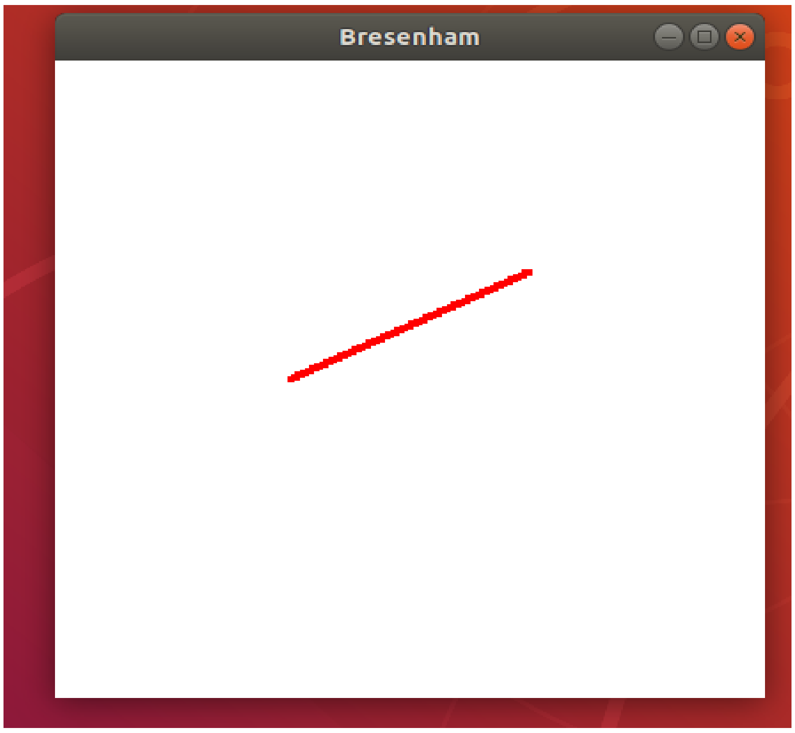
1. Implement Brenham’s line drawing algorithm for all types of slope.

```
#include<GL/glut.h>
#include <stdlib.h>
#include<math.h>
void init(void)
{
//set display-window background color to white
glClearColor(1.0,1.0,1.0,0.0);
//set projection paramaters
glMatrixMode(GL_PROJECTION);
gluOrtho2D(0.0,300.0,0.0,300.0);
}
void setPixel(GLint xCoordinate, GLint yCoordinate)
{
glBegin(GL_POINTS);
glVertex2i(xCoordinate,yCoordinate);
glEnd();
glFlush(); //executes all OpenGL functions as quickl y as possible
}
//Bresenham line-drawing procedure for |m| < 1.0
void lineBres(GLint x0, GLint y0, GLint xEnd, GLint yEnd)
{
GLint dx = fabs(xEnd - x0);
GLint dy = fabs(yEnd - y0);
GLint p = 2 * dy - dx;
GLint twoDy = 2 * dy;
GLint twoDyMinusDx = 2 * (dy-dx);
GLint x,y;
// determine which endpoint to use as start position
if (x0 > xEnd){
x = xEnd;
y = yEnd;
xEnd = x;
}else{
x = x0;
y = y0;
}
setPixel(x,y);
while(x<xEnd){
x++;
if(p<0)
p += twoDy;
else{
y++;
p += twoDyMinusDx;
}
setPixel(x,y);
}
}
```

```
void drawMyLine(void)
{
glClear(GL_COLOR_BUFFER_BIT);
glColor3f(1.0,0.0,0.0);
glPointSize(4.0);
GLint x0 = 100;
GLint y0 = 150;
GLint xEnd = 200;
GLint yEnd = 200;
lineBres(x0,y0,xEnd,yEnd);
}
int  main(int argc, char**argv)
{
//initialize GLUT
glutInit(&argc,argv);
//initialize display mode
glutInitDisplayMode(GLUT_SINGLE | GLUT_RGB);
//set display-window width & height
glutInitWindowSize(400,400);
//set display-window upper-left position
glutInitWindowPosition(0,0);
//create display-window with a title
glutCreateWindow("Bresenham");
//initialze OpenGL
init();
//call graphics to be displayed on the window
glutDisplayFunc(drawMyLine);
//display everything and wait
glutMainLoop();
}
```

