

Virtual Environments – Report Group H

Challenges:

The group faced some challenges while carrying out the project proposal.

The first challenge was the models. The group needed to create models and find models online that would run on a mid-range mobile device. This ultimately meant, an environment with a low poly count. The vehicles, and other models would need to be quite minimal in terms of detail for this to work. The team was able to develop some models for use in the environment, as well as source some of the more difficult models to create, on the web.

How to navigate the experience of shopping for a car. And how to implement the “additional feature”, changing the car colour. Each car would need to have a pre-set number of colours to be able to change to and some form of functionality to carry out this change. Scripts were created to facilitate this, in addition to resources used in the final laboratory session, which covered interaction. Buttons were added on the ground such that when the player walked over them, the colour of the car would change and be stored. Simply, the material is changed on the body of the car when the user enters the collision for that specific colour in the specific scene for the vehicle.

Secondly, the movement needed to be addressed. It had been mentioned in one of the earlier lectures that teleportation could be used to navigate the environment. However, upon further research, this didn't seem feasible, nor necessary. Thankfully, the assignments covered gaze based movement, which sufficed for what the group needed to accomplish.

The next challenge that was faced was the UI portion of the application. The code and text elements of the UI were present on Moodle and in the labs. The group needed a way to change the text based on selected vehicles and performing the buy action. The solution was to rename the text labels, allowing the text to be modified based on the interaction component discussed in the lab. When a user enters a collision body, the text is changed, based on the box that was entered.

The group worked very well together and there were no stresses in getting everything done in time. All group members played their part and had some laughs along the way. Overall, the group enjoyed developing a virtual reality project, and can now use this as a portfolio project for future employers, showcasing not only design and programming skills, but showing that they worked swiftly and effectively as a team to compile the components into a working application.

Individual contributions:

HUGO CAFFERTY:

Hugo designed the models for the main desk, the office chair, and the regular chair. Hugo sourced the car models and came up with a solution for changing the car models, using the “areas” on the ground. Hugo designed scripts for changing and saving the colours and display the selected colour and vehicle on the UI, in addition to another script that would make the cars spin on the platforms. Hugo also designed the “Buy” script, which is triggered when the user walks over the “buy” button. This changes the text on the screen to show a purchase notification for the vehicle, again displaying the car name and the colour. Hugo added in any extra models that the team designed towards the end of the project. Hugo also provided a video of the application running and compiled the “.apk” for the lecturer.

SEAN KENNETH MAGUIRE:

Sean spent time designing the “tire stack” model, as well as laying out some of the design elements for the environment, including a general rule of where things should be placed in the environment. Sean also added in the skybox to the world to work with the windows created in the environment. Sean also worked on creating lighting for the dealership, adding different lighting effects to add immersion and achieve higher presence.

NIAMH EMMA CONNOLLY:

Niamh put some time into designing a beautiful infographic for the project, showcasing all aspects of the project, including the logo, showcasing the products, the customisation, the environment, and the process of customising and purchasing the selected car. Niamh also designed some of the models, including “bamboo”, “tree”, “cactus”, and “cleaner”. She uploaded drafts of the infographic and asked for the teams input on how it should be formatted. Niamh took the initiative to update the infographic as the project changed.

PADRAIG HALSTEAD:

Padraig designed the stands for “Colour” and “Buy”, in addition to the car dealership itself. Padraig also created a GitHub repository for the group to upload and manage files. Padraig compiled the models created by the team into the finished environment, including the designed models, models from the web, and scripts developed by Hugo and the scripts for locomotion from the lab assignments. This gave the project a base for other members to work on scripts, add lighting, extra models, and the skybox around the outside.

ASTLE MALCOLM CUTINHA:

Astle designed a couple of models, including a cash register, a divider for the vehicles, and a carpet. Astle added these into the scene along with some of the other group members models. Astle also worked on creating lighting for the dealership, adding different lighting effects to add immersion and achieve higher presence.


Infographic:


Reality Motors CAR DEALERSHIP

1

The Store

Reality Motors is a virtual car dealership that prioritizes customer convenience. Our store provides an immersive shopping experience where customers can browse products virtually.





2


Our Products


Customers can walk around the virtual store to view our products. Reality Motors currently has three different car models on display.

3

Customisation

Reality Motors provides product customisation options for customers. For each product, customers will have the option to view the car in a different colour.





4


Immersive Environment

Reality Motors virtual store contains a number of other products seen at a dealership, as well as decorations such as plants and lamps to boost customer immersion.

5

The Process

Once a car model and colour are selected, customers can choose to purchase a vehicle at the desk. This process allows for an immersive and stress free shopping experience.



realitymotors.com

References / Sources:

Low poly sports car: “Low poly race car game ready” by “damonfury3”

<https://www.blendswap.com/blend/20642>

Ford Angila: “Ford Angila | Low poly car” by “sudeepsingh”

<https://www.blendswap.com/blend/25003>

Suzuki Mariti: “Low Poly Taxi” by “sudeepsingh”

<https://www.blendswap.com/blend/28524>

Simple Computer: “Retro computer” by “senmurai”

<https://www.blendswap.com/blend/26625>

Skybox: “Kloofendal 48d Partly Cloudy (Pure Sky)” by “Greg Zall” and “Jarod Guest”

https://polyhaven.com/a/kloofendal_48d_partly_cloudy_puresky

VR Player Locomotion:

https://moodle.maynoothuniversity.ie/pluginfile.php/1228586/mod_resource/content/0/VRPlayerLocomotion.gd

VR HUD:

https://moodle.maynoothuniversity.ie/pluginfile.php/1228584/mod_resource/content/0/VRDebugHUD.tscn

https://moodle.maynoothuniversity.ie/pluginfile.php/1228853/mod_resource/content/0/VRDebugHUD.gd

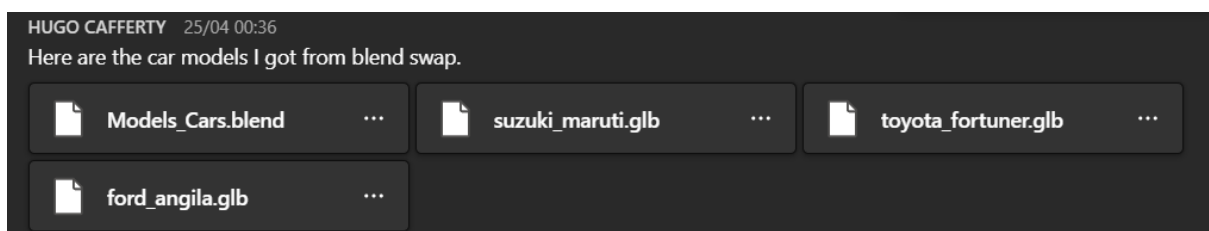
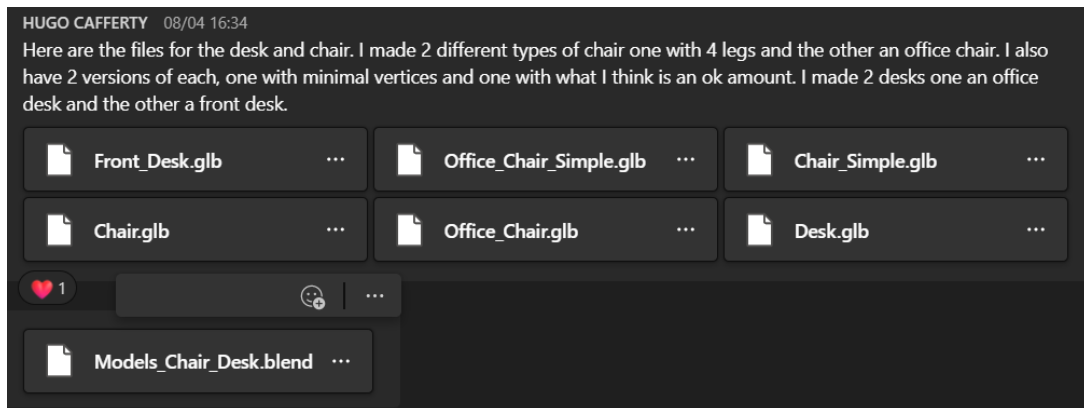
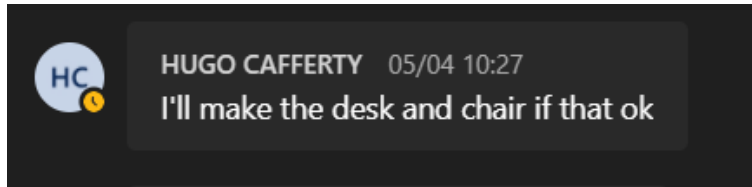
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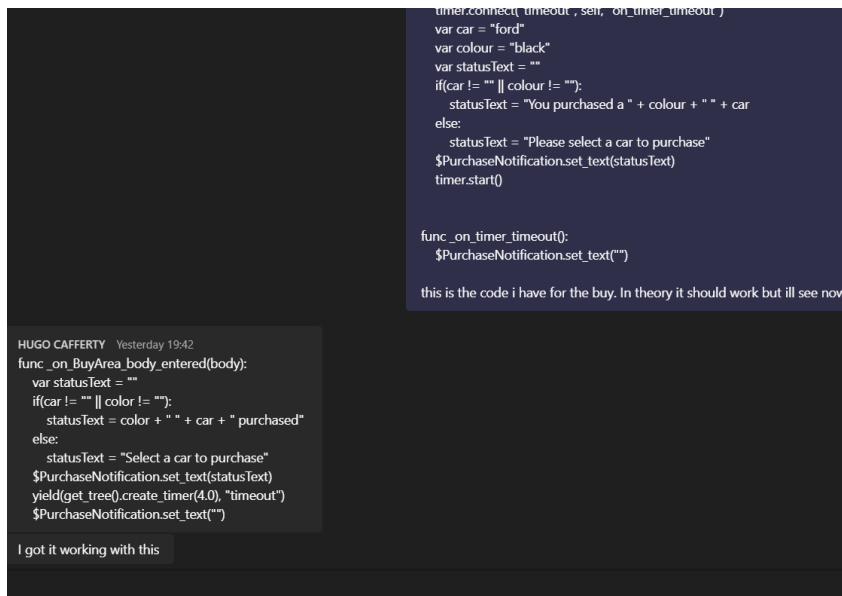
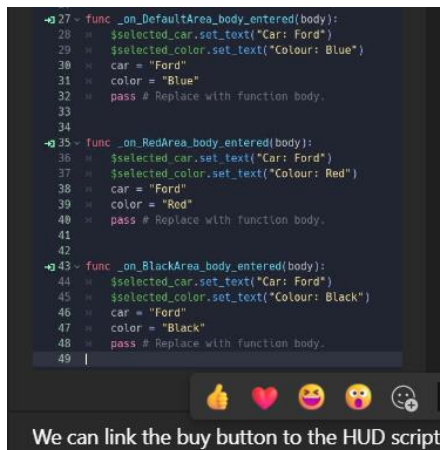
https://moodle.maynoothuniversity.ie/pluginfile.php/1231454/mod_resource/content/0/Lamp.gd

