ICG Homework 1

Due to 2025/4/17

March 14, 2025

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1 Introduction

This homework includes 3D rendering and 3D transformation. You need to modify the WebGL code to meet our requirements and display your results in a browser. You must attend the class and present your results for TAs to grade on 4/17. Additionally, submit your code to NTU COOL.If you have any questions about this homework, feel free to send email to TAs.

2 Requirement

The following are the requirements. You must implement all of them to achieve the baseline score A-. To earn additional points, you need to complete the bonus part, which will be described later.

2.1 Shading

Implement **Flat, Gouraud, and Phong shading** in shaders.

Flat shading Gouraud shading Phong shading

2.2 Light

Put at least **two lights at different positions** in the scene. You can verify the presence of the three lights through the specular highlights in Phong shading, or you can change light color to ensure that there are at least two lights in different position.

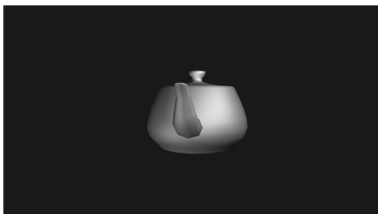
Two lights

2.3 Transformation

Implement **translate, rotate, scale and shear**.

Origin

Translate



Rotate

Scale

Shear

2.4 Clipping

Implement **3D clipping**, at least in one direction(x or y or z).

Clip

2.5 Multiple object

Put at least **three objects** in the scene, and there should be at least **two objects from different models**.You can use the models we provide or any model you prefer.

example

3 Bonus

For bonus, include but not limited to implementing different shading (ex: Toon shading), texture, special lighting effects, interesting animations, importing or modeling custom models, a five-second animation that changes the perspective, etc.

4 Demo

Physical demo will be hold on **4/17/2025, start at 9:30 in CSIE Room 104**. TAs will grade your result during class time.You should attend the class and present your results in person.

5 Policies

You have to write your own codes. Copying code from others is not allowed. We encourage you to discuss with your classmates, but remember to mention their names and contributions in the code or in the README file. **You should submit your code and related resources to NTU COOL HW1.**

6 Guidance

You are free to use sample code and sample models to finish this homework, and there are some example for your reference.
https://www.csie.ntu.edu.tw/%7Eming/courses/icg/HW/DEMO2/
https://www.csie.ntu.edu.tw/%7Eming/courses/icg/HW/DEMO3/