# MALNAD COLLEGE OF ENGINEERING

(An Autonomous Institute under VTU, Belagavi)

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**Subject:** Computer Graphics and Visualization **Code:**

18CS602

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Computer Science

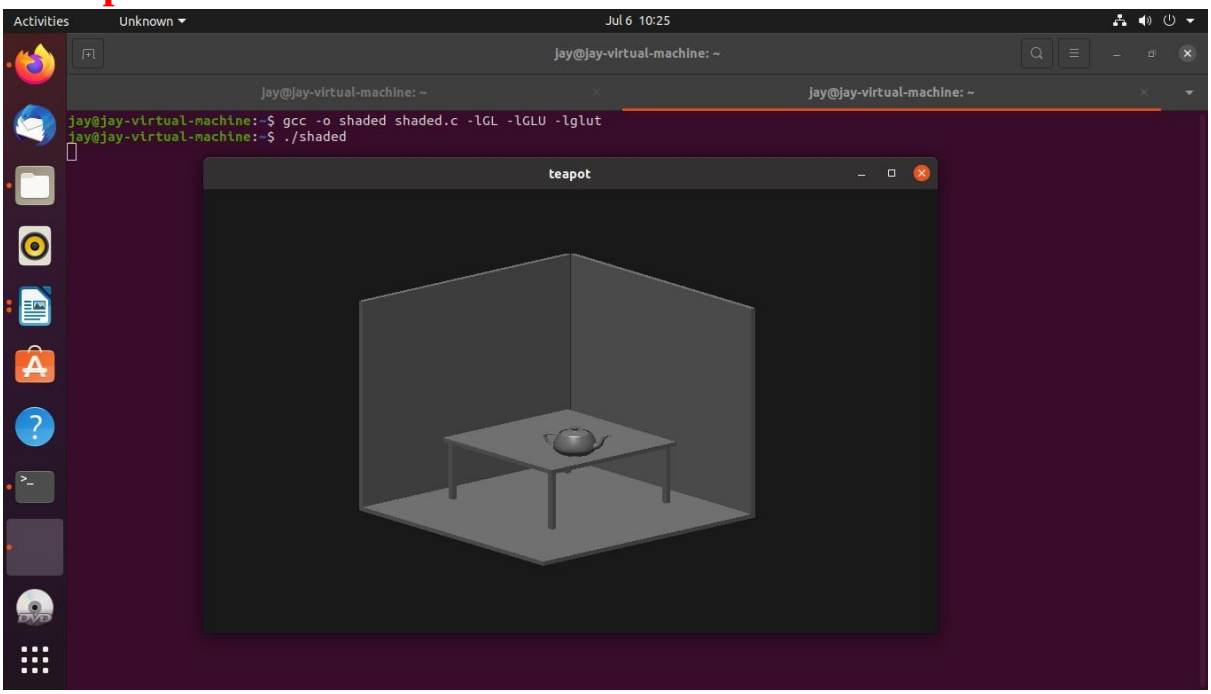
**Program using openGL functions to draw a simple shaded scene consisting of a teapot on a table. Define suitably the positions and properties of the light source along with the properties of the surfaces of the solid object used in the scene.**

