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Assignment III Title : Creating a Portal using Leap Motion Device in VR Application

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This group assignment is about creating a virtual portal with the use of leap motion in VR application. The theme is about Doctor Strange and the game engine we used is Unity.

1. First, a VR scene had been compiled (like the assignment 1).
2. Two scenes have been created. The first scene is on the street and the second scene is around the snowy mountain.
3. In order to collaborate leap motion with unity, leap motion asset SDK had been incorporated into the VR scene. The packages included hand prefabs, demo scenes, etc.
4. Next, the Hand Controller prefabs had been placed and adjustment of the position and size had been modified as well. We first tried the build-in interaction to test the accessibility of the leap motion, for example grasp the object.
5. A round shape had been used to make the portal. Shader script is included to reorder the distorted scene and portal camera had been setup. In order to transport the player to the other portal side, set collision planes at both portals. Once the player overlaps with the collision plane, he will be teleported to the other portal.
6. The portal is made by using Visual Effect Graph, a package in unity. No coding is required, it can be achieved by adjusting the value of the variable, size, colour and adding the suitable collider.
7. In this assignment, we used two types of hand gestures in opening and closing the portal. As Dr Strange did to create his portal, we moved our palm in a circle and then the portal was created. We obtained the palm position of the right hand and calculated the degree by using tangent. We closed the portal by using hand clapping. The palm position of both hands is obtained, and they were used in measuring the distance between 2 hands. The distance formula is as in figure 1.
8. The interaction of the portal with the object can be observed when we threw in a cube then the cube is teleported to the other world.

Video Link: https://youtu.be/QjjQ6O7Rr7w

Appendix

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

Figure 1: The distance formula.

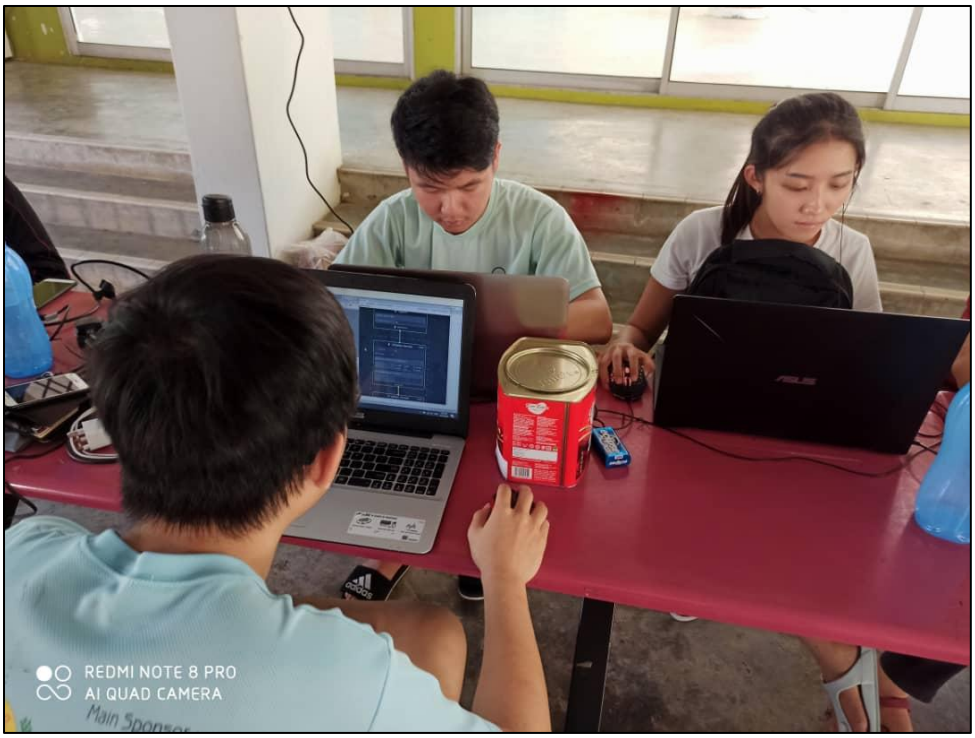

Figure 2: Group discussion.