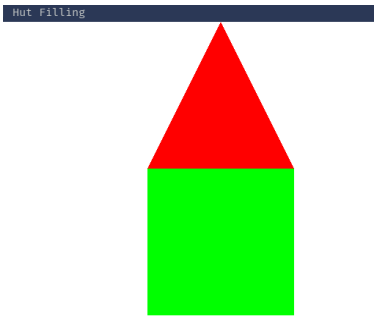
Experiment – 7

Aim: To write a program to draw a simple hut use library and use filling algorithm.




```
#include <GL/glut.h>

int width = 800;
int height = 600;

// hut coordinates
int hut_x = 200;
int hut_y = 200;
int hut_width = 200;
int hut_height = 200;

void drawHut() {
   // draw the roof
   glBegin(GL_TRIANGLES);
   glColor3f(1.0f, 0.0f, 0.0f); // red
   glVertex2i(hut_x, hut_y + hut_height);
   glVertex2i(hut_x + hut_width / 2, hut_y + hut_height * 2);
   glVertex2i(hut_x + hut_width, hut_y + hut_height);
   glEnd();

   // draw the walls
   glBegin(GL_QUADS);
   glColor3f(0.0f, 1.0f, 0.0f); // green
   glVertex2i(hut_x, hut_y);
   glVertex2i(hut_x + hut_width, hut_y);
   glVertex2i(hut_x + hut_width, hut_y + hut_height);
   glVertex2i(hut_x, hut_y + hut_height);
   glEnd();
}

void display() {
   glClear(GL_COLOR_BUFFER_BIT);

   drawHut();

   glFlush();
}
```

```
void fillHut(int x, int y, float* fillColor, float* oldColor) {
   float color[3];
   glReadPixels(x, y, 1, 1, GL_RGB, GL_FLOAT, color);
   if (color[0] == oldColor[0] && color[1] == oldColor[1] && color[2] == oldColor[2]) {
      glColor3fv(fillColor);
      glBegin(GL_POINTS);
      glVertex2i(x, y);
      glEnd();
      fillHut(x+1, y, fillColor, oldColor);
      fillHut(x-1, y, fillColor, oldColor);
      fillHut(x, y+1, fillColor, oldColor);
      fillHut(x, y-1, fillColor, oldColor);
   }
}

void mouse(int button, int state, int x, int y) {
   if (button == GLUT_LEFT_BUTTON && state == GLUT_DOWN) {
      float fillColor[] = {1.0f, 0.0f, 0.0f}; // red
      float oldColor[] = {0.0f, 1.0f, 0.0f}; // green
      fillHut(x, height-y, fillColor, oldColor);
   }
}

int main(int argc, char** argv) {
   glutInit(&argc, argv);
   glutInitDisplayMode(GLUT_SINGLE);
   glutInitWindowSize(width, height);
   glutInitWindowPosition(100, 100);
   glutCreateWindow("Hut Filling");
   glClearColor(1.0, 1.0, 1.0, 0.0);
   glMatrixMode(GL_PROJECTION);
   glLoadIdentity();
   gluOrtho2D(0, width, 0, height);
   glutDisplayFunc(display);
   glutMouseFunc(mouse);
   glutMainLoop();
   return 0;
}
```