**EXPERIMENT - 06**

**6. Program to draw a simple shaded scene consisting of a tea pot on a table. Define suitably the position and properties of the light source along with the properties of the properties of the surfaces of the solid object used in the scene.**

#include<GL/glut.h>

void teapot(GLfloat x, GLfloat y, GLfloat z)

{

glPushMatrix();

glTranslatef(x,y,z);

glutSolidTeapot(0.1);

glPopMatrix();

}

void tableTop(GLfloat x,GLfloat y,GLfloat z)

{

glPushMatrix();

glTranslatef(x,y,z);

glScalef(0.6,0.02,0.5);

glutSolidCube(1.0);

glPopMatrix();

}

void tableLeg(GLfloat x,GLfloat y,GLfloat z)

{

glPushMatrix();

glTranslatef(x,y,z);

glScalef(0.02,0.3,0.02);

glutSolidCube(1.0);

glPopMatrix();

}

void wall(GLfloat x,GLfloat y,GLfloat z)

{

glPushMatrix();

glTranslatef(x,y,z);

glScalef(1.0,1.0,0.02);

glutSolidCube(1.0);

glPopMatrix();

}

void light()

{

GLfloat mat\_ambient[]={1.0,1.0,1.0,1.0};

GLfloat mat\_diffuse[]={0.5,0.5,0.5,1.0};

GLfloat mat\_specular[]={1.0,1.0,1.0,1.0};

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 light\_position[]={2.0,6.0,3.0,1.0};

GLfloat lightIntensity[]={0.7,0.7,0.7,1.0};

glLightfv(GL\_LIGHT0,GL\_POSITION,light\_position);

glLightfv(GL\_LIGHT0,GL\_DIFFUSE,lightIntensity);

}

void display()

{

GLfloat teapotP=-0.07,tabletopP=-0.15,tablelegP=0.2,wallP=0.5;

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

glLoadIdentity();

gluLookAt(-2.0,2.0,5.0,0.0,0.0,0.0,0.0,1.0,0.0);

light(); //Adding light source to your project

teapot(0.0,teapotP,0.0); //Create teapot

tableTop(0.0,tabletopP,0.0); //Create table’s top

tableLeg(tablelegP,-0.3,tablelegP); //Create 1st leg

tableLeg(-tablelegP,-0.3,tablelegP); //Create 2nd leg

tableLeg(-tablelegP,-0.3,-tablelegP); //Create 3rd leg

tableLeg(tablelegP,-0.3,-tablelegP); //Create 4th leg

wall(0.0,0.0,-wallP); //Create 1st wall

glRotatef(90.0,1.0,0.0,0.0);

wall(0.0,0.0,wallP); //Create 2nd wall

glRotatef(90.0,0.0,1.0,0.0);

wall(0.0,0.0,wallP); //Create 3rd wall

glFlush();

}

void myinit()

{

glClearColor(0.0,0.0,0.0,1.0);

glMatrixMode(GL\_PROJECTION);

glLoadIdentity();

glOrtho(-1.0,1.0,-1.0,1.0,-1.0,10.0);

glMatrixMode(GL\_MODELVIEW);

}

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

{

glutInit(&argc,argv);

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

glutInitWindowSize(500,500);

glutInitWindowPosition(0,0);

glutCreateWindow("Teapot on a table");

myinit();

glutDisplayFunc(display);

glEnable(GL\_LIGHTING);

glEnable(GL\_LIGHT0);

glShadeModel(GL\_SMOOTH);

glEnable(GL\_NORMALIZE);

glEnable(GL\_DEPTH\_TEST);

glutMainLoop();

}

**OUTPUT :**

