have a working movement script, (using keyboard and mouse at the moment, but can be modified to allow the use of a VR headset). This script was applied to a placeholder capsule player model, as well as a camera which is fixed to the "head" of the player and has different parameters which can be altered, which are what we used to conduct our second test. These parameters are the movement speed and the drag. The movement speed is self explanatory, but the drag is a scalar that essentially increases the friction between the player and the ground. This was necessary because initially the player would slide around as if they were on ice, which is mitigated by this value. We used the player speed to decrease the amount of time it takes to maneuver around the map. Here are some pictures of the 'player model', as well as the classes that were required to create movement:
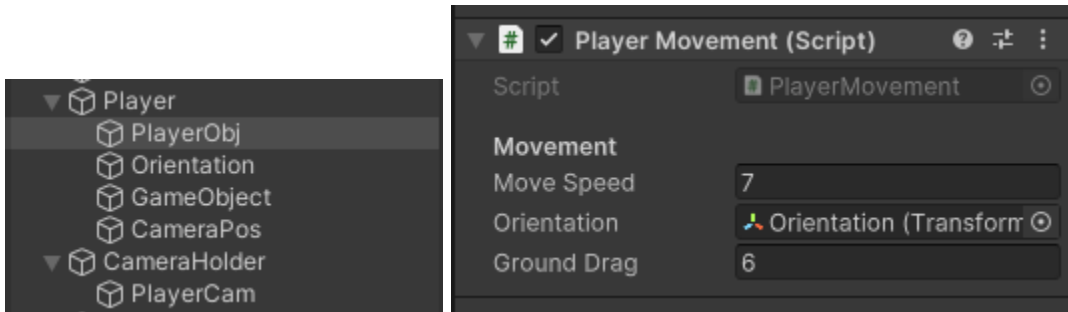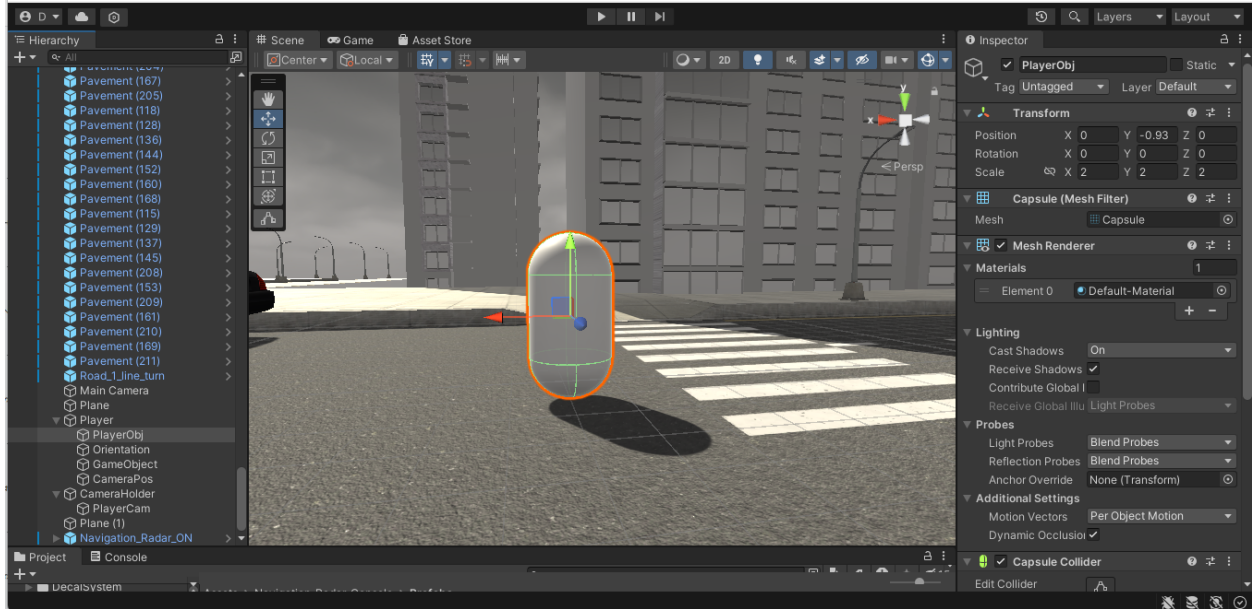
In the second test, we used the movement script to time how long it would take to walk from the starting point to the end of the street, where the school resides. In the initial test, it took 37 seconds to reach the end of the street. This was above our desired time, as the player also has to explore the environment, not just walk down the street. We then increased the player speed and decreased the drag, which brought the time down to 19 seconds. This may also be somewhat high, which indicated that we might have to move the school closer to the store. This time was also affected by lag due to the game being run on a laptop that could not properly handle the game, so it will take much less time on a better laptop, which we will use with our final product. In the attached files of this submission, there will be a video of the test that was conducted using the movement script.