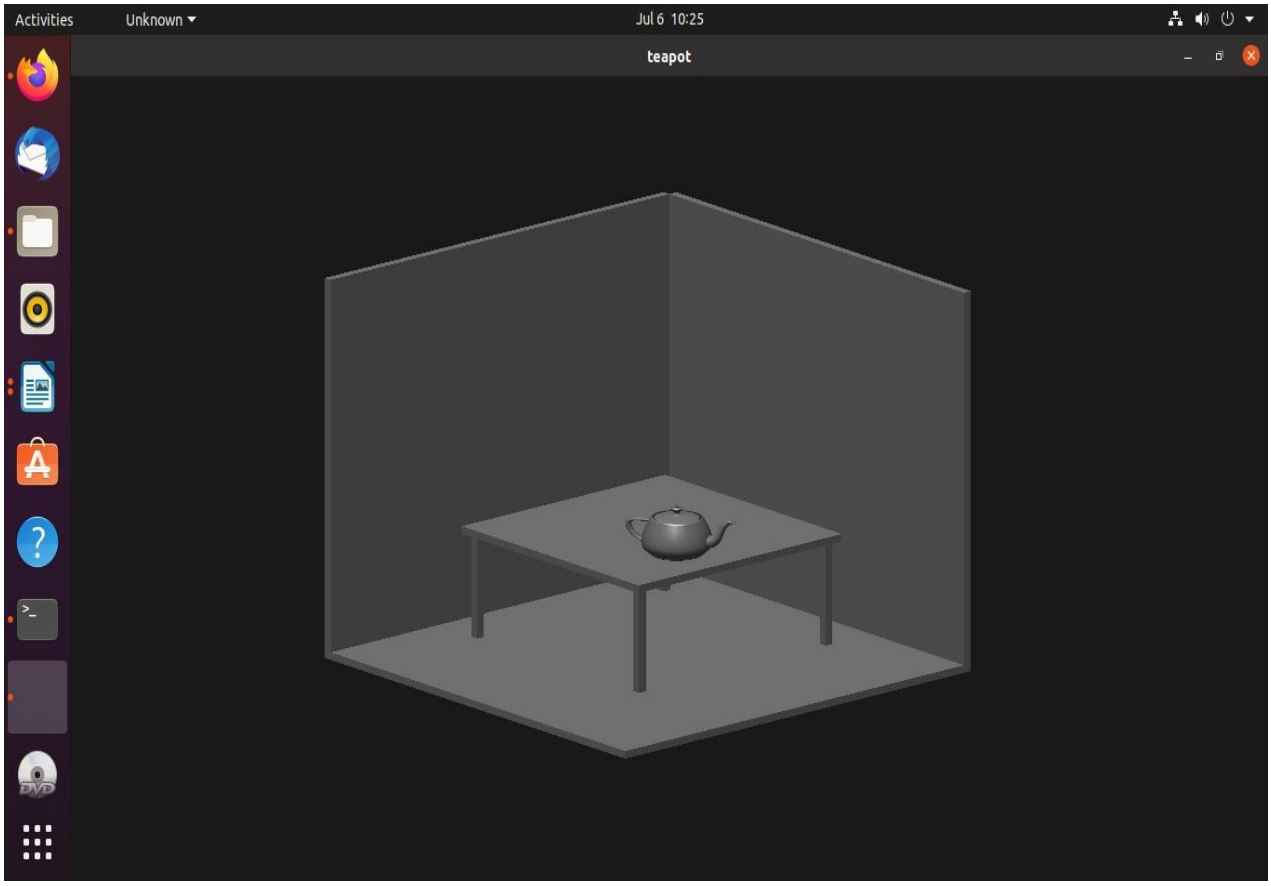
```
#include <GL/glut.h>
#include <stdio.h>
#include <stdlib.h>


void wall(double thickness)
{
        glPushMatrix();
glTranslated(0.5,0.5*thickness,0.5);
glScaled(1.0,thickness,1.0);
glutSolidCube(1.0);    glPopMatrix();
}


void tableleg(double thick,double len)
{
        glPushMatrix();
                glTranslated(0,len/2,0);
glScaled(thick,len,thick);
glutSolidCube(1.0);    glPopMatrix();
}


void table(double topw,double topt,double legt,double legl)
{
        glPushMatrix();
glTranslated(0,legl,0);
glScaled(topw,topt,topw);
glutSolidCube(1.0);    glPopMatrix();

        double dist=0.95*topw/2.0-legt/2.0;

        glPushMatrix();

                glTranslated(dist,0,dist);
                tableleg(legt,legl);

                glTranslated(0,0,-2*dist);
                tableleg(legt,legl);

                glTranslated(-2*dist,0,2*dist);
tableleg(legt,legl);                glTranslated(0,0,-2*dist);
                tableleg(legt,legl);
        glPopMatrix();
  }
```

```
void displaysolid(void)
{
        GLfloat mat_ambient[]={0.7f,0.7f,0.7f,1.0f};
         GLfloat mat_diffuse[]={0.5f,0.5f,0.5f,1.0f};
        GLfloat mat_specular[]={1.0f,1.0f,1.0f,1.0f};
        GLfloat mat_shininess[]={50.0f};

        glMaterialfv(GL_FRONT,GL_AMBIENT,mat_ambient);
glMaterialfv(GL_FRONT,GL_DIFFUSE,mat_diffuse);
glMaterialfv(GL_FRONT,GL_SPECULAR,mat_specular);
        glMaterialfv(GL_FRONT,GL_SHININESS,mat_shininess);

        GLfloat lightint[]={0.7f,0.7f,0.7f,1.0f};
        GLfloat lightpos[]={2.0f,6.0f,3.0f,0.0f};

        glLightfv(GL_LIGHT0,GL_POSITION,lightpos);
        glLightfv(GL_LIGHT0,GL_DIFFUSE,lightint);

        glMatrixMode(GL_PROJECTION);
        glLoadIdentity();
        double winht=1.0;
        glOrtho(-winht*64/48.0,winht*64/48.0,-winht,winht,0.1,100.0);
glMatrixMode(GL_MODELVIEW);
        glLoadIdentity();
        gluLookAt(2.3,1.3,2.0,0.0,0.25,0.0,0.0,1.0,0.0);
        glClear(GL_COLOR_BUFFER_BIT|GL_DEPTH_BUFFER_BIT);

        glPushMatrix();
                glRotated(90.0,0.0,0.0,1.0);
                wall(0.02);
glPopMatrix();          wall(0.02);
glPushMatrix();                 glRotated(-
90.0,1.0,0.0,0.0);              wall(0.02);
glPopMatrix();

        glPushMatrix();
glTranslated(0.4,0,0.4);
                table(0.6,0.02,0.02,0.3);
glPopMatrix();



         glPushMatrix();
                glTranslated(0.6,0.38,0.5);
glRotated(30,0,1,0);            glutSolidTeapot(0.08);
         glPopMatrix();

glFlush();
```

```
}


int main(int argc,char**argv)
{
        glutInit(&argc,argv);
        glutInitDisplayMode(GLUT_SINGLE|GLUT_RGB|GLUT_DEPTH);
        glutInitWindowSize(500,500);
glutInitWindowPosition(0,0);
glutCreateWindow("teapot");
glutDisplayFunc(displaysolid);
glEnable(GL_LIGHTING);    glEnable(GL_LIGHT0);
glShadeModel(GL_SMOOTH);
glEnable(GL_DEPTH_TEST);
glEnable(GL_NORMALIZE);
        glClearColor(0.1,0.1,0.1,0.0);
glViewport(0,0,640,480);
        glutMainLoop();
}
```

## Output:




Activities
Unknown
Jul 6 10:25
teapot