GNG 1103: Deliverable F

GNG 1103-F04

Submitted by: Group 2

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1 Introduction

This deliverable focuses on the first project prototype and the feedback received from customers or users. The first project prototype is important for gathering information from customers/users and demonstrate a concept of what the final prototype might be like. The first prototype is important for creating an environment and scenario that a customer/user can engage and react. For this deliverable we have elected to create a focused prototype, of which will demonstrate one aspect of the project to exhibit how the prototype will function when it is fully complete.

2 Prototype

As mentioned, Prototype #1 was created to be a focused prototype. We elected to choose to create a focused prototype since this type represents a smaller aspect of the design that can be easily tested and measured. Additionally, a focused prototype is relatively easier for a new customer/user to engage with and acquire feedback from. In this deliverable, specific feedback is needed in order to adjust and/or correct certain aspects of the design and a focused prototype can deliver these needs. We plan for the next prototype to be another focused prototype, but it will focus on aspects that are not covered in prototype #1 and any necessary improvements.

Our concept for Prototype #1 is to use the storyline scenario outlined in Deliverable D. The user will be brought into a realistic scenario of waking up and getting to class on time for 8:30am. The user will then use certain everyday items to represent specific reactions and molecules in organic chemistry. For this prototype, the environment will be focusing on the process of brushing teeth and how it relates to the lactic and propanoic acid in your mouth. The user will be able to brush their teeth and see that initially their teeth have a build-up of plaque, of which is a sticky combination of food debris, saliva, bacteria and acid. The user will be able to zoom in on the microscopic level to see the molecular structure and interactions. The user can then use the toothpaste to brush their teeth and observe that the toothpaste is foaming from the outside and then zoom in to see what is happening on the microscopic level.



Figure 1: Virtual Reality environment showing the placement of toothbrush

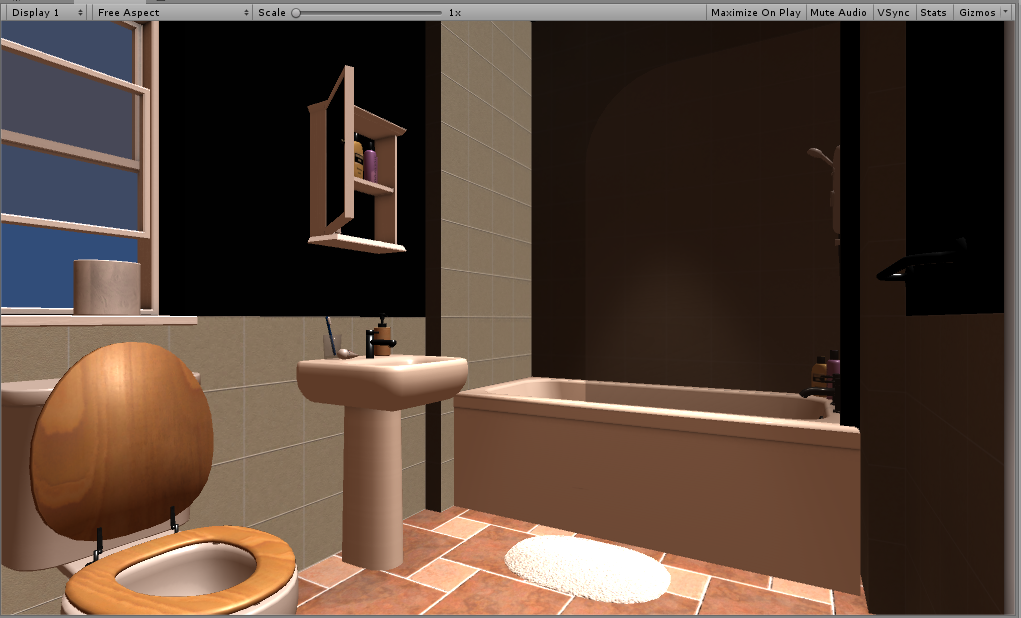


Figure 2: Virtual Reality environment of the bathroom and boundary environment

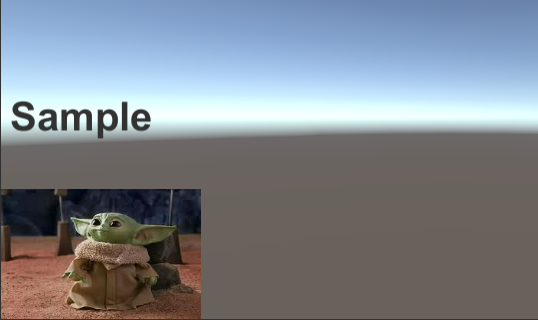


Figure 3: Sample of the split screen to demonstrate the macro vs microscopic environment *(Please note that this feature is currently only available in script format)*

