Assignment 2 – Lighting Detail Instruction

by Ruen-Rone Lee

ICL/ITRI

Goal

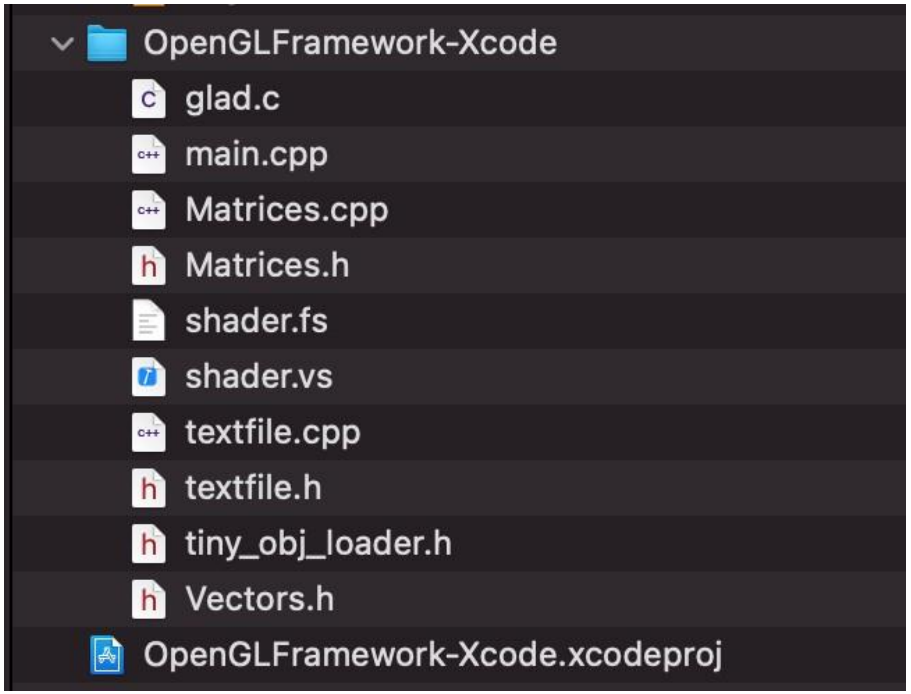
- Implement 3 types of light sources:
  - Directional light
  - Position light (Point light)
  - Spot light
- Interact and modify the light source in runtime.
- Finish the code in main.cpp, vertex shader and fragment shader

Assignment 2

- **Announce date: 2020/05/04**
- **Deadline: 2020/05/25 23:59 (UTC+8)**
- **Late work will be penalized by 20/week.**
- **Copy & paste others' code will get 0.**
- **Hand in your homework to ILMS in the following format(-10 for penalty)**
  - **studentID_HW2.zip**
  - **studentID_HW2_Report.pdf**

In studentID_HW2.zip

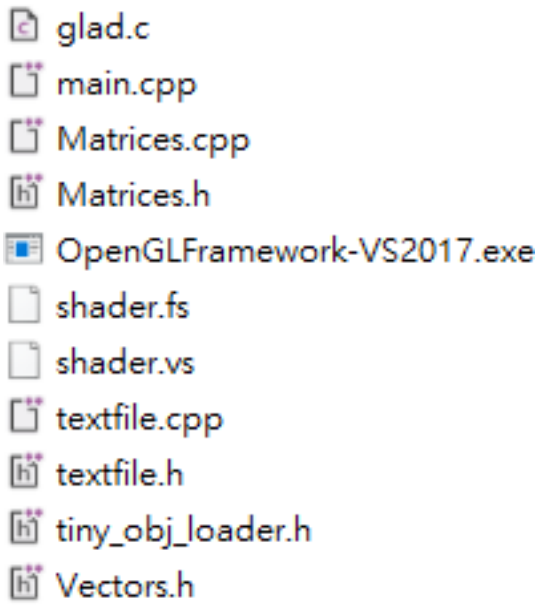
- Depend on your device
- -10 for those upload “Normal Models”



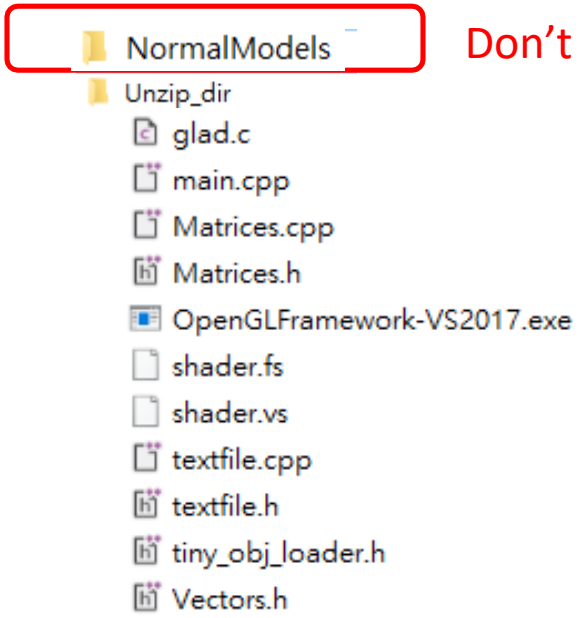
For Mac

In studentID_HW2.zip

- Depend on your device
- -10 for those upload “x64” or “Normal Models”



For Windows



Make Sure exe can run

Lighting Attribute Reference

- Directional light:
  - Position: (1, 1, 1)
  - Direction: always pointing at (0, 0, 0)
- Position(point) light
  - Position: (0, 2, 1)
- Spot light
  - Position: (0, 0, 2)
  - Direction: (0, 0, -1)
  - Exponent: 50
  - Cutoff: 30 degree

Lighting Attribute Reference

- Diffuse intensity: (1, 1, 1)
- Ambient intensity: (0.15, 0.15, 0.15)
- Shininess: 64
- Attenuation:
  - Point light:
    - Constant: 0.01
    - Linear: 0.8
    - Quadratic: 0.1
  - Spot light:
    - Constant: 0.05
    - Linear: 0.3
    - Quadratic: 0.6

Key Mapping

- Please follow the spec bellow, or you would not get the score of item.
- You must make sure your key mapping is exactly same to ours.
- Z/X: switch the model
- T: switch to translation mode
- S: switch to scale mode
- R: switch to rotation mode

Key Mapping

- **L: switch between directional/point/spot light**
- **K: switch to light editing mode**
- **J: switch to shininess editing mode**

Key Mapping

- If you switch mode by T, S, R
- Apply change on Z axis when scroll the wheel
- Apply change on X axis when mouse drag horizontally
- Apply change on Y axis when mouse drag vertically
- Only rotation should apply X axis when mouse drag vertically, and Y axis when mouse drag horizontally

Key Mapping

- If you switch mode by K
- Apply change on X axis of light's position when mouse drag horizontally
- Apply change on Y axis of light's position when mouse drag vertically
- Apply change on diffuse intensity for directional or point light, cutoff angle for spot light when scroll the wheel

Key Mapping

- If you switch mode by J
- Apply change on shininess when scroll the wheel
- The shininess is applied to all models.

Report

- **Some screen shot**
- **Description of your program control instructions**
- **Other special things you have done**

Grading Policy

Item	Score
Directional light	20%
Point light	20%
Spot light	20%
Per-pixel lighting / Per-vertex lighting	15%
Side-by-side viewport	5%
Switch lights & models	5%
Dynamic light position, cutoff, shininess	10%
Report	5%
Total	100%