Technical Documentation for Buggy Factory

SUMMARY

Executive Summary

· This document serves as the technical documentation for Buggy Factory, consisting of following contents

1. Code Repository
2. Unity Prefabs
3. Unity Scripts and Project Structure

CONTENT

Code Repository

· We use github as our code repository, which can be found at https://github.com/NickGod/Prototype_BuggyFactory.git.

Unity Prefabs

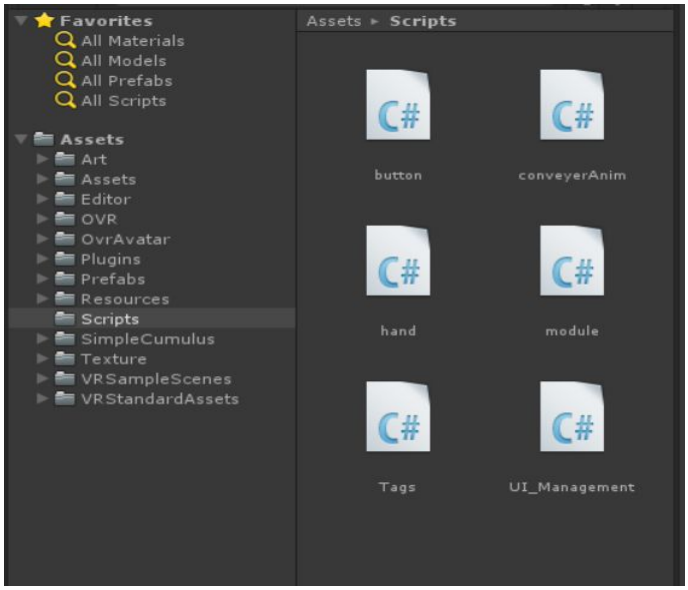
· This project has following prefabs

Unity scripts and Project Structure

· The Unity project follows the following structure

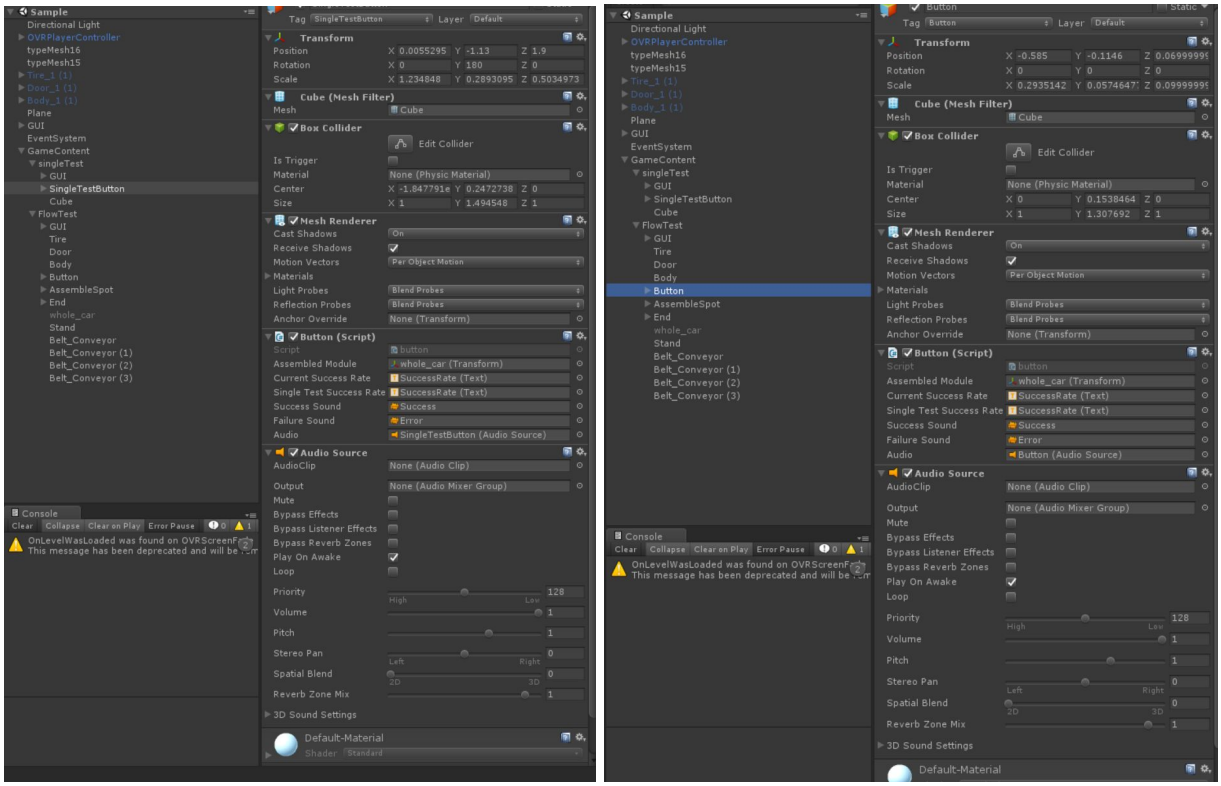
Scripts folder(as shown below) has all the code we have:

