Assignment 1 – Transformation Detail Instruction

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ICL/ITRI

Goal

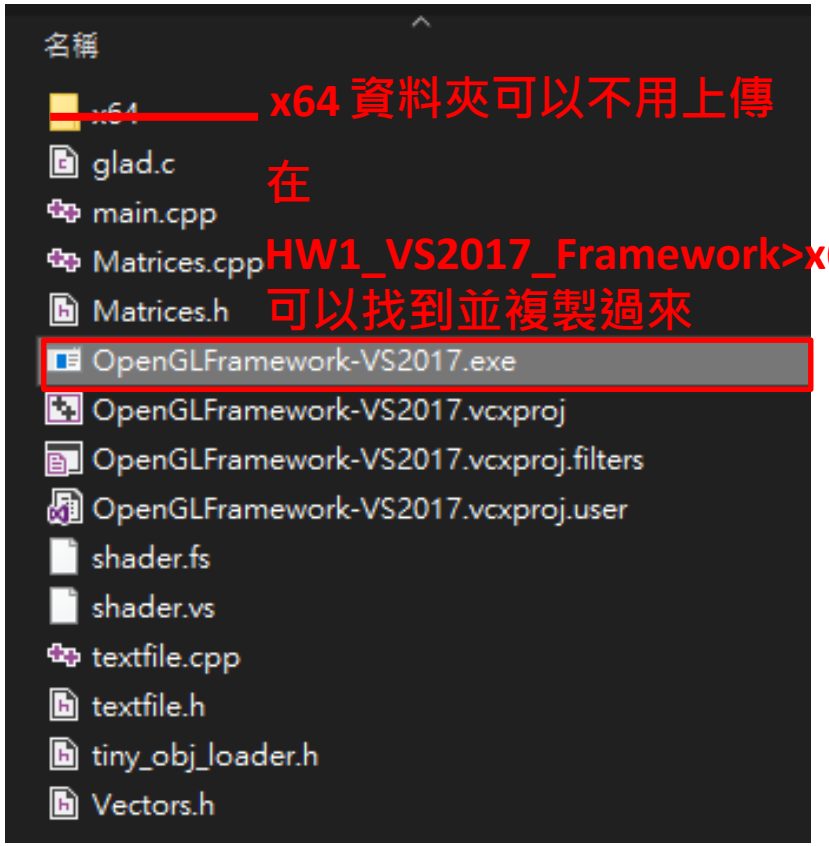
- Interact with five model (independently)
- Control the camera
- Implement transformation, viewing, and projection matrices (MVP)
- Switch between 5 models
- Switch between solid and wireframe mode
- Finish all the TODO in main.cpp and vertex shader
  - Keep scene ratio when window reshaped
  - Add floor plane in world scene
  - ...

Assignment 1

- Announce date: 2024/04/17
- Deadline: 2024/05/08 23:59 (UTC+8)
- Late work will be penalized by 20/week.
- Copy & paste others' code will get 0.
- Hand in your homework to eeclass in the following form (-5 for penalty)
  - studentID_HW1.zip
  - studentID_HW1_Report.pdf

In studentID_HW1.zip

Depend on your device



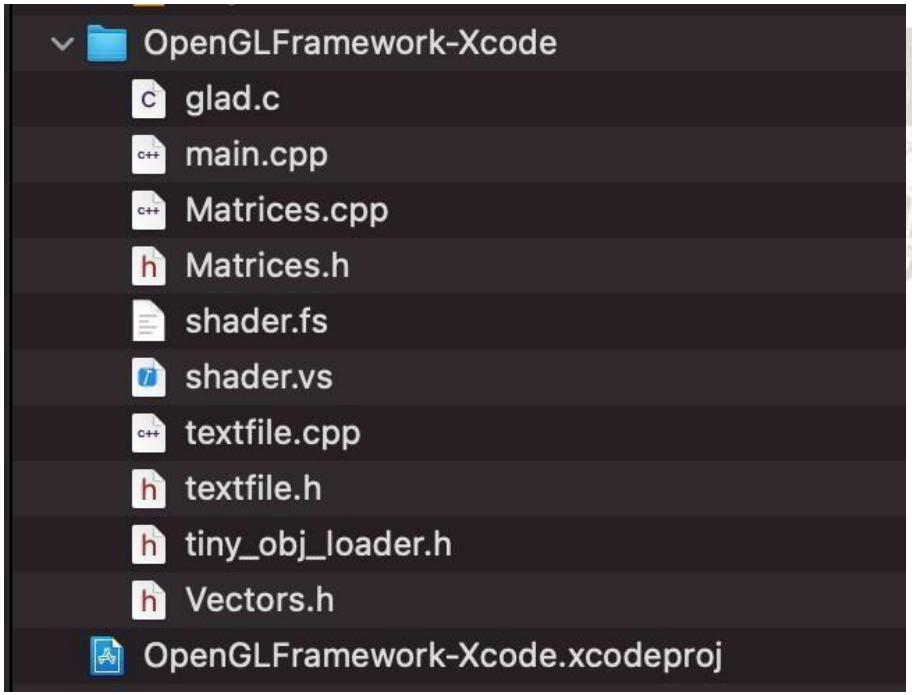
x64 資料夾可以不用上傳

在

HW1_VS2017_Framework>x64>Debug

可以找到並複製過來

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 (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	5%
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%
Window resize	5%
Report	5%
Total	100%

Reference

- Event handlings
- Tinyobj loader