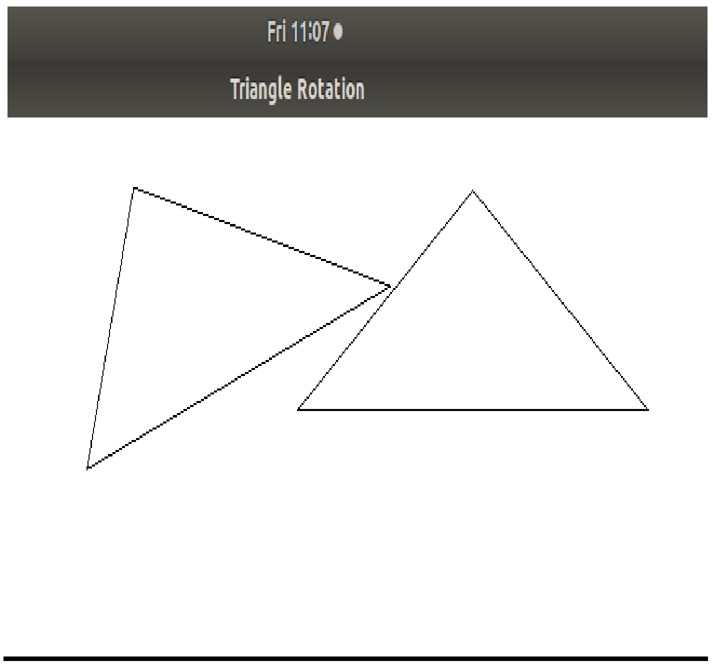
OUTPUT



2. Create and rotate a triangle about the origin and a fixed point.

```
#include<GL/glut.h>
#include<stdio.h>
float v[]={0,0.6,0.25,0.9,0.5,0.6};
GLubyte list[]={0,1,2};
int g=0;
void dis()
{
glClear(GL_COLOR_BUFFER_BIT);
glClearColor(1,1,1,1);
glColor3f(0,0,0);
//glViewport(0,0,700,700);
glDrawElements(GL_LINE_LOOP,3,GL_UNSIGNED_BYTE,list);
glRotated(g,0,0,1);
glDrawElements(GL_LINE_LOOP,3,GL_UNSIGNED_BYTE,list);
glFlush();
glLoadIdentity();
}
int main(int argc, char **argv)
{
glutInit(&argc,argv);
glutInitDisplayMode(GLUT_SINGLE|GLUT_RGB);
glutInitWindowSize(500,500);
printf("Enter Rotation Angle:");
scanf("%d",&g);
glutCreateWindow("Triangle Rotation");
glutDisplayFunc(dis);
glEnableClientState(GL_VERTEX_ARRAY);
glVertexPointer(2,GL_FLOAT,0,v);
glutMainLoop();
}
```

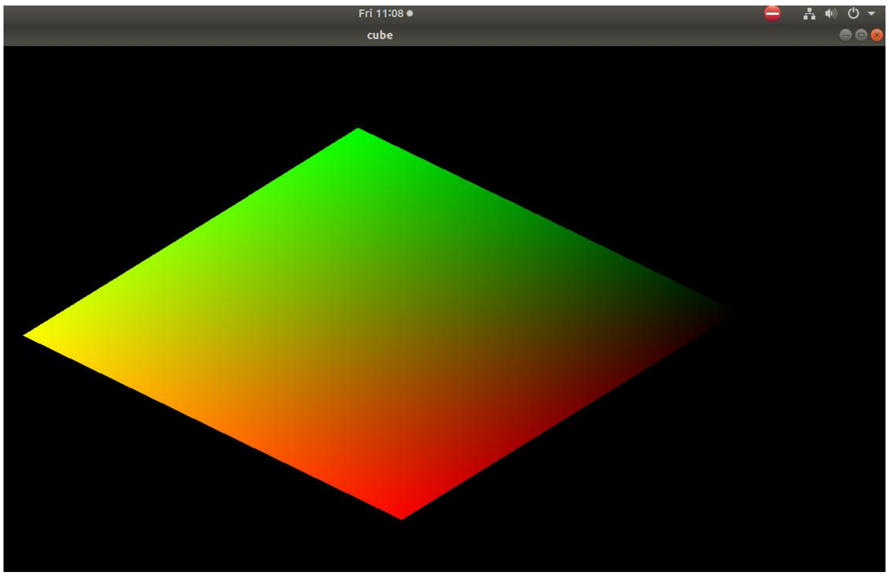
OUTPUT



3. Program to draw a color cube and spin it using OpenGL transformation matrices.

```
#include<GL/glut.h>
float v[]={-0.5,-0.5,-0.5,    -0.5,0.5,-0.5,   0.5,0.5,-0.5, 0.5,-0.5,-0.5, -0.5,-0.5,0.5,  -0.5,0.5,0.5,  0.5,0.5,0.5,
0.5,-0.5,0.5};
float c[]={0,0,0,  1,0,0,  1,1,0,  0,1,0,  0,0,1,  1,0,1,  1,1,1,  0,1,1,};
GLubyte d[]={0,1,2,3,   2,3,7,6,   4,5,6,7,  4,5,1,0,   5,6,2,1,   0,3,7,4};
int gx=0,gy=0,gz=1.0;
void display()
{
glClear(GL_COLOR_BUFFER_BIT|GL_DEPTH_BUFFER_BIT);
glRotated(0.2,gx,gy,gz);
glDrawElements(GL_QUADS,24,GL_UNSIGNED_BYTE,d);
glFlush();
}
void mouse(int btn,int state,int x,int y)
{
if(btn==GLUT_LEFT_BUTTON&&state==GLUT_DOWN) {gx=1; gy=0; gz=0;}
if(btn==GLUT_MIDDLE_BUTTON&&state==GLUT_DOWN) {gx=0; gy=1; gz=0;}
if(btn==GLUT_RIGHT_BUTTON&&state==GLUT_DOWN) {gx=0; gy=0; gz=1;}
}
int main(int argc, char **argv)
{
glutInit(&argc,argv);
glutInitDisplayMode(GLUT_SINGLE|GLUT_RGB|GLUT_DEPTH);
glutCreateWindow("cube");
glutDisplayFunc(display);
glutIdleFunc(display);
glutMouseFunc(mouse);
glEnableClientState(GL_VERTEX_ARRAY);
glEnableClientState(GL_COLOR_ARRAY);
glVertexPointer(3,GL_FLOAT,0,v);
glColorPointer(3,GL_FLOAT,0,c);
glEnable(GL_DEPTH_TEST);
glutMainLoop();
}
```

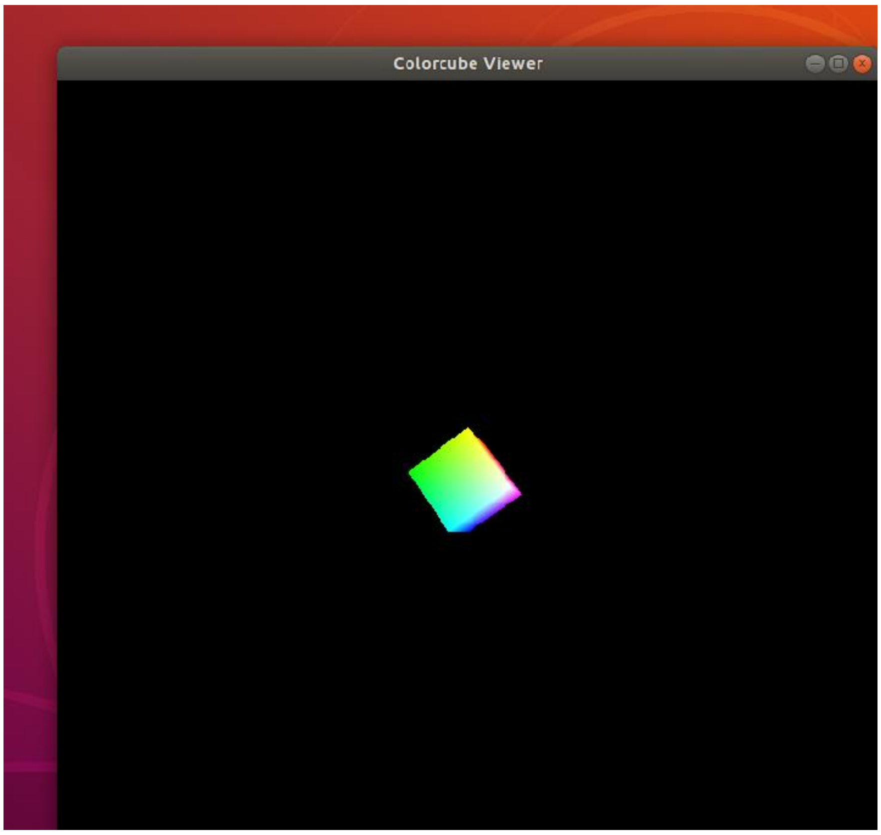
OUTPUT



4. Draw a color cube and allow the user to move the camera suitably to experiment with perspective viewing.

```
#include <GL/glut.h>
float v[]={-0.5,-0.5,-0.5, -0.5,0.5,-0.5,   0.5,0.5,-0.5, 0.5,-0.5,-0.5, -0.5,-0.5,0.5, -0.5,0.5,0.5,  0.5,0.5,0.5,
0.5,-0.5,0.5};
float c[]={0,0,0,  0,1,0,  1,1,0,  1,0,0,  0,0,1,  0,1,1,  1,1,1,  1,0,1,};
GLubyte list[]={0,1,2,3,  6,7,3,2,  4,7,6,5,   4,5,1,0,   5,6,2,1,  0,3,7,4};
int gx=0,gy=0,gz=1;
static GLfloat theta[] = {0.0,0.0,0.0};
static GLint axis = 2;
static GLdouble viewer[]= {0.0, 0.0, 5.0};
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);
glDrawElements(GL_QUADS,24,GL_UNSIGNED_BYTE,list);
glFlush();
}
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();
}
int main(int argc, char **argv)
{
glutInit(&argc,argv);
glutInitDisplayMode(GLUT_SINGLE|GLUT_RGB|GLUT_DEPTH);
glutInitWindowSize(700, 700);
glutCreateWindow("Colorcube Viewer");
glMatrixMode(GL_PROJECTION);
glFrustum(-2.0, 2.0, -2.0, 2.0, 2.0, 20.0);
glMatrixMode(GL_MODELVIEW);
glutDisplayFunc(display);
glEnableClientState(GL_VERTEX_ARRAY);
glEnableClientState(GL_COLOR_ARRAY);
glVertexPointer(3,GL_FLOAT,0,v);
glColorPointer(3,GL_FLOAT,0,c);
glutMouseFunc(mouse);
glutKeyboardFunc(keys);
glEnable(GL_DEPTH_TEST);
glutMainLoop();
}
```