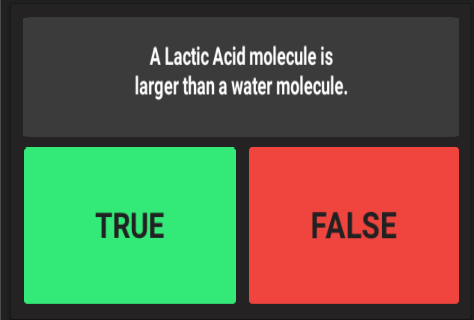


Figure 4: The interactive quiz question shown after brushing teeth and immersing in the microscopic environment

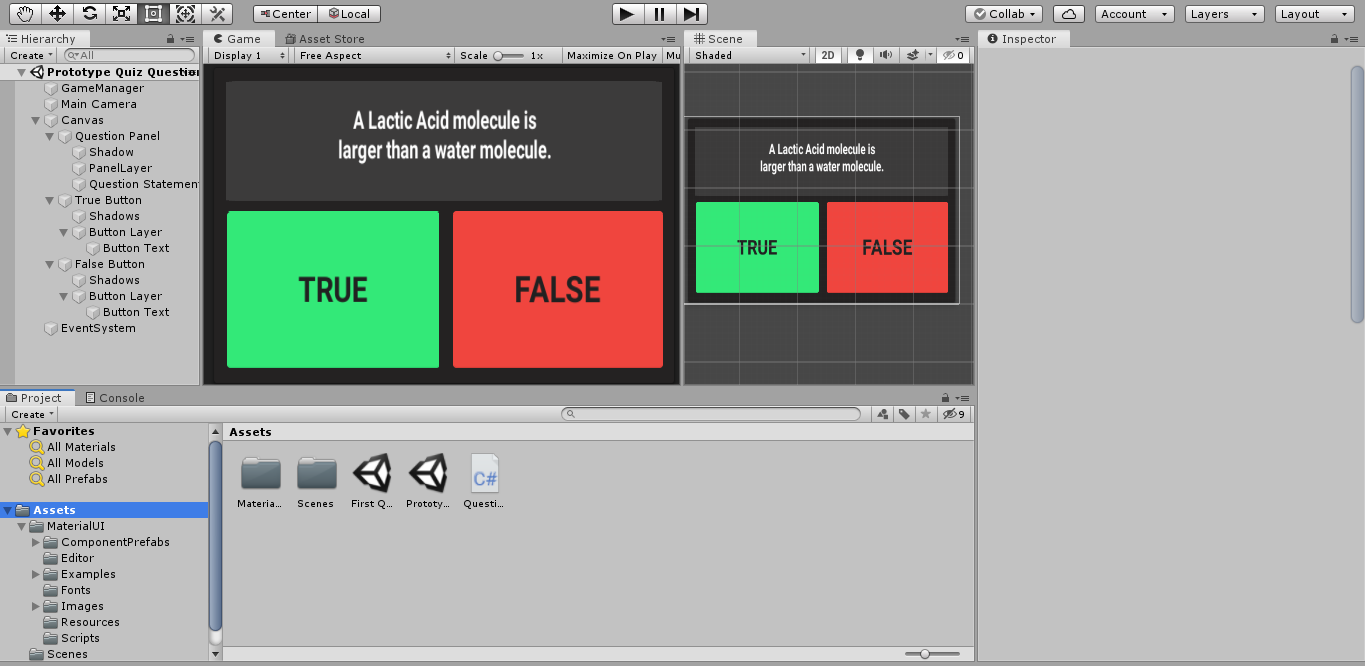


Figure 5: Quiz question as shown in Unity

3 Test Plan

Regarding the test plan, the simplest way to evaluate whether our prototype is responding to the intended criteria or not is to have various people test out and give feedback to the environment we have created. A testing plan can also improve our prototype by eliminating defects within the environment and user interface. Since the client needs a program that can be adapted to various levels as well as the initial first year organic chemistry student, different levels of chemistry users will be used for testing our VR simulation. These users will consist of students in engineering as well as science with knowledge ranging from high school chemistry to 4th year chemistry. Some users will not have taken organic chemistry, some will have taken it and some will be in the process of completing the course so this will give us a range of opinions. The general concepts that we will be testing relates to the aesthetics of the environment, usability, simplicity, comprehensiveness and learning outcomes.