OpenVR module: <https://godotengine.org/asset-library/asset/150>

Appendix on Group Contributions

HUGO CAFFERTY:





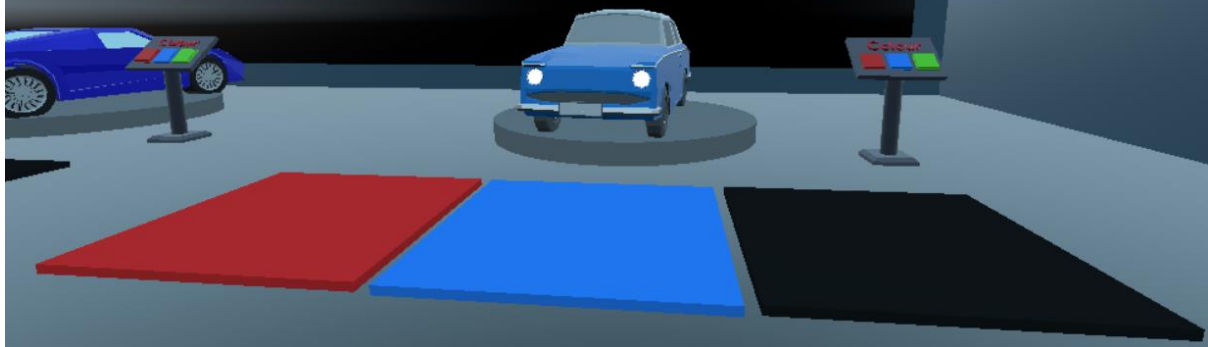
CAR: NONE
COLOUR: NONE

PLEASE SELECT A CAR

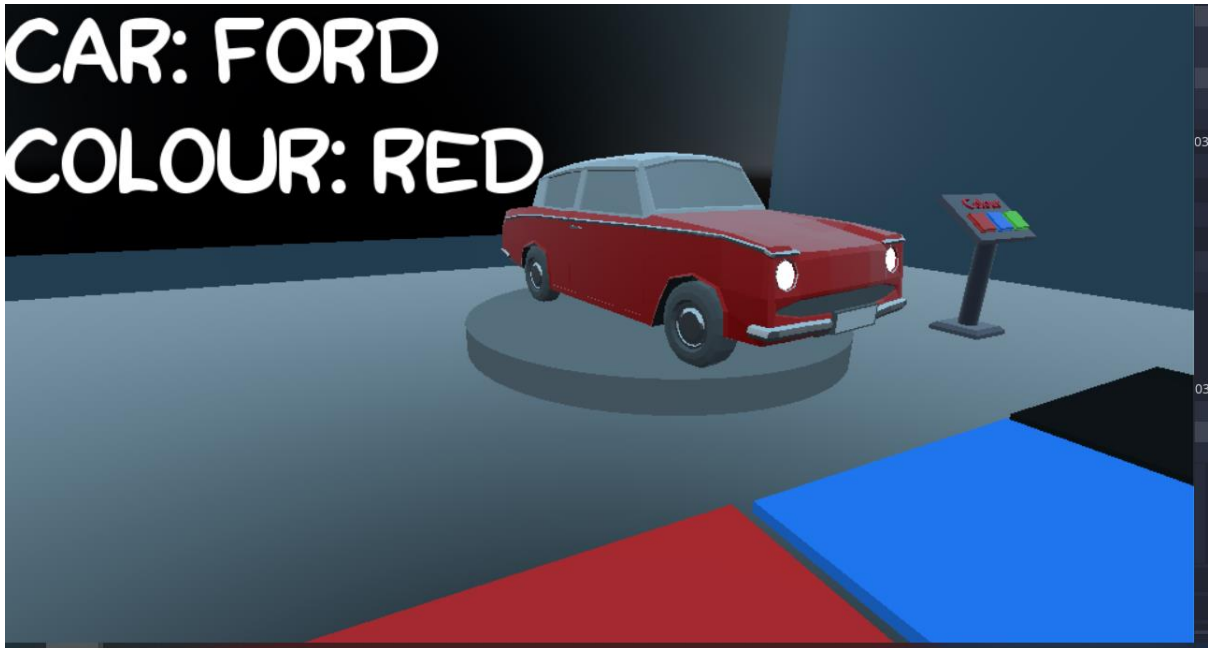
CAR: FORD
COLOUR: BLACK

BLACK FORD PURCHASED

CAR: FORD
COLOUR: BLUE



CAR: FORD
COLOUR: RED



HUGO CAFFERTY 05:22

I added the tree and cactus and made a fake collision for the VR player using scripts since real collision doesn't work with VR

The GitHub is up to date

SEAN KENNETH MAGUIRE:

SEAN KENNETH MAGUIRE 10/04 12:21

Nice work. I'll do the tyre stack and maybe the main desk if everyone's ok with that. I'll have it done by Wednesday night

SEAN KENNETH MAGUIRE Yesterday 12:32



tireStack.blend

...



SEAN KENNETH MAGUIRE 25/04 13:48

Okay I'll start piecing stuff together this evening / tomorrow! I won't be at the lab on Thursday I have work. But I'll get it sent in for Wednesday night latest.