OUTPUT



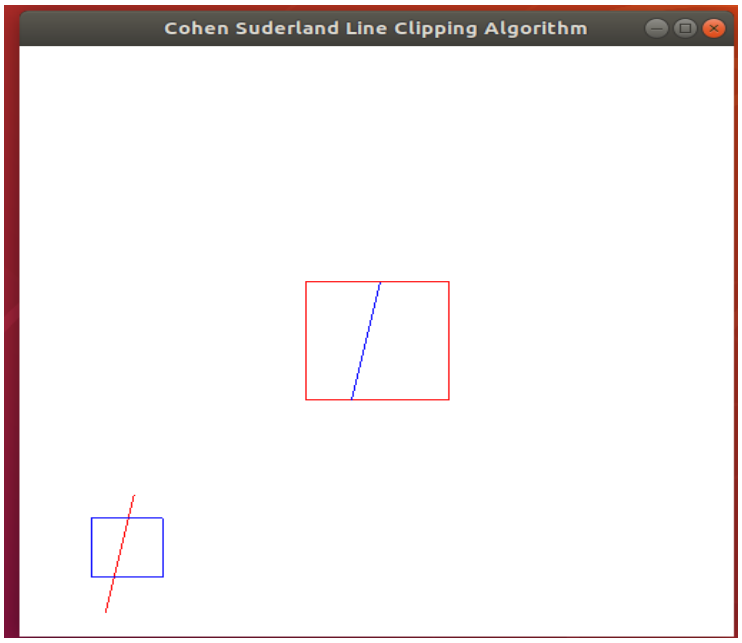
5. Clip a lines using Cohen-Sutherland algorithm.

```
#include <GL/glut.h>
double xmin=50,ymin=50, xmax=100,ymax=100; // Window boundaries
double xvmin=200,yvmin=200,xvmax=300,yvmax=300; // Viewport boundaries
//bit codes for the right, left, top, & bottom
const int RIGHT = 8;
const int LEFT = 2;
const int TOP = 4;
const int BOTTOM = 1;
//function to compute bit codes of a point
//Compute the bit code for a point (x, y) using the clip rectangle bounded diagonally by (xmin, ymin), and
(xmax, ymax)
int ComputeOutCode (double x, double y)
{
int code = 0;
if (y > ymax)            //above the clip window
code |= TOP;
else if (y < ymin)        //below the clip window
code |= BOTTOM;
if (x > xmax)            //to the right of clip window
code |= RIGHT;
else if (x < xmin)        //to the left of clip window
code |= LEFT;
return code;
}
/*Cohen-Sutherland clipping algorithm clips a line from P0 = (x0, y0) to P1 = (x1, y1) against a rectangle  */
void CohenSutherlandLineClipAndDraw (double x0, double y0,double x1, double y1)
{
//Outcodes for P0, P1 and the point that lies outside the clip rectangle
int outcode0, outcode1, outcodeOut;
bool accept = false, done = false;
//compute outcodes
outcode0 = ComputeOutCode (x0, y0);
outcode1 = ComputeOutCode (x1, y1);
do
{
if (!(outcode0 | outcode1))      //logical OR is 0: Trivially accept & exit
{
accept = true;
done = true;
}
else if (outcode0 & outcode1)   //logical AND is not 0: Trivially reject and exit
done = true;
else
{
//calculate the line segment to clip from an outside point to an intersection with clip edge
double x, y;
//At least one endpoint is outside the clip rectangle; pick it.
outcodeOut = outcode0? outcode0: outcode1;
//Now find the intersection point with formula: y = y0 + slope * (x - x0), x = x0 + (1/slope)* (y - y0)
if (outcodeOut & TOP)     //point is above the clip rectangle
{
x = x0 + (x1 - x0) * (ymax - y0)/(y1 - y0);
y = ymax;
}
else if (outcodeOut & BOTTOM)  //point is below the clip rectangle
{
x = x0 + (x1 - x0) * (ymin - y0)/(y1 - y0);
y = ymin;
}
else if (outcodeOut & RIGHT)   //point is to the right of clip rectangle
{
y = y0 + (y1 - y0) * (xmax - x0)/(x1 - x0);
x = xmax;
}
else                          //point is to the left of clip rectangle
{
y = y0 + (y1 - y0) * (xmin - x0)/(x1 - x0);
x = xmin;
}
//Now we move outside point to intersection point to clip
//and get ready for next pass.
if (outcodeOut == outcode0)
{
x0 = x;
y0 = y;
outcode0 = ComputeOutCode (x0, y0);
}
else
{
x1 = x;
y1 = y;
outcode1 = ComputeOutCode (x1, y1);
}
}
}
while (!done);
```

```
if (accept)
{               // Window to viewport mappings
double sx=(xvmax-xvmin)/(xmax-xmin); // Scale parameters
double sy=(yvmax-yvmin)/(ymax-ymin);
double vx0=xvmin+(x0-xmin)*sx;
double vy0=yvmin+(y0-ymin)*sy;
double vx1=xvmin+(x1-xmin)*sx;
double vy1=yvmin+(y1-ymin)*sy;
//draw a red colored viewport
glColor3f(1.0, 0.0, 0.0);
glBegin(GL_LINE_LOOP);
glVertex2f(xvmin, yvmin);
glVertex2f(xvmax, yvmin);
glVertex2f(xvmax, yvmax);
glVertex2f(xvmin, yvmax);
glEnd();
glColor3f(0.0,0.0,1.0); // draw blue colored clipped line
glBegin(GL_LINES);
glVertex2d (vx0, vy0);
glVertex2d (vx1, vy1);
glEnd();
}
}
void display()
{
double x0=60,y0=20,x1=80,y1=120;
glClear(GL_COLOR_BUFFER_BIT);
glColor3f(1.0,0.0,0.0);
glBegin(GL_LINES);
glVertex2d (x0, y0);
glVertex2d (x1, y1);
glEnd();
glColor3f(0.0, 0.0, 1.0);
glBegin(GL_LINE_LOOP);
glVertex2f(xmin, ymin);
glVertex2f(xmax, ymin);
glVertex2f(xmax, ymax);
glVertex2f(xmin, ymax);
glEnd();
CohenSutherlandLineClipAndDraw(x0,y0,x1,y1);
glFlush();
}
```

```
void myinit()
{
glClearColor(1.0,1.0,1.0,1.0);
glMatrixMode(GL_PROJECTION);
glLoadIdentity();
gluOrtho2D(0.0,499.0,0.0,499.0);
glMatrixMode(GL_MODELVIEW);
}
int main(int argc, char** argv)
{
//int x1, x2, y1, y2;
//printf("Enter End points:");
//scanf("%d%d%d%d", &x1,&x2,&y1,&y2);
glutInit(&argc,argv);
glutInitDisplayMode(GLUT_SINGLE|GLUT_RGB);
glutInitWindowSize(500,500);
glutInitWindowPosition(0,0);
glutCreateWindow("Cohen Suderland Line Clipping Algorithm");
glutDisplayFunc(display);
myinit();
glutMainLoop();
}
```

