GNG 1103 F: Deliverable F (Prototype 1 and Customer Feedback)

Name	Student Number
Patrick Huang	300097191
Thomas Boyd	300117763
Pion Das	300124924
Marie Daoust	300052381

Why are we doing this test? (General Objectives)

We are making a VR game for professors and researchers to enhance the learning experience for 2nd year university students that are taking organic chemistry. Specifically, we are providing a visual representation of reactions and proportions through a chemical reaction. The general objective of this prototyping is to learn about the applicability of the VR chemistry game.

Test Objectives Description:

What are the specific test objectives?

As a result of the guidelines of the VR game, we need to make sure that it is easy to navigate the VR game, interactive to the user, and realistic enough to accurately display valid organic chemistry concepts.

What exactly is being learned or communicated from the prototype?

We are learning about how easy or difficult it is to navigate the VR game. We are learning if the learning outcomes are realistic to achieve. We are learning if the environment in which the VR game takes place is realistic and enhances the learning environment.

What are the possible types of results?

The molecules in the VR game could be easy to rotate and easy to collide; otherwise the interaction between molecules is too hard to perform. Given an instruction manual, the user may find the learning outcomes to be easy, moderate, or too difficult to perform. Finally, the environment may or not be an appropriate setting for expressing the learning outcomes.

How will these results be used to make decisions or select concepts?

Based on the results, the proper adjustments will be made to optimize the VR game. If the molecule is too hard to align in the given reaction, we can change the chemical reaction and replace the given molecule with a smaller, simpler one. If the learning outcomes of the VR game are too easy, we could introduce more levels with more complex reactions. Similarly, if the learning outcomes are too difficult, we could decrease the complexity of the given chemical reactions to ease the intellectual process. Finally, the environment can be adjusted, such that the user feels immersed in a setting where they feel motivated to expand their organic chemistry knowledge.

What are the criteria for success or failure?

The criteria for success is satisfying the specific test objectives. Specifically, the prototype is successful if it is easy to rotate and align the molecules in the VR game, have effective and moderately challenging learning outcomes, and have a realistic environment to enhance the experience. The criteria for failure is if any of the 3 conditions are not met.

What is going on and how is it being done:

For the first prototype, we are generalizing concepts we have decided on by making a rough physical prototype inside the VR to communicate how generally the game will work. We will show this off through screenshots of what has been made and explaining how it works.

Describe the prototype type and the reason for the selection of this type of prototype.

It is a physical prototype, and focused. It communicates to others what we are going to accomplish without using mathematical testion. It is also focused on certain aspects of the project like molecules, the tablet and the scoreboard. We have chosen this type of prototype because it is best to have a physical prototype to communicate to the client the important information they would need to know about our product. Also, we have chosen to make it focused because creating a prototype that shows that shows the entirety of the game would cost more time to create, which is what we wanted to avoid for our first prototype.

Describe the testing process in enough detail to allow someone else to build and test the prototype instead of you.

First the tablet, the scoreboard and the molecules are created using unity software. To test these items, the VR headset must be set up and the game will be set up on this machine. To test each aspect, we will be interacting with the object and testing various aspects of them like intractability, visual quality, functionality (successful collisions).

What information is being measured

During the testing process, some information that is being measured is, can the player move freely around the enclosed room. When the player starts the reaction is achievements/progress being updated. Along with when the reaction starts how well can the player see the molecules reacting with each other.

What is being observed and how is it being recorded?

We are observing whether the collision between molecules is successful or not and how the molecules move on their own. These observations will be marked down on paper. Also, we will be observing if objects are intractable and making a checklist for if they're working or not.

What materials are required and approximately how much will it cost?

For materials, we are using some assets from the unity store along with a VR headset that is provided. These assets are Steam VR (Free), Lab room (25$)

What work needs to be done?

