MP2: Flight Simulator

Due: October 28 at 11:55pm

Write a simple flight simulator using WebGL to handle the display. The airplane should automatically move forward at a fixed speed.
The user will control the bank and tilt of the airplane through the arrow keys.

- Pressing the left (right) arrow key will make the plane roll to its left (right).
- Pressing the up (down) arrow key will cause the airplane to pitch up (down).

You will need to implement the following

1. A quaternion based viewing system.
2. A terrain rendering algorithm so that you have something to fly over. At a minimum, implement the diamond-square algorithm. You can implement something more complex if you wish.
3. A vertex shader that implements either Phong or Blinn-Phong shading. You can use demo code from the course webpage.
   You can position your light source anywhere in the scene as long as the rendered images are well-lit.
4. A user interface that minimally implements the arrow-key controls described above. You can add additional controls to affect speed and yaw if you wish.
5. Your webpage should include text instructions describing how the user interface works.

Submission:

You will upload your files to compass in a zipped folder with name **${NetID}_MP2.zip**. Include all of the files necessary for your application to run locally. Name your webpage *Flight.html*

Rubric:

Feature	Points	Description
Interactive UI	2pts	Using keyboard to control your plane interactively.
Translation	2pts	The plane should move forward automatically.
Roll	2pts	Apply correct rotation when your plane rolls left or right.
Pitch	2pts	Apply correct rotation when your plane pitch up and down.
Terrain Generation	3pts	Generate a finite mesh of triangles that resmebles a terrain
Lighting	2pt	Implement Phong/Blinn-Phong and render a well-lit and correctly shaded scene
Performance	1pt	Your simulator should run interactively and should be reasonably efficient.
Documentation	1pt	Your code should be commented or self-explanatory. A readme.txt should explain the features and special instructions (if any) to run your code.