**Lab Taks-3**

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| **Question- 1**  Draw five storied building with windows and a front door |
| **Graph Plot (Picture)-** |
| **Code-**  #include <windows.h> // for MS Windows  #include <GL/glut.h> // GLUT, include glu.h and gl.h  #include <math.h>  /\* Handler for window-repaint event. Call back when the window first appears and  whenever the window needs to be re-painted. \*/  // 22-46013-1  // MD. SHOHANUR RAHMAN SHOHAN  building()  {  // ################################  // ## ##  // ## L E F T PORTION ##  // ## ##  // ################################  //  // LOWER RECTANGLE  //  glBegin(GL\_POLYGON);  glColor3f(0.0f, 1.0f, 0.0f);  glVertex2f(-26.0f, -10.0f);  glVertex2f(-35.0f, -10.0f);  glVertex2f(-35.0f, -9.5f);  glVertex2f(-26.0f, -9.5f);  glEnd();  // OUTLINE  glBegin(GL\_LINES);  glColor3f(1.0f, 1.0f, 1.0f);  glVertex2f(-35.0f, -9.5f);  glVertex2f(-35.0f, -10.0f);  glVertex2f(-35.0f, -10.0f);  glVertex2f(-26.0f, -10.0f);  glVertex2f(-26.0f, -10.0f);  glVertex2f(-26.0f, -9.5f);  glEnd();  //  // UPPER RECTANGLE  //  glBegin(GL\_POLYGON);  glColor3f(0.0f, 1.0f, 0.0f);  glVertex2f(-26.0f, 35.0f);  glVertex2f(-35.0f, 35.0f);  glVertex2f(-35.0f, 36.0f);  glVertex2f(-26.0f, 36.0f);  glEnd();  // OUTLINE  glBegin(GL\_LINES);  glColor3f(1.0f, 1.0f, 1.0f);  glVertex2f(-35.0f, 35.0f);  glVertex2f(-35.0f, 36.0f);  glVertex2f(-35.0f, 36.0f);  glVertex2f(-26.0f, 36.0f);  glEnd();  //  // LEFT BODY  //  glBegin(GL\_POLYGON);  glColor3f(0.5f, 0.0f, 0.0f);  glVertex2f(-26.0f, -9.5f);  glVertex2f(-35.0f, -9.5f);  glVertex2f(-35.0f, 35.0f);  glVertex2f(-26.0f, 35.0f);  glEnd();  //  // LEFT BODY OUTLINE  //  glBegin(GL\_LINES);  glColor3f(1.0f, 1.0f, 1.0f);  glVertex2f(-26.0f, -9.5f);  glVertex2f(-35.0f, -9.5f);  glVertex2f(-35.0f, -9.5f);  glVertex2f(-35.0f, 35.0f);  glVertex2f(-35.0f, 35.0f);  glVertex2f(-26.0f, 35.0f);  glVertex2f(-26.0f, 35.0f);  glVertex2f(-26.0f, -9.5f);  glEnd();  //  // WINDOW1  //  glBegin(GL\_POLYGON);  glColor3f(0.5f, 1.0f, 1.0f); //CYAN  glVertex2f(-29.0f, -7.0f);  glVertex2f(-32.0f, -7.0f);  glVertex2f(-32.0f, -3.0f);  glVertex2f(-29.0f, -3.0f);  glEnd();  //  // WINDOW1 BORDER  //  glBegin(GL\_LINES);  glColor3f(0.0f, 0.0f, 0.0f); //BLACK  glVertex2f(-29.0f, -7.0f);  glVertex2f(-32.0f, -7.0f);  glVertex2f(-32.0f, -7.0f);  glVertex2f(-32.0f, -3.0f);  glVertex2f(-32.0f, -3.0f);  glVertex2f(-29.0f, -3.0f);  glVertex2f(-29.0f, -3.0f);  glVertex2f(-29.0f, -7.0f);  glVertex2f(-30.5f, -3.0f); // DIVIDER  glVertex2f(-30.5f, -7.0f); // DIVIDER  glEnd();  //  // WINDOW2  //  glBegin(GL\_POLYGON);  glColor3f(0.5f, 1.0f, 1.0f); //CYAN  glVertex2f(-29.0f, 2.0f);  glVertex2f(-32.0f, 2.0f);  glVertex2f(-32.0f, 6.0f);  glVertex2f(-29.0f, 6.0f);  glEnd();  //  // WINDOW2 BORDER  //  glBegin(GL\_LINES);  glColor3f(0.0f, 0.0f, 0.0f); //BLACK  glVertex2f(-29.0f, 2.0f);  glVertex2f(-32.0f, 2.0f);  glVertex2f(-32.0f, 2.0f);  glVertex2f(-32.0f, 6.0f);  glVertex2f(-32.0f, 6.0f);  glVertex2f(-29.0f, 6.0f);  glVertex2f(-29.0f, 6.0f);  glVertex2f(-29.0f, 2.0f);  glVertex2f(-30.5f, 6.0f); // DIVIDER  glVertex2f(-30.5f, 2.0f); // DIVIDER  glEnd();  //  // WINDOW3  //  glBegin(GL\_POLYGON);  glColor3f(0.5f, 1.0f, 1.0f); //CYAN  glVertex2f(-29.0f, 11.0f);  glVertex2f(-32.0f, 11.0f);  glVertex2f(-32.0f, 15.0f);  glVertex2f(-29.0f, 15.0f);  glEnd();  //  // WINDOW3 BORDER  //  glBegin(GL\_LINES);  glColor3f(0.0f, 0.0f, 0.0f); //BLACK  glVertex2f(-29.0f, 11.0f);  glVertex2f(-32.0f, 11.0f);  glVertex2f(-32.0f, 11.0f);  glVertex2f(-32.0f, 15.0f);  glVertex2f(-32.0f, 15.0f);  glVertex2f(-29.0f, 15.0f);  glVertex2f(-29.0f, 15.0f);  glVertex2f(-29.0f, 11.0f);  glVertex2f(-30.5f, 15.0f); // DIVIDER  glVertex2f(-30.5f, 11.0f); // DIVIDER  glEnd();  //  // WINDOW4  //  glBegin(GL\_POLYGON);  glColor3f(0.5f, 1.0f, 1.0f); //CYAN  glVertex2f(-29.0f, 20.0f);  glVertex2f(-32.0f, 20.0f);  glVertex2f(-32.0f, 24.0f);  glVertex2f(-29.0f, 24.0f);  glEnd();  //  // WINDOW4 BORDER  //  glBegin(GL\_LINES);  glColor3f(0.0f, 0.0f, 0.0f); //BLACK  glVertex2f(-29.0f, 20.0f);  glVertex2f(-32.0f, 20.0f);  glVertex2f(-32.0f, 20.0f);  glVertex2f(-32.0f, 24.0f);  glVertex2f(-32.0f, 24.0f);  glVertex2f(-29.0f, 24.0f);  glVertex2f(-29.0f, 24.0f);  glVertex2f(-29.0f, 20.0f);  glVertex2f(-30.5f, 24.0f); // DIVIDER  glVertex2f(-30.5f, 20.0f); // DIVIDER  glEnd();  //  // WINDOW5  //  glBegin(GL\_POLYGON);  glColor3f(0.5f, 1.0f, 1.0f); //CYAN  glVertex2f(-29.0f, 29.0f);  glVertex2f(-32.0f, 29.0f);  glVertex2f(-32.0f, 33.0f);  glVertex2f(-29.0f, 33.0f);  glEnd();  //  // WINDOW5 BORDER  //  glBegin(GL\_LINES);  glColor3f(0.0f, 0.0f, 0.0f); //BLACK  glVertex2f(-29.0f, 29.0f);  glVertex2f(-32.0f, 29.0f);  glVertex2f(-32.0f, 29.0f);  glVertex2f(-32.0f, 33.0f);  glVertex2f(-32.0f, 33.0f);  glVertex2f(-29.0f, 33.0f);  glVertex2f(-29.0f, 33.0f);  glVertex2f(-29.0f, 29.0f);  glVertex2f(-30.5f, 33.0f); // DIVIDER  glVertex2f(-30.5f, 29.0f); // DIVIDER  glEnd();  // ################################  // ## ##  // ## MIDDLE PORTION ##  // ## ##  // ################################  //  // UPPER RECTANGLE  //  glBegin(GL\_POLYGON);  glColor3f(0.0f, 1.0f, 0.0f);  glVertex2f(-14.0f, 37.0f);  glVertex2f(-26.0f, 37.0f);  glVertex2f(-26.0f, 38.0f);  glVertex2f(-14.0f, 38.0f);  glEnd();  // OUTLINE  glBegin(GL\_LINES);  glColor3f(1.0f, 1.0f, 1.0f);  glVertex2f(-26.0f, 36.0f);  glVertex2f(-26.0f, 38.0f);  glVertex2f(-26.0f, 38.0f);  glVertex2f(-14.0f, 38.0f);  glVertex2f(-14.0f, 38.0f);  glVertex2f(-14.0f, 36.0f);  glVertex2f(-14.0f, 37.0f);  glVertex2f(-26.0f, 37.0f);  glEnd();  //  // MIDDLE BODY  //  glBegin(GL\_POLYGON);  glColor3f(0.7f, 0.0f, 0.0f);  glVertex2f(-14.0f, -10.0f);  glVertex2f(-26.0f, -10.0f);  glVertex2f(-26.0f, 37.0f);  glVertex2f(-14.0f, 37.0f);  glEnd();  // OUTLINE  glBegin(GL\_LINES);  glColor3f(1.0f, 1.0f, 1.0f);  glVertex2f(-14.0f, 37.0f);  glVertex2f(-14.0f, -10.0f);  glEnd();  //  // WINDOW11  //  glBegin(GL\_POLYGON);  glColor3f(0.5f, 0.5f, 0.5f); //Gray  glVertex2f(-16.0f, -1.0f);  glVertex2f(-24.0f, -1.0f);  glVertex2f(-24.0f, 0.0f);  glVertex2f(-16.0f, 0.0f);  glEnd();  //  glBegin(GL\_POLYGON);  glColor3f(0.5f, 1.0f, 1.0f); //CYAN  glVertex2f(-18.0f, 0.0f);  glVertex2f(-22.0f, 0.0f);  glVertex2f(-22.0f, 5.0f);  glVertex2f(-18.0f, 5.0f);  glEnd();  //  // WINDOW11 BORDER  //  glBegin(GL\_LINES);  glColor3f(0.0f, 0.0f, 0.0f); //BLACK  glVertex2f(-18.0f, 0.0f);  glVertex2f(-22.0f, 0.0f);  glVertex2f(-22.0f, 0.0f);  glVertex2f(-22.0f, 5.0f);  glVertex2f(-22.0f, 5.0f);  glVertex2f(-18.0f, 5.0f);  glVertex2f(-18.0f, 5.0f);  glVertex2f(-18.0f, 0.0f);  glVertex2f(-20.0f, 0.0f); // DIVIDER  glVertex2f(-20.0f, 5.0f); // DIVIDER  glEnd();  //  // WINDOW12  //  glBegin(GL\_POLYGON);  glColor3f(0.5f, 0.5f, 0.5f); //Gray  glVertex2f(-16.0f, 8.0f);  glVertex2f(-24.0f, 8.0f);  glVertex2f(-24.0f, 9.0f);  glVertex2f(-16.0f, 9.0f);  glEnd();  //  glBegin(GL\_POLYGON);  glColor3f(0.5f, 1.0f, 1.0f); //CYAN  glVertex2f(-18.0f, 9.0f);  glVertex2f(-22.0f, 9.0f);  glVertex2f(-22.0f, 14.0f);  glVertex2f(-18.0f, 14.0f);  glEnd();  //  // WINDOW12 BORDER  //  glBegin(GL\_LINES);  glColor3f(0.0f, 0.0f, 0.0f); //BLACK  glVertex2f(-18.0f, 9.0f);  glVertex2f(-22.0f, 9.0f);  glVertex2f(-22.0f, 9.0f);  glVertex2f(-22.0f, 14.0f);  glVertex2f(-22.0f, 14.0f);  glVertex2f(-18.0f, 14.0f);  glVertex2f(-18.0f, 14.0f);  glVertex2f(-18.0f, 9.0f);  glVertex2f(-20.0f, 14.0f); // DIVIDER  glVertex2f(-20.0f, 9.0f); // DIVIDER  glEnd();  //  // WINDOW13  //  glBegin(GL\_POLYGON);  glColor3f(0.5f, 0.5f, 0.5f); //Gray  glVertex2f(-16.0f, 17.0f);  glVertex2f(-24.0f, 17.0f);  glVertex2f(-24.0f, 18.0f);  glVertex2f(-16.0f, 18.0f);  glEnd();  //  glBegin(GL\_POLYGON);  glColor3f(0.5f, 1.0f, 1.0f); //CYAN  glVertex2f(-18.0f, 18.0f);  glVertex2f(-22.0f, 18.0f);  glVertex2f(-22.0f, 23.0f);  glVertex2f(-18.0f, 23.0f);  glEnd();  //  // WINDOW13 BORDER  //  glBegin(GL\_LINES);  glColor3f(0.0f, 0.0f, 0.0f); //BLACK  glVertex2f(-18.0f, 18.0f);  glVertex2f(-22.0f, 18.0f);  glVertex2f(-22.0f, 18.0f);  glVertex2f(-22.0f, 23.0f);  glVertex2f(-22.0f, 23.0f);  glVertex2f(-18.0f, 23.0f);  glVertex2f(-18.0f, 23.0f);  glVertex2f(-18.0f, 18.0f);  glVertex2f(-20.0f, 18.0f); // DIVIDER  glVertex2f(-20.0f, 23.0f); // DIVIDER  glEnd();  //  // WINDOW14  //  glBegin(GL\_POLYGON);  glColor3f(0.5f, 0.5f, 0.5f); //Gray  glVertex2f(-16.0f, 26.0f);  glVertex2f(-24.0f, 26.0f);  glVertex2f(-24.0f, 27.0f);  glVertex2f(-16.0f, 27.0f);  glEnd();  //  glBegin(GL\_POLYGON);  glColor3f(0.5f, 1.0f, 1.0f); //CYAN  glVertex2f(-18.0f, 27.0f);  glVertex2f(-22.0f, 27.0f);  glVertex2f(-22.0f, 32.0f);  glVertex2f(-18.0f, 32.0f);  glEnd();  //  // WINDOW14 BORDER  //  glBegin(GL\_LINES);  glColor3f(0.0f, 0.0f, 0.0f); //BLACK  glVertex2f(-18.0f, 27.0f);  glVertex2f(-22.0f, 27.0f);  glVertex2f(-22.0f, 27.0f);  glVertex2f(-22.0f, 32.0f);  glVertex2f(-22.0f, 32.0f);  glVertex2f(-18.0f, 32.0f);  glVertex2f(-18.0f, 32.0f);  glVertex2f(-18.0f, 27.0f);  glVertex2f(-20.0f, 27.0f); // DIVIDER  glVertex2f(-20.0f, 32.0f); // DIVIDER  glEnd();  // ################################  // ## ##  // ## R I G H T PORTION ##  // ## ##  // ################################  //  // UPPER RECTANGLE  //  glBegin(GL\_POLYGON);  glColor3f(0.0f, 1.0f, 0.0f);  glVertex2f(-5.0f, 35.0f);  glVertex2f(-14.0f, 35.0f);  glVertex2f(-14.0f, 36.0f);  glVertex2f(-5.0f, 36.0f);  glEnd();  // OUTLINE  glBegin(GL\_LINES);  glColor3f(1.0f, 1.0f, 1.0f);  glVertex2f(-5.0f, 35.0);  glVertex2f(-14.0f, 35.0);  glVertex2f(-14.0f, 35.0);  glVertex2f(-14.0f, 36.0);  glVertex2f(-14.0f, 36.0);  glVertex2f(-5.0f, 36.0);  glVertex2f(-5.0f, 36.0);  glVertex2f(-5.0f, 35.0);  glEnd();  //  // RGHT BODY  //  glBegin(GL\_POLYGON);  glColor3f(0.5f, 0.0f, 0.0f);  glVertex2f(-14.0f, 35.0f);  glVertex2f(-5.0f, 35.0f);  glVertex2f(-5.0f, -9.5f);  glVertex2f(-14.0f, -9.5f);  glEnd();  // OUTLINE  glBegin(GL\_LINES);  glColor3f(1.0f, 1.0f, 1.0f);  glVertex2f(-14.0f, 35.0f);  glVertex2f(-5.0f, 35.0f);  glVertex2f(-5.0f, 35.0f);  glVertex2f(-5.0f, 35.0f);  glVertex2f(-5.0f, 35.0f);  