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 tableâ€™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);
      glRotatef(90.0,1.0,0.0,0.0);
      wall(0.0,0.0,wallP);
      glRotatef(90.0,0.0,1.0,0.0);
      wall(0.0,0.0,wallP);
      glFlush();
//Create 1st wall
//Create 2nd wall
//Create 3rd wall
}
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);
}
int 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: