EECS 3431 Fall 2023: Assignment 2

Collaboration: **Groups of two**. If you discuss this assignment with others outside your group you should submit their names along with the assignment material.

The assignment has three pages.

Start working on it early. You will not have time to do it at the last minute.

Free Animation Write a program that shows an animated scene. Your scene should include a combination of hierarchical objects that move about.

MINIMUM REQUIRED ELEMENTS

1. At least one two-level hierarchical object (e.g. human arm).
2. At least one texture either procedurally generated or mapped.
3. At least one shader edited or designed from scratch to perform a clearly visible effect.
4. 360 degrees camera fly around using *lookAt() and setMV()*.
5. Connection to real-time. You should make sure that your scene runs in real-time on fast enough machines. Real-time means that one simulated second corresponds roughly to one real second.
6. You should display the frame rate of your program in the console window or the graphics window once every 2 seconds.
7. Make and submit a movie of your animation. The movie should be about 512x512 and in a standard format, such as mp4. Include a cover image (png or jpg) of 100x100 pixels. You may use any screen capture program that is available.
8. Provide a readme.txt that describes what you have done, what you have omitted, and any other information that will help the grader evaluation your work, including what is stated below.

ADDITIONAL EVALUATION

9. Complexity: scene setup and design, movement of animated elements, and programming.
10. Creativity: story telling, scene design, object appearance and other artistic elements.
11. Quality: Attention to detail, modeling quality, rendering quality, motion control.
12. Programming style.

REMARKS

- Note that creativity and complexity are both important for this assignment. You will not a high grade if your scene is complex but not creative, and vice versa.
- Satisfying all the minimum requirements will result in a grade at the level of "C".
- You must use the template code provided. However, you can modify it as you see fit.
- You must do the assignment from scratch. If you use existing code (e.g. assmt 1) then you must state that clearly in your readme.txt file. Using any piece of code from any source (e.g. previous offerings of the course, assmt 1, the web etc) without attribution will be considered plagiarism.
  You can use libraries as stated below. You will not get credit for the code you have not written, however, it might help with the visual complexity of your scene. For example, if you use an existing model for required element 1, then you will not get credit for it. See below for more details.
- The assignment will be marked in York's 9-point scale or equivalent letter grade scale.

PROJECT SUBMISSION INSTRUCTIONS

1. Make a backup copy of your project folder first to avoid accidentally deleting your work.
2. Remove un-necessary files from the project.
3. Archive the project folder in a zip folder and call it eecs3431_assignment_2.zip.
4. Test the archive
    a. Unzip the archive in a different location.
    b. Make sure everything works as expected.
5. Submit the zip file on eClasss.

Essentially we want to be able to open your zip file, run, and see some pretty graphics on screen :-). Also note that you can add as many files as you want to the project as well as modify any settings that you need to. However, it would be useful if you stated unusual settings and additional files in the readme.txt.

Check the forum and the courses web site regularly for changes in the submission process.

MOVIE SUBMISSION INSTRUCTIONS

1) Call your movie file **<first>_<last>**_movie.[mpg,mp4], replacing <first> and <last> with your first name and last name.
2) Call your image file **<first>_<last>**_image.jpg.
3) Zip the two files in an archive called **<first> <last>** bundle.zip.
4) Submit the file on websubmit/submit (see bottom of document)

NOTE

- You may run out of space when you record your frames to make a movie. You may need to use temporarily another drive to record the movie, i.e. a usb mini-drive. If you do not have access to one, let us know and we will figure something out.

FAQ

1. Are there any size limitations to the project? i.e. number of classes, project size, memory, number of textures, texture resolution etc?

A. In terms of texture resolution, number of textures etc, there are:

1. Hardware and software limitations. There is a maximum number of textures you can have active at the same time, and there is a maximum size for textures.

2. Practical limitations. EClass

3.has a 100MB limit on what you can upload. You also want your project to run in real-time.

2. What should be the duration of the movie?

A. Between 30-60 seconds.

3. Can we use images from the web?

A. As long as the images are free for public use, sure. Do not use assets that are copyrighted.

4. Can we use external libraries?

A. As long as they (a) are free for public use, (b) do not make the required elements unfairly easier for you, and (c) the TA can run your project, you can use additional libraries. However, if the TA cannot run your program because of missing dependencies etc you will have a problem.

5. Can we use audio?

A. You can, however 3) also applies here.

6. How ambitious can we be?

A. I encourage you to take this opportunity and explore your programming (additional libraries, effects etc) and your creative interests. However, I advise you not to aim too high, unless you are confident about what you are doing. And above all, FIRST make sure that you have covered the required elements of the assignment.

Submission (ssh/terminal or via websubmit):

submit 3431 a2 <firstname_lastname>_bundle.zip

or via websubmit: https://webapp.eecs.yorku.ca/submit/