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# Preamble

The goal of this part of the project is to allow the user to see the road network between the warehouses and his truck in a 3D scene, and to be able to interact with the truck and to move the camera as wanted.

# Technologies used

In order to develop this part of the project, we used the JavaScript language combined with these libraries:

* Three.js to build the 3d scene
* Orbit Control to create and interact with the camera
* FBXLoader to load the warehouses 3d model
* GLTFLoader to load the truck 3d model

The solution will be hosted on a server running Debian 11.

# User interaction

## Moving the truck

In order to allow the logistic manager to view the path of the truck through the warehouses of the delivery plan, we have made the truck movable with the keys ZQSD for an AZERTY keyboard, and WASD for a QWERTY keyboard.

To enhance the reality of the movement, we have add an acceleration system. The truck will take some time to reach its maximum speed.

Une image contenant texte

Description générée automatiquement

Figure - The code that moves the truck forward when we press Z

## Moving the camera

As the elements are represented in a 3D scene, the user must be able to move the camera, zoom and move to view all the elements. To achieve this goal, we used the OrbitControl Library which allow to create a controller and move in the scene.

By default, the center of the controller is located in the center of all warehouses. This way, when the user will rotate the camera, this last will rotate around the warehouses.

To interact with the camera, the user can use:

* the left-click to rotate the camera
* the right-click to move the camera
* the mouse wheel to zoom in and out

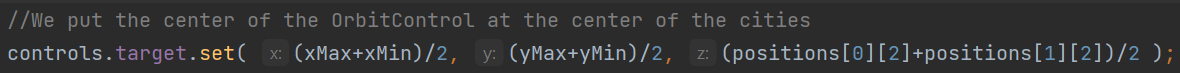


Figure - Moving the controller in the center of the wharehouses

# Lights

In order to illuminate the scene, we used three lights:

* A hemisphere light
* A Directional light representing the sun
* An ambient light

The hemisphere light has a light blue color for the sky color, and a orange for the ground.

To make the scene more realistic, we also added shadows to the objects. They are often visible on the cities (represented by circles), and under the truck.

Une image contenant texte, ciel, extérieur, nuages

Description générée automatiquement

Figure - Example of a shadow on a city