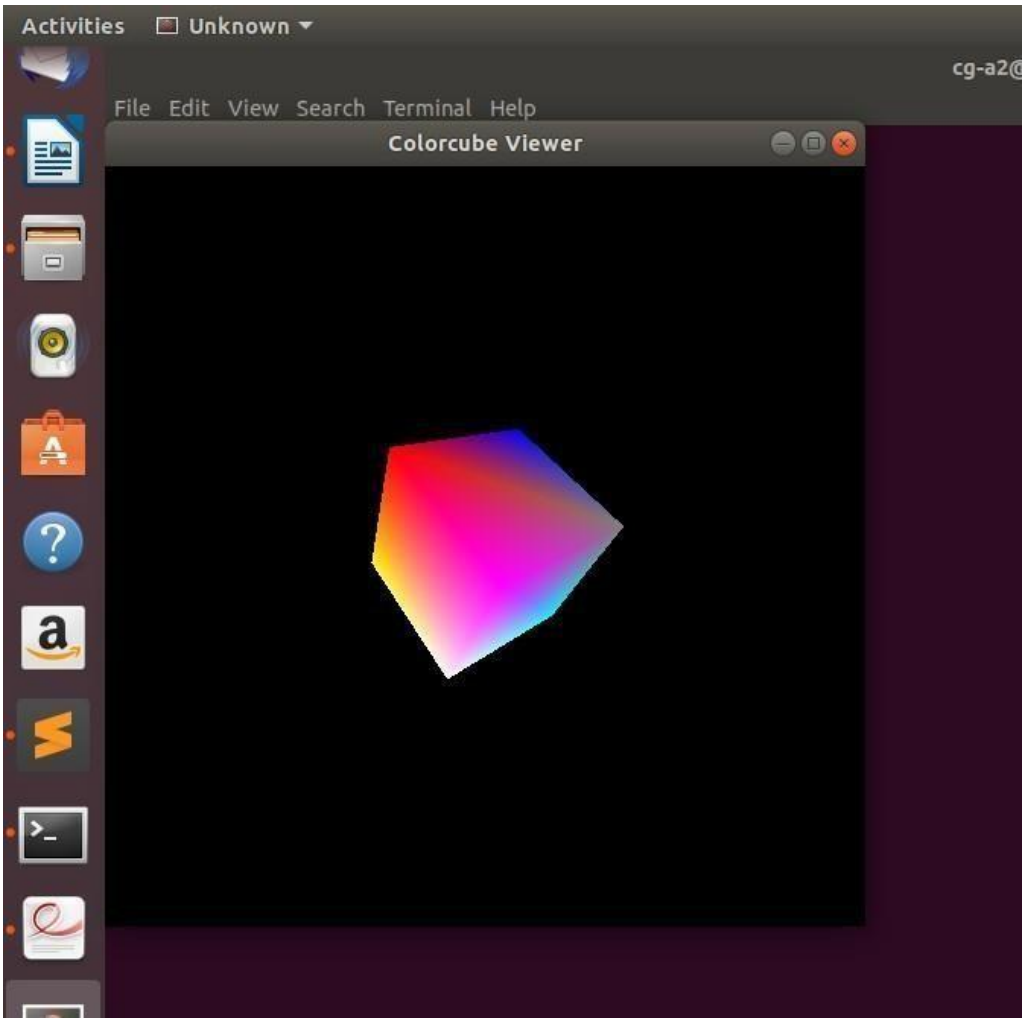
4. Program to draw a color cube and allow the user to move the camera suitably toexperiment with perspective viewing.

```
#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}
};
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);
}
      GLfloat theta[] = {0.0,0.0,0.0};
      GLint axis = 2;
      GLdouble viewer[]= {0.0, 0.0, 5.0}; /* initial viewer location */
      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();
}
```

OUTPUT :


Activities
Unknown
File Edit View Search Terminal Help
Colorcube Viewer