GNG 1103 F: Deliverable G (Prototype 2 and Customer Feedback)

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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?

The prototype is resolving some of the misconceptions regarding organic chemistry. Specifically, we are focusing on the misconceptions behind reactions and proportions, which are the requirements and frequency of the success of collisions in a given chemical reaction.

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 executing the reactions to be easy, moderate, or too difficult to perform. Finally, the environment might 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. Currently, we are working on the environment from the previous prototype, because it was too simplistic and needed further enhancement. Additionally, the microscopic environment is being created, but we need to keep in mind that molecules will only react successfully given a minimum amount of energy and a collision at the correct angle, and not randomly. The selected reactions were the hydration of ethylene (tutorial reaction), and the esterification of ethanol, the product of the tutorial reaction. This series of reactions were chosen because they are simple to convey, and focus on the learning outcome, which is to let the user realize the misconceptions of collisions.

What are the criteria for success or failure?

Similar to our previous prototype, the main criteria for success depends on how well we convey the learning outcomes to the user. A successful prototype will have an enlightening environment, where the user feels immersed in the game. Additionally, having an enjoyable level of intractability to achieve the learning outcomes is another source of criteria. Finally, our ability to convey the learning outcomes to the user by available content in the game, such as a scoreboard, and the ability to rotate molecules and collide them together to make a successful collision, will model the success of a prototype.

What is going on and how is it being done:

The prototype mainly focuses on the environment of the game and the intractability of the items inside it such as the molecules. These are created by inserting objects and asset packages in the unity file. These aspects will be tested and adjusted to better suit the needs of the client and improve the general experience of the game.

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

This prototype is more general than the last and is more physical because we are focusing on the big picture of the game and the environment.

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

To test this prototype, the game needs to be opened using steam VR with the VR headset, and people must test it by playing the game and trying every aspect of the

game with as much detail as possible. The person testing it must also observe how realistic and immersive the game feels.

What information is being measured

Firstly, we will measure the immersiveness of the environment. Secondly we will be measuring the intractability in which the user will utilise to achieve the learning outcomes. Finally, the ease that the users will have with being informed of the different learning outcomes.

What is being observed and how is it being recorded?

We will be verifying the immersiveness by testing the environment with the VR headset and observing what it is like ingame. Also, we will observe how intractable the game is by, again, testing the game using the headset and interacting will every aspect of the game to verify its use. Lastly, we will use the same method to observe the ease in which the user can identify the learning outcomes, and make sure that they are clearly defined

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

It is imperative that we test the game using the VR headset to fully understand the user experience using this game.

What work needs to be done?

The different parts of the prototype need to be opened using the VR headset and ingame testing must be thoroughly done in the entirety of the prototype

When is it happening:

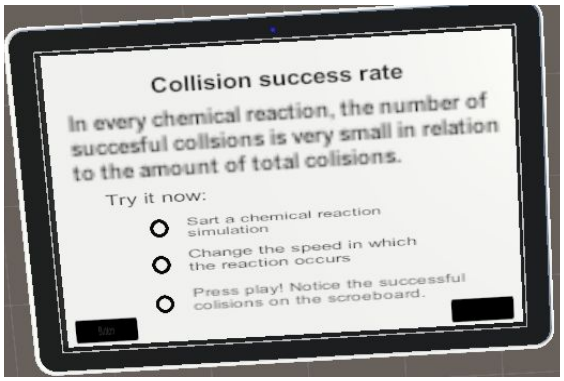
This testing will be done during the weekend of March 7th.

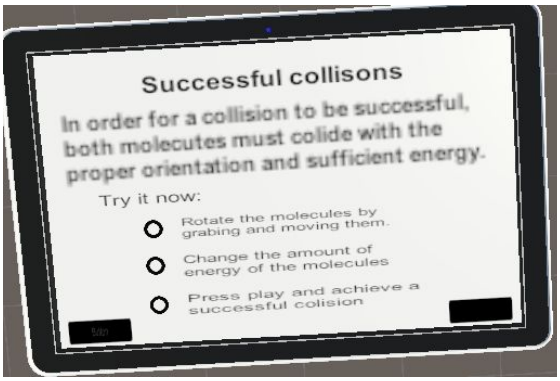
How long will the test take and what are the dependencies?

