**3.color cube with spin**

#include <stdlib.h> v#include <GL/glut.h>

GLfloat vertices[][3] = {{-1.0,-1.0,-1.0},{1.0,-1.0,-1.0}, {1.0,1.0,-1.0}, {-1.0,1.0,-1.0}, {-1.0,-1.0,1.0}, {1.0,-1.0,1.0}, {1.0,1.0,1.0}, {-1.0,1.0,1.0}};

GLfloat normals[][3] = {{-1.0,-1.0,-1.0},{1.0,-1.0,-1.0}, {1.0,1.0,-1.0}, {-1.0,1.0,-1.0}, {-1.0,-1.0,1.0}, {1.0,-1.0,1.0}, {1.0,1.0,1.0}, {-1.0,1.0,1.0}};

GLfloat colors[][3] = {{0.0,0.0,0.0},{1.0,0.0,0.0}, {1.0,1.0,0.0}, {0.0,1.0,0.0}, {0.0,0.0,1.0}, {1.0,0.0,1.0}, {1.0,1.0,1.0}, {0.0,1.0,1.0}};

**void** polygon(**int** a, **int** b, **int** c , **int** d)

{ glBegin(GL\_POLYGON); glColor3fv(colors[a]); glNormal3fv(normals[a]); glVertex3fv(vertices[a]);

glColor3fv(colors[b]); glNormal3fv(normals[b]);

glVertex3fv(vertices[b]); glColor3fv(colors[c]);

glVertex3fv(vertices[d]); glEnd(); }

**void colorcube(void)**

{ polygon(0,3,2,1);polygon(2,3,7,6);polygon(0,4,7,3); polygon(1,2,6,5); polygon(4,5,6,7); polygon(0,1,5,4); } **static** GLfloat theta[] = {0.0,0.0,0.0};

**static** GLint axis = 2;

**void display(void)**

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

glLoadIdentity(); glRotatef(theta[0], 1.0, 0.0, 0.0);

glRotatef(theta[1], 0.0, 1.0, 0.0);

glRotatef(theta[2], 0.0, 0.0, 1.0);

colorcube(); glFlush(); glutSwapBuffers(); }

glNormal3fv(normals[c]); glVertex3fv(vertices[c]);

glColor3fv(colors[d]); glNormal3fv(normals[d]);

**void spinCube()**

{ theta[axis] += 1.0;

**if**( theta[axis] > 360.0 ) theta[axis] -= 360.0;

glutPostRedisplay(); }

**void** mouse(**int** btn, **int** state, **int** x, **int** y)

{ **if**(btn==GLUT\_LEFT\_BUTTON && state == GLUT\_DOWN) axis = 0;

**if(btn==GLUT\_MIDDLE\_BUTTON && state == GLUT\_DOWN) axis = 1;**

**if(btn==GLUT\_RIGHT\_BUTTON && state == GLUT\_DOWN) axis = 2;** }

**void** myReshape(**int** w, **int** h)

{ glViewport(0, 0, w, h);

glMatrixMode(GL\_PROJECTION);

glLoadIdentity();

**if** (w <= h)

glOrtho(-2.0, 2.0, -2.0 \* (GLfloat) h / (GLfloat) w, 2.0 \* (GLfloat) h / (GLfloat) w, -10.0, 10.0);

**else**

glOrtho(-2.0 \* (GLfloat) w / (GLfloat) h, 2.0 \* (GLfloat) w / (GLfloat) h, -2.0, 2.0, -10.0, 10.0);

glMatrixMode(GL\_MODELVIEW); }

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

{ glutInit(&argc, argv);

glutInitDisplayMode(GLUT\_DOUBLE | GLUT\_RGB | GLUT\_DEPTH);

glutInitWindowSize(500, 500);

glutCreateWindow("Rotating a Color Cube");

glutReshapeFunc(myReshape); glutDisplayFunc(display);

glutIdleFunc(spinCube); glutMouseFunc(mouse);

glEnable(GL\_DEPTH\_TEST); glutMainLoop(); }