



Assignment 5 Challenges

Computer Graphics
May 21st, 2015

INTRODUCTION

This is the last personal assignment and will cover most of things you learn in the last 3 or 4 lectures (aka lighting, shading, modeling, mesh & subdivision). It may be tough for most of you to finish all the following tasks. But don't worry, the last two tasks are optional and this is why the title of this assignment is "Challenges" .

The goal of this assignment is to code your first OpenGL application with a window, which may be a brand new issue for most of you. (需要实现一个窗口应用,有菜单栏,可以进行各种操作)

SAMPLE CODE

You can find lots of codes that can finish this assignment from the Internet. Note that plagiarizing is **ZERO TOLERANCE** in this class. It will be ok to make this code one of your references, but **DO NOT** just copy and paste. Once detected, you can only get **ZERO** and this may affect your final score.

Here are some codes that you can refer to:

- [C#窗体程序OpenGL绘制立方体多边形旋转示例教程\(VS2008,Winform\)](#)
- [\(VS2005,OpenGL\)WinForm建立OpenGL视场](#)
- [Using OpenGL in a WPF Application](#)
- [基于MFC的OpenGL绘图](#)
- [基于MFC的OpenGL编程\(很不错的一个系列\)](#)
- [Basic OpenGL Lighting](#)
- [OpenGL进阶\(十二\) - 基础着色\(Shading\)](#)
- [【翻译】The Half-Edge Data Structure](#)
- [OpenGL学习笔记——三角形细分](#)

It is highly recommended to create your own toys based on these codes. It's easy and of great fun.

IMPLEMENTATION

This project is somehow challenging, right? That's true. But once you overcome it, you will find the beauty in it. Here are some tips that may be useful:

1. Don't worry about your scores, just do your best.
2. Make full use of the web pages mentioned above.
3. First you should understand the concepts, then you code.
4. Many of the techniques can be used in your final project.
5. Make sure your document describes what you have done clearly.

REQUIREMENTS

In this assignment, you are asked to implement things as followed:

- A Mesh Viewer with a window and a menu so that multiple actions can be performed with the clicks on menu items.
- The actions include
 - Read in a OBJ file
 - Rotation and Translation
 - Lighting
 - Shading
 - Texturing
- Implement the [Half-Edge Data Structure](#) and use your own way to show the advantages of this data structure [\(optional\)](#)
 - Example 1: click one face and all the faces adjacent to it change to the same color
 - Example 2: click one vertex and all the vertices adjacent to it change to the same color
 - You can use whatever way you want to show us that you really using the half-edge structure.
- Implement the [Loop Subdivision Method](#) . [\(optional\)](#)
 - You can use a simple model to do so.

If you have difficulties on this project. Please turn to your roommates, classmates or boy/girl friend. Or come to visit the TAs in their office hours. Note that TA is not the guy help you finish your homework.

SUBMITTING LIST

Here is the list of files you should submit for grading

- **Source code** of your project (Make sure you execute the clean command before submitting, we don't need those temporary files)
- **Executable program** of your project (It means that TAs can see your homework after clicking the exe file)
- **Document** of your project (Briefly describe what you have done. And if your program need to be executed with some other steps, please tell us in this Document. Note that only PDF file is acceptable)

Please compress this files to get a zip file and mail it to the mailbox for submitting homework. You can find the address on the course home page .

GRADING

Detail information is on the course home page . Please check it out before submitting your homework.

FAQS

- Can I use different ways to control the object, such as keyboard?

Sure you can, but you should first try to finish the project as asked. You will get extra points if you do some extra work. That's fair for everybody. But note that you should tell the TAs how to control them with different controlling method in you Document.