

Initial Plan  
Virtual Reality App



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Module CM3203 One Semester Individual Project

Cardiff University

## **Description**

The project aim is to develop a virtual reality app that provides an immersive user experience. The user should be able to move around within the app to explore a virtual 3D world and interaction within that world.

The app will include models and objects created by sculpting and then importing those finished products into the unity engine where the game environment will be put together. The code used to implement any movement or interaction will be in C++ and any testing or debugging will be done on an Oculus Rift VR headset.

## **Project Aims and Objectives**

### **Design**

Firstly a good plan to build on will be the first step to this project. Many design decisions will set the tone for the project and allow us to visualise the goal for the final product.

- What will populate the 3D world such as colour palette, models and objects. Floor design and Sky box design.
- How many variations of models and the purpose they serve.
- Player view options - first or third person and size of environment.
- Options offered to the user and user interface.
- Any stretch goals for future development that can be achieved.
- Research on further uses for the VR app such as how we can use it for educational purposes will be explored.

### **World Setup and Implementation**

This phase focuses on all elements needed to create the foundations of the app, this includes assets, code, blueprints, lighting and all other implementation.

- 3D models will be sculpted using a range of free programs such as blender and mudbox and then imported to Unity.
- The environment will be set up using these models and designs for the surface area the user will walk on.
- Lighting box to create natural light.
- Once a working draft of the virtual environment is complete we can start working on the camera view for the user.

- Coding for user movement and interaction with the environment will be done in C++. How much interaction will be decided as the project develops based on what options are available.

### **Testing and Documentation**

Once the environment is near completion it should be tested for bugs and user feedback. This can be anything from an app crashing bug to an unexpected result of an interaction from a user not being as originally intended.

- The VR app will be run and tested on a windows operating system using the Oculus Rift VR headset.
- Documenting bugs and making changes where necessary.
- Feedback on user interface and making changes where necessary.
- Each bug fix should come with a documented solution and patch notes. With the final release a user guide should be made available on how to start up and use the program.

### **Usability**

All code will use comments to allow for adjustments throughout development and can also help detect bugs. We must also make considerations for our users experience making VR more accessible and enjoyable.

- The project will present a menu to the user to allow them to either startup the 3D world or to exit the app. While within the virtual world the user should also be given an option to end the experience.
- All features of the app will be later refined if time allows.
- Standing or sitting gameplay options for the user.
- The app should aim to create the illusion of smooth movement to avoid any motion sickness to users.
- Users should be able to adjust height and vision focus for comfort but this is a basic adjustment offered by the majority of VR headsets.

## Gantt Chart

This gantt chart gives us a visual look at the development stages and the estimated timescales of those stages - **Everything is subject to change.**

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
<b>Task Description</b>												
Initial Plan												
App Design												
Model Design												
Model Sculpting												
Building Environment												
Creating User View (Camera)												
Create Lighting												
Adding User Movement												
Adding User Interaction												
Initial Testing & Debugging												
Bug solutions and patch notes												
User Guide												
Report Writing												
Report Documentation												

## References

Oculus.com. (2015). *Oculus Quest: All-in-one VR Headset* | Oculus. [online] Available at: [https://www.oculus.com/quest/?locale=en\\_GB](https://www.oculus.com/quest/?locale=en_GB). Accessed 26/01/2020