Thursday

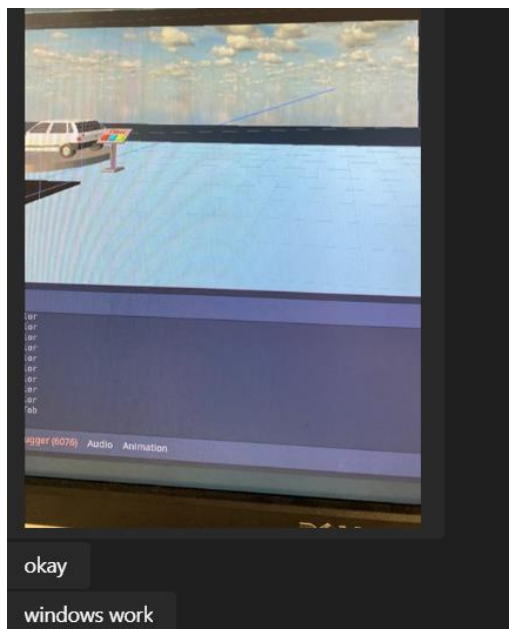
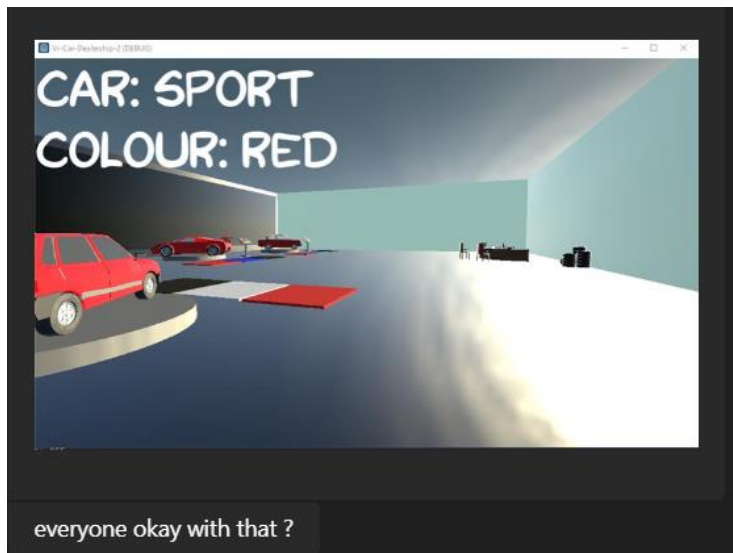
SEAN KENNETH MAGUIRE Thursday 09:49



Dealership.blend

...

I have this done at the moment, not completely done but its a start.



SEAN KENNETH MAGUIRE 13:47
I added a directional light to the scene.

SEAN KENNETH MAGUIRE Yesterday 18:12
maybe not sure, it was 70mb for 4k so I lowered the resolution of the download says its 5mb

let me know how that is now.

 VR-Car-Dealership-main.zip ...


https://polyhaven.com/a/kloofendal_48d_partly_cloudy_puresky

 **Kloofendal 48d Partly Cloudy (Pure Sky) HDRI • ...**
Download this free HDRI from Poly Haven
polyhaven.com

thats the link for the pic if u need it for references

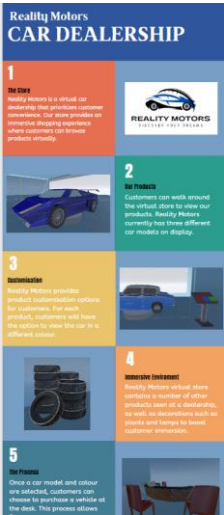
NIAMH EMMA CONNOLLY:

Hey, this is the first draft of the infographic, if you want me to change anything let me know




Car Dealership Infographic.pdf

...




NIAMH EMMA CONNOLLY Yesterday 20:53


Hey, Sorry if I double sent this but it's not showing up as sent for me. I made a potted plant, cactus and bamboo that can be added to the store for decorations. I also made a cleaning product. I thought we could use these to talk about customer immersion like in the infographic if these are okay?

 bamboo (1).blend


...

 tree (1).blend

...

 cactus (1).blend

...

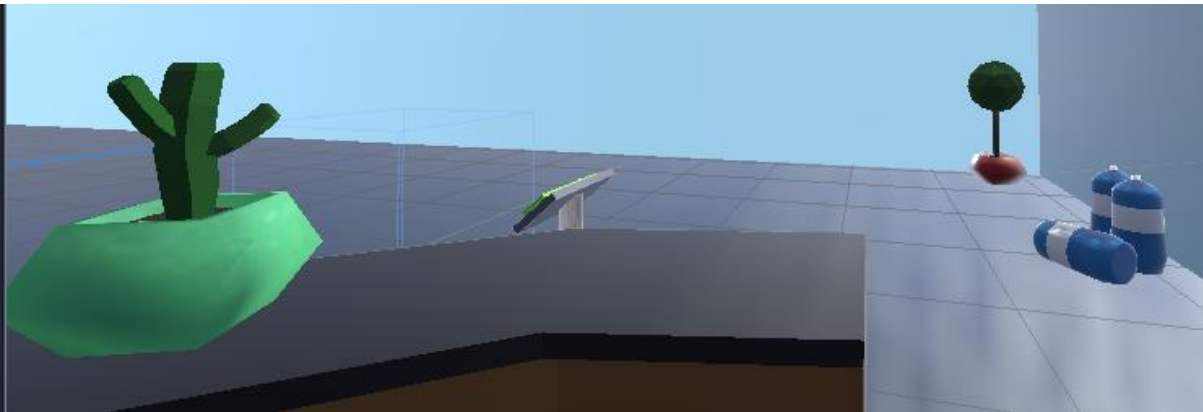
 cleaner (1).blend

...

Today

10:43

Yep we can get those added in and you can add them into the infographic



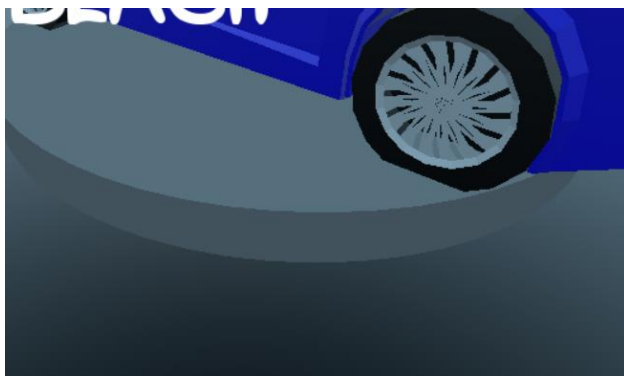
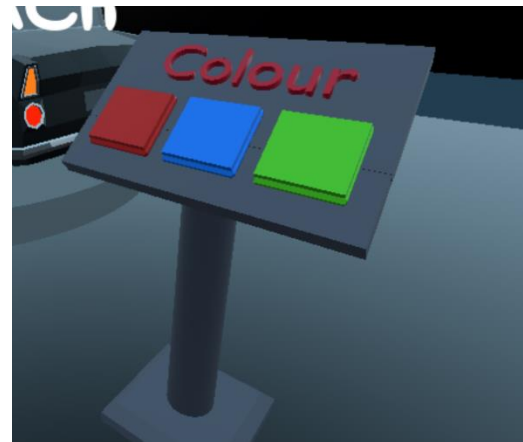
PADRAIG HALSTEAD:

12/04 03:19

Have buttons for selecting car, changing colour and platforms for cars to sit on. I won't be around for the rest of this week for a meeting so we can perhaps have a meeting at the end of the lab next week? I think if we have a collection of all the models, we can place them around in a godot world and see how they fit, and design the showroom around it. He briefly covered teleportation and gaze based movements in the lecture, we may need to use gaze based because it needs to run on an android which may not have hand interactivity. So we'll need to think about that too. Great work so far anyways guys 😊 thanks.



blendfiles_ph.zip



24/04 16:10

Dealership. Not much detail on the external, as the player will not be outside the dealership. May consider getting a city backdrop of some form, so when you look out the windows it's not just blank. If there are any improvements you think could be made, let me know and I'll try add them in.