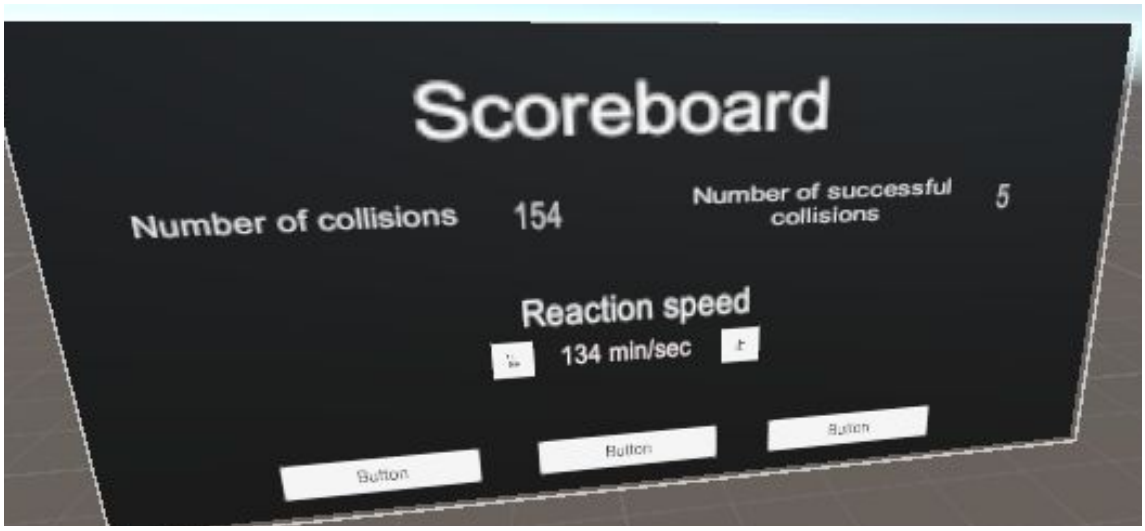
These tests will take 2 sessions of 1 hour in the game, done by various people and on different days to ensure that our testing is done with the most variety as possible to obtain the most information as possible. The only dependency is that we must complete testing to be able to improve the next prototype based on the results.

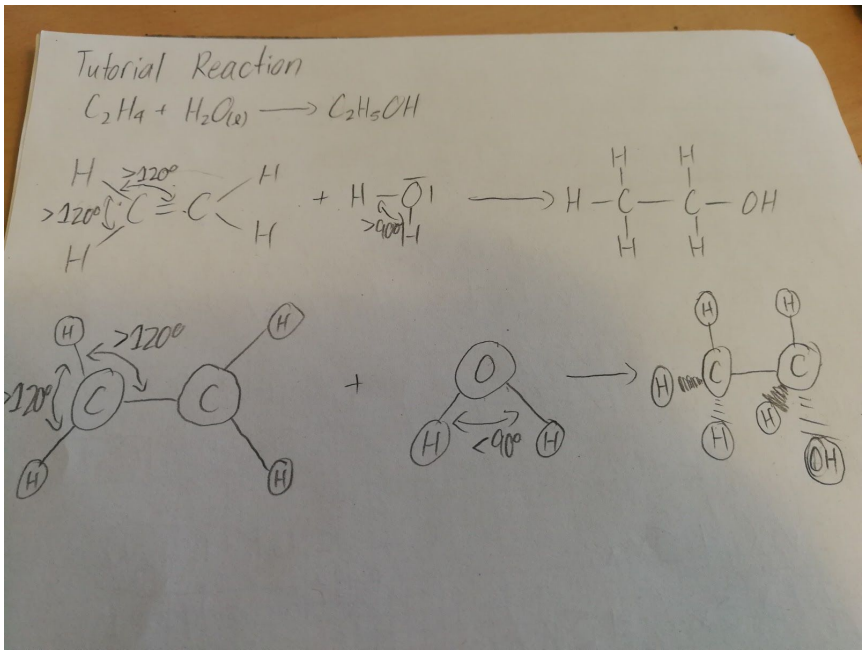
When are the results required? And what depends on the results of this test in the project plan?

