

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



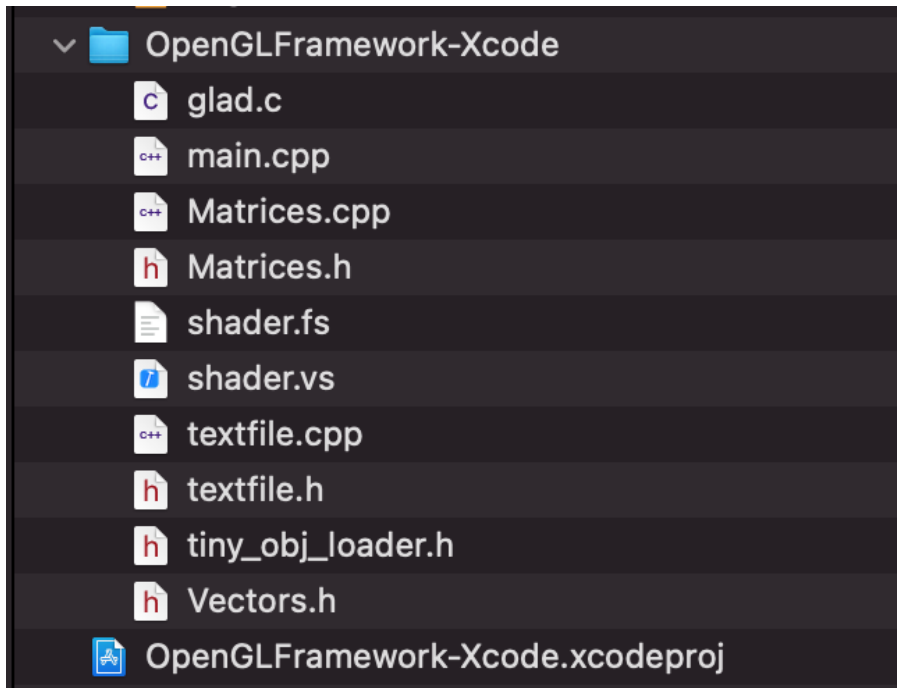
Assignment 1

- ◆ 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

- glad.c
- main.cpp
- Matrices.cpp
- Matrices.h
- OpenGLFramework-VS2017.exe
- shader.fs
- shader.vs
- textfile.cpp
- textfile.h
- tiny_obj_loader.h
- Vectors.h

For Windows

- ColorModels
- Unzip_dir
 - glad.c
 - main.cpp
 - Matrices.cpp
 - Matrices.h
 - OpenGLFramework-VS2017.exe
 - shader.fs
 - shader.vs
 - textfile.cpp
 - textfile.h
 - tiny_obj_loader.h
 - Vectors.h

Don't upload!!!

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