glVertex2f(-5.0f, -9.5f);  glVertex2f(-5.0f, -9.5f);  glVertex2f(-14.0f, -9.5f);  glVertex2f(-14.0f, -9.5f);  glVertex2f(-14.0f, 35.0f);  glEnd();  //  // RIGHT LOWER RECTANGLE  //  glBegin(GL\_POLYGON);  glColor3f(0.0f, 1.0f, 0.0f);  glVertex2f(-5.0f, -10.0f);  glVertex2f(-14.0f, -10.0f);  glVertex2f(-14.0f, -9.5f);  glVertex2f(-5.0f, -9.5f);  glEnd();  // OUTLINE  glBegin(GL\_LINES);  glColor3f(1.0f, 1.0f, 1.0f);  glVertex2f(-5.0f, -10.0f);  glVertex2f(-14.0f, -10.0f);  glVertex2f(-14.0f, -10.0f);  glVertex2f(-14.0f, -9.5f);  glVertex2f(-14.0f, -9.5f);  glVertex2f(-5.0f, -9.5f);  glVertex2f(-5.0f, -9.5f);  glVertex2f(-5.0f, -10.0f);  glEnd();  //  // WINDOW6  //  glBegin(GL\_POLYGON);  glColor3f(0.5f, 1.0f, 1.0f); //CYAN  glVertex2f(-8.0f, -7.0f);  glVertex2f(-11.0f, -7.0f);  glVertex2f(-11.0f, -3.0f);  glVertex2f(-8.0f, -3.0f);  glEnd();  //  // WINDOW6 BORDER  //  glBegin(GL\_LINES);  glColor3f(0.0f, 0.0f, 0.0f); //BLACK  glVertex2f(-8.0f, -7.0f);  glVertex2f(-11.0f, -7.0f);  glVertex2f(-11.0f, -7.0f);  glVertex2f(-11.0f, -3.0f);  glVertex2f(-11.0f, -3.0f);  glVertex2f(-8.0f, -3.0f);  glVertex2f(-8.0f, -3.0f);  glVertex2f(-8.0f, -7.0f);  glVertex2f(-9.5f, -3.0f); // DIVIDER  glVertex2f(-9.5f, -7.0f); // DIVIDER  glEnd();  //  // WINDOW7  //  glBegin(GL\_POLYGON);  glColor3f(0.5f, 1.0f, 1.0f); //CYAN  glVertex2f(-8.0f, 2.0f);  glVertex2f(-11.0f, 2.0f);  glVertex2f(-11.0f, 6.0f);  glVertex2f(-8.0f, 6.0f);  glEnd();  //  // WINDOW7 BORDER  //  glBegin(GL\_LINES);  glColor3f(0.0f, 0.0f, 0.0f); //BLACK  glVertex2f(-8.0f, 2.0f);  glVertex2f(-11.0f, 2.0f);  glVertex2f(-11.0f, 2.0f);  glVertex2f(-11.0f, 6.0f);  glVertex2f(-11.0f, 6.0f);  glVertex2f(-8.0f, 6.0f);  glVertex2f(-8.0f, 6.0f);  glVertex2f(-8.0f, 2.0f);  glVertex2f(-9.5f, 6.0f); // DIVIDER  glVertex2f(-9.5f, 2.0f); // DIVIDER  glEnd();  //  // WINDOW8  //  glBegin(GL\_POLYGON);  glColor3f(0.5f, 1.0f, 1.0f); //CYAN  glVertex2f(-8.0f, 11.0f);  glVertex2f(-11.0f, 11.0f);  glVertex2f(-11.0f, 15.0f);  glVertex2f(-8.0f, 15.0f);  glEnd();  //  // WINDOW8 BORDER  //  glBegin(GL\_LINES);  glColor3f(0.0f, 0.0f, 0.0f); //BLACK  glVertex2f(-8.0f, 11.0f);  glVertex2f(-11.0f, 11.0f);  glVertex2f(-11.0f, 11.0f);  glVertex2f(-11.0f, 15.0f);  glVertex2f(-11.0f, 15.0f);  glVertex2f(-8.0f, 15.0f);  glVertex2f(-8.0f, 15.0f);  glVertex2f(-8.0f, 11.0f);  glVertex2f(-9.5f, 11.0f); // DIVIDER  glVertex2f(-9.5f, 15.0f); // DIVIDER  glEnd();  //  // WINDOW9  //  glBegin(GL\_POLYGON);  glColor3f(0.5f, 1.0f, 1.0f); //CYAN  glVertex2f(-8.0f, 20.0f);  glVertex2f(-11.0f, 20.0f);  glVertex2f(-11.0f, 24.0f);  glVertex2f(-8.0f, 24.0f);  glEnd();  //  // WINDOW9 BORDER  //  glBegin(GL\_LINES);  glColor3f(0.0f, 0.0f, 0.0f); //BLACK  glVertex2f(-8.0f, 20.0f);  glVertex2f(-11.0f, 20.0f);  glVertex2f(-11.0f, 20.0f);  glVertex2f(-11.0f, 24.0f);  glVertex2f(-11.0f, 24.0f);  glVertex2f(-8.0f, 24.0f);  glVertex2f(-8.0f, 24.0f);  glVertex2f(-8.0f, 20.0f);  glVertex2f(-9.5f, 20.0f); // DIVIDER  glVertex2f(-9.5f, 24.0f); // DIVIDER  glEnd();  //  // WINDOW10  //  glBegin(GL\_POLYGON);  glColor3f(0.5f, 1.0f, 1.0f); //CYAN  glVertex2f(-8.0f, 29.0f);  glVertex2f(-11.0f, 29.0f);  glVertex2f(-11.0f, 33.0f);  glVertex2f(-8.0f, 33.0f);  glEnd();  //  // WINDOW10 BORDER  //  glBegin(GL\_LINES);  glColor3f(0.0f, 0.0f, 0.0f); //BLACK  glVertex2f(-8.0f, 29.0f);  glVertex2f(-11.0f, 29.0f);  glVertex2f(-11.0f, 29.0f);  glVertex2f(-11.0f, 33.0f);  glVertex2f(-11.0f, 33.0f);  glVertex2f(-8.0f, 33.0f);  glVertex2f(-8.0f, 33.0f);  glVertex2f(-8.0f, 29.0f);  glVertex2f(-9.5f, 33.0f); // DIVIDER  glVertex2f(-9.5f, 29.0f); // DIVIDER  glEnd();  // ################################  // ## ##  // ## D O O R ##  // ## ##  // ################################  glBegin(GL\_POLYGON);  glColor3f(0.0f, 1.0f, 0.0f);  glVertex2f(-22.0f, -10.0f);  glVertex2f(-22.2f, -10.0f);  glVertex2f(-22.2f, -3.8f);  glVertex2f(-22.0f, -4.0f);  glEnd();  glBegin(GL\_POLYGON);  glColor3f(0.0f, 1.0f, 0.0f);  glVertex2f(-22.0f, -4.0f);  glVertex2f(-22.2f, -3.8f);  glVertex2f(-17.8f, -3.8f);  glVertex2f(-18.0f, -4.0f);  glEnd();  glBegin(GL\_POLYGON);  glColor3f(0.0f, 1.0f, 0.0f);  glVertex2f(-18.0f, -10.0f);  glVertex2f(-17.8f, -10.0f);  glVertex2f(-17.8f, -3.8f);  glVertex2f(-18.0f, -4.0f);  glEnd();  // DOOR FILL  glBegin(GL\_POLYGON);  glColor3f(0.5f, 0.35f, 0.05f);  glVertex2f(-22.0f, -4.0f);  glVertex2f(-18.0f, -4.0f);  glVertex2f(-18.0f, -10.0f);  glVertex2f(-22.0f, -10.0f);  glEnd();  //DOOR DIVIDER LINE  glBegin(GL\_LINES);  glColor3f(1.0f, 1.0f, 1.0f);  glVertex2f(-20.0f, -4.0f);  glVertex2f(-20.0f, -10.0f);  glEnd();  // LOWER OUTLINE  glBegin(GL\_LINES);  glColor3f(1.0f, 1.0f, 1.0f); //WHITE  glVertex2f(-14.0f, -10.0f);  glVertex2f(-26.0f, -10.0f);  glEnd();  }  void display() {  glClearColor(0.0f, 0.0f, 0.0f, 0.0f); // Set background color to black and opaque  glClear(GL\_COLOR\_BUFFER\_BIT); // Clear the color buffer (background)  glLineWidth(1);  building();  glFlush(); // Render now  }  /\* Main function: GLUT runs as a console application starting at main() \*/  int main(int argc, char\*\* argv) {  glutInit(&argc, argv); // Initialize GLUT  glutInitWindowSize(520, 520);// Set the window's initial width & height  glutCreateWindow("OpenGL Setup Test");  //gluOrtho2D(-0.1,0.7,-0.1,0.3); // Create a window with the given title  //glutInitWindowSize(320, 320);// Set the window's initial width & height  glutDisplayFunc(display);// Register display callback handler for window re-paint  gluOrtho2D(-40,0,-20,50);  glutMainLoop(); // Enter the event-processing loop  return 0;  } |
