Assignment 1 – Transformation Detail Instruction

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ICL/ITRI

Goal

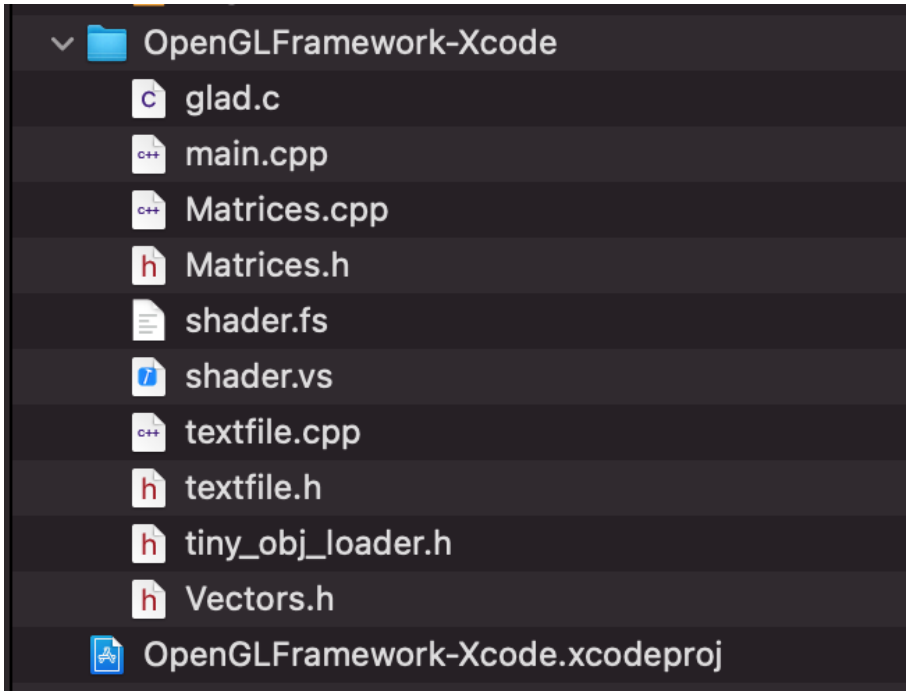
- Interact with five model (independently)
- Control the camera
- Implement transformation, viewing, and projection matrices (MVP)
- Switch between 5 models
- Switch between solid and wireframe mode
- Finish all the TODO in main.cpp and vertex shader

Assignment 1

- Announce date: 2021/04/07
- Deadline: 2021/04/28 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 form (-5 for penalty)
  - studentID_HW1.zip
  - studentID_HW1_Report.pdf

In studentID_HW1.zip

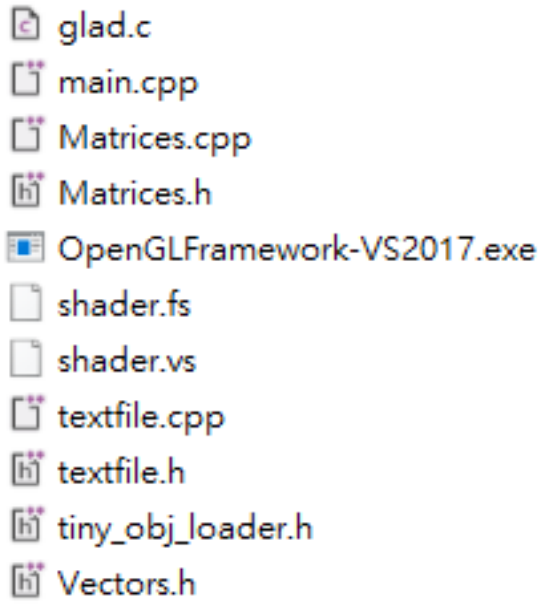
- **Depend on your device**



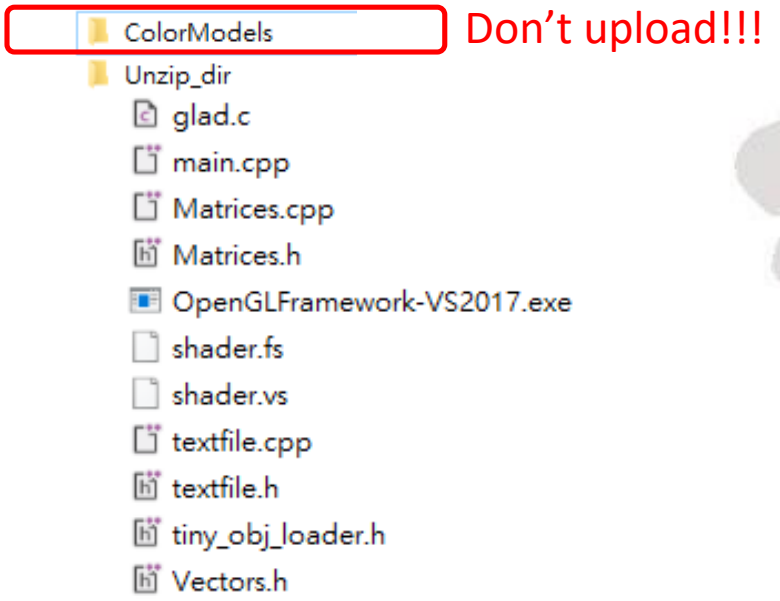
For Mac

In studentID_HW1.zip

- **Depend on your device**



For Windows



Make Sure exe can run

Submission Guide

- **Please submit to course webpage at NTHU iLMS system**
  - ***Notice: E-mail submission will not be accepted***
- **Submission should include**
  - **Source codes (including solution and project files)**
  - **Executable binary (can be run on PC/windows)**
  - **Documentation (explain how you did it and how to operate it)**
  - ***Notice: please do not submit any 3D models to save the disk space***
- **Contact with TAs if you have problem in submission**

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.
- W: switch between solid and wireframe mode
- Z/X: switch the model
- O: switch to Orthogonal projection
- P: switch to NDC Perspective projection
- T: switch to translation mode
- S: switch to scale mode
- R: switch to rotation mode

Key Mapping

- **E: switch to translate eye position mode**
- **C: switch to translate viewing center position mode**
- **U: switch to translate camera up vector position mode**
- **I: print information**
  - **Translation Matrix, Rotation Matrix, Scaling Matrix, Viewing Matrix, Projection Matrix**

Key Mapping

- If you switch mode by T, S, R, E, C, and U
- 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

Report

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

Grading Policy

Item	Score
Correctly render model in Orthogonal projection	10%
Correctly render model in NDC perspective	10%
Translation, Rotation, Scaling models	30%
Camera Control, render quad	30%
Switch models (5 models in Line 581 of main.cpp)	5%
Switch between solid and wireframe mode	5%
Print information	5%
Report	5%
Total	100%

Reference

- Event handlings
- Tinyobj loader