

Assignment 1 – Transformation Detail Instruction

***by Ruen-Rone Lee
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
 - ◆ Keep scene ratio when window reshaped
 - ◆ Add floor plane in world scene
 - ◆ ...



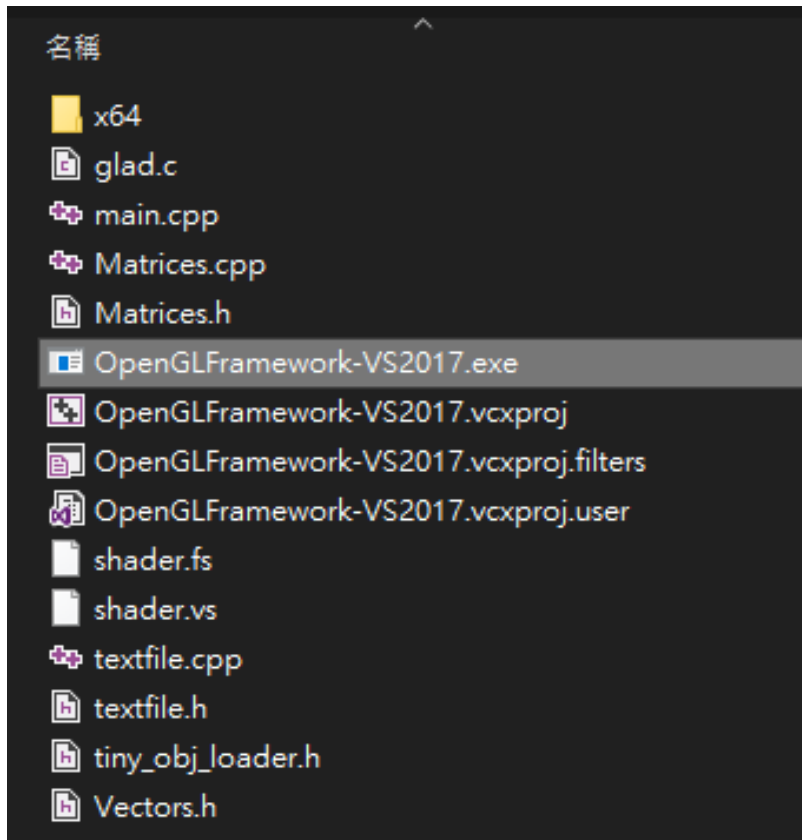
Assignment 1

- ◆ Announce date: 2021/04/13
- ◆ Deadline: **2021/05/04 23:59 (UTC+8)**
- ◆ Late work will be penalized by 20/week.
- ◆ **Copy & paste others' code will get 0.**
- ◆ Hand in your homework to **eeclase** in the following form (**-5 for penalty**)
 - ◆ studentID_HW1.zip
 - ◆ studentID_HW1_Report.pdf

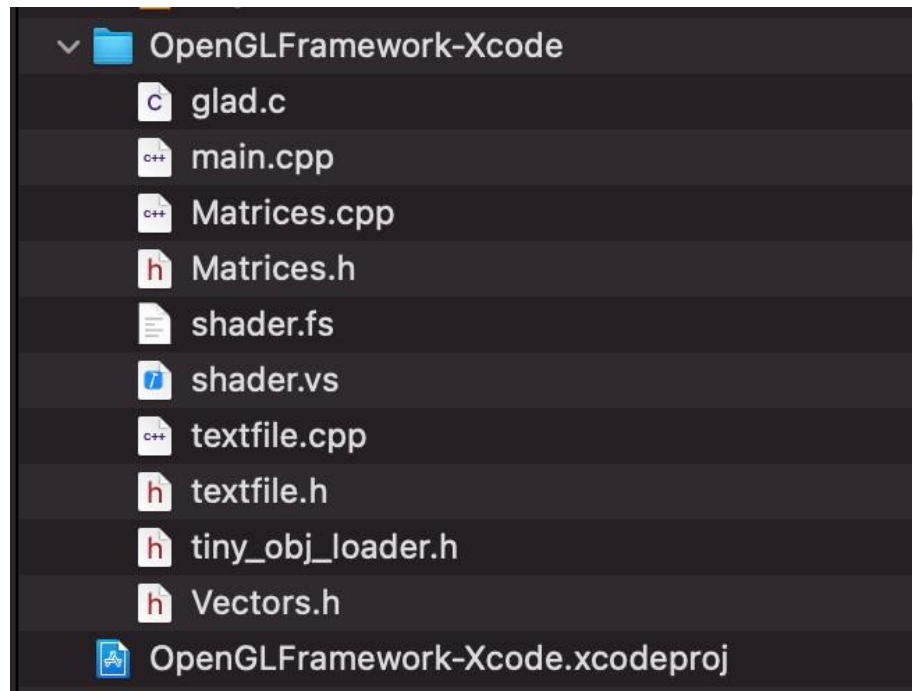


In studentID_HW1.zip

◆ Depend on your device



For Windows



For Mac



Submission Guide

◆ Please submit to **course webpage at NTHU eeclass 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	5%
Translation, Rotation, Scaling models	30%
Camera Control	30%
Switch models (5 models in Line 566 of main.cpp)	5%
render quad	5%
Switch between solid and wireframe mode	5%
Print information	5%
Report	5%
Total	100%

Reference

- ◆ Event handlings
- ◆ Tinyobj loader

