Computer Graphics: HW #2 Modeling & Navigating Your Studio

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Abstract

In this assignment, we implement a program written in Moden OpenGL (i.e., OpenGL 2.x or higher) using shaders, in order to modeling and navigating a virtual world.

Fig. 1. Your furniture: a desk (top-left), a fan (top-right), a sofa (bottom-left), a TV set (bottom-right).

1 Introduction

Let's assume that you investigate a studio for living nearby the Kookmin University. Yesterday, you finally found a lovely studio and made a contract with the householder. Today, you try to decorate your studio with the following furniture; a desk, a fan, a sofa, and a TV set.

2 Modeling

Now, you place each object with the following sequence of transformations.

- Desk
  - Scale: $(\times 1.5)$
  - Translate: $(-5, 0, 0)$
- Fan
  - Scale: $(\times 1.5)$
  - Rotate: continuously rotating along with $(0, 1, 0)$
  - Translate: $(0, 5, 0)$
- Sofa
  - Scale: $(\times 1.5)$
  - Rotate: 180 degrees along with $(0, 1, 0)$ direction
  - Translate: $(0, 0, 5)$
- TV set
  - Scale: $(\times 2.0)$
  - Translate: $(0, 0, -5)$

You have to update the provided template codes in order to place the furniture in the right places. In the template codes, the functions about loading and displaying each model are already implemented. As a result, in this part, you just concentrate on specifying the correct transformations in your codes.

- *Instructor: Junho Kim*

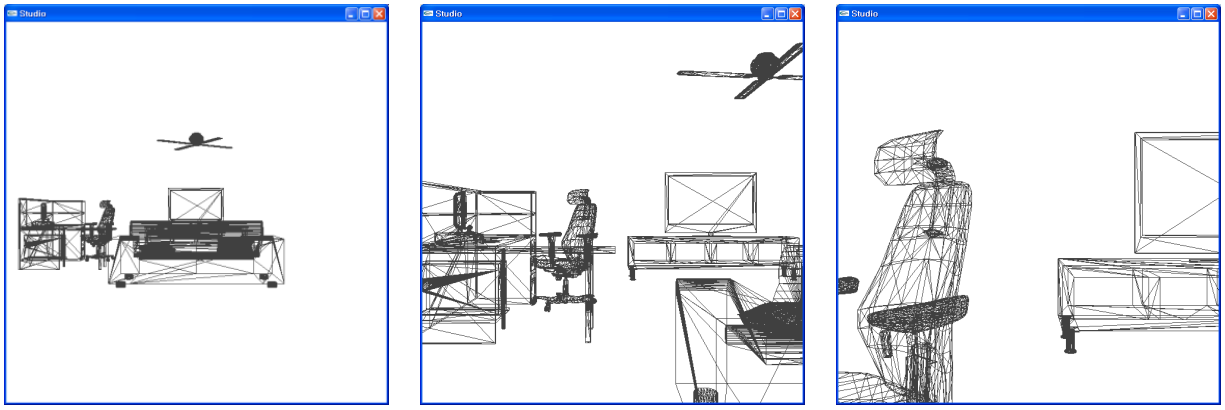
3 Navigating your studio

Now, you look around your studio after you decorate it with the furniture. Let's assume that, in the beginning you are standing on the origin of the world coordinate system. Your eye is on (0,2,0), and your front (or viewing)-direction is –z direction, and your-up direction is +y direction.

The following is the buttons for the navigation (similar to FPS game).

- ↑ : you step forward to your front direction
- ↓ : you step backward against to your front direction
- ←: you step to the left with respect to your front direction
- →: you step to the right with respect to your front direction
- a (or A): you change your front direction by rotating yourself to the left
- d (or D): you change your front direction by rotating yourself to the right

4 Sample Results



5 Due and Misc. (EXTREMELY IMPORTANT!!!)

- Your source codes must be written in a Moden OpenGL (i.e., OpenGL 2.x or higher) with shader programming.
- Your homework must be submitted to **가상강의실** until 23:59 on May. 19, in the form of OOOOOOOO_assign01.tar.gz (i.e., based on **standard zip** or **tar.gz**) containing the followings
  - Source files (*.h, *.cpp)
  - Makefile
- **The submitted source codes should be compiled on CentOS7.**
- Please, utilize the office hours when you have any question about the homework.