| **Output Screenshot (Full Screen)-** |

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| **Question- 2**  Draw a tree |
| **Graph Plot (Picture)-** |
| **Code-**  #include <windows.h> // for MS Windows  #include <GL/glut.h> // GLUT, include glu.h and gl.h  #include <math.h>  /\* Handler for window-repaint event. Call back when the window first appears and  whenever the window needs to be re-painted. \*/  // 22-46013-1  // MD. SHOHANUR RAHMAN SHOHAN  tree()  {  // ################################  // ## ##  // ## Perpendicular Portion ##  // ## ##  // ################################  glBegin(GL\_POLYGON);  glColor3f(0.35f, 0.0f, 0.0f);  glVertex2f(-50.0f, -10.0f);  glVertex2f(-54.0f, -10.0f);  glVertex2f(-54.0f, 2.0f);  glVertex2f(-50.0f, 2.0f);  glEnd();  // ################################  // ## ##  // ## Leaf CIRCLE ##  // ## ##  // ################################  glBegin(GL\_POLYGON);// Draw a Red 1x1 Square centered at origin  for(int i=0;i<200;i++)  {  glColor3f(0.0,1.0,0.0);  float pi=3.1416;  float A=(i\*2\*pi)/200;  float r=8.6659815004197;  float x = r \* cos(A);  float y = r \* sin(A);  glVertex2f(x-52,y+6);  }  glEnd();  glBegin(GL\_POLYGON);// Draw a Red 1x1 Square centered at origin  for(int i=0;i<200;i++)  {  glColor3f(0.0,1.0,0.0);  float pi=3.1416;  float A=(i\*2\*pi)/200;  float r=5.830845944313;  float x = r \* cos(A);  float y = r \* sin(A);  glVertex2f(x-58,y+2);  }  glEnd();  glBegin(GL\_POLYGON);// Draw a Red 1x1 Square centered at origin  for(int i=0;i<200;i++)  {  glColor3f(0.0,1.0,0.0);  float pi=3.1416;  float A=(i\*2\*pi)/200;  float r=5.4226234335593;  float x = r \* cos(A);  float y = r \* sin(A);  glVertex2f(x-56,y+10);  }  glEnd();  glBegin(GL\_POLYGON);// Draw a Red 1x1 Square centered at origin  for(int i=0;i<200;i++)  {  glColor3f(0.0,1.0,0.0);  float pi=3.1416;  float A=(i\*2\*pi)/200;  float r=6.4799888240209;  float x = r \* cos(A);  float y = r \* sin(A);  glVertex2f(x-52,y+12);  }  glEnd();  glBegin(GL\_POLYGON);// Draw a Red 1x1 Square centered at origin  for(int i=0;i<200;i++)  {  glColor3f(0.0,1.0,0.0);  float pi=3.1416;  float A=(i\*2\*pi)/200;  float r=5.2014196599334;  float x = r \* cos(A);  float y = r \* sin(A);  glVertex2f(x-48,y+10);  }  glEnd();  glBegin(GL\_POLYGON);// Draw a Red 1x1 Square centered at origin  for(int i=0;i<200;i++)  {  glColor3f(0.0,1.0,0.0);  float pi=3.1416;  float A=(i\*2\*pi)/200;  float r=5.9123382529913;  float x = r \* cos(A);  float y = r \* sin(A);  glVertex2f(x-46,y+2);  }  glEnd();  }  void display() {  glClearColor(0.0f, 0.0f, 0.0f, 0.0f); // Set background color to black and opaque  glClear(GL\_COLOR\_BUFFER\_BIT); // Clear the color buffer (background)  glLineWidth(1);  tree();  glFlush(); // Render now  }  /\* Main function: GLUT runs as a console application starting at main() \*/  int main(int argc, char\*\* argv) {  glutInit(&argc, argv); // Initialize GLUT  glutInitWindowSize(520, 520);// Set the window's initial width & height  glutCreateWindow("OpenGL Setup Test");  //gluOrtho2D(-0.1,0.7,-0.1,0.3); // Create a window with the given title  //glutInitWindowSize(320, 320);// Set the window's initial width & height  glutDisplayFunc(display);// Register display callback handler for window re-paint  gluOrtho2D(-70,-35,-15,20);  glutMainLoop(); // Enter the event-processing loop  return 0;  } |
| **Output Screenshot (Full Screen)-** |

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| **Question- 3**  Draw a lamppost with black background |
| **Graph Plot (Picture)-** |
| **Code-**  #include <windows.h> // for MS Windows  #include <GL/glut.h> // GLUT, include glu.h and gl.h  #include <math.h>  /\* Handler for window-repaint event. Call back when the window first appears and  whenever the window needs to be re-painted. \*/  // 22-46013-1  // MD. SHOHANUR RAHMAN SHOHAN  lampPost()  {  // ################################  // ## ##  // ## LOWER PORTION ##  // ## ##  // ################################  glBegin(GL\_POLYGON);  glColor3f(0.5f, 0.5f, 0.5f);  glVertex2f(3.5f, -10.0f);  glVertex2f(2.0f, -10.0f);  glVertex2f(2.3f, -9.5f);  glVertex2f(3.2f, -9.5f);  glEnd();  // OUTLINE  glBegin(GL\_LINES);  glColor3f(1.f, 1.0f, 1.0f);  glVertex2f(3.5f, -10.0f);  glVertex2f(2.0f, -10.0f);  glVertex2f(2.0f, -10.0f);  glVertex2f(2.3f, -9.5f);  glVertex2f(2.3f, -9.5f);  glVertex2f(3.2f, -9.5f);  glVertex2f(3.2f, -9.5f);  glVertex2f(3.5f, -10.0f);  glEnd();  glBegin(GL\_POLYGON);  glColor3f(0.5f, 0.5f, 0.5f);  glVertex2f(3.1f, -9.5f);  