IM3080 Design and Innovation Project (AY2021/22 Semester 1)
Individual Report

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Group No: Group 1

Project Title: IDea – a collaborative interior design web application

Contributions to the Project :

1. 2D Floorplan Drawing

Our 1.0 applications 3D Home Design (main), Coohom and Roomle has a feature that requires the user to draw the floor plan from scratch. This implies that the user is required to draw lines on a canvas, attach them to the grid and create a 3D model from it. I did this part of the project alongside with Vivian and Glenna.

However, in week 6's presentation there was feedback for us to omit this feature due to time constraint and to redirect our focus to the main features instead.

1.1 2D Drawing

There is a component in Unity called Line Renderer which takes an array of two or more points (through the click of the mouse and registering the mouse position) in a 3D space and connects them with a straight line. The points are generated based on a raycast into the scene.

However, we decided to go ahead with Vivian's method as it was functioning more consistently and I did not attempt to debug the error after the presentation feedback was given.

1.2 Snap to Grid

Unity provides a visual grid in the Editor's Scene View which can help to align GameObjects precisely by snapping (moving) then to the nearest grid location. This feature enables the resizing of the grid, to change the default values and rest it to the original set position and to push the game object to snap to the grid. I can also select which grip to snap to, there are three axes in total, X, Y and Z.

2. Geolocation

I used a few extensions for Unity to attempt to create a dynamically working map. However, I could only find 3D models and AR mapping. Initially, our team wanted to create an AR feature for the mobile application version, GO Maps would be a suitable Unity package. But our team decided to omit this version as we are told to focus on one platform, furthermore, GO Maps is only available for purchase.

I have experimented 3D mapping with Mapbox and Maps SDK for Unity. I decided to move on with Maps SDK as it has a real-time update synchronization to the real world. This function is made available by Google Maps Platform, however as of today (19/10/2021), it was announced that the service will be deprecated, and current users will have access only until 31/12/2022.

2.1 3D Map

The Google API Key must be created and activated for the map to generate the 3D building models in that area. Maps SDK for Unity provides a function called *RoadNamesUpdater* and *BuildingNamesUpdater* which provides both roads and building names as labels when the component is activated. These names are updated in real-time and are taken from Google Map.

2.2 Shortest Distance

When activating the command on the UI panel called *Activate* Bots, the AI Agent search behavior is also activated. There will be two Android bots available, red and green. *Show AI Paths* will display all AI paths taken for the red bot to find the green bot in real-time. The red bot is always finding the green bot, it cannot be switched around.

2.3 Nearest Building

This feature is made available with the button *Search By PlaceIDs*. Upon clicking, the button, a dialog box will be displayed. There will be a drop-down list of all the buildings currently loaded in the scene. These strings of IDs are dynamically updated and actively synced upon loading.