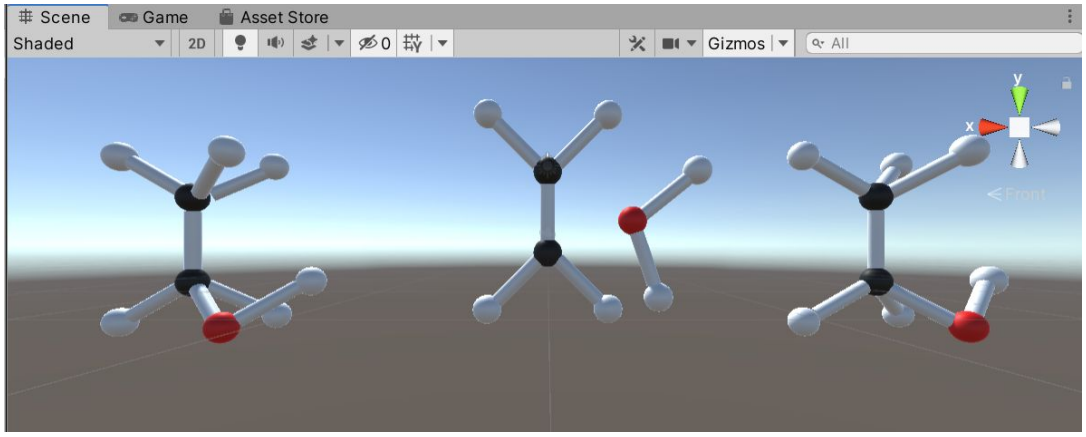
The results are required in the beginning of the next week to ensure that we have enough time to complete the third prototype in time.



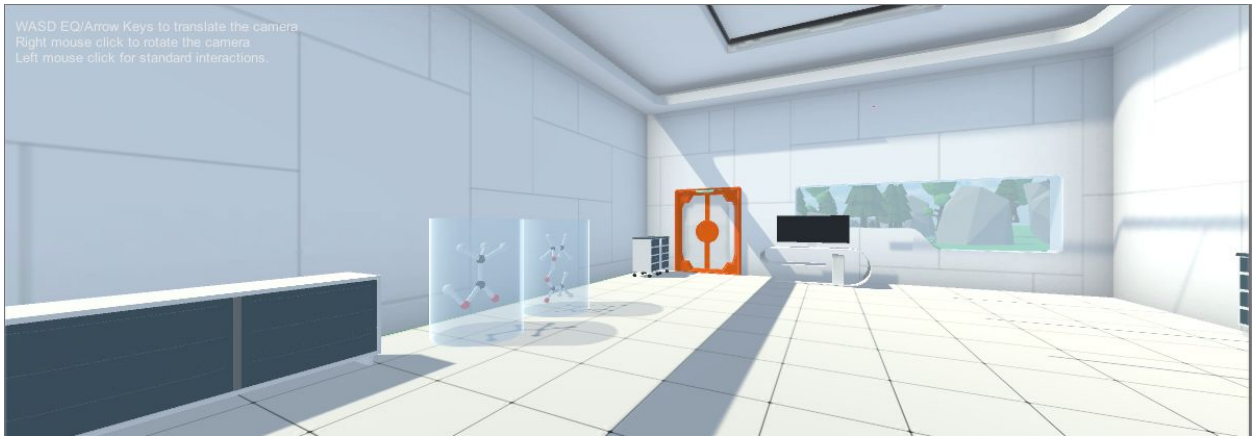





Tutorial Reaction
$C_2H_4 + H_2O_{(g)} \longrightarrow C_2H_5OH$
>120°
>120°
>120°
>120°
<90°
>90°
OH


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

Environmental Model:




WASD EQ/Arrow Keys to translate the camera
Right mouse click to rotate the camera
Left mouse click for standard interactions.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