# IMAT 2800 Assignment 2 Report

For my project I decided to model Leicester Airport in Stoughton, Leicestershire. I chose this airport as it is small enough that it will not be too difficult to represent in OpenGL and still gives a good area to model with 3 main runways, a control tower and hangers I have also been there in person.

## My process

I began by creating a Win32 project from scratch, I created a class “Program” that holds the main functions that will be used during the programs main loop similar to the “ExampleX” class from the lab work. I moved over the provided “TextureLoader” and “Win32OpenGl” classes as well as the Camera, Model, and ModelInstance classes I had created through the course of the labs. I modified the model instance into and “Object” class which holds a model as well as position, rotation and scale information. This allows a model to be used many times without having to reload it each time.

I added mouse movement to my camera class by using windows setCursour pos() function to centre the cursor to the middle of the screen, calculating the delta movement of the cursor each frame moving the camera relative to this movement then recentering the mouse cursor. Next I wrapped all the light information into a light class and created a keyboard class to more easily and accurately detect if a key is pressed down.

As the mouse was now locked to the centre of the screen I decided I needed an escape menu to free the cursor and quit and also give the option to adjust the sensitivity of the mouse look. I managed to get an escape menu and an options pop-up that allows the user to enter a value to adjust the look speed.

Next I added a skybox I used Maya to invert the normal of the cube I then created the texture from 6 images. I set the skybox to follow the player so it looks like it is far in the distance.

Next I worked on loading the scene in from an external file, I chose XML as it is well structured but also flexible. I used the PuigiXML library to parse the XML in DOM format. I included a lot of error checking and made all the attributes optional any errors will be outputted to the log file and placeholder .obj and textures will be used. The models are loaded into a map with the given identifier the identifiers are then used to create object from the stored models.

I went about creating the scene I created the runways, taxiways, aircraft parking, car parking and control tower models myself and sourced most my other models from cgtrader.com I added key binds for logging the position and rotation of the camera for easy placement of the objects.

## critical evaluation

Some of the aspects I found most challenging were programming a Win32 application I had not done this before it was hard to get my head around the message pump and other standard code to start with but now I feel I have a pretty good grasp. Sourcing the models was difficult but once I had found a few I got into the swing of it better knowing what to look for and how to overcome any issues the model may have.

Some aspect I think I did well were creating the model and object classes allowing model reuse. Camera and keyboard control are smooth and mouse sensitivity can be adjusted. Loading the scene in from XML is done well and accounts for errors proving informative messages.

If I had more time to work on the I would like to add more scenery such as hangar buildings, trees, fences and hills. Overall I am pleased with what I managed to accomplish in this coursework.

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