Practical – 5

AIM: Write a C/C++ Program to fill Area Algorithm.

1. Write a C/C++ program to draw any object and fill color in that object using boundary fill algorithm and flood fill algorithm in one program.

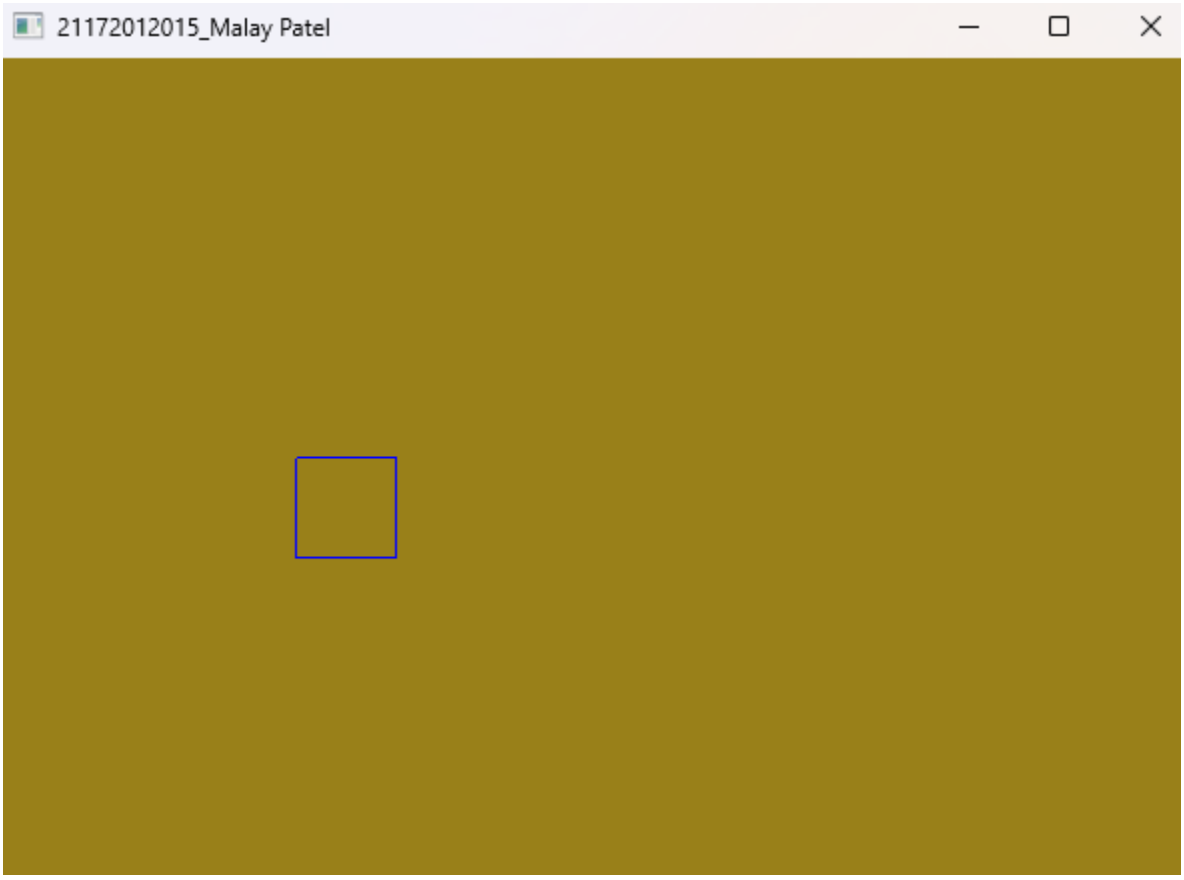
Code:

```
namespace gp5_1 {
	int ww = 600, wh = 500;
	float fillCol[3] = { 0.0,1.0,0.0 };
	float borderCol[3] = { 0.0,0.0,1.0 };
	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_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);
```

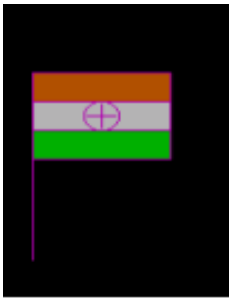
```
		glEnd();
		glBegin(GL_LINES);
		glVertex2i(x1, y2);
		glVertex2i(x2, y2);
		glEnd();
		glFlush();
	}
	void display()
	{
		glClearColor(0.6, 0.5, 0.1, 0.7);
		glClear(GL_COLOR_BUFFER_BIT);
		drawPolygon(150, 250, 200, 300);
		glFlush();
	}
	void boundaryFill4(int x, int y, float fillColor[3], float 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 + 1, y, fillColor, borderColor);
			boundaryFill4(x - 1, y, fillColor, borderColor);
			boundaryFill4(x, y + 1, fillColor, borderColor);
			boundaryFill4(x, y - 1, 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);
	}
	void main(int argc, char** argv)
	{
		glutInit(&argc, argv);
		glutInitDisplayMode(GLUT_SINGLE | GLUT_RGB);
		glutInitWindowSize(ww, wh);
		glutCreateWindow("21172012015_Malay Patel");
		glutDisplayFunc(display);
		myinit();
		glutMouseFunc(mouse);
```

```
glutMainLoop();
  }
}
```

OUTPUT:



2. Write a C/C++ Program to draw flag of India by using glRect method in OpenGL.



Code:

```
amespace gp5_2 {
	float theta;
	void init()
	{
		glClearColor(0.0, 0.0, 0.0, 0.0);
		glMatrixMode(GL_PROJECTION);
		gluOrtho2D(0.0, 800, 0.0, 600);
	}
	void Flag()
	{
		glColor3f(0.9, 0.9, 0.9);
		glBegin(GL_LINES);
		glVertex2i(300, 50);
		glVertex2i(300, 340);
		glEnd();
		glColor3f(0.98, 0.625, 0.12);
		glRecti(300, 250, 500, 280);
		glColor3f(0.9, 0.9, 0.9);
		glRecti(300, 280, 500, 310);
		glColor3f(0.0, 0.9, 0.0);
		glRecti(300, 310, 500, 340);
		float theta;
		glColor3f(0.0, 0.0, 0.9);
		glLineWidth(1);
		glBegin(GL_LINES);
		for (int i = 0; i <= 360; i++)
		{
			theta = i * 3.142 / 180;
			glVertex2f(400 + 15 * cos(theta), 295 + 15 * sin(theta));
		}
		glEnd();
		glColor3f(0.0, 0.0, 0.9);
		glLineWidth(1);
		glBegin(GL_LINES);
		glVertex2i(400, 280);
		glVertex2i(400, 310);
		glVertex2i(385, 295);
		glVertex2i(415, 295);
		glEnd();
		glFlush();
	}
	void main(int argc, char** argv)
	{
		glutInit(&argc, argv);
		glutInitDisplayMode(GLUT_SINGLE | GLUT_RGB);
		glutInitWindowPosition(10, 10);
		glutInitWindowSize(800, 600);
		glutCreateWindow("21172012015_Malay Patel");
		init();
		glutDisplayFunc(Flag);
		glutMainLoop();
	}
}
```

Output: