GEA Folder - Driver's Test Traffic Simulation

Introduction

My simulation is a simulation of a Driver's Test where the player will follow some directions to get to a free parking spot, whilst making sure not to break any traffic rules. If the player breaks any traffic rules, they'll fail the driver's test and it'll reset the simulation. The traffic rules implemented in the simulation are as follows: running a red light or crashing the car into anything.

How to Run Simulation

Controls

To move the car around you can use WASD or arrow buttons on the keyboard:

- W (up-arrow) accelerates the car
- S (down-arrow) decelerates the car and starts reversing when the car is stopped
- A (left-arrow) turns the car left
- D (right-arrow) turns the car right

Playing the Simulation

To run the simulation, make sure the SampleScene is opened then enter the Play mode, if you are in Unity Editor. Once in play mode, an explanation of what to do in the simulation will pop up, with a Start and an Exit button. When clicking on start the simulation will begin and you can drive around. Follow the directions to the parking spot on the right side of the screen and make sure to not break any traffic rules, as this will reset the driver's test. Once you've parked the car inside the grey outlined box the simulation is over, and you can either Restart or Exit.

Explanation of the Components in Simulation

Player Movement

The CarMovement script includes all the logic for how the player moves the car. I am using Unity's AddForce for the physics, and Raycasting to check if the car is on the ground, and flipped.

AI Cars

The AI Cars follow a set path which I created using Unity's Spline tools. I pause their animation when there is a car in front of the AI Car, or if there is a red light, or if they have to yield at the Three Way Junction. AICarMovement script includes all of the logic for the AI Cars.

Traffic Light Junction

The TrafficLightControl script has all the logic for each individual traffic light, which changes color in a loop.
The TrafficJunctionManager script includes all the logic for the whole traffic junction.

Three Way Junction

Each three way junction has three different trigger boxes with a TriggerBoxCheck script attached, which checks if an AI Car or Player car has entered the trigger box, depending on the Tag of the trigger box.
The ThreeWayJunctionManager script includes all of the logic for stopping the AI Car if another car is in one of the two big trigger boxes.

Parking

The ParkingTriggerCheck checks if the player has entered a trigger box, and the ParkingManager script checks if both trigger boxes in the ParkingCube object has been entered by the player.

Scene Manager

The ManageScene script holds control of what UI element to activate depending on the situation. It also pauses and resumes the scene.

Assets Used

I have downloaded and used some free assets found in the Unity's Asset Store. Some of these assets included their own Scripts, which I have not used in this simulation. The assets used in this project are as follows:

- City Traffic Lights Pack [FREE] - Low Poly 3D Art *by Tarbo Studios*
- Modular Lowpoly Streets (Free) *by EVPO Games*
- Down Town Park – Lite *by Gamemag Creation Studio*
- Car'Toon : The Sport Car with interior *by Pixtim*
- Road Sign – Big Pack *by Mixall*