

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

**Options: (You should implement at least 2 of them) (30%)** If you implement 1 more functions, you will receive 5% extra bonus.

- shadow
- dynamic reflection
- bump mapping

## **Creativity: (10%)**

- An example that should receive full points from this part: [https://www.youtube.com/watch?v=4RDKSFrwp2Q&ab\\_channel=Ko-ChihWang](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.

## Bonus:

All works will be voted by all students, the instructor and TA. Each student can vote to three other students' works (cannot vote to yourself)

- 1st place: 10% bonus
- 2nd place: 8% bonus
- 3rd place: 6% bonus
- 4th place: 4% bonus
- 5th place: 2% bonus

## Demonstration:

- **Demonstration time: 2:20PM, June 6 (Thu.)**
- Each one has 4 -5 minutes to introduce your 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 you

## Submission:

- You have to submit your program to moodle before the deadline - **5:00PM, June 5 (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 order for the demonstration:** <https://tinyurl.com/yc54xfn7> (before the submission deadline)
- **Late submission will not be accepted**