**10.9**

将二维Cohen-Sutherland线段裁剪算法修改成用规范化对称观察体正方形裁剪三维线段的算法

**10.21**

修改10.10节的示例程序，允许用户为正方形的前面或后面制定视图。

**10.22**

修改10.10节的示例程序，允许将透视观察参数作为用户输入来指定。

**10.23**

修改10.10节的示例程序，使其能生成任意输入多面体的试图。

**附10.10节示例程序：**

#include <GL/glut.h>

GLint winWidth = 600, winHeight = 600; // Initial display-window size.

GLfloat x0 = 100.0, y0 = 50.0, z0 = 50.0; // Viewing-coordinate origin.

GLfloat xref = 50.0, yref = 50.0, zref = 0.0; // Look-at point.

GLfloat Vx = 0.0, Vy = 1.0, Vz = 0.0; // View-up vector.

/\* Set coordinate limits for the clipping window: \*/

GLfloat xwMin = -40.0, ywMin = -60.0, xwMax = 40.0, ywMax = 60.0;

/\* Set positions for near and far clipping planes: \*/

GLfloat dnear = 25.0, dfar = 125.0;

void init(void)

{

glClearColor(1.0, 1.0, 1.0, 0.0);

glMatrixMode(GL\_MODELVIEW);

gluLookAt(x0, y0, z0, xref, yref, zref, Vx, Vy, Vz);

glMatrixMode(GL\_PROJECTION);

glFrustum(xwMin, xwMax, ywMin, ywMax, dnear, dfar);

}

void displayFcn(void)

{

glClear(GL\_COLOR\_BUFFER\_BIT);

/\* Set parameters for a square fill area. \*/

glColor3f(0.0, 1.0, 0.0); // Set fill color to green.

glPolygonMode(GL\_FRONT, GL\_FILL);

glPolygonMode(GL\_BACK, GL\_LINE); // Wire-frame back face.

glBegin(GL\_QUADS);

glVertex3f(0.0, 0.0, 0.0);

glVertex3f(100.0, 0.0, 0.0);

glVertex3f(100.0, 100.0, 0.0);

glVertex3f(0.0, 100.0, 0.0);

glEnd();

glFlush();

}

void reshapeFcn(GLint newWidth, GLint newHeight)

{

glViewport(0, 0, newWidth, newHeight);

winWidth = newWidth;

winHeight = newHeight;

}

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

{

glutInit(&argc, argv);

glutInitDisplayMode(GLUT\_SINGLE | GLUT\_RGB);

glutInitWindowPosition(50, 50);

glutInitWindowSize(winWidth, winHeight);

glutCreateWindow("Perspective View of A Square");

init();

glutDisplayFunc(displayFcn);

glutReshapeFunc(reshapeFcn);

glutMainLoop();

}