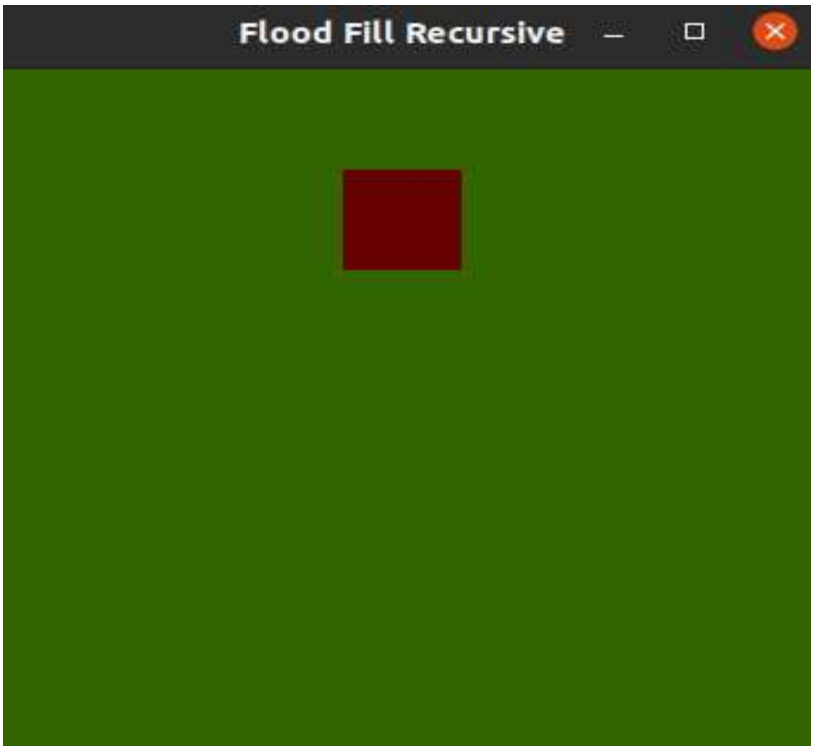
Assignment No:04

Flood fill:

```
#include<GL/glut.h>
#include<iostream>
#include<math.h>
int ww = 800, wh = 700;
  float bgCol[3]={0.2,0.4,0.0};
  float intCol[3]={0.0,0.0,1.0};
  float fillCol[3] = {0.4 ,0.0,0.0};
  void setPixel(int pointx, int pointy, float f[3])
  {
        glBegin(GL_POINTS);
        glColor3fv(f);
        glVertex2i(pointx, pointy);
        glEnd();
        glFlush();
     }
     void getPixel(int x, int y, float pixels[3])
     {
     glReadPixels(x, y, 1.0, 1.0,GL_RGB,GL_FLOAT, pixels);
     }
     void drawPolygon(int x1, int y1, int x2, int y2)
     {
     glColor3f(0.0,0.0,1.0);
     glBegin(GL_POLYGON);
     glVertex2i(x1,y1);
     glVertex2i(x1,y2);
     glVertex2i(x2,y2);
     glVertex2i(x2,y1);
     glEnd();
     glFlush();
     }
  void display()
  {
  glClearColor(0.2,0.4,0.0,1.0);
  glClear(GL_COLOR_BUFFER_BIT);
  drawPolygon(150,250,200,300);
  glFlush();
  }
  void floodfill4(int x, int y, float oldColor[3], float newcolor[3])
  {
  float color[3];
  getPixel(x, y, color);
  if(color[0]==oldColor[0]&&(color[1])==oldColor[1]&&(color[2])==oldColor[2])
  {
  setPixel(x, y, newcolor);
  floodfill4(x+1, y,oldColor,newcolor);
  floodfill4(x-1, y,oldColor,newcolor);
  floodfill4(x, y+1,oldColor,newcolor);
```

```
floodfill4(x, y-1,oldColor,newcolor);
   }
   }
   void mouse(int btn,int state, int x, int y)
   {
   if(btn==GLUT_LEFT_BUTTON && state == GLUT_DOWN)
   {
     int xi = x;
     int yi = (wh - y);
     floodfill4(xi, yi, intCol, fillCol);
   }
   }
   void myinit()
   {
          glViewport(0,0,ww,wh);
          glMatrixMode(GL_PROJECTION);
          glLoadIdentity();
          gluOrtho2D(0.0,(GLdouble)ww,0.0,(GLdouble)wh);
          glMatrixMode(GL_MODELVIEW);
          }
int main (int argc , char **argv)
{
  glutInit(&argc,argv);
  glutInitDisplayMode(GLUT_SINGLE|GLUT_RGB);
  glutInitWindowSize(ww , wh);
  glutCreateWindow("Flood Fill Recursive");
  glutDisplayFunc(display);
  myinit();
  glutMouseFunc(mouse);
  glutMainLoop();
  return 0;
  }
```