- *button.cs*
- *conveyerAnim.cs*
- *hand.cs*
- *module.cs*
- *Tags.cs*
- *UI_Management.cs*

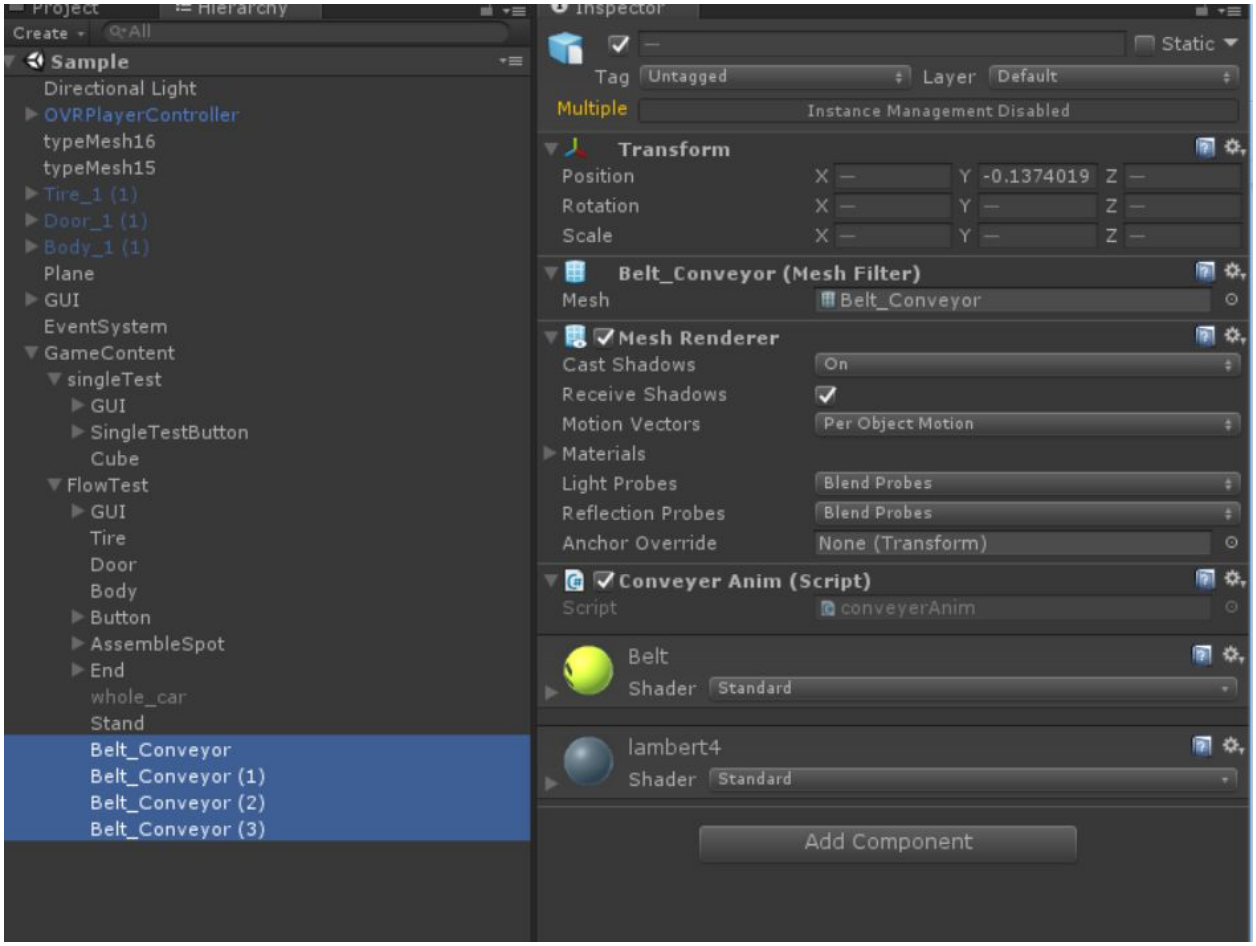


· Detailed explanation on object and script correspondence, features/functionalities enabled by scripts.

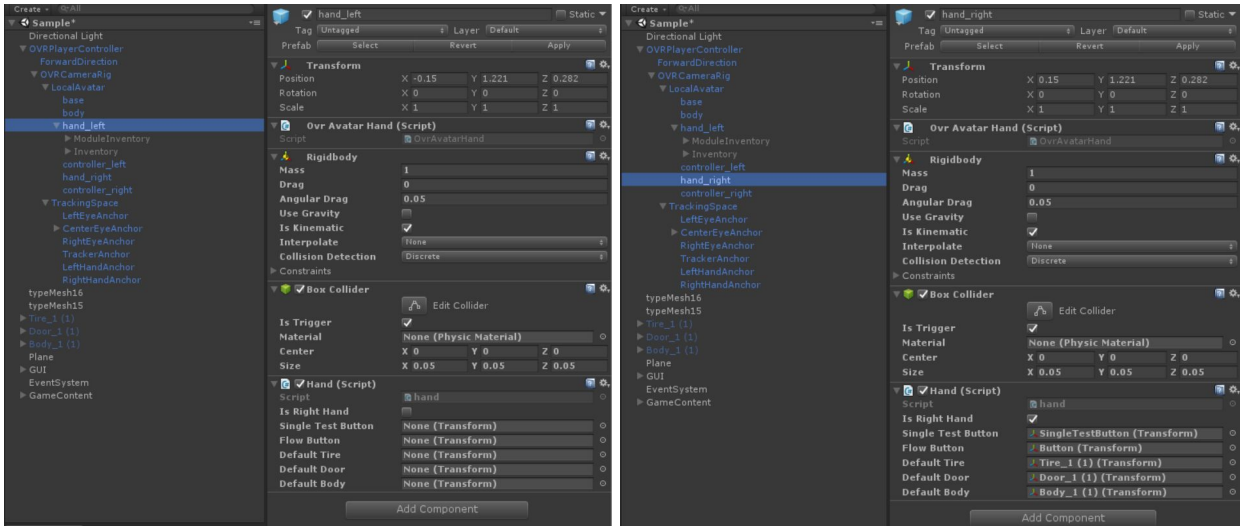
Button.cs: Responsible for major logic in game, e.g the movement of different parts of a car generated by module factory, the assembly of different components, and the movement of the manufactured car. It should be attached to either “SingleTestButton” and “Button” gameObject. The SingleTestButton gameobject should be tagged as “SingleTestButton” and the button gameobject should be tagged as “Button”.



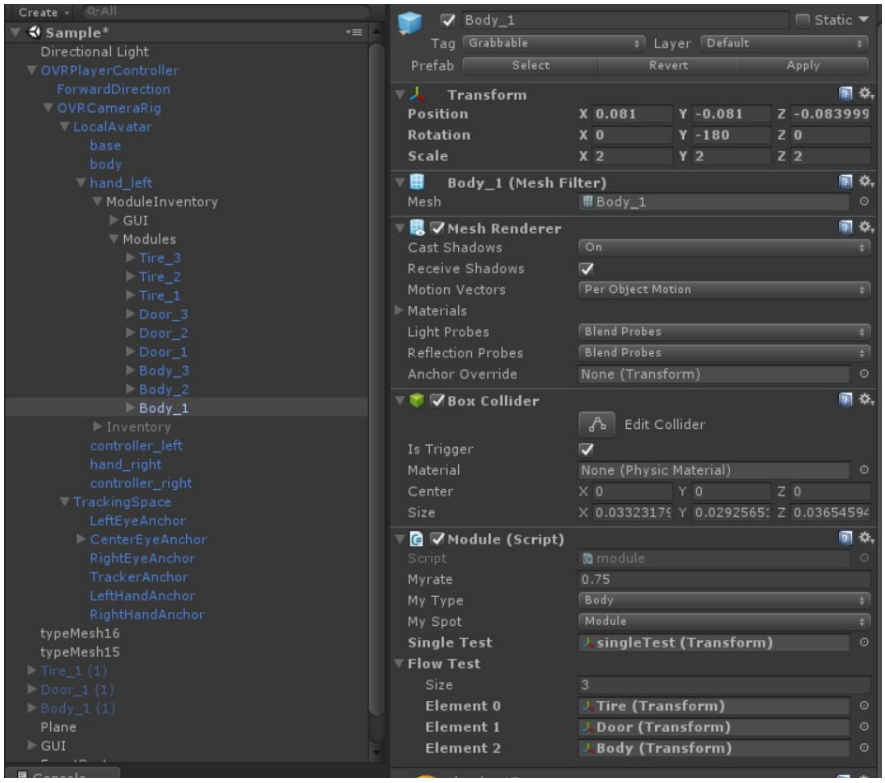
ConveyerAnim.cs controls the rolling animation for the conveyer. This script should be attached to Belt_Conveyor. (Shown below)

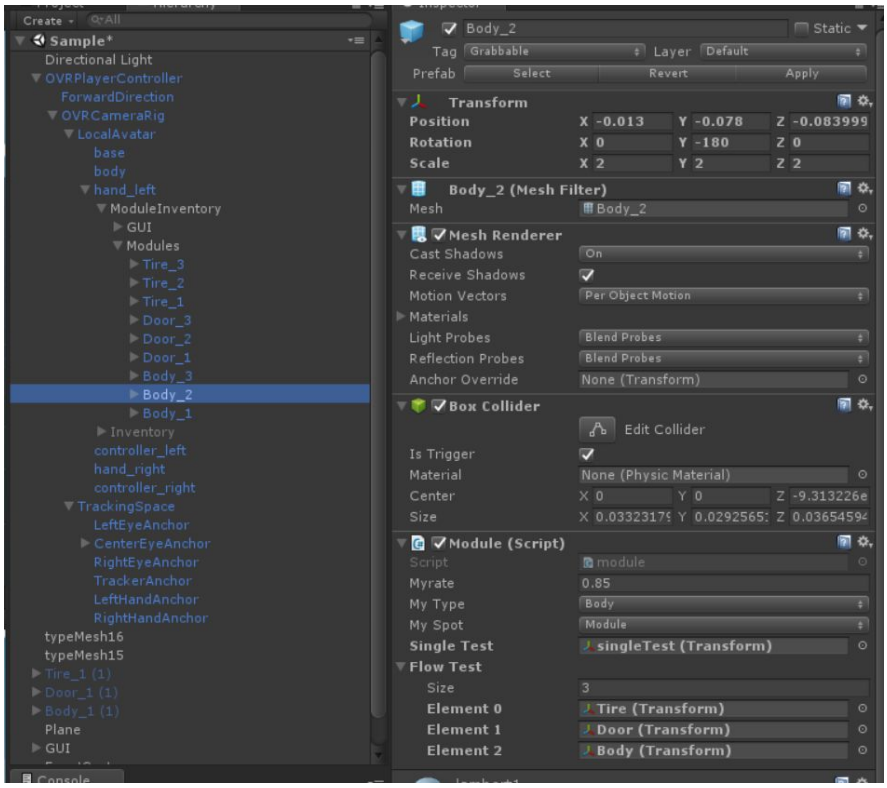


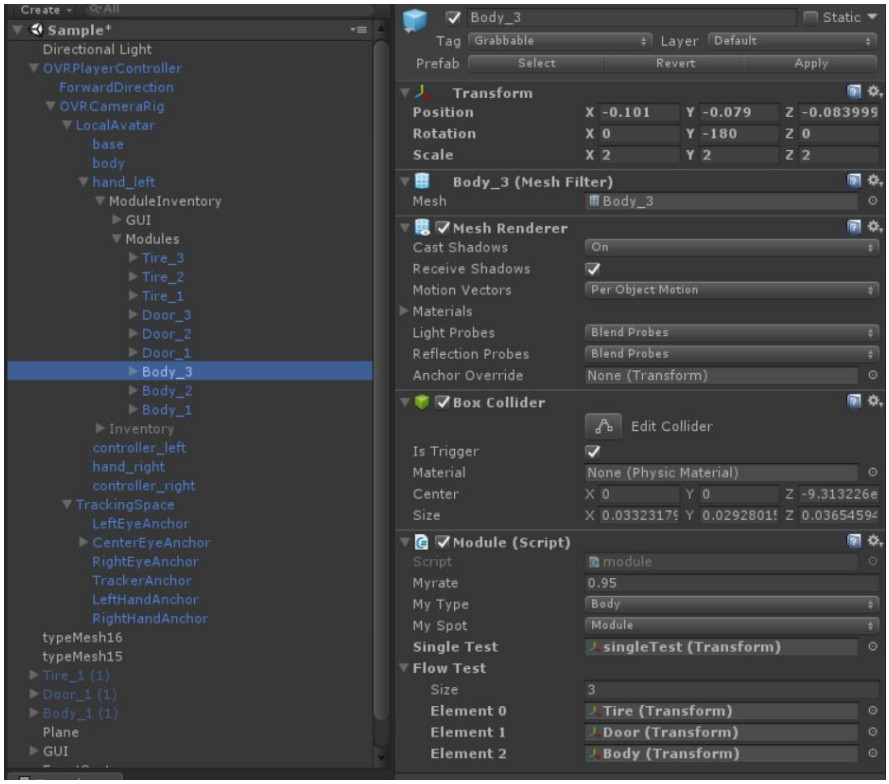
Hand.cs handles interactions related to hands, e.g. grabbing, releasing, showing inventory and calling Button.cs to start car production. Any object that can be grabbed should be tagged as Grabbable. This should be attached to both hand gameObjects.(Shown below)

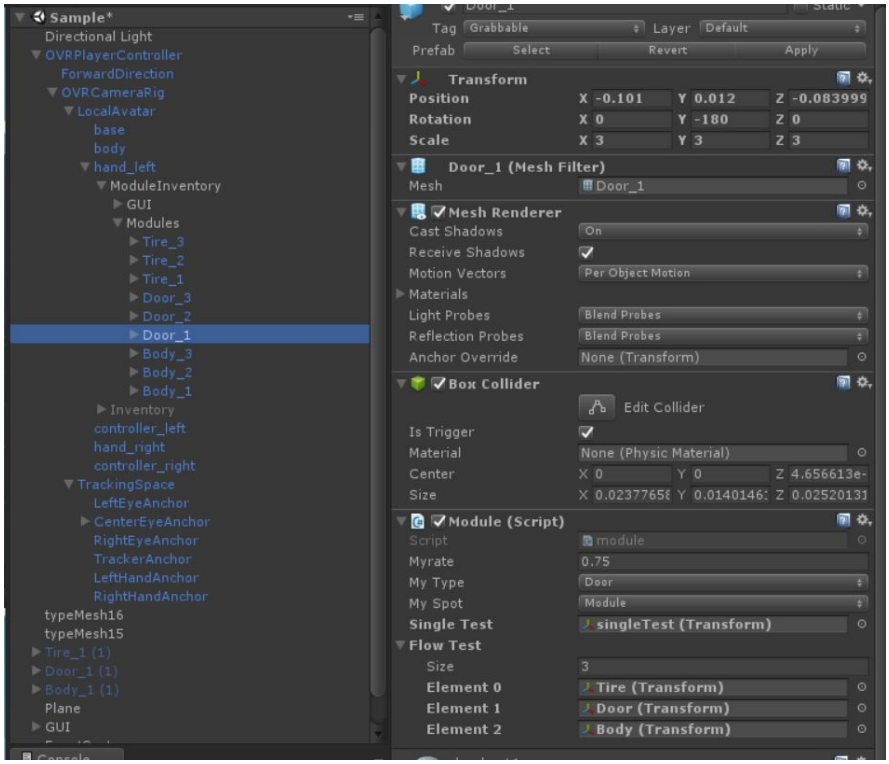


Module.cs handles the mechanics related to factories. Module should be attached to module factories. Module rate, module type and module spot can be defined, which is shown in the picture below.






Create
Sample*
Directional Light
OVRPlayerController
ForwardDirection
OVRCameraRig
LocalAvatar
base
body
hand_left
ModuleInventory
GUI
Modules
Tire_3
Tire_2
Tire_1
Door_3
Door_2
Door_1
Body_3
Body_2
Body_1
Inventory
controller_left
hand_right
controller_right
TrackingSpace
LeftEyeAnchor
CenterEyeAnchor
RightEyeAnchor
TrackerAnchor
LeftHandAnchor
RightHandAnchor
typeMesh16
typeMesh15
Tire_1 (1)
Door_1 (1)
Body_1 (1)
Plane
GUI
Body_3
Static
Tag Grabbable
Layer Default
Prefab Select Revert Apply
Transform
Position X -0.101 Y -0.079 Z -0.083999
Rotation X 0 Y -180 Z 0
Scale X 2 Y 2 Z 2
Body_3 (Mesh Filter)
Mesh Body_3
Mesh Renderer
Cast Shadows On
Receive Shadows
Motion Vectors Per Object Motion
Materials
Light Probes Blend Probes
Reflection Probes Blend Probes
Anchor Override None (Transform)
Box Collider
Edit Collider
Is Trigger
Material None (Physic Material)
Center X 0 Y 0 Z -9.313226e
Size X 0.0332317 Y 0.0292801 Z 0.0365459
Module (Script)
Script module
Myrate 0.95
My Type Body
My Spot Module
Single Test singleTest (Transform)
Flow Test
Size 3
Element 0 Tire (Transform)
Element 1 Door (Transform)
Element 2 Body (Transform)