For this test, the necessary steps are to create each item using Unity software, and incorporating it's intractability. This includes its ability to be manipulated by the user as well as its interaction with each other like objects hitting into each other and molecule collisions.

When is it happening:

The creation of the first prototype is during the last week of February, and the testing begins at the beginning of March. The testing will conclude with the presentation of the prototype on March 4th, where feedback will be provided directly from the client based on the quality of the concepts and demonstrations we will be presenting.

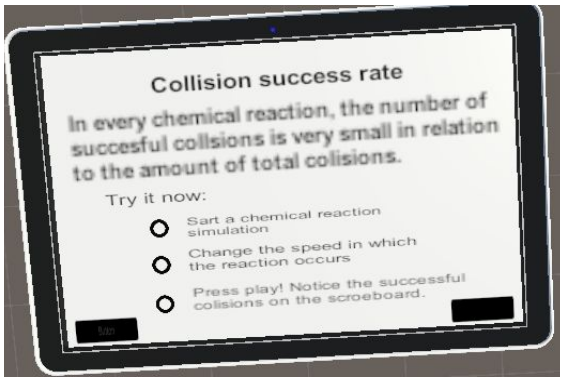
How long will the test take and what are the dependencies?

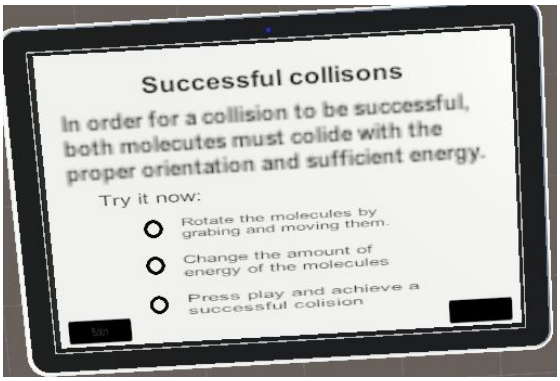
The test will only take a couple of days since everything can be done using a VR machine and testing it is not time consuming. Also, other than the fact that the prototype

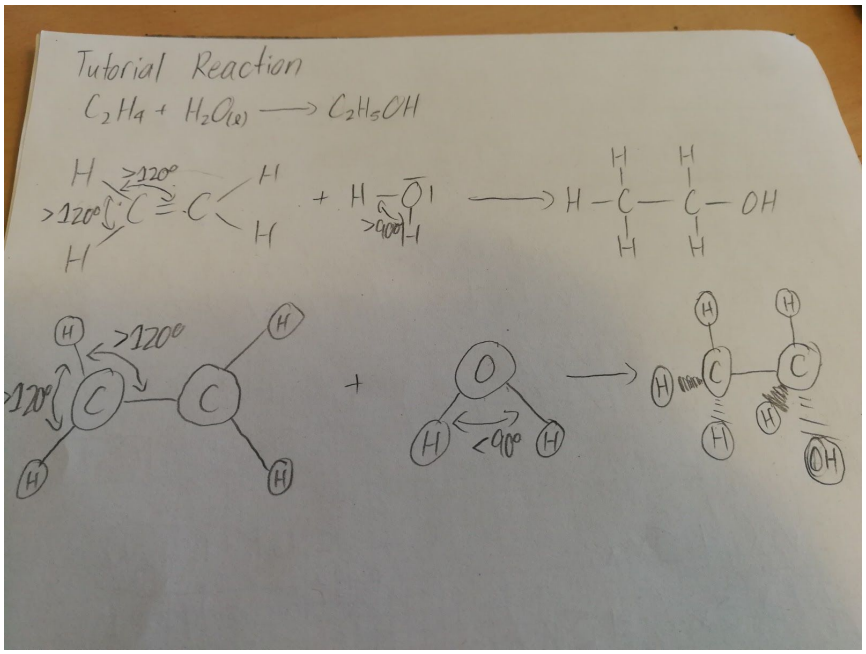
needs to be created before testing it, there are no dependencies, because each component of the prototype is able to be tested individually.

