演習課題 12 (7月01日）レポート

交換留学(文学部)　ES19-0013 ジョユンサン  
課題 12

発展課題12

*// Created by Jho on 07/01/2019. In "Xcode"*

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*// github*

#include <GLUT/GLUT.h>

#include <OpenGL/OpenGL.h>

#include <OpenGL/glu.h>

#include <math.h>

#include <stdio.h>

#include <stdlib.h> *// for exit(0)*

**void** KeyboardHandler(**unsigned** **char** key, **int** x, **int** y)

{

*// 押されたキーがスペース(空白)だったらプログラムを終了する*

**if** (key == ' ')

exit(0);

}

**void** Prism(**int** N)

{

**double** angle = 2 \* 3.1415 / N;

glBegin(GL\_POLYGON); *//上面*

glNormal3f(0.0, 0.5, 0.0);

**for** (**int** i = 0; i < N; i++)

glVertex3f(cos(i \* angle), 4.0, sin(i \* angle)-8);

glEnd();

glBegin(GL\_QUAD\_STRIP);

**for** (**int** i = 0; i <= N; i++)

{

glNormal3f(cos((i - 0.5) \* angle), 0.0, sin((i - 0.5) \* angle));

glVertex3f(cos(i \* angle), 0.0, sin(i \* angle)-8);

glVertex3f(cos(i \* angle), 4.0, sin(i \* angle)-8);

}

glEnd();

glBegin(GL\_POLYGON); *//下面*

glNormal3f(0.0, 0.0, 0.0);

**for** (**int** i = 0; i < N; i++)

glVertex3f(cos(i \* angle), 0.0, sin(i \* angle)-8);

glEnd();

}

*//再描画*

**void** display(**void**)

{

glClear(GL\_COLOR\_BUFFER\_BIT | GL\_DEPTH\_BUFFER\_BIT);

glColor3f(1.0, 1.0, 1.0);

glMatrixMode(GL\_MODELVIEW);

glLoadIdentity();

glPushMatrix();

Prism(12);

glPopMatrix();

glPushMatrix();

glTranslatef(-2.0, 2.0,-4.0);

glRotatef(-90, 0.0, 0.0, 1.0);

glScalef(0.5, 1.0, 0.5);

Prism(8);

glPopMatrix();

glFlush();

}

**int** main(**int** argc, **char**\*\* argv)

{

glutInit(&argc, argv);

glutInitWindowPosition(0, 0);

glutInitWindowSize(400, 400);

glutInitDisplayMode(GLUT\_RGBA | GLUT\_DEPTH);

glutCreateWindow("ES19-0013 ジョユンサン");

glClearColor(0.0, 0.0, 0.0, 1.0);

glMatrixMode(GL\_PROJECTION);

glLoadIdentity();

gluPerspective(45, 1.0, 1.0, 20.0);

gluLookAt(4, 6, 0, 0, 2, -8, 0, 1, 0);

glShadeModel(GL\_FLAT);

glEnable(GL\_LIGHT0);

glEnable(GL\_LIGHTING);

glEnable(GL\_DEPTH\_TEST);

**float** light\_position[] = { 5.0, 10.0, 2.0, 0.0 };

glLightfv(GL\_LIGHT0, GL\_POSITION, light\_position);

glutDisplayFunc(display);

glutKeyboardFunc(KeyboardHandler);

glutMainLoop();

}