glVertex2f(2.4f, -9.5f);  glVertex2f(2.5f, -9.3f);  glVertex2f(3.0f, -9.3f);  glEnd();  // OUTLINE  glBegin(GL\_LINES);  glColor3f(1.0f, 1.0f, 1.0f);  glVertex2f(3.1f, -9.5f);  glVertex2f(2.4f, -9.5f);  glVertex2f(2.4f, -9.5f);  glVertex2f(2.5f, -9.3f);  glVertex2f(2.5f, -9.3f);  glVertex2f(3.0f, -9.3f);  glVertex2f(3.0f, -9.3f);  glVertex2f(3.1f, -9.5f);  glEnd();  // ################################  // ## ##  // ## STAND PORTION ##  // ## ##  // ################################  glBegin(GL\_POLYGON);  glColor3f(0.5f, 0.5f, 0.5f);  glVertex2f(2.9f, -9.3f);  glVertex2f(2.6f, -9.3f);  glVertex2f(2.6f, 0.0f);  glVertex2f(2.9f, 0.0f);  glEnd();  // OUTLINE  glBegin(GL\_LINES);  glColor3f(1.0f, 1.0f, 1.0f);  glVertex2f(2.9f, -9.3f);  glVertex2f(2.6f, -9.3f);  glVertex2f(2.6f, -9.3f);  glVertex2f(2.6f, 0.0f);  glVertex2f(2.6f, 0.0f);  glVertex2f(2.9f, 0.0f);  glVertex2f(2.9f, 0.0f);  glVertex2f(2.9f, -9.3f);  glEnd();  // ################################  // ## ##  // ## UPPER PORTION ##  // ## ##  // ################################  glBegin(GL\_POLYGON);  glColor3f(1.0f, 0.0f, 0.0f); //RED  glVertex2f(3.0f, 0.0f);  glVertex2f(2.5f, 0.0f);  glVertex2f(2.5f, 0.2f);  glVertex2f(3.0f, 0.2f);  glEnd();  // OUTLINE  glBegin(GL\_LINES);  glColor3f(1.0f, 1.0f, 1.0f);  glVertex2f(3.0f, 0.0f);  glVertex2f(2.5f, 0.0f);  glVertex2f(2.5f, 0.0f);  glVertex2f(2.5f, 0.2f);  glVertex2f(2.5f, 0.2f);  glVertex2f(3.0f, 0.2f);  glVertex2f(3.0f, 0.2f);  glVertex2f(3.0f, 0.0f);  glEnd();  glBegin(GL\_POLYGON);  glColor3f(1.0f, 0.0, 0.0f); // RED  glVertex2f(3.2f, 0.2f);  glVertex2f(2.3f, 0.2f);  glVertex2f(2.3f, 0.4f);  glVertex2f(3.2f, 0.4f);  glEnd();  // OUTLINE  glBegin(GL\_LINES);  glColor3f(1.0f, 1.0f, 1.0f);  glVertex2f(3.2f, 0.2f);  glVertex2f(2.3f, 0.2f);  glVertex2f(2.3f, 0.2f);  glVertex2f(2.3f, 0.4f);  glVertex2f(2.3f, 0.4f);  glVertex2f(3.2f, 0.4f);  glVertex2f(3.2f, 0.4f);  glVertex2f(3.2f, 0.2f);  glEnd();  // ################################  // ## ##  // ## LAMP PORTION ##  // ## ##  // ################################  glBegin(GL\_POLYGON);  glColor3f(0.5f, 1.0f, 1.0f);  glVertex2f(3.2f, 0.4f);  glVertex2f(2.3f, 0.4f);  glVertex2f(1.7f, 1.8f);  glVertex2f(3.8f, 1.8f);  glEnd();  // TRIANGLE  glBegin(GL\_POLYGON);  glColor3f(0.8f, 0.0f, 0.0f);  glVertex2f(4.0f, 1.8f);  glVertex2f(1.5f, 1.8f);  glVertex2f(2.75f, 3.0f);  glEnd();  // L1  glBegin(GL\_POLYGON);  glColor3f(1.f, 1.0f, 0.0f);  glVertex2f(2.695f, 0.45f);  glVertex2f(2.32, 0.45f);  glVertex2f(2.0429f, 1.105f);  glVertex2f(2.695f, 1.105f);  glEnd();  // L2  glBegin(GL\_POLYGON);  glColor3f(1.f, 1.0f, 0.0f);  glVertex2f(2.695f, 1.205f);  glVertex2f(2.0006, 1.205f);  glVertex2f(1.77f, 1.75f);  glVertex2f(2.695f, 1.75f);  glEnd();  // L3  glBegin(GL\_POLYGON);  glColor3f(1.f, 1.0f, 0.0f);  glVertex2f(3.4778077f, 1.205f);  glVertex2f(2.795, 1.205f);  glVertex2f(2.795f, 1.75f);  glVertex2f(3.7f, 1.75f);  glEnd();  // L4  glBegin(GL\_POLYGON);  glColor3f(1.f, 1.0f, 0.0f);  glVertex2f(3.17f, 0.45f);  glVertex2f(2.795, 0.45f);  glVertex2f(2.795f, 1.105f);  glVertex2f(3.437f, 1.105f);  glEnd();  }  void display() {  glClearColor(0.0f, 0.0f, 0.0f, 0.0f); // Set background color to black and opaque  glClear(GL\_COLOR\_BUFFER\_BIT); // Clear the color buffer (background)  glLineWidth(1);  lampPost();  glFlush(); // Render now  }  /\* Main function: GLUT runs as a console application starting at main() \*/  int main(int argc, char\*\* argv) {  glutInit(&argc, argv); // Initialize GLUT  glutInitWindowSize(520, 720);// Set the window's initial width & height  glutCreateWindow("OpenGL Setup Test");  //gluOrtho2D(-0.1,0.7,-0.1,0.3); // Create a window with the given title  //glutInitWindowSize(320, 320);// Set the window's initial width & height  glutDisplayFunc(display);// Register display callback handler for window re-paint  gluOrtho2D(0,6,-14,10);  glutMainLoop(); // Enter the event-processing loop  return 0;  } |
| **Output Screenshot (Full Screen)-** |

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| **Question- 4**  Draw a bench |
| **Graph Plot (Picture)-** |
| **Code-**  #include <windows.h> // for MS Windows  #include <GL/glut.h> // GLUT, include glu.h and gl.h  #include <math.h>  /\* Handler for window-repaint event. Call back when the window first appears and  whenever the window needs to be re-painted. \*/  // 22-46013-1  // MD. SHOHANUR RAHMAN SHOHAN  bench()  {  // ################################  // ## ##  // ## ALL BAR ##  // ## ##  // ################################  // BAR1  glBegin(GL\_POLYGON);  glColor3f(0.5f, 0.5f, 0.5f);  glVertex2f(8.0f, -10.0f);  glVertex2f(7.6f, -10.0f);  glVertex2f(7.6f, -8.2f);  glVertex2f(8.0f, -8.2f);  glEnd();  // BAR2  glBegin(GL\_POLYGON);  glColor3f(0.5f, 0.5f, 0.5f);  glVertex2f(9.3f, -10.0f);  glVertex2f(9.0f, -10.0f);  glVertex2f(9.0f, -8.2f);  glVertex2f(9.3f, -8.2f);  glEnd();  // BAR3  glBegin(GL\_POLYGON);  glColor3f(0.5f, 0.5f, 0.5f);  glVertex2f(15.0f, -10.0f);  glVertex2f(14.7f, -10.0f);  glVertex2f(14.7f, -8.2f);  