The stopping criteria of our testing plan will involve a combination of time constraints and customer feedback. Since the project timeline is not lenient, a proper testing timeline is needed. One must stop testing at a certain point since the project timeline is not infinite and one must gather feedback and findings in order to create another prototype, which allows the process to remain iterative. Therefore, we will define a timeline such that the testing process will not overlap or delay further project prototyping. Additionally, the stopping criteria will also involve customer feedback in the form of customer satisfaction. Customer feedback and satisfaction will be assessed using a post-use survey that will address the testing criteria. Since satisfaction is not a measurable variable, we must define satisfaction. According to GetFeedback by SurveyMonkey, the formula to finding customer satisfaction using a five point scale is shown below:

The 5-point scale will be addressed as a scale from ‘Disagree’ to ‘Agree’ where the lower end represents a 1 and the higher end represents 5. The scale will be as follows from 1 to 5: Disagree, Somewhat disagree, Neutral, Somewhat agree and Agree.

For Prototype #1, we have chosen 80% customer satisfaction as an appropriate starting point for stopping criteria. Thus, we will know when to stop testing and create a new prototype based on the feedback. As we progress to more prototypes, the customer satisfaction percentage as a stopping criteria will increase to 90% and 95%. A unique survey will be applied to Prototype #1 according to the testing criteria and will be changed for further prototypes according to the respective testing criteria.

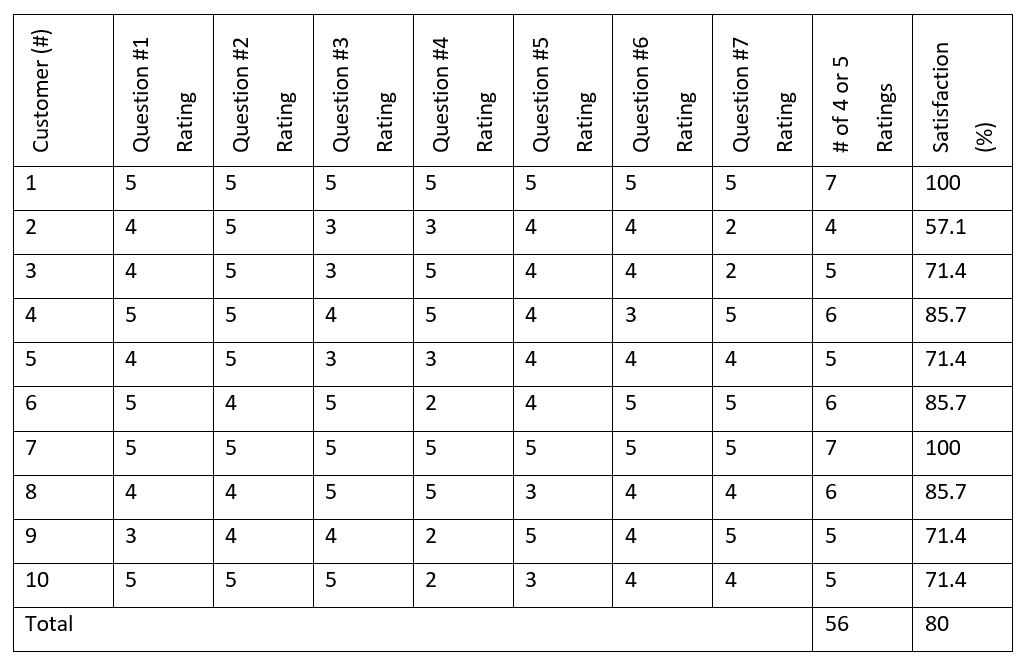
As well as testing and having students test the product, we will conduct initial surveys to know if our prototype is responding to our client’s needs. These surveys will contain screenshot images of our environment and the interactions between the user and interface, which will allow us to distribute the surveys to many people without having them come try the VR simulator every time. This will give us initial feedback to allow us to modify and adapt our product until we reach an adequate satisfaction level. The following statements will be assessed by the user in the survey for Prototype #1 on 5-point scale (Disagree-Agree):

1. The interface is engaging and dynamic
2. The environment is aesthetically pleasing and easy to navigate
3. The quiz question is adequate for 1st and 2nd year organic chemistry students
4. The scenario adequately represents molecules and reactions on a macro-to-micro scale
5. The instructions are clear and concise
6. The instruction word bubbles are adequately placed and timed
7. The environment has enhanced my learning experience

4 Customer Feedback

The customer feedback of this prototype was conducted using a Google Survey. The survey was sent to prospective customers/users of the product so that we could gather an adequate amount of feedback from a variety of different people. Below are the results of the survey:

Table 1: Survey results



5 Conclusion

In conclusion, the testing plan and stopping criteria have been outlined and discussed. The aspects being tested are aesthetics, usability, simplicity, comprehensiveness and learning outcomes. The prototype was tested using a survey created with Google Surveys after the user had engaged with the environment. The satisfaction rate was exactly 80% after ten users/respondents which concludes the testing period.

6 References

<https://www.getfeedback.com/resources/cx/how-to-define-customer-satisfaction-and-measure-it/>