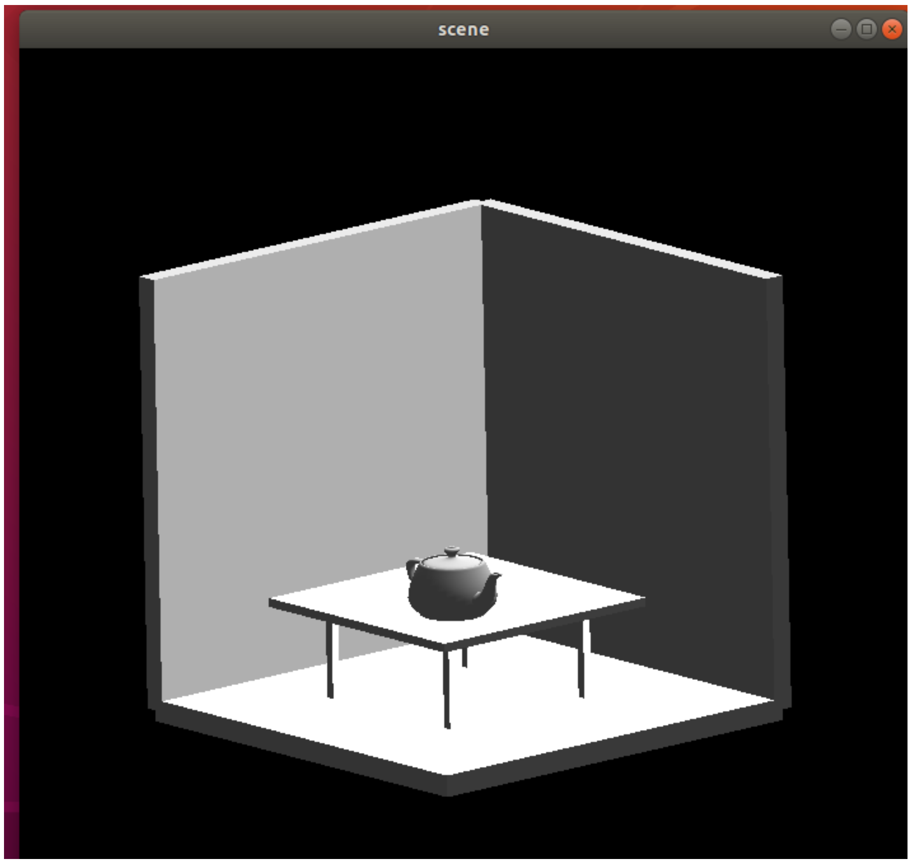
OUTPUT



6. 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 surfaces of the solid object used in the scene.

```
#include<GL/glut.h>
void obj(double tx,double ty,double tz,double sx,double sy,double sz)
{
glRotated(50,0,1,0);
glRotated(-10,1,0,0);
glRotated(-10,0,0,1);
glTranslated(tx,ty,tz);
glScaled(sx,sy,sz);
glutSolidCube(1);
glLoadIdentity();
}
void display()
{
//glViewport(0,0,700,700);
glClear(GL_COLOR_BUFFER_BIT|GL_DEPTH_BUFFER_BIT);
obj(0,0,0.5,1,1,0.05);  // right wall
obj(0,-0.5,0,1,0.05,1); // bottom wall
obj(-0.5,0,0,0.05,1,1); // left wall
obj(0,-0.3,0,0.02,0.2,0.02);   // four table legs
obj(0,-0.3,-0.4,0.02,0.2,0.02);
obj(0.4,-0.3,0,0.02,0.2,0.02);
obj(0.4,-0.3,-0.4,0.02,0.2,0.02);
obj(0.2,-0.18,-0.2,0.6,0.02,0.6);  // table top
glRotated(50,0,1,0);
glRotated(-10,1,0,0);
glRotated(-10,0,0,1);
glTranslated(0.3,-0.1,-0.3);
glutSolidTeapot(0.1);
glFlush();
glLoadIdentity();
}
int main(int argc, char **argv)
{
glutInit(&argc,argv);
glutInitDisplayMode(GLUT_SINGLE|GLUT_RGB|GLUT_DEPTH);
float ambient[]={1,1,1,1}; //ambient surface in homogeneous: uniform illumination throughout the room
float light_pos[]={27,80,2,0}; //distant light source
glutInitWindowSize(700,700);
glutCreateWindow("scene");
glutDisplayFunc(display);
glEnable(GL_LIGHTING);
glEnable(GL_LIGHT0);
glMaterialfv(GL_FRONT,GL_AMBIENT,ambient);
glLightfv(GL_LIGHT0,GL_POSITION,light_pos);
glEnable(GL_DEPTH_TEST);
glutMainLoop();
}
```

