CST325. Homework 7. FINAL PROJECT (deadline Dec 9)

Homework 7 is a combination of homeworks 4, 5 and 6 into a single, large project, plus a bit of integration work and one new requirement. READ CAREFULLY - SEE THE GRADING RUBRIC BELOW

This homework is worth **200 points, that is 20% of your final grade.**

Submission: submit a zipped folder with DirectX project on ilearn. If it is too large, submit a link to google drive folder with zipped DirectX project. **THE PROJECT MUST COMPILE.** If it does not, you get 0 (no partial credit available for non-compiling project)

Title: Flight Simulator in Virtual World

Create a game that let you explore virtual world in which you fly over heightmap-generated terrain. In the game you can fly (using WASD keys) a dragon, the F18, or any other complex object lit with ambient, diffused AND specular light (homework 4). Your would must have a skybox and billboard clouds (homework 5), grassy terrain made using heightmapping (new thing, but available on ilearn) AND wavy water/lake/sea in some areas (homework 6).
IMPORTANT: you have to have separate vertex and pixel shaders for each flying object, skybox, billboard clouds, grassy terrain heightmapping, and wavy water.

Note: IF you had successfully completed homeworks 4, 5, and 6, the only thing you need to do now is to combine everything into a coherent project - this is a reward for your regular hard work during the semester. IF you had not submitted some of the homeworks above, it is your chance to learn the material that you missed back then.

Grading rubric:
Code quality: 10% (reasonable variable names, indentation, comments). Make sure you use separate vertex buffers, separate, properly named shaders etc.
Aesthetics: 10% - is the world pretty, are clouds well done, is the terrain interesting (good choice of height)
Functionality:
1. Control of Movement and Camera of the flying object: 10%
2. Texture on the flying object: 10%
3. Clouds: 10%
4. Skybox: 10%
5. Diffuse and ambient light: 10%
6. Specular light: 10%
7. Water with waves: 10%
8. Terrain via heightmapping, using texture shifting for a flight-over effect: 10%

The final project idea is inspired by your colleagues, Emily Turnage / Ryan Blakeman / Clay Evans / Brandon Woodard, CST321 / CST 326 game project from last year entitled Enkindle. If you wish, download the game from at http://csumb.itch.io

BONUS Project (deadline: Dec 16) - estimated completion time: 20h. Use only as a substitute of final exam programming part, if you failed it. You cannot get bonus points AND final exam programming part points at the same time.

Populate your virtual world with at least 3 more flying objects, loaded from obj or 3DS files found online and using a texture. They should fly by themselves. Each must have its own vertex and pixel shader, because:
1. The first flying object should fly on a circle around the player's flying object.
2. The second one should fly straight in random direction and then change direction.
3. The third one should fly (jump?) up and down.
4. Each flying object (dragon, bird, plane) should have a color tint beside just having a texture. Choose any three different colors as tints and make sure that the tins are visible
Deliver both the project and COMPILED VERSION OF THE PROJECT.