Computer Graphics Fall 2020

Assignment – Scene4 (S4)

Due on 11/22, 2020.

Submission Instructions:

Assignment Instructions:

1. Please carefully read the instructions for assignment S2 and strictly follow these instructions. Failure to follow the instructions might result in a penalty (rather than getting a grade of 1 and a chance to remedy).
2. you cannot use any GLU or GLUT functions for defining objects such as the cube or the sphere (you can use the sphere snippet posted on TRACS).
3. From this assignment and on, I will be giving extra points (4 this time) to students that exceed the requirements posed in the assignments. For example, adding animation, texture mapping, fractals, or other "nice" features.

Assignment Instructions:

The goal of this assignment (S4) is to expand one of the four scenes you produced in assignment S2 (extending **your** submission of S3 will qualify for extra credit).

- The TRACS folder "Misc./PPM.zip" contains: a program that enables loading a PPM image into the frame buffer, several PPM images, a few PGMA images, and the PGMA file format definition. Note that the PPM-read function is specific to a PPM header format and not all the images comply with this format. Hence, either the image header or PPM-read might need to be changed accordingly.
- A computer-generated image is the contents of the frame buffer of any graphics you generate using an open GL program.
- A natural image is any decent image (assume rated G in terms of movies) you load from the internet or from TRACS. The image can be in any image format (e.g., tiff, jpeg, PPM). It is recommended that you use a PPM or PGMA images or convert your image to PPM.

The main requirement of this assignment is to exercise GL texture mapping. In specific:

1. At the minimum, your scene should include the following the following objects: a triangle, a square, a hexagon, a cube, a sphere, **a cylinder**, and the walls of a "room" where your scene "resides".
2. Use perspective projection and place the items with minimum occlusion and away from the center.
3. Add texture mapping effects to your current scene.
    a. Add at least six different texture effects to objects in your scene (one per object)
        i. At least one of the images used for mapping should be a computer-generated image (a fractal, a chess-board, a synthetic image of a flag, a sine wave, etc.).
        ii. At least two of the images used for mapping should be a natural images.
            1. At least one image should be in PPM format
            2. At least one image should be in PGM or PGMA format