glVertex2f(15.0f, -8.2f);  glEnd();  // BAR4  glBegin(GL\_POLYGON);  glColor3f(0.5f, 0.5f, 0.5f);  glVertex2f(16.4f, -10.0f);  glVertex2f(16.0f, -10.0f);  glVertex2f(16.0f, -8.2f);  glVertex2f(16.4f, -8.2f);  glEnd();  // BAR5  glBegin(GL\_POLYGON);  glColor3f(0.5f, 0.5f, 0.5f);  glVertex2f(9.3f, -6.0f);  glVertex2f(9.0f, -6.0f);  glVertex2f(9.0f, -2.5f);  glVertex2f(9.3f, -2.5f);  glEnd();  // BAR6  glBegin(GL\_POLYGON);  glColor3f(0.5f, 0.5f, 0.5f);  glVertex2f(15, -6.0f);  glVertex2f(14.7f, -6.0f);  glVertex2f(14.7f, -2.5f);  glVertex2f(15.0f, -2.5f);  glEnd();  // ################################  // ## ##  // ## SITING AREA ##  // ## ##  // ################################  // small portion  glBegin(GL\_POLYGON);  glColor3f(0.5f, 0.5f, 0.5f);  glVertex2f(17.0f, -8.2f);  glVertex2f(7.0f, -8.2f);  glVertex2f(7.0f, -8.0f);  glVertex2f(17.0f, -8.0f);  glEnd();  // large portion  glBegin(GL\_POLYGON);  glColor3f(0.8f, 0.5f, 0.0);  glVertex2f(17.0f, -8.0f);  glVertex2f(16.0f, -6.0f);  glVertex2f(8.0f, -6.0f);  glVertex2f(7.0f, -8.0f);  glEnd();  // ################################  // ## ##  // ## BACKREST AREA ##  // ## ##  // ################################  // it's from bottom to top  glBegin(GL\_POLYGON);  glColor3f(0.8f, 0.5f, 0.0f);  glVertex2f(8.0f, -5.5f);  glVertex2f(8.0f, -5.0f);  glVertex2f(16.0f, -5.0f);  glVertex2f(16.0f, -5.5f);  glEnd();  //  glBegin(GL\_POLYGON);  glColor3f(0.8f, 0.5f, 0.0f);  glVertex2f(16.0f, -4.8f);  glVertex2f(16.0f, -4.3f);  glVertex2f(8.0f, -4.3f);  glVertex2f(8.0f, -4.8);  glEnd();  //  glBegin(GL\_POLYGON);  glColor3f(0.8f, 0.5f, 0.0f);  glVertex2f(8.0f, -4.1f);  glVertex2f(8.0f, -3.6f);  glVertex2f(16.0f, -3.6f);  glVertex2f(16.0f, -4.1f);  glEnd();  //  glBegin(GL\_POLYGON);  glColor3f(0.8f, 0.5f, 0.0f);  glVertex2f(16.0f, -3.4f);  glVertex2f(16.0f, -2.9f);  glVertex2f(8.0f, -2.9f);  glVertex2f(8.0f, -3.4f);  glEnd();  }  void display() {  glClearColor(0.0f, 0.0f, 0.0f, 0.0f); // Set background color to black and opaque  glClear(GL\_COLOR\_BUFFER\_BIT); // Clear the color buffer (background)  glLineWidth(1);  bench();  glFlush(); // Render now  }  /\* Main function: GLUT runs as a console application starting at main() \*/  int main(int argc, char\*\* argv) {  glutInit(&argc, argv); // Initialize GLUT  glutInitWindowSize(520, 520);// Set the window's initial width & height  glutCreateWindow("OpenGL Setup Test");  //gluOrtho2D(-0.1,0.7,-0.1,0.3); // Create a window with the given title  //glutInitWindowSize(320, 320);// Set the window's initial width & height  glutDisplayFunc(display);// Register display callback handler for window re-paint  gluOrtho2D(4,20,-14,4);  glutMainLoop(); // Enter the event-processing loop  return 0;  } |
| **Output Screenshot (Full Screen)-** |

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| **Question- 5**  Use the building, tree, lamppost and bench to create a scenario |
| **Graph Plot (Picture)-** |
| **Code-**  #include <windows.h> // for MS Windows  #include <GL/glut.h> // GLUT, include glu.h and gl.h  #include <math.h>  /\* Handler for window-repaint event. Call back when the window first appears and  whenever the window needs to be re-painted. \*/  // 22-46013-1  // MD. SHOHANUR RAHMAN SHOHAN  // ########################################################  // ########################################################  // B U I L D I N G  // ########################################################  // ########################################################  building()  {  // ################################  // ## ##  // ## L E F T PORTION ##  // ## ##  // ################################  //  // LOWER RECTANGLE  //  glBegin(GL\_POLYGON);  glColor3f(0.0f, 1.0f, 0.0f);  glVertex2f(-26.0f, -10.0f);  glVertex2f(-35.0f, -10.0f);  glVertex2f(-35.0f, -9.5f);  glVertex2f(-26.0f, -9.5f);  glEnd();  // OUTLINE  glBegin(GL\_LINES);  glColor3f(1.0f, 1.0f, 1.0f);  glVertex2f(-35.0f, -9.5f);  glVertex2f(-35.0f, -10.0f);  glVertex2f(-35.0f, -10.0f);  glVertex2f(-26.0f, -10.0f);  glVertex2f(-26.0f, -10.0f);  glVertex2f(-26.0f, -9.5f);  glEnd();  //  // UPPER RECTANGLE  //  glBegin(GL\_POLYGON);  glColor3f(0.0f, 1.0f, 0.0f);  glVertex2f(-26.0f, 35.0f);  glVertex2f(-35.0f, 35.0f);  glVertex2f(-35.0f, 36.0f);  glVertex2f(-26.0f, 36.0f);  glEnd();  // OUTLINE  glBegin(GL\_LINES);  glColor3f(1.0f, 1.0f, 1.0f);  glVertex2f(-35.0f, 35.0f);  glVertex2f(-35.0f, 36.0f);  glVertex2f(-35.0f, 36.0f);  glVertex2f(-26.0f, 36.0f);  glEnd();  //  // LEFT BODY  //  glBegin(GL\_POLYGON);  glColor3f(0.5f, 0.0f, 0.0f);  glVertex2f(-26.0f, -9.5f);  glVertex2f(-35.0f, -9.5f);  glVertex2f(-35.0f, 35.0f);  glVertex2f(-26.0f, 35.0f);  glEnd();  //  // LEFT BODY OUTLINE  //  glBegin(GL\_LINES);  glColor3f(1.0f, 1.0f, 1.0f);  glVertex2f(-26.0f, -9.5f);  glVertex2f(-35.0f, -9.5f);  glVertex2f(-35.0f, -9.5f);  glVertex2f(-35.0f, 35.0f);  glVertex2f(-35.0f, 35.0f);  glVertex2f(-26.0f, 35.0f);  glVertex2f(-26.0f, 35.0f);  glVertex2f(-26.0f, -9.5f);  glEnd();  //  // WINDOW1  //  glBegin(GL\_POLYGON);  