2.3 Additional Changes to the Prototype:
Although this wasn't in the test plan, we created some posters to be displayed throughout the environment. We also generally added more buildings, and started on working on what will be inside of the robot safety store:
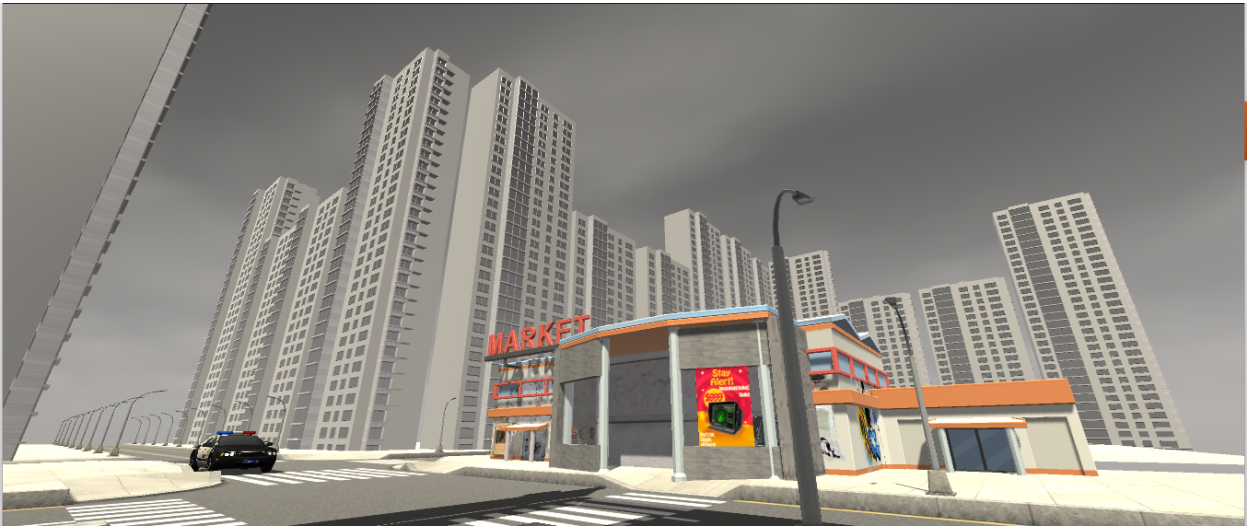
3.0 Prototyping Test Plan

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4.0 Task Plan:

4.1 Test 1:

4.1.1 Task 1

This test will require several different tasks to complete. The first of which is to install the proper libraries to allow the VR headset to interact with the environment, mainly one of the XR plugins. The plugin that we will be using is the oculus VR plugin. This has different packages that we can apply to our player to create the compatibility required to use the VR headset. Once this task is complete we can move on to the second task, which will be to choose our movement method and apply it to our existing script.

4.1.2 Task 2

As previously stated, this task is to choose the type of movement that we will include in our game. With VR games, there are several different techniques that can be used to move around the environment. The first of which is the use of teleportation, where the player points to a certain spot with the use of a target, then presses a button to teleport to that location when they are ready. This method works well once you get used to it, however our users do not have time to adapt to this method of movement. Therefore, we should try to stick to the next method of movement, which is similar to a standard keyboard or controller. They will be able to move fluidly in different directions by utilizing the buttons on their controllers. This will be more intuitive to the user, and will also be able to potentially take advantage of the scripts that we already have in our project.

4.1.3 Task 3:

Once we have set up the required plugins and chosen our desired movement method, we will be able to start implementing our final VR movement. This will involve a similar testing process to the one we have executed with this prototype. We will test to make sure that every desired aspect of the map is easily accessible by the player, as well as any bugs that could disrupt fluidity of gameplay, or induce motion sickness.

4.2 Responsibilities

4.2.1 The first task will be Daniel's responsibility. He will ensure that the Oculus library is installed in the project and ready for the implementation of the VR headset before the next team meeting (wednesday).

4.2.2 The second task will be discussed during the group meeting, where we will all discuss the best approach to implement in our project.

4.2.3 The third task will be Daniel and Andrew's responsibility. They will test with the actual VR headset that will be used to develop a working movement system.

4.3 Milestones and Dependencies:
The dependencies of this test are in order in the task outline above. Task 2 is dependent on task 1 and task 3 is dependent on task 2. The major milestones of this test will firstly be importing the required libraries, as this is crucial to adding the VR element to our game. The second milestone will be our first successful trial of movement/VR compatibility. By first successful trial, we mean the first time that we can look around our environment with the headset, and move the camera using the VR controllers. The movement may not be fully functional, but as long as the concept is proven to be viable, it will count as a milestone. The final milestone will be when the movement is fully complete. This means that we will be able to look in all directions and move to every location in a smooth manner.

5.0 Feedback from Potential clients

The current prototype was shown to some potential users of this virtual reality experience to get an opinion on different changes that need to be done going forward into the next prototype and then final design.
Some of the things which the users liked about the design was the use of small details, like the posters or safety store, that show how life was affected by having the killer robots just by having these things in place. Some of the aspects which they thought needed some more work was adding more of the posters or billboards into the environment so it is not as plain, and making the environment look more like wartime and ravaged. Some more feedback going forward with development they gave was to add somber music in the background to fit the theme of the experience, and also some ambient noises so the user can be more immersed in the environment

6.0 Updated target specifications

	Design Criteria	Relation	Value	Units	Method
	Functional Requirements				
1	User able to move in environment with VR headset	=	yes	N/A	Test
2	User is able to see the posters in environment interact with specific objects	=	yes	N/A	Test
3	User is able to hear sound in the while going through the virtual reality experience	>	20	Hertz	Test

	Constraints				
4	Length	<	60	Seconds	Analysis
5	Virtual reality experience is not complex and easy to understand	=	yes	N/A	Analysis
	Non-Functional Requirements				
6	Environment looks warlike and portrays the effects of killer robots	=	yes	N/A	Observation

7.0 Prototyping test plan

Going forward with our future prototypes, our goal is to incorporate sound as well as user interaction with the experience, so the user will be able to move around the environment and hear noises with the virtual reality headset.
The test will consist of playing the project on the VR headset and looking for all the things that we need to match our target specifications, like the movement , interactions, and being able to hear sounds.