Output:



BOUNDARY FILL

```
#include<GL/glut.h>
#include<iostream>
#include<math.h>
int ww = 600, wh = 500;
float fillCol[3] = {0.4,0.0,0.0};
float borderCol[3] = {0.0, 0.0,0.0};
void setPixel(int pointx, int pointy, float f[3])
{
	glBegin(Gl_POINTS);
		glColor3fv(f);
		glVertex2i(pointx,pointy);
	glEnd();
	glFlush();
}
void getPixel(int x, int y, float pixels[3])
{	glReadPixels(x, y, 1.0, 1.0,GL_RGB, GL_FLOAT,pixels);
}

void drawPolygon(int x1,int y1,int x2,int y2)
{
	glColor3f(0.0,0.0,0.0);
	glBegin(GL_LINES);
		glVertex2i(x1,y1);
		glVertex2i(x1,y2);
	glEnd();
	glBegin(GL_LINES);
		glVertex2i(x2,y1);
		glVertex2i(x2,y2);
	glEnd();
	glBegin(GL_LINES);
		glVertex2i(x1,y1);
		glVertex2i(x2,y1);
	glEnd();
	glBegin(GL_LINES);
		glVertex2i(x1,y2);
		glVertex2i(x2,y2);
	glEnd();
	glFlush();
}
void display(){

	 glClearColor(0.6,0.4,0.1,1.0);
	 glClear(GL_COLOR_BUFFER_BIT);
	 drawPolygon(150,250,200,300);
	 glFlush();
}
```

```
void boundaryFill4(int x,int y,float fillColor[3],float borderColor[3])
{
	float interiorColor[3];
	getPixel(x,y,interiorColor);

	if ((interiorColor[0] != borderColor[0] && interiorColor[1] != borderColor[1] &&
interiorColor[2] != borderColor[2])&& (interiorColor[0] != fillColor[0] && interiorColor[1] !=
fillColor[1] && interiorColor[2] != fillColor[2]))

{
	setPixel(x,y,fillColor);
	boundaryFill4(x,y-1,fillColor,borderColor);
	boundaryFill4(x,y+1,fillColor,borderColor);
	boundaryFill4(x+1,y,fillColor,borderColor);
	boundaryFill4(x-1,y,fillColor,borderColor);

}
}

void mouse(int btn, int state, int x ,int y)
{
	if(btn == GLUT_LEFT_BUTTON && state == GLUT_DOWN)
{
	int xi = x;
	int yi = (wh - y);
	boundaryFill4( xi , yi , fillCol, borderCol);
}
}
void myinit()
{
	glViewport(0,0,ww,wh);
	glMatrixMode(GL_PROJECTION);
	glLoadIdentity();
	gluOrtho2D(0.0,(GLdouble)ww,0.0,(GLdouble)wh);
	glMatrixMode(GL_MODELVIEW);
	}
int main (int argc , char **argv)
{
 glutInit(&argc,argv);
 glutInitDisplayMode(GLUT_SINGLE|GLUT_RGB);
 glutInitWindowSize(ww , wh);
 glutCreateWindow("Boundry Fill Recursive");
 glutDisplayFunc(display);
 myinit();
 glutMouseFunc(mouse);
 glutMainLoop();
 return 0;
 }
```

Output: