IM3080 Design and Innovation Project
Individual Report

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Group No: Group 1

Project Title: IDea

Contributions to the Project (1-2 page)

I. Week 1 – Week 6 Tech group leader – Led the group to completed 60% of Version I

Week 1 – Week 3:

After confirmed the app we want to improve, Run Di (Research Group Leader) and I (Tech Team Leader) led our group to research on possible approaches for implementing this App, and decided to use Unity Engine because of three reasons: a) Built-in functions for camera and 3D rendering. b) Friendly to VR development. c) Reference project founded in GitHub (Appendix 1).

Week 4 – Week 6: Imported 3D models into Unity & wrote the change material function

I collected 50+ 3D furniture models from online free resources website (Shown in Appendix 1), and did the UV editing, Texture painting and Shading using Blender (shown in figure 1), this enables my groupmates to use the models directly in Unity.

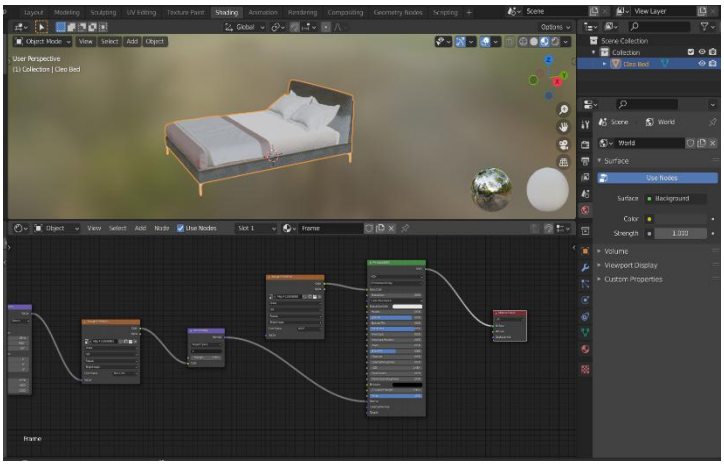


Figure 1 From Blender

I wrote the "Change material function" which enables the users to change the materials of the furniture with clicks from the UI. I learnt this from YouTube videos. This part made use of the Unity library *UnityEngine* and *UnityEngine.UI* and mainly used the built- in component "material" of the Game Objects.

II. Week 7 – Week 8 Tech group leader – Led the group to completed 100% of Version I

In these two weeks, my main task was to design and implement the "Choose furniture" UI in our project (shown in the Figure 2). I used Adobe XD to design the UI, and implemented it in Unity. In this stage, the bed button is clickable, and one bed will be created with a click of the picture.

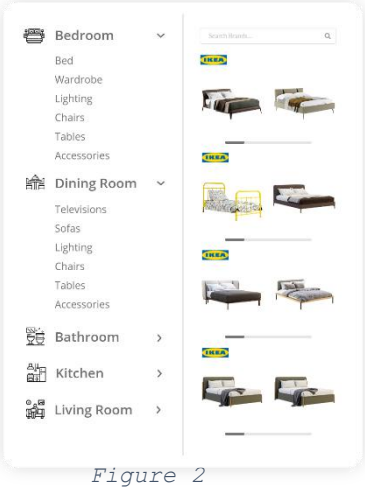
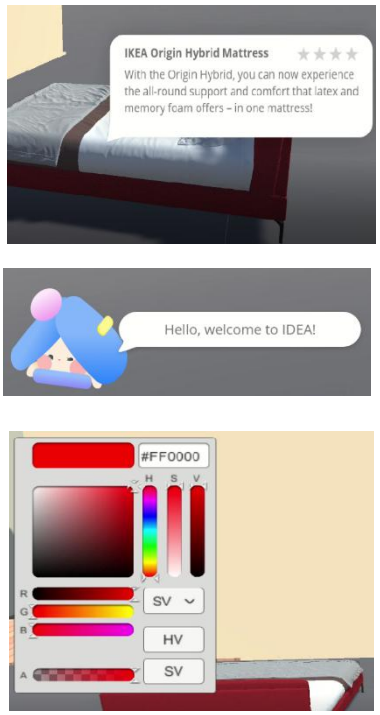


Figure 2

Additionally, Run Di and I organized our groupmates to combine

our works. Initially, each of our groupmates work in separate Unity Project, and when we need to combine our works, we not only need to combine the codes, but also the GUI components in Unity Engine. We used Unity Collaborate as the collaborate tool, and used Vivian's project as the root project. Brandon and I organized our group mates to Zoom with each other one by one to ensure that all functions work well.

III. Week 8 – Week 11 Polished the Version I APP with Zi Ying

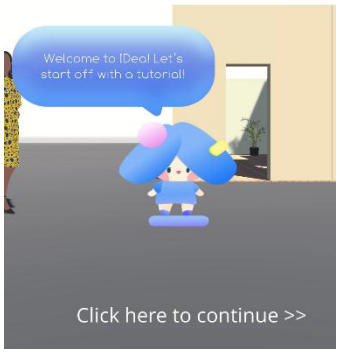


In these three weeks, I mainly did three parts of tasks:

a) Implemented the "Review" function. When the user hovers on the furniture, the reviews of this furniture from other users will be shown on the top of the furniture. (Shown in Figure 3)
b) Implemented the "Avatar helper" function. When the user hovers on the avatar, the animation will play and when the user clicks on the avatar, a dialog box will appear. This part mainly used the *Animation State Machine* and the *Event Controller* in Unity. (Shown in Figure 3)
c) Implemented the "Color Picker" function. This function enables the users to pick any arbitrary colors for the furniture. I learnt this part from the YouTube Video in the appendix. (Shown in Figure 3)

Figure 3

IV. Week 12 – Week 13 Implemented the User guide using Unity



My major task in these two weeks was to implement the user tutorial. With this tutorial, users can learn the basic operation of this app with the guide of our avatar. (Shown in Figure 4).

The implementation of the user tutorial needs to make use of all functions in our Version I APP, so I read through all the codes wrote by group mates in order to allow users to interact with the guide.

Figure 4

Reflection on Learning Outcome Attainment

Point 1: Individual and Team works – Learn from each other and grow together

I learnt a lot from this project and from our team, in term of both knowledge and ability. The APP that we want to implement is one of the most challenging APPs among all the groups, I remembered that Prof Erry mentioned in our second presentation that our idea is ambitious but he is a little doubt about whether we can achieve our goal. However, we managed to finished most of the functions that listed in our first presentation.

Our collaborate mode is very effective. With the lead of our two group leaders, we had regular meetings every week. Purpose of the meetings is to update the progresses, assign new tasks and solve the current problems. The meeting is short, normally within 1 hour, so that it will not be a border for our groupmates. After new tasks are assigned to our group members, we research on the task separately, and update our progress in next week's meeting. I am so lucky that all our group members are very responsible for the tasks assigned to them, so that every time in our meeting, we can learn from each other when we sharing our research results. Additionally, my research skills improved a lot, because for several times, I was assigned with a new task which I know nothing about it but I need to solve this problem before our next meeting. For example, for the implementation of the 2D animation, I do not have any experience before, so I have to search on google and watch a lot of YouTube tutorials in order to finish my tasks. Through solving these tasks, my self-learning skills increased a lot.

Point 2: Engineering knowledge – Gain proficiency in new software

Through this project, I learnt 3 new software which are: Unity Game Engine, Adobe XD, and Blender. They are all industrial standard software, so it is very beneficial to my future career.

Our APP is developed using Unity Engine. During the development process, I mainly focused on UI implementation, 2D animation implementation as well as 3D model configuration. I learnt the development methods of these three parts from all the free resources online, including the YouTube tutorials and the official documentations. After this project, I am confident that in the future projects or career, if I need to use Unity again, my tasks can be solved faster and with less references.

Blender a very useful tool for 3D model constructing. Blender becomes more and more popular these years, and many professional modelers use it to do the UV editing and Shading. It can not only be used on model constructing but also adjusting the material properties such as lightning and roughness through coding. With this project, I gain some hands-on experience in Blender, which will become a highlight in my profile.

Adobe XD is also a very popular software in UI design field. With this project, I also gained proficiency in using Adobe XD.

Appendix:

https://www.youtube.com/watch?v=6G0ageCcOdc&t=2s

https://learnmmd.com/downloads/