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

GLfloat vertices[][3] = {    {-1,-1,-1},
                             {1,-1,-1},
                             {1,1,-1},
                             {-1,1,-1},
                             {-1,-1,1},
                             {1,-1,1},
                             {1,1,1},
                             {-1,1,1}
                         };

GLfloat colors[][3] = {      {1,0,0},
                             {1,1,0},
                             {0,1,0},
                             {0,0,1},
                             {1,0,1},
                             {1,1,1},
                             {0,1,1},
                             {0.5,0.5,0.5}
                         };

GLfloat theta[] = {0.0,0.0,0.0};
GLint axis = 2;
GLdouble viewer[]= {0.0, 0.0, 5.0}; // initial viewer location //

void polygon(int a, int b, int c, int d)
{
    glBegin(GL_POLYGON);
        glColor3fv(colors[a]);
        glVertex3fv(vertices[a]);
        glColor3fv(colors[b]);
        glVertex3fv(vertices[b]);
        glColor3fv(colors[c]);
        glVertex3fv(vertices[c]);
        glColor3fv(colors[d]);
        glVertex3fv(vertices[d]);
    glEnd();
}

void colorcube(void)
{
    polygon(0,3,2,1);
    polygon(0,4,7,3);
    polygon(5,4,0,1);
    polygon(2,3,7,6);
    polygon(1,2,6,5);
    polygon(4,5,6,7);
}


void display(void)
{
    glClear(GL_COLOR_BUFFER_BIT | GL_DEPTH_BUFFER_BIT);
    glLoadIdentity();
    gluLookAt(viewer[0],viewer[1],viewer[2], 0.0, 0.0, 0.0, 0.0, 1.0, 0.0);
    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();
}

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;
    theta[axis] += 2.0;
    if( theta[axis] > 360.0 ) theta[axis] -= 360.0;
```

```
    display();
}

void keys(unsigned char key, int x, int y)
{
    if(key == 'x') viewer[0]-= 1.0;
    if(key == 'X') viewer[0]+= 1.0;
    if(key == 'y') viewer[1]-= 1.0;
    if(key == 'Y') viewer[1]+= 1.0;
    if(key == 'z') viewer[2]-= 1.0;
    if(key == 'Z') viewer[2]+= 1.0;
    display();
}

void myReshape(int w, int h)
{
    glViewport(0, 0, w, h);
    glMatrixMode(GL_PROJECTION);
    glLoadIdentity();
    if(w<=h)
        glFrustum(-2.0, 2.0, -2.0 * (GLfloat) h/ (GLfloat) w, 2.0* (GLfloat) h / (GLfloat)
w,2.0, 20.0);
    else
        glFrustum(-2.0, 2.0, -2.0 * (GLfloat) w/ (GLfloat) h, 2.0* (GLfloat) w / (GLfloat)
h, 2.0, 20.0);
    glMatrixMode(GL_MODELVIEW);
}

int main(int argc, char **argv)
{
    glutInit(&argc, argv);
    glutInitDisplayMode(GLUT_DOUBLE | GLUT_RGB | GLUT_DEPTH);
    glutInitWindowSize(500, 500);
    glutCreateWindow("Colorcube Viewer");

    glutReshapeFunc(myReshape);
    glutDisplayFunc(display);
    glutMouseFunc(mouse);
    glutKeyboardFunc(keys);

    glEnable(GL_DEPTH_TEST);
    glutMainLoop();
}
```