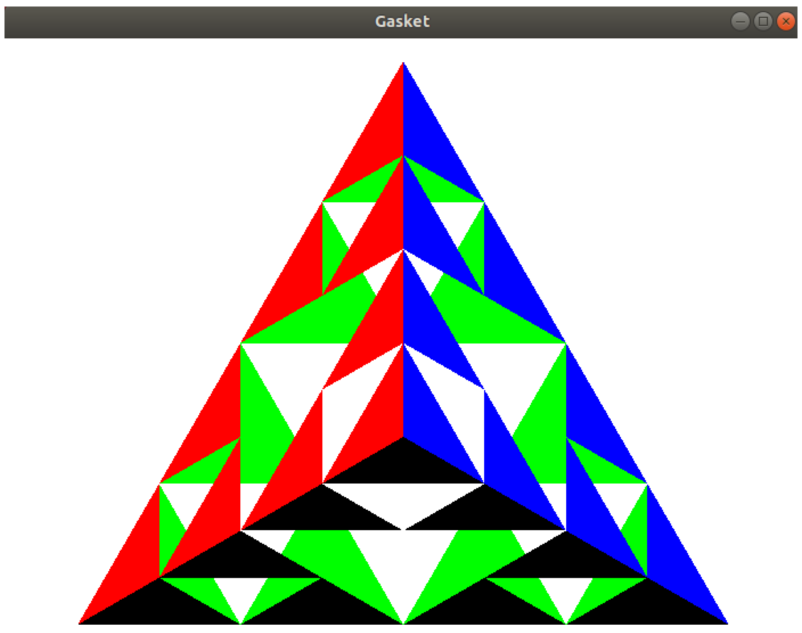
OUTPUT



7. Design, develop and implement recursively subdivide a tetrahedron to form 3D sierpinski gasket. The number of recursive steps is to be specified by the user.

```
#include<GL/glut.h>
#include<stdio.h>
typedef float point[3];
point v[]={{0.0,0.0,-1.0},{0.0,0.9428,-0.3333},{-0.8164,-0.4714,-0.3333},{0.8164,-0.4714,-0.5}};
int n;
void tri(point a,point b,point c)
{
 glBegin(GL_POLYGON);
glVertex3fv(a);
glVertex3fv(b);
glVertex3fv(c);
glEnd();
}
void divide_tri(point a,point b,point c,int m)
{   point v1,v2,v3;
if(m>0)
{
for(int j=0;j<3;j++)
{
v1[j]=(a[j]+b[j])/2;
v2[j]=(a[j]+c[j])/2;
v3[j]=(b[j]+c[j])/2;
}
divide_tri(a,v1,v2,m-1);
divide_tri(c,v2,v3,m-1);
divide_tri(b,v3,v1,m-1);
}
else tri(a,b,c);
}
void tet(int m)
{
glColor3f(1,0,0);
divide_tri(v[0],v[1],v[2],m);
glColor3f(0,1,0);
divide_tri(v[3],v[2],v[1],m);
glColor3f(0,0,1);
divide_tri(v[0],v[3],v[1],m);
glColor3f(0,0,0);
divide_tri(v[0],v[2],v[3],m);
}
void display()
{
glViewport(0,0,700,700);
glClear(GL_COLOR_BUFFER_BIT|GL_DEPTH_BUFFER_BIT);
tet(n);
glFlush();
glLoadIdentity();
}
int main(int argc,char **argv)
{
printf("Enter Divisions: ");
scanf("%d",&n);
glutInit(&argc,argv);
glutInitDisplayMode(GLUT_SINGLE|GLUT_RGB|GLUT_DEPTH);
glutInitWindowSize(700,700);
glutCreateWindow("Gasket");
glEnable(GL_DEPTH_TEST);
glutDisplayFunc(display);
glClearColor(1,1,1,1);
glutMainLoop();
}
```

OUTPUT



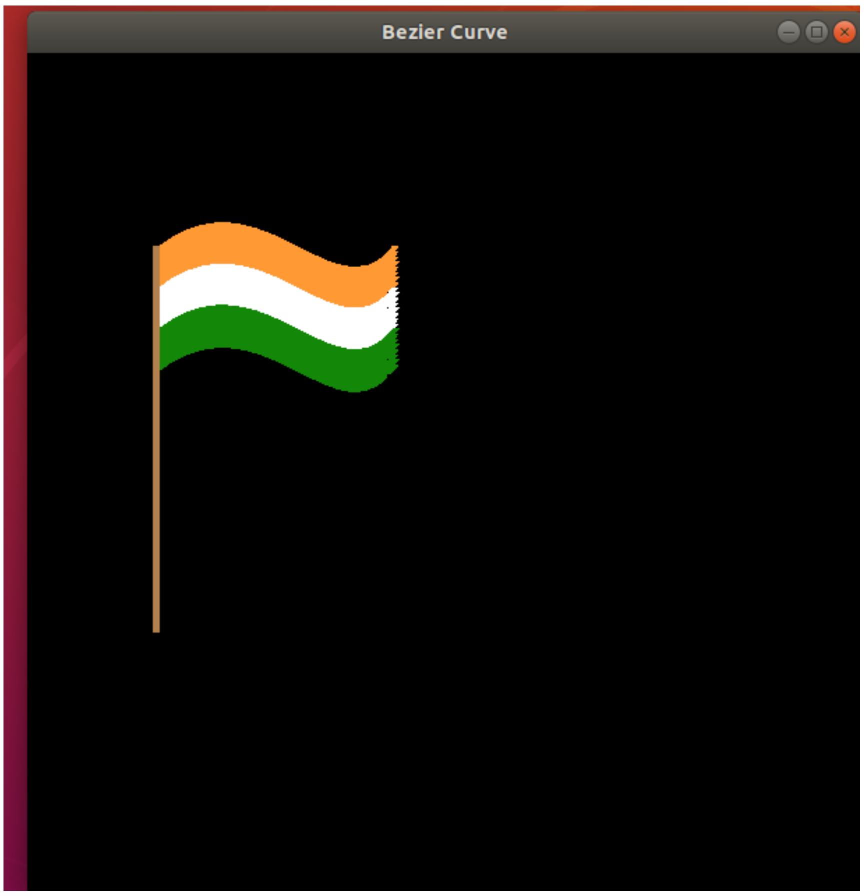
8. Develop a menu driven program to animate a flag using Bezier Curve algorithm

```
#include<GL/glut.h>
#include<stdio.h>
#include<math.h>
#define PI 3.1416
GLsizei winWidth = 600, winHeight = 600;
GLfloat xwcMin = 0.0, xwcMax = 130.0;
GLfloat ywcMin = 0.0, ywcMax = 130.0;
typedef struct wcPt3D
{
GLfloat x, y, z;
};
void bino(GLint n, GLint *C)
{
GLint k, j;
for(k=0;k<=n;k++)
{
C[k]=1;
for(j=n;j>=k+1; j--)
C[k]*=j;
for(j=n-k;j>=2;j--)
C[k]/=j;
}
}
void computeBezPt(GLfloat u, wcPt3D *bezPt, GLint nCtrlPts, wcPt3D *ctrlPts, GLint*C)
{
GLint k, n=nCtrlPts-1;
GLfloat bezBlendFcn;
bezPt ->x =bezPt ->y = bezPt->z=0.0;
for(k=0; k< nCtrlPts; k++)
{
bezBlendFcn = C[k] * pow(u, k) * pow( 1-u, n-k);
bezPt ->x += ctrlPts[k].x * bezBlendFcn;
bezPt ->y += ctrlPts[k].y * bezBlendFcn;
bezPt ->z += ctrlPts[k].z * bezBlendFcn;
}
}
void bezier(wcPt3D *ctrlPts, GLint nCtrlPts, GLint nBezCurvePts)
{
wcPt3D bezCurvePt;
GLfloat u;
GLint *C, k;
C= new GLint[nCtrlPts];
bino(nCtrlPts-1, C);
glBegin(GL_LINE_STRIP);
for(k=0; k<=nBezCurvePts; k++)
{
u=GLfloat(k)/GLfloat(nBezCurvePts);
computeBezPt(u, &bezCurvePt, nCtrlPts, ctrlPts, C);
glVertex2f(bezCurvePt.x, bezCurvePt.y);
}
glEnd();
delete[]C;
}
void displayFcn()
{
GLint nCtrlPts = 4, nBezCurvePts =20;
static float theta = 0;
wcPt3D ctrlPts[4] = {
{20, 100, 0},
{30, 110, 0},
{50, 90, 0},
{60, 100, 0}};
ctrlPts[1].x +=10*sin(theta * PI/180.0);
ctrlPts[1].y +=5*sin(theta * PI/180.0);
ctrlPts[2].x -= 10*sin((theta+30) * PI/180.0);
ctrlPts[2].y -= 10*sin((theta+30) * PI/180.0);
ctrlPts[3].x-= 4*sin((theta) * PI/180.0);
ctrlPts[3].y += sin((theta-30) * PI/180.0);
theta+=0.1;
glClear(GL_COLOR_BUFFER_BIT);
glColor3f(1.0, 1.0, 1.0);
glPointSize(5);
glPushMatrix();
glLineWidth(5);
glColor3f(255/255, 153/255.0, 51/255.0); //Indian flag: Orange color code
for(int i=0;i<8;i++)
{
glTranslatef(0, -0.8, 0);
bezier(ctrlPts, nCtrlPts, nBezCurvePts);
}
glColor3f(1, 1, 1); //Indian flag: white color code
for(int i=0;i<8;i++)
{
glTranslatef(0, -0.8, 0);
bezier(ctrlPts, nCtrlPts, nBezCurvePts);
}
glColor3f(19/255.0, 136/255.0, 8/255.0); //Indian flag: green color code
for(int i=0;i<8;i++)
{
glTranslatef(0, -0.8, 0);
bezier(ctrlPts, nCtrlPts, nBezCurvePts);
}
glPopMatrix();
glColor3f(0.7, 0.5,0.3);
glLineWidth(5);
glBegin(GL_LINES);
glVertex2f(20,100);
glVertex2f(20,40);
glEnd();
```

```
glFlush();
glutPostRedisplay();

glutSwapBuffers();
}
void winReshapeFun(GLint newWidth, GLint newHeight)
{
glViewport(0, 0, newWidth, newHeight);
glMatrixMode(GL_PROJECTION);
glLoadIdentity();
gluOrtho2D(xwcMin, xwcMax, ywcMin, ywcMax);
glClear(GL_COLOR_BUFFER_BIT);
}
int main(int argc, char **argv)
{
glutInit(&argc, argv);
glutInitDisplayMode(GLUT_DOUBLE | GLUT_RGB);
glutInitWindowPosition(50, 50);
glutInitWindowSize(winWidth, winHeight);
glutCreateWindow("Bezier Curve");
glutDisplayFunc(displayFcn);
glutReshapeFunc(winReshapeFun);
glutMainLoop();
}
```