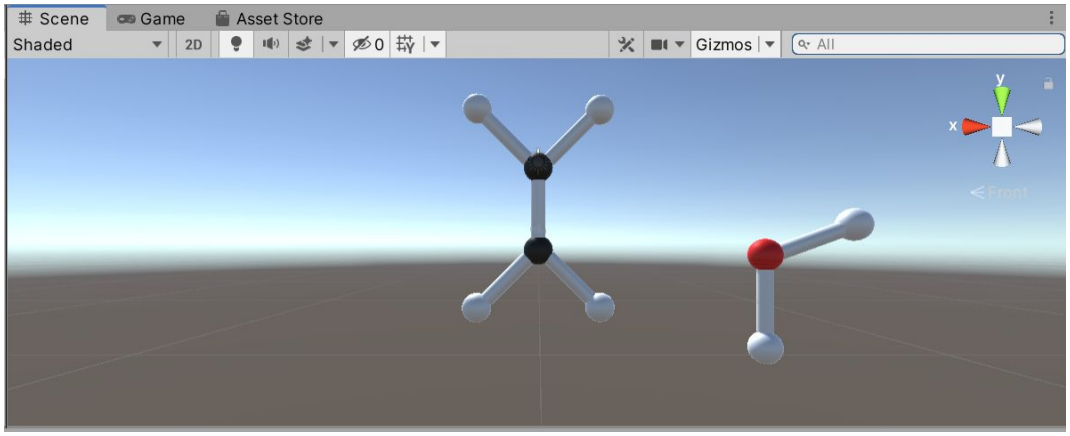
When are the results required? And what depends on the results of this test in the project plan?

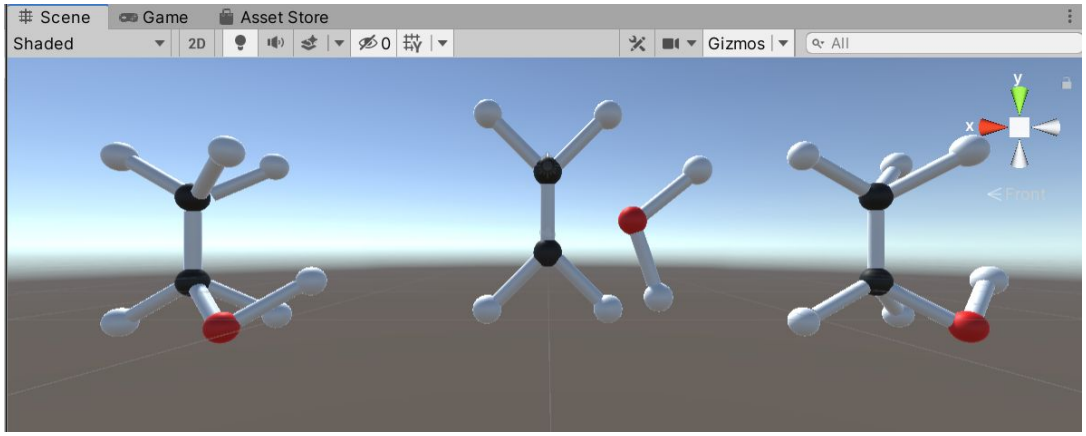
The results are required before we start working on prototype 2. This is important because the creation of prototype 2 will begin with the assessment of the issues from prototype 1 and improving it for prototype 2. It is not until after we have fixed the first prototype, that we will be starting to add new components to the game and increase its fidelity to the final product.






Tutorial Reaction
$C_2H_4 + H_2O_{(g)} \longrightarrow C_2H_5OH$
>120°
>120°
>120°
>120°
<90°
>90°
OH


Scene
Game
Asset Store
Shaded
2D
Gizmos
All
y
x
Front


Scene
Game
Asset Store
Shaded
2D
Gizmos
All
y
x
Front