When a string is selected, the camera will jump to the location of the map feature and a blue arrow will float above to highlight the building.
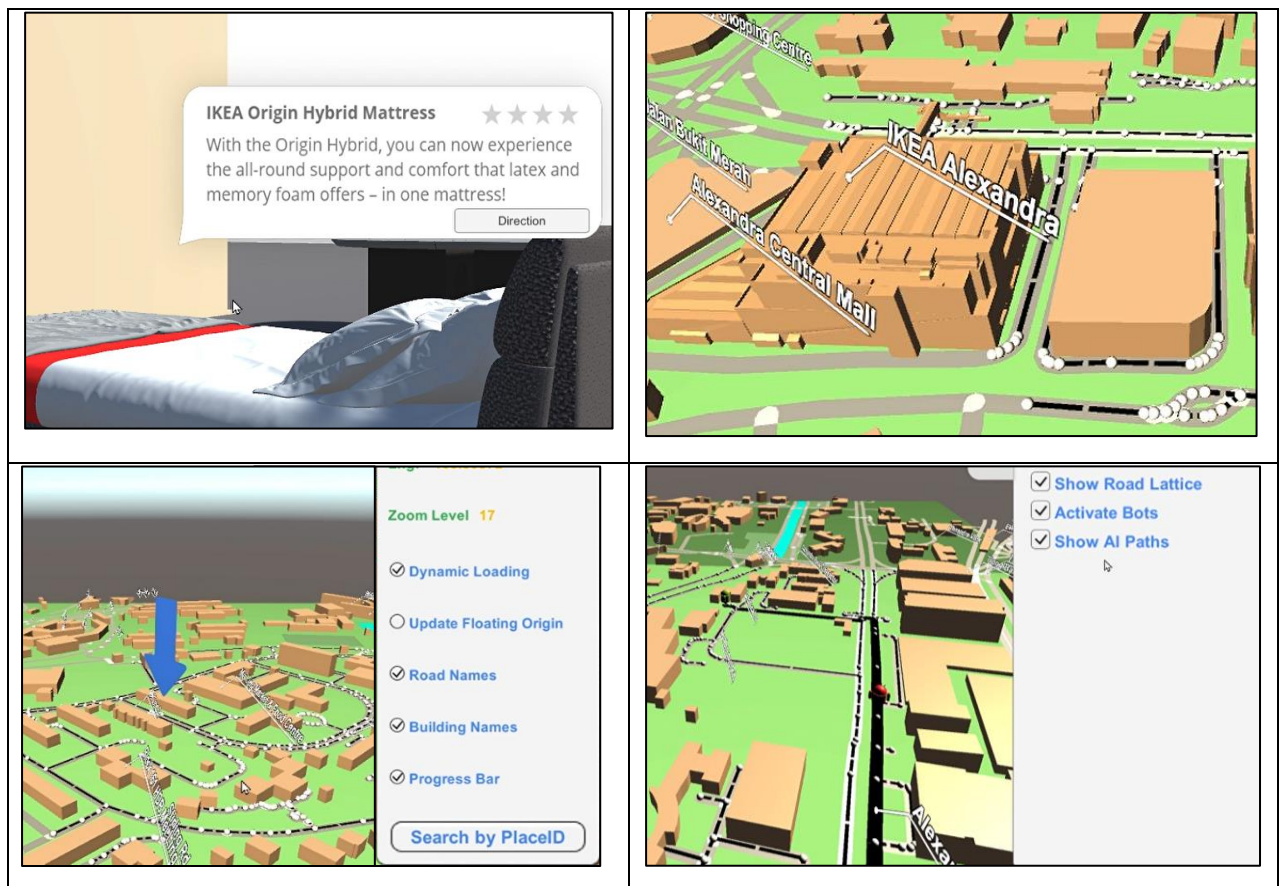
3. Media Team

3.1 Project Poster

I assisted the team in doing the project poster. The poster was done in Canva, and we were able to work on it collaboratively.

3.2 Group Report

I was assigned to oversee the group report alongside with Mabel. We re-structured the report and approached the members when necessary for their respective content of features.

The group report was done with Google Document, to work on it concurrently and easily.

Reflection on Learning Outcome Attainment

Reflect on your experience during your project and the achievements you have relating to <u>at least two</u> of the points below:
    (a) Engineering knowledge
    (b) Problem Analysis
    (c) Investigation
    (d) Design/development of Solutions
    (e) Modern Tool Usage
    (f) The Engineer and Society
    (g) Environment and Sustainability
    (h) Ethics
    (i) Individual and Team Work
    (j) Communication
    (k) Project Management and Finance
    (l) Lifelong Learning

Point 1: G
State the area: Environment and Sustainability
Throughout the project period, I was just elated about the Maps SDK for Unity function. I did not know that the SDK will be discontinued. This made me realize that there is a reason why working products are discontinued. It could be the high cost of maintenance or other possible reasons. This was the first time the sustainability of a product has impacted me closely.

Point 2: H
State the area: Ethics
As this project requires us to work in a large group of 11, with people of differing backgrounds, I have learnt that work ethic is important. Some of us prefer to work without taking a break and sometimes throughout the night. But others prefer to do it gradually but daily. Whichever method we prefer, we must still learn to appreciate and respect one another's decision.

It is also necessary to praise and acknowledge each other's effort when it comes to contribution into the project. Every presentation my group will have a rehearsal and I will offer to be their dummy audience. There are times that my members would tell me that my encouragement helped them to become more confident and felt more appreciated.

I have also noticed that setting a goal and a similar mindset before attempting any kind of projects with your members is necessary. I felt that our team chemistry (as a whole) is very positive and supportive even though most of us have not seen or know each other in campus before.