Group 5’s Report

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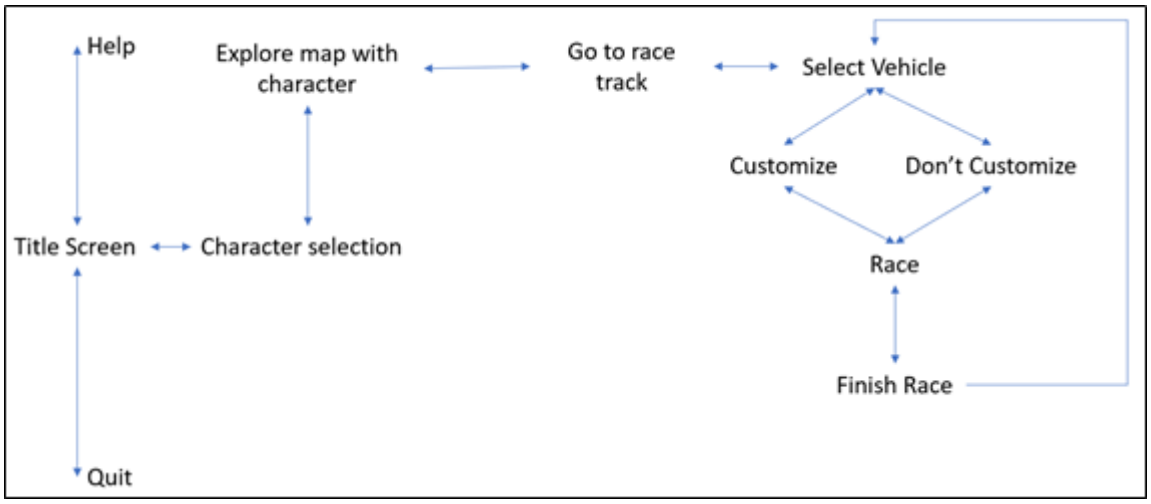
Concept and Designs

Our concept is to create a hybrid between 3rd person racing game and a toy car shop which will be done via 3d models we will create and be put into Unity so we can create the game. A lot of the current racing games are very realistic or overly dream-like, so we want to create a middle ground with our racing game. Our project will fix the problems with the current racing game as we will provide the users with an environment where they can view the vehicles that we will create in 3d modelling software and allow them to customise and race with the vehicles. We plan to make this project easily interactable to provide the user with a more friendly environment.

In our project, we will have it so you can walk to the vehicle after selecting from a variety of characters from a selection and see if from different camera angles which will be interior, passenger seat (if applicable), exterior view, and a slightly further exterior view. We also may include a VR option; however, we aren't entirely sure about this. This will allow the user to pick the correct vehicle they wish to use. We will also allow certainly customisable to be used such as colour, wheels, rims, engines, and frames which will change the stats of the vehicle. From this point, they will be able to get into the vehicle and simply drive away and it will teleport them to a relevant track where they can test the speeds, brakes, and general systems of the vehicles.

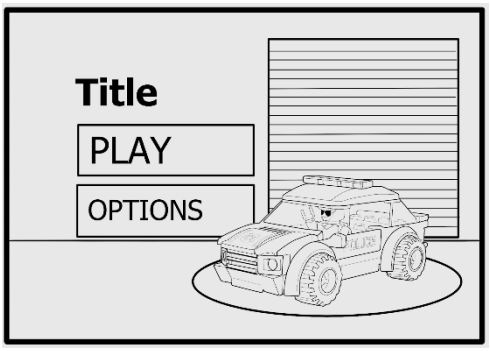
We came up with the idea from a few games which are Hot Wheels UNLEASHED and Forza Horizon 4, wherein both you can race and in Forza, you can have an open world option where you can drive over a map located in the UK. However, both don't have an option to view the cars at a closer view as you aren't able to have a first-person view which means you are only stuck with the 3d view on the outside of the car.

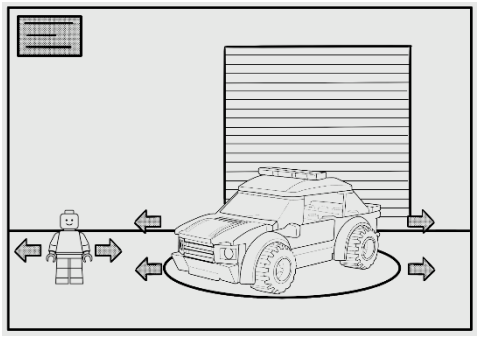
Design Diagram: Flow chart



Above we have a flow chart that has a step-by-step design about how you would play the game. The user will be able to move from and to each waypoint as shown above.

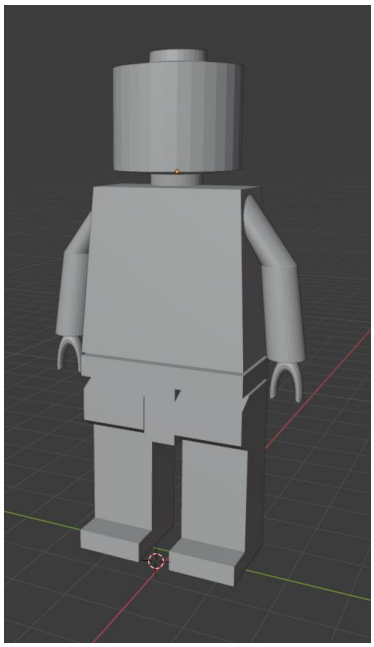
Storyboard and Diagrams





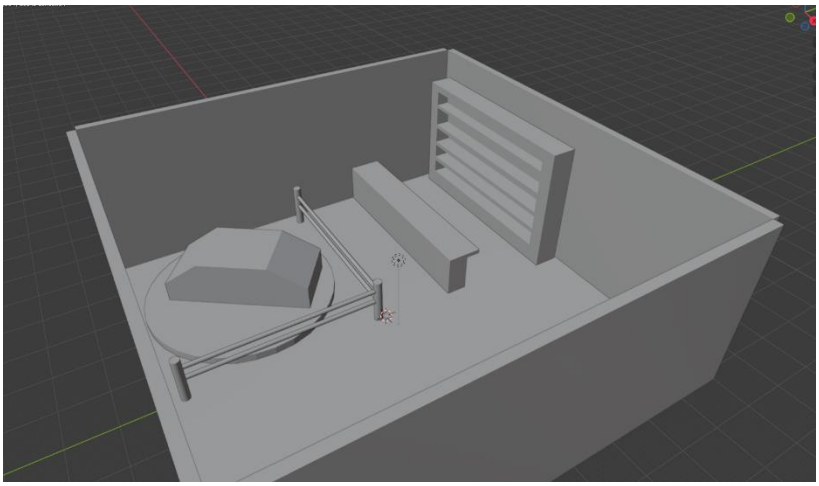
-Seamless transition from menu to garage menu

-Garage menu may be changed to an interactable 3d environment



purposes.

- Player Model WIP.
- Player will be fully animated with a 3rd and 1st person camera
- The garage has been blocked out for planning



Navigation Framework

For our navigation system, we will primarily use a mouse for menu navigation and keys for movement within the environment, the keys will be set to a familiar binding of WASD for ease of use. We will have multiple camera angle presets that will be available for the user to choose from, this menu will be easily accessible with the ESC key. This button will also have options to navigate to other potentially required features such as graphical settings, reset buttons and return to the main menu.

Within our garage the mouse will be the main method of navigation for menus and interactions, the player will be able to click and drag the selected vehicle to rotate it and view interiors via camera buttons and sliders.

Once the player selects their character and vehicle then the mouse will disappear and will only reappear once the player pauses the game and accesses the menu.

Interactivity(cameras), Selection, Manipulation

We are including various cameras in our racing game. Firstly, we'll have a camera for the main menu, where we will stick 2D buttons for the player to navigate the menu. A second camera will be used to showcase the player's character and car. 2D interaction will be involved, as the player will be able to customize the car by clicking on the arrow button. Pop-ups will be used to tell the player critical information, such as not having enough credits to buy customisation. Other examples may include buttons to show the status of the car, such as speed/handling. We'll be using a 2D heads up display to notify the player how many credits he's collected during the race, and how much boost the player has. Smooth and seamless camera movements will

Animation, Movement, Narrative

We are going to have animations for our car model. There will be interactive animations built into it and the way the animations will be triggered is by either pressing keys on the keyboard or clicking on the parts that have animations such as doors, windows and even the boot and bonnet. This will allow the player to fully explore the car however depending on the time, the bonnet would most likely be empty as it would take a little bit of extra time to make a simple model of the engine. When the car drives the wheel will be animated just as the steering wheel whether it goes left or right as for the wheels to spin the wheel will spin faster the longer you hold a certain button. Animation other than the car will depend on the time we have available such as environmental elements we would animate some trees, grass perhaps and have some intractable fences that break on impact as a future plan.

Lighting, shaders, and texturing

We want our game to be visually appealing for the user. Therefore, creating the best visuals we can is essential to grab the user's attention. We plan to have 2 options for our lighting, one will be a daily cycle of the map and one will be a night cycle.

Lighting

For the night cycle, we will use a variety of hues which will consist of blue and purple. The lighting would need to look very realistic to allow the user to believe that they are in a vehicle and are about to race in their chosen vehicle. Some examples can be found in Figure 7.1.

Figure 7.1

Our day cycle will be different from our night cycle as we will be using a mix of yellow, red, and oranges while tinkering with the saturation levels to make it look like and feel that they are in the summer heat about to race. Examples of this will be in Figure 7.2.

Figure 7.2

Shaders & Textures

Our models and textures won't look like real cars or motorbikes, they will look more like toys, because of this, we will need to increase the realism of the models and textures by applying a shader to the models. We will need to go with a reflective or glossy shader so that the light from the map will affect the visuals of the vehicle creating a more realistic effect. However, doing this for every model we have in the game will cost the CPU, because of this we will only apply this shader to certain models and not e.g., background models etc.

Commercial Analysis

Most 3D interactive products that are online are very similar to each other as they give the user a 3D space to interact and explore with other objects that they are given, and most of these products are either for selling products or educational purposes. The 3D interactive product that we are going to create is more of a showcasing type where you can pick a car model that we create, customise it and test the car out.

UI Efficiency

We want to make sure that our user interface has a wide range of options for you to choose from so that the player will have the flexibility to move around the menus.
To make sure that the format of the text is visible to the player could be done by simple design changes such as keeping the texts bold so that they stand out or even blurring out what is in the background if necessary. The player will be able to move around the menus by using either a keyboard/controller or a mouse. The UI will have limited options to make it as simple as possible.