WINTEC - WAIKATO INSTITUTE
OF TECHNOLOGY

PROJECT HANDOVER REPORT

Internship - ThrillCapital
INFO710

NOVEMBER 2022

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WAIKATO INSTITUTE
OF TECHNOLOGY

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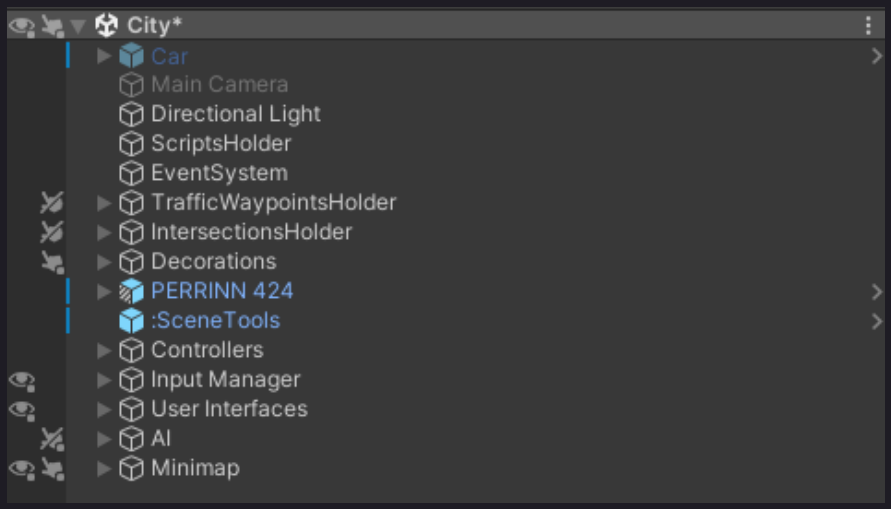
1. Technical Schemas

1.1. General Info

- Unity version: 2021.3.2f1
- User's car: PERRINN 424
- Scene located in: Assets/GleyPlugins/Traffic System/Example -> Open "City"
- Pedestrian assets and animations are from Mixamo.
- Car AIs are from Gley Traffic System asset.

1.2. Unity Hierarchy

Once you have opened the scene "City", the hierarchy will look like this:



- "ScriptsHolder", "TrafficWaypointsHolder" and "IntersectionsHolder" are from the Gley Traffic System asset, and as the names suggest, they hold the scripts, waypoints and intersections respectively.
- "Decorations" includes everything that is for decorative purposes only / doesn't hold a script (road meshes, buildings, signs, etc.).
- "PERRINN 424" is user's car, and ":SceneTools", "Controllers", "Input Manager", "User Interfaces" are all the things that come with the car.
- "AI" holds objects and scripts about the pedestrian AIs.
- "Minimap" has the minimap camera and street names.

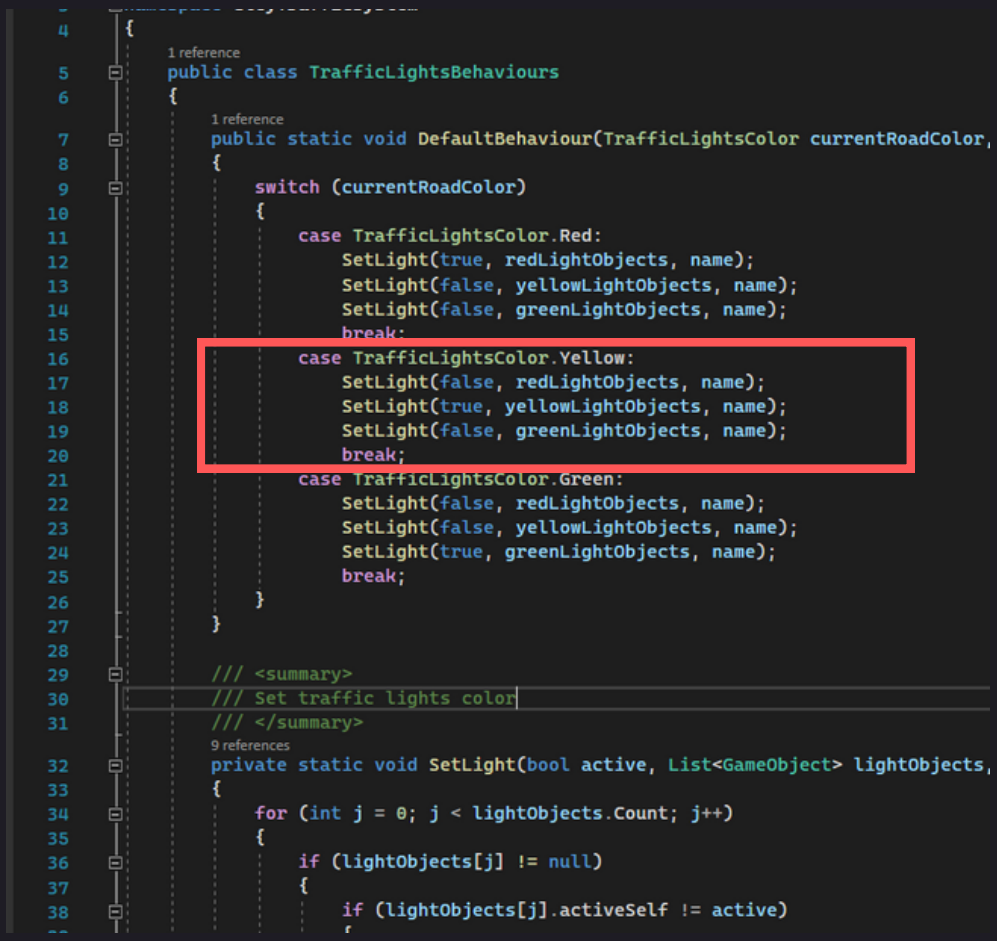
1.3. Modified Scripts

I modified some scripts that came from Gley Traffic System:

- "TrafficLightsIntersection.cs": can be found at Assets/GleyPlugins/TrafficSystem/Scripts/Core/Traffic/Intersection. The code block below makes all the traffic lights stay red for 500 frames after a yellow light expires, and the pedestrian lights green during that time, then change one of the traffic lights to green, and all the pedestrian lights to red.

```
109             return;
110
111         if (yellowLight == false)
112         {
113             if (realtimeSinceStartup - currentTime > greenLightTime)
114             {
115                 Debug.Log("Yellow light");
116                 ChangeCurrentRoadColors(currentRoad, TrafficLightsColor.Yellow);
117                 ApplyColorChanges();
118                 yellowLight = true;
119                 currentTime = realtimeSinceStartup;
120             }
121         }
122         else
123         {
124             if (realtimeSinceStartup - currentTime > yellowLightTime)
125             {
126                 ChangeCurrentRoadColors(currentRoad, TrafficLightsColor.Red);
127                 timer++;
128                 Debug.Log(timer);
129                 if (timer > 500)
130                 {
131                     currentRoad++;
132                     currentRoad = GetValidValue(currentRoad);
133                     ChangeCurrentRoadColors(currentRoad, TrafficLightsColor.Green);
134                     yellowLight = false;
135                     currentTime = realtimeSinceStartup;
136                     timer = 0;
137                 }
138                 ApplyColorChanges();
139                 if (carsInIntersection.Count == 0 || exitWaypoints.Count == 0)
140                 {
141                     //Debug.Log(timer);
142
143                 }
144             }
145         }
146     }
147
148
149     /// <summary>
150     /// Used for editor applications
151     /// </summary>
152     /// <returns></returns>
        2 references
153     public override List<IntersectionStopWaypointsIndex> GetWaypoints()
```

- "TrafficLightsBehaviours.cs": can be found at Assets/GleyPlugins/TrafficSystem/Scripts/Core/Traffic/DelegateImplementation. The function DefaultBehaviour sets the default traffic lights and because the asset's developer made it for the US, originally, when the yellow light turned on, the green light was also on, so I changed it to match with New Zealand's traffic lights (only one light is on at a time).



```
{
    1 reference
    public class TrafficLightsBehaviours
    {
        1 reference
        public static void DefaultBehaviour(TrafficLightsColor currentRoadColor,
        {
            switch (currentRoadColor)
            {
                case TrafficLightsColor.Red:
                    SetLight(true, redLightObjects, name);
                    SetLight(false, yellowLightObjects, name);
                    SetLight(false, greenLightObjects, name);
                    break;
                case TrafficLightsColor.Yellow:
                    SetLight(false, redLightObjects, name);
                    SetLight(true, yellowLightObjects, name);
                    SetLight(false, greenLightObjects, name);
                    break;
                case TrafficLightsColor.Green:
                    SetLight(false, redLightObjects, name);
                    SetLight(false, yellowLightObjects, name);
                    SetLight(true, greenLightObjects, name);
                    break;
            }
        }

        /// <summary>
        /// Set traffic lights color
        /// </summary>
        9 references
        private static void SetLight(bool active, List<GameObject> lightObjects,
        {
            for (int j = 0; j < lightObjects.Count; j++)
            {
                if (lightObjects[j] != null)
                {
                    if (lightObjects[j].activeSelf != active)
```

1.4. Pedestrian Scripts

See video attached (called "Code Structure").

2. Product Status

I think this map will only be considered as most a prototype since it's not a fully fleshed out, finished simulation yet. There are still a lot of things to be developed in the future.

3. Outstanding Requirements

There are no specific requirements that needed to be done, but there are improvements to be made in the future. See section number 7 for future development ideas.

4. Administrative Information

- GitHub location: https://github.com/NoahNg/project-424-unity
- Gley Traffic System YouTube tutorials: https://www.youtube.com/watch?v=hjKXg6HtWPI&list=PLKeb94eicHQtyL7nYgZ4De1htLs8lmz9C
- Gley Traffic System Discord server: https://discord.gg/7FGPVXDQ
- For Mixamo.com, you will need to create an account, and then you can get their meshes and animations for free.

5. Quality and Testing Standards

There weren't really any testing standards. Everything was fine as long as David and Chan were happy with it.

6. Bugs/Issues

Screen reload function (backspace) doesn't work sometimes.

7. Future Development Ideas

- Develop another car to be used as user's car with more realistic functions, such as indicators and side mirrors.
- Make the pedestrians more unpredictable. For example, they can walk in groups, change their speeds in runtime, etc.