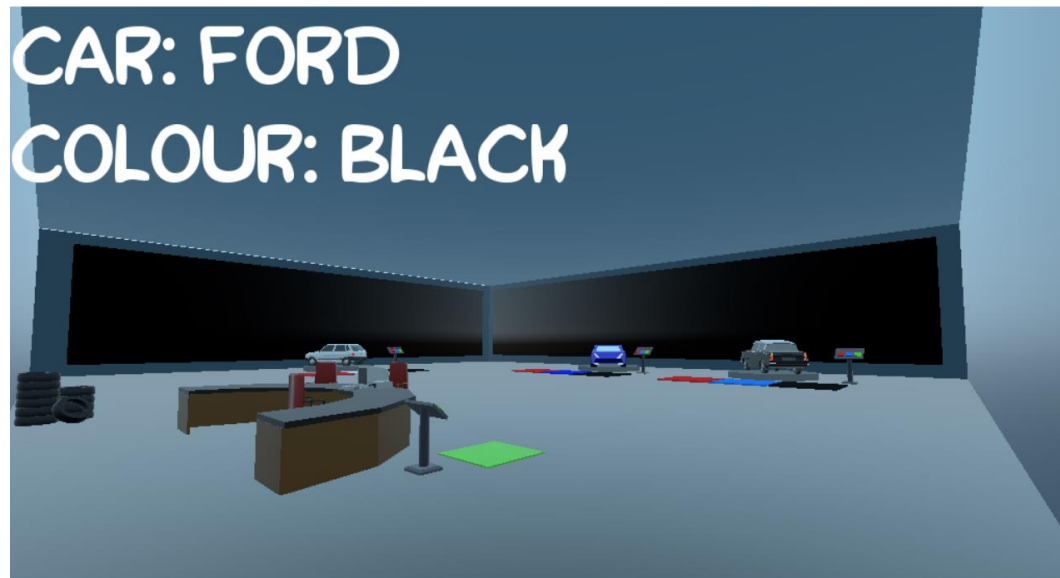


Dealership.gltf



Dealership.blend





Thursday 12:56

No meeting today, I created a github repo for everyone to be able to access everything in one place. I sent invites to emails. If you use a different email for github, let me know. [NIAMH EMMA CONNOLLY](#), [ASTLE MALCOLM CUTINHA](#), any update on the

PadraigHalstead / VR-Car-Dealership (Private)

Unwatch 1 Fork

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main 2 branches 0 tags Go to file Add file <> Code About

Your main branch isn't protected
Protect this branch from force pushing or deletion, or require status checks before merging. [Learn more](#) **Protect this branch** ×

Cactus136 Buy script for HUD 6705511 19 hours ago 8 commits

VR-Car-Dealership-2 Buy script for HUD 19 hours ago

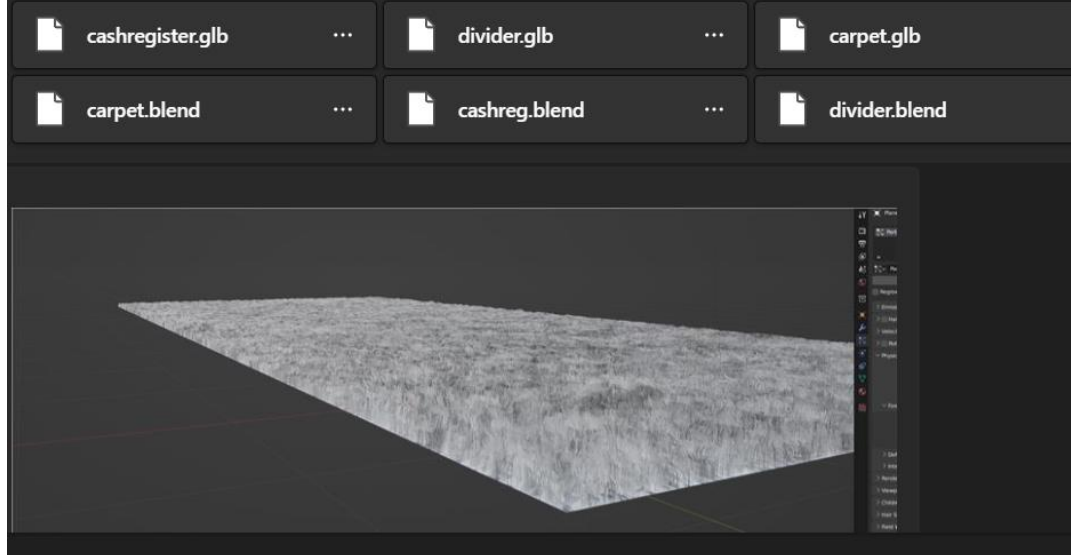
About
4th year group project.
0 stars
1 watching
0 forks

Releases
No releases published

ASTLE MALCOLM CUTINHA:

So for the divider just change spacing depending on how you want it to be. these are for the cars so people dont go touch the carpet...yeah i dont know whats wrong with it. I imported it into Godot and UE5 and they both look scuffed. worst case just have the weird looking version added.

What else do u guys want me to do? I can make 1 or 2 more meshes if necessary.



ASTLE MALCOLM CUTINHA Yesterday 18:59

so guys, with the lighting, the black windows kinda block it. There is a slight gap in the ceiling with allows some light in and the directional light increases exposure but thats all there is. Is there something we can do to change the windows maybe? its not exactly high priority.

I also added my meshes in, before i send the zip file should i add anything else in? [NIAMH EMMA CONNOLLY](#) i think u had a cactus u wanted in oor soomething?

