For my final project, I had selected the scene of Amsterdam on the canal. The shot was taken from the side, showing the canal wall raising up to a street scape. Buildings lined the back of the scene, with trees and streetlamps on the canal wall. I have chosen this scene as I thought it would be the most interesting and have availability for objects (especially ones that reoccur) where I can show off a system that allows me to easily transform and scale.

When I started out this project, I decided on reusability as a key point. I wanted to bring in duplicates of items and reposition them in the scene with ease without having to generate multiple vertex coordinates. To that end, I create each object within the coordinate system once, and use the GLMeshCollection vector to control how many appear in the scene, where they ultimately transform to/from and how large they are. Additionally, this control is independent, so one tree object can be much larger in size than the next tree object. This also becomes an important point for my buildings. While they are ultimately low poly rectangular cubes, in order to simulate the varying height of the buildings on the canal, they needed to be scaled slightly in the y-direction. Utilizing this system made this job extremely easy.

Another system that was implemented in order to keep the scene fresh is the dynamic texture system. Since I only had to texture two objects, the buildings are the only objects to take advantage of this system. How the system works is that multiple building textures are loaded for buildings in the scene. They are collected into a texture map based off the objects enum. As an example, a building object may have 3 textures loaded. When the scene is loaded the first time, a texture is taken from the map and bound to the mesh object for the duration of that applications run. In actuality, this gives each building a distinct look and feel. Additionally, since the system is random each application start will have a different look to each of the buildings. This allows for a bit more ‘replay-ability’ than just conventionally textured structure.

To fill my streets, I included trees and streetlamps. The trees are a complex object made up of two pyramid objects and a rectangular cube for the base. My streetlamps are similar with a spiral sphere a top a rectangular cube base. The sphere is rendered as just the ‘skeleton’ of the sphere, as I was not able to figure how to do a proper transparency skin. I figured this effect would be good enough to simulate. Finally, I textured the canal water, the canal wall and my buildings with real textures. I left the tree’s and streetlamps with the default smiley.png texture as it wasn’t required to texture more than two objects. Finally, the user is able to move around my scene using WASD to traverse the camera. Q and E are used to raise and lower the camera, respectively. Scrolling the mouse wheel in and out changes how fast the camera is able to be moved around the scene. Finally, to change between view types, pressing the ‘p’ key allows the user to see perspective/orthographic views.