

In this final project, you are going to create a nice-looking scene which includes multiple 3D objects.

Required User Interaction: (30%)

- One of the 3D objects is the "player". Users can move the player and rotate the player by the mouse and keyboard.
- By default, your camera should move/rotate along with the "player". This is so called the first person view angle.
- Allow users to switch between the first person view angle and the third person view angle (by pressing the mouse button or a key). The third person view angle can be just a fixed camera position which can cover most of the region of your scene.

Technical Requirements: (30%)

- 1 point light and implement the local illumination (ambient+diffuse+specular and phong shading)
- At least, 1 of the 3D objects with nice texture mapping
- Use an environment cube map to have the environment background
- Cube map reflection or refraction on at least one object (If you implement the dynamic reflection or reflection described in the "options" section, you automatically satisfy this requirement)
- Make some of your objects keep moving or rotating. This is an example, <http://math.hws.edu/graphicsbook/source/webgl/cube-camera.html>
- At the bottom of your webpage, write some texts to shortly introduce your work and tell users how to play your work

Pick 2 out of 3: (20%)

- shadow
- dynamic reflection
- bump mapping

Creativity: (20%)

- An example that should receive full points from this part: https://www.youtube.com/watch?v=4RDKSFrwp2Q&ab_channel=Ko-ChihWang
- If what you do or your scene is too close to what we have in the class examples or the quizzes, the score you receive from this part may be low.

Note:

You are not allowed to use high-level 3D rendering library, such as three.js.

Bonus:

The work demonstrated each week will be voted separately. For each week, the top three projects will be awarded 1st, 2nd, and 3rd place, with corresponding bonus points. All projects demonstrated in a given week will be voted on by the students, the instructor, and the TA. Each student vote for two different projects, but cannot vote for their own.

- 1st place: 6% bonus
- 2nd place: 4% bonus
- 3rd place: 2% bonus

Demonstration:

- **Demonstration dates: May 29 (Thu.) and June 5 (Thu.)**
- You should sign up to choose the time and date for the demonstration
- Each one has 3 - 4 minutes to introduce their work
- Your program will be collected from moodle in advanced and we will run it on instructor's computer
- You do not have to prepare slides (powerpoint)
- Play your work and introduce your work
- Emphasize what you have done about the technical options
- Your goal of this demonstration is to attract people to vote for you

Submission:

- Everyone (no matter which week you are going to present) has to submit your program to moodle before the deadline - **5:00PM, May 28 (Wed.)** .

- Find the best view angle and take a screenshot. Submit this screenshot image, too. (The image will be used in the bonus voting process.)
- You have to put all files (index.html, js) and the screenshot in a folder, zip the folder, rename the zip file to your student ID (e.g., 407470888s.zip), and submit this zip file to moodle.
- If your file is too large to upload to Moodle, please put your file on a cloud drive and upload a text file with the cloud drive link to Moodle.
- **Book the day and order for the demonstration:** <https://tinyurl.com/yc54xfn7> (before the submission deadline)
- **Late submission will not be accepted**