Sample*
Directional Light
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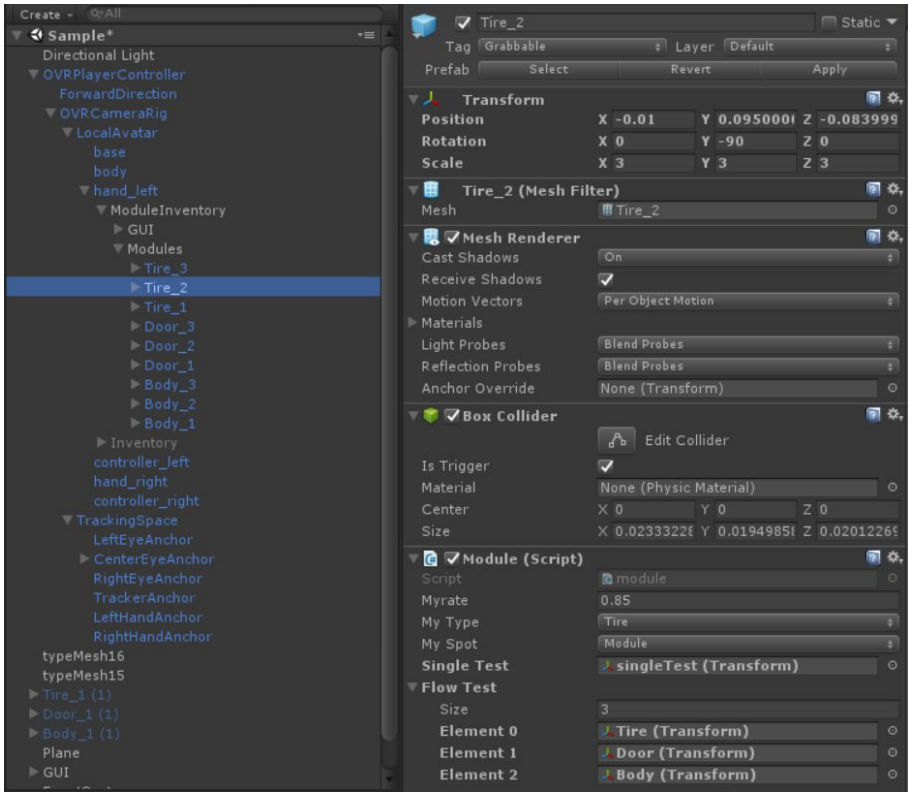
typeMesh16
typeMesh15
Tire_1 (1)
Door_1 (1)
Body_1 (1)
Plane
GUI
Tag Grabbable
Layer Default
Prefab Select Revert Apply
Transform
Position X -0.101 Y 0.012 Z -0.083999
Rotation X 0 Y -180 Z 0
Scale X 3 Y 3 Z 3
Door_1 (Mesh Filter)
Mesh Door_1
Mesh Renderer
Cast Shadows On
Receive Shadows
Motion Vectors Per Object Motion
Materials
Light Probes Blend Probes
Reflection Probes Blend Probes
Anchor Override None (Transform)
Box Collider
Edit Collider
Is Trigger
Material None (Physic Material)
Center X 0 Y 0 Z 4.656613e-
Size X 0.0237765 Y 0.0140146 Z 0.0252013
Module (Script)
Script module
Myrate 0.75
My Type Door
My Spot Module
Single Test singleTest (Transform)
Flow Test
Size 3
Element 0 Tire (Transform)
Element 1 Door (Transform)
Element 2 Body (Transform)



Known Issues

There are some known issues during development:

Unintentional left hand touch:

For showing up the inventory, you should always keep your left hand's index finger and middle finger away from the index trigger and middle trigger, some issues happened when you are trying to grab things out of inventory with you right hand. If this happens, first make sure you can see your left hand all the time, oculus touch doesn't work if any of the controller disappears, second make sure your left hand doesn't touch the triggers all the time, attention you might unconsciously touch the trigger when you are trying to grab with you right hand.

System Requirement

This project is builded on the environment of:
Processor: Intel(R)Core(TM)i7-4790 CPU@ 3.60Hz
Installed memory(RAM): 16.0 GB
Display adapter: NVIDIA Geforce GTX 745

Tested on the environment of:
Processor: Intel(R)Xeon(R)CPU E5-1603 v4 @2.80GHz
Installed memory(RAM): 16.0 GB
Display adapter: NVIDIA Geforce GTX 1080
With set-up of Oculus Rift CV1 and Oculus Touch

Average Frame Rate: 65 fps
Minimum Frame Rate: 38 fps

Next Steps

During development, we discovered problem with showing success rate. Therefore we made a decision and changed the game to show whether the production succeeds or not, which can more clearly show the correspondence between testing a factory and testing a module in the program.

Programmatically, we did not strictly follow the OOP principle due to the limited time for development. To make the game more stable and the structure more clear, it is better if one could separate logics from buttons to objects.