OUTPUT



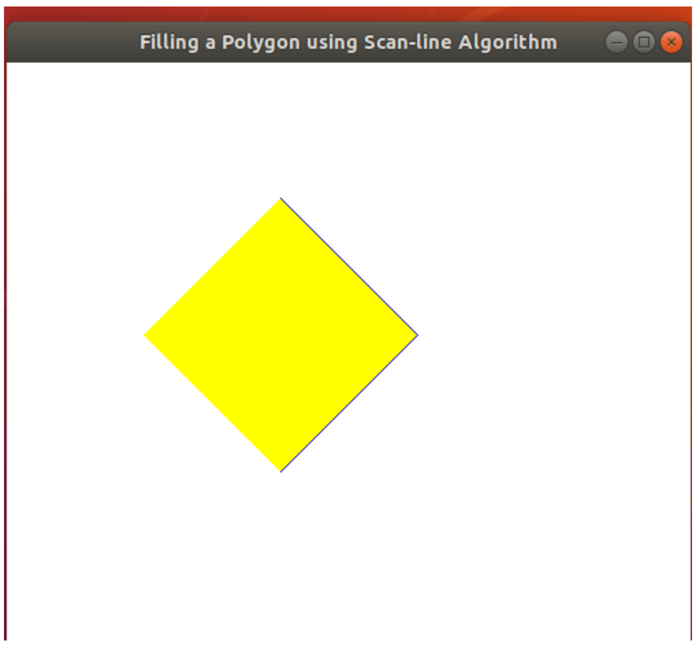
9. Develop a menu driven program to fill the polygon using scan line algorithm.

```
#define BLACK 0
#include <stdlib.h>
#include <stdio.h>
#include <GL/glut.h>
float x1,x2,x3,x4,y1,y2,y3,y4;
void edgedetect(float x1,float y1,float x2,float y2,int *le,int *re)
{
float mx,x,temp;
int i;
if((y2-y1)<0)
{
temp=y1;y1=y2;y2=temp;
temp=x1;x1=x2;x2=temp;
}
if((y2-y1)!=0)
mx=(x2-x1)/(y2-y1);
else
mx=x2-x1;
x=x1;
for(i=y1;i<=y2;i++)
{
if(x<(float)le[i])
le[i]=(int)x;
if(x>(float)re[i])
re[i]=(int)x;
x+=mx;
}
}
void draw_pixel(int x,int y,int value)
{
glColor3f(1.0,1.0,0.0);
glBegin(GL_POINTS);
glVertex2i(x,y);
glEnd();
}
void scanfill(float x1,float y1,float x2,float y2,float x3,float y3,float x4,float y4)
{
int le[500],re[500];
int i,y;
for(i=0;i<500;i++)
```

```
{
le[i]=500;
re[i]=0;
}
edgedetect(x1,y1,x2,y2,le,re);
edgedetect(x2,y2,x3,y3,le,re);
edgedetect(x3,y3,x4,y4,le,re);
edgedetect(x4,y4,x1,y1,le,re);
for(y=0;y<500;y++)
{
if(le[y]<=re[y])
for(i=(int)le[y];i<(int)re[y];i++)
draw_pixel(i,y,BLACK);
}
}
void display()
{
x1=200.0;y1=200.0;x2=100.0;y2=300.0;x3=200.0;y3=400.0;x4=300.0;y4=300.0;
glClear(GL_COLOR_BUFFER_BIT);
glColor3f(0.0, 0.0, 1.0);
glBegin(GL_LINE_LOOP);
glVertex2f(x1,y1);
glVertex2f(x2,y2);
glVertex2f(x3,y3);
glVertex2f(x4,y4);
glEnd();
scanfill(x1,y1,x2,y2,x3,y3,x4,y4);
glFlush();
}
void myinit()
{
glClearColor(1.0,1.0,1.0,1.0);
glMatrixMode(GL_PROJECTION);
glLoadIdentity();
gluOrtho2D(0.0,499.0,0.0,499.0);
glMatrixMode(GL_MODELVIEW);
}
int main(int argc, char** argv)
{
glutInit(&argc,argv);
glutInitDisplayMode(GLUT_SINGLE|GLUT_RGB);
glutInitWindowSize(500,500);
glutInitWindowPosition(0,0);
glutCreateWindow("Filling a Polygon using Scan-line Algorithm");
```

```
glutDisplayFunc(display);
myinit();
glutMainLoop();
}
```

OUTPUT


Filling a Polygon using Scan-line Algorithm