glColor3f(0.5f, 1.0f, 1.0f); //CYAN  glVertex2f(-29.0f, -7.0f);  glVertex2f(-32.0f, -7.0f);  glVertex2f(-32.0f, -3.0f);  glVertex2f(-29.0f, -3.0f);  glEnd();  //  // WINDOW1 BORDER  //  glBegin(GL\_LINES);  glColor3f(0.0f, 0.0f, 0.0f); //BLACK  glVertex2f(-29.0f, -7.0f);  glVertex2f(-32.0f, -7.0f);  glVertex2f(-32.0f, -7.0f);  glVertex2f(-32.0f, -3.0f);  glVertex2f(-32.0f, -3.0f);  glVertex2f(-29.0f, -3.0f);  glVertex2f(-29.0f, -3.0f);  glVertex2f(-29.0f, -7.0f);  glVertex2f(-30.5f, -3.0f); // DIVIDER  glVertex2f(-30.5f, -7.0f); // DIVIDER  glEnd();  //  // WINDOW2  //  glBegin(GL\_POLYGON);  glColor3f(0.5f, 1.0f, 1.0f); //CYAN  glVertex2f(-29.0f, 2.0f);  glVertex2f(-32.0f, 2.0f);  glVertex2f(-32.0f, 6.0f);  glVertex2f(-29.0f, 6.0f);  glEnd();  //  // WINDOW2 BORDER  //  glBegin(GL\_LINES);  glColor3f(0.0f, 0.0f, 0.0f); //BLACK  glVertex2f(-29.0f, 2.0f);  glVertex2f(-32.0f, 2.0f);  glVertex2f(-32.0f, 2.0f);  glVertex2f(-32.0f, 6.0f);  glVertex2f(-32.0f, 6.0f);  glVertex2f(-29.0f, 6.0f);  glVertex2f(-29.0f, 6.0f);  glVertex2f(-29.0f, 2.0f);  glVertex2f(-30.5f, 6.0f); // DIVIDER  glVertex2f(-30.5f, 2.0f); // DIVIDER  glEnd();  //  // WINDOW3  //  glBegin(GL\_POLYGON);  glColor3f(0.5f, 1.0f, 1.0f); //CYAN  glVertex2f(-29.0f, 11.0f);  glVertex2f(-32.0f, 11.0f);  glVertex2f(-32.0f, 15.0f);  glVertex2f(-29.0f, 15.0f);  glEnd();  //  // WINDOW3 BORDER  //  glBegin(GL\_LINES);  glColor3f(0.0f, 0.0f, 0.0f); //BLACK  glVertex2f(-29.0f, 11.0f);  glVertex2f(-32.0f, 11.0f);  glVertex2f(-32.0f, 11.0f);  glVertex2f(-32.0f, 15.0f);  glVertex2f(-32.0f, 15.0f);  glVertex2f(-29.0f, 15.0f);  glVertex2f(-29.0f, 15.0f);  glVertex2f(-29.0f, 11.0f);  glVertex2f(-30.5f, 15.0f); // DIVIDER  glVertex2f(-30.5f, 11.0f); // DIVIDER  glEnd();  //  // WINDOW4  //  glBegin(GL\_POLYGON);  glColor3f(0.5f, 1.0f, 1.0f); //CYAN  glVertex2f(-29.0f, 20.0f);  glVertex2f(-32.0f, 20.0f);  glVertex2f(-32.0f, 24.0f);  glVertex2f(-29.0f, 24.0f);  glEnd();  //  // WINDOW4 BORDER  //  glBegin(GL\_LINES);  glColor3f(0.0f, 0.0f, 0.0f); //BLACK  glVertex2f(-29.0f, 20.0f);  glVertex2f(-32.0f, 20.0f);  glVertex2f(-32.0f, 20.0f);  glVertex2f(-32.0f, 24.0f);  glVertex2f(-32.0f, 24.0f);  glVertex2f(-29.0f, 24.0f);  glVertex2f(-29.0f, 24.0f);  glVertex2f(-29.0f, 20.0f);  glVertex2f(-30.5f, 24.0f); // DIVIDER  glVertex2f(-30.5f, 20.0f); // DIVIDER  glEnd();  //  // WINDOW5  //  glBegin(GL\_POLYGON);  glColor3f(0.5f, 1.0f, 1.0f); //CYAN  glVertex2f(-29.0f, 29.0f);  glVertex2f(-32.0f, 29.0f);  glVertex2f(-32.0f, 33.0f);  glVertex2f(-29.0f, 33.0f);  glEnd();  //  // WINDOW5 BORDER  //  glBegin(GL\_LINES);  glColor3f(0.0f, 0.0f, 0.0f); //BLACK  glVertex2f(-29.0f, 29.0f);  glVertex2f(-32.0f, 29.0f);  glVertex2f(-32.0f, 29.0f);  glVertex2f(-32.0f, 33.0f);  glVertex2f(-32.0f, 33.0f);  glVertex2f(-29.0f, 33.0f);  glVertex2f(-29.0f, 33.0f);  glVertex2f(-29.0f, 29.0f);  glVertex2f(-30.5f, 33.0f); // DIVIDER  glVertex2f(-30.5f, 29.0f); // DIVIDER  glEnd();  // ################################  // ## ##  // ## MIDDLE PORTION ##  // ## ##  // ################################  //  // UPPER RECTANGLE  //  glBegin(GL\_POLYGON);  glColor3f(0.0f, 1.0f, 0.0f);  glVertex2f(-14.0f, 37.0f);  glVertex2f(-26.0f, 37.0f);  glVertex2f(-26.0f, 38.0f);  glVertex2f(-14.0f, 38.0f);  glEnd();  // OUTLINE  glBegin(GL\_LINES);  glColor3f(1.0f, 1.0f, 1.0f);  glVertex2f(-26.0f, 36.0f);  glVertex2f(-26.0f, 38.0f);  glVertex2f(-26.0f, 38.0f);  glVertex2f(-14.0f, 38.0f);  glVertex2f(-14.0f, 38.0f);  glVertex2f(-14.0f, 36.0f);  glVertex2f(-14.0f, 37.0f);  glVertex2f(-26.0f, 37.0f);  glEnd();  //  // MIDDLE BODY  //  glBegin(GL\_POLYGON);  glColor3f(0.7f, 0.0f, 0.0f);  glVertex2f(-14.0f, -10.0f);  glVertex2f(-26.0f, -10.0f);  glVertex2f(-26.0f, 37.0f);  glVertex2f(-14.0f, 37.0f);  glEnd();  // OUTLINE  glBegin(GL\_LINES);  glColor3f(1.0f, 1.0f, 1.0f);  glVertex2f(-14.0f, 37.0f);  glVertex2f(-14.0f, -10.0f);  glEnd();  //  // WINDOW11  //  glBegin(GL\_POLYGON);  glColor3f(0.5f, 0.5f, 0.5f); //Gray  glVertex2f(-16.0f, -1.0f);  glVertex2f(-24.0f, -1.0f);  glVertex2f(-24.0f, 0.0f);  glVertex2f(-16.0f, 0.0f);  glEnd();  //  glBegin(GL\_POLYGON);  glColor3f(0.5f, 1.0f, 1.0f); //CYAN  glVertex2f(-18.0f, 0.0f);  glVertex2f(-22.0f, 0.0f);  glVertex2f(-22.0f, 5.0f);  glVertex2f(-18.0f, 5.0f);  glEnd();  //  // WINDOW11 BORDER  //  glBegin(GL\_LINES);  glColor3f(0.0f, 0.0f, 0.0f); //BLACK  glVertex2f(-18.0f, 0.0f);  glVertex2f(-22.0f, 0.0f);  glVertex2f(-22.0f, 0.0f);  glVertex2f(-22.0f, 5.0f);  glVertex2f(-22.0f, 5.0f);  glVertex2f(-18.0f, 5.0f);  glVertex2f(-18.0f, 5.0f);  glVertex2f(-18.0f, 0.0f);  glVertex2f(-20.0f, 0.0f); // DIVIDER  glVertex2f(-20.0f, 5.0f); // DIVIDER  glEnd();  //  // WINDOW12  //  glBegin(GL\_POLYGON);  glColor3f(0.5f, 0.5f, 0.5f); //Gray  glVertex2f(-16.0f, 8.0f);  glVertex2f(-24.0f, 8.0f);  glVertex2f(-24.0f, 9.0f);  glVertex2f(-16.0f, 9.0f);  glEnd();  //  glBegin(GL\_POLYGON);  glColor3f(0.5f, 1.0f, 1.0f); //CYAN  glVertex2f(-18.0f, 9.0f);  glVertex2f(-22.0f, 9.0f);  glVertex2f(-22.0f, 14.0f);  glVertex2f(-18.0f, 14.0f);  glEnd();  //  // WINDOW12 BORDER  //  glBegin(GL\_LINES);  glColor3f(0.0f, 0.0f, 0.0f); //BLACK  glVertex2f(-18.0f, 9.0f);  glVertex2f(-22.0f, 9.0f);  glVertex2f(-22.0f, 9.0f);  glVertex2f(-22.0f, 14.0f);  glVertex2f(-22.0f, 14.0f);  glVertex2f(-18.0f, 14.0f);  glVertex2f(-18.0f, 14.0f);  glVertex2f(-18.0f, 9.0f);  glVertex2f(-20.0f, 14.0f); // DIVIDER  glVertex2f(-20.0f, 9.0f); // DIVIDER  glEnd();  //  // WINDOW13  //  glBegin(GL\_POLYGON);  glColor3f(0.5f, 0.5f, 0.5f); //Gray  glVertex2f(-16.0f, 17.0f);  glVertex2f(-24.0f, 17.0f);  glVertex2f(-24.0f, 18.0f);  glVertex2f(-16.0f, 18.0f);  glEnd();  //  glBegin(GL\_POLYGON);  glColor3f(0.5f, 1.0f, 1.0f); //CYAN  glVertex2f(-18.0f, 18.0f);  glVertex2f(-22.0f, 18.0f);  glVertex2f(-22.0f, 23.0f);  glVertex2f(-18.0f, 23.0f);  glEnd();  //  // WINDOW13 BORDER  //  glBegin(GL\_LINES);  glColor3f(0.0f, 0.0f, 0.0f); //BLACK  glVertex2f(-18.0f, 18.0f);  glVertex2f(-22.0f, 18.0f);  glVertex2f(-22.0f, 18.0f);  glVertex2f(-22.0f, 23.0f);  glVertex2f(-22.0f, 23.0f);  glVertex2f(-18.0f, 23.0f);  glVertex2f(-18.0f, 23.0f);  glVertex2f(-18.0f, 18.0f);  glVertex2f(-20.0f, 18.0f); // DIVIDER  glVertex2f(-20.0f, 23.0f); // DIVIDER  glEnd();  //  // WINDOW14  //  glBegin(GL\_POLYGON);  glColor3f(0.5f, 0.5f, 0.5f); //Gray  glVertex2f(-16.0f, 26.0f);  glVertex2f(-24.0f, 26.0f);  glVertex2f(-24.0f, 27.0f);  glVertex2f(-16.0f, 27.0f);  glEnd();  //  glBegin(GL\_POLYGON);  glColor3f(0.5f, 1.0f, 1.0f); //CYAN  glVertex2f(-18.0f, 27.0f);  glVertex2f(-22.0f, 27.0f);  glVertex2f(-22.0f, 32.0f);  glVertex2f(-18.0f, 32.0f);  glEnd();  //  // WINDOW14 BORDER  //  glBegin(GL\_LINES);  glColor3f(0.0f, 0.0f, 0.0f); //BLACK  glVertex2f(-18.0f, 27.0f);  glVertex2f(-22.0f, 27.0f);  glVertex2f(-22.0f, 27.0f);  glVertex2f(-22.0f, 32.0f);  glVertex2f(-22.0f, 32.0f);  glVertex2f(-18.0f, 32.0f);  glVertex2f(-18.0f, 32.0f);  glVertex2f(-18.0f, 27.0f);  glVertex2f(-20.0f, 27.0f); // DIVIDER  glVertex2f(-20.0f, 32.0f); // DIVIDER  glEnd();  // ################################  // ## ##  // ## R I G H T PORTION ##  // ## ##  // ################################  //  // UPPER RECTANGLE  //  glBegin(GL\_POLYGON);  glColor3f(0.0f, 1.0f, 0.0f);  glVertex2f(-5.0f, 35.0f);  glVertex2f(-14.0f, 35.0f);  glVertex2f(-14.0f, 36.0f);  glVertex2f(-5.0f, 36.0f);  glEnd();  // OUTLINE  glBegin(GL\_LINES);  glColor3f(1.0f, 1.0f, 1.0f);  glVertex2f(-5.0f, 35.0);  glVertex2f(-14.0f, 35.0);  glVertex2f(-14.0f, 35.0);  glVertex2f(-14.0f, 36.0);  glVertex2f(-14.0f, 36.0);  glVertex2f(-5.0f, 36.0);  glVertex2f(-5.0f, 36.0);  glVertex2f(-5.0f, 35.0);  glEnd();  //  // RGHT BODY  //  glBegin(GL\_POLYGON);  glColor3f(0.5f, 0.0f, 0.0f);  glVertex2f(-14.0f, 35.0f);  glVertex2f(-5.0f, 35.0f);  glVertex2f(-5.0f, -9.5f);  glVertex2f(-14.0f, -9.5f);  glEnd();  // OUTLINE  glBegin(GL\_LINES);  glColor3f(1.0f, 1.0f, 1.0f);  glVertex2f(-14.0f, 35.0f);  glVertex2f(-5.0f, 35.0f);  glVertex2f(-5.0f, 35.0f);  glVertex2f(-5.0f, 35.0f);  glVertex2f(-5.0f, 35.0f);  glVertex2f(-5.0f, -9.5f);  glVertex2f(-5.0f, -9.5f);  glVertex2f(-14.0f, -9.5f);  glVertex2f(-14.0f, -9.5f);  glVertex2f(-14.0f, 35.0f);  glEnd();  //  // RIGHT LOWER RECTANGLE  //  glBegin(GL\_POLYGON);  glColor3f(0.0f, 1.0f, 0.0f);  glVertex2f(-5.0f, -10.0f);  glVertex2f(-14.0f, -10.0f);  glVertex2f(-14.0f, -9.5f);  glVertex2f(-5.0f, -9.5f);  glEnd();  // OUTLINE  glBegin(GL\_LINES);  glColor3f(1.0f, 1.0f, 1.0f);  glVertex2f(-5.0f, -10.0f);  glVertex2f(-14.0f, -10.0f);  glVertex2f(-14.0f, -10.0f);  glVertex2f(-14.0f, -9.5f);  glVertex2f(-14.0f, -9.5f);  glVertex2f(-5.0f, -9.5f);  glVertex2f(-5.0f, -9.5f);  glVertex2f(-5.0f, -10.0f);  glEnd();  //  // WINDOW6  //  glBegin(GL\_POLYGON);  glColor3f(0.5f, 1.0f, 1.0f); //CYAN  glVertex2f(-8.0f, -7.0f);  glVertex2f(-11.0f, -7.0f);  glVertex2f(-11.0f, -3.0f);  glVertex2f(-8.0f, -3.0f);  glEnd();  //  // WINDOW6 BORDER  //  glBegin(GL\_LINES);  glColor3f(0.0f, 0.0f, 0.0f); //BLACK  glVertex2f(-8.0f, -7.0f);  glVertex2f(-11.0f, -7.0f);  glVertex2f(-11.0f, -7.0f);  glVertex2f(-11.0f, -3.0f);  glVertex2f(-11.0f, -3.0f);  glVertex2f(-8.0f, -3.0f);  glVertex2f(-8.0f, -3.0f);  glVertex2f(-8.0f, -7.0f);  glVertex2f(-9.5f, -3.0f); // DIVIDER  glVertex2f(-9.5f, -7.0f); // DIVIDER  glEnd();  //  // WINDOW7  //  glBegin(GL\_POLYGON);  glColor3f(0.5f, 1.0f, 1.0f); //CYAN  glVertex2f(-8.0f, 2.0f);  glVertex2f(-11.0f, 2.0f);  glVertex2f(-11.0f, 6.0f);  glVertex2f(-8.0f, 6.0f);  glEnd();  //  // WINDOW7 BORDER  //  glBegin(GL\_LINES);  glColor3f(0.0f, 0.0f, 0.0f); //BLACK  glVertex2f(-8.0f, 2.0f);  glVertex2f(-11.0f, 2.0f);  glVertex2f(-11.0f, 2.0f);  glVertex2f(-11.0f, 6.0f);  glVertex2f(-11.0f, 6.0f);  glVertex2f(-8.0f, 6.0f);  glVertex2f(-8.0f, 6.0f);  glVertex2f(-8.0f, 2.0f);  glVertex2f(-9.5f, 6.0f); // DIVIDER  glVertex2f(-9.5f, 2.0f); // DIVIDER  glEnd();  //  // WINDOW8  //  glBegin(GL\_POLYGON);  glColor3f(0.5f, 1.0f, 1.0f); //CYAN  glVertex2f(-8.0f, 11.0f);  glVertex2f(-11.0f, 11.0f);  glVertex2f(-11.0f, 15.0f);  glVertex2f(-8.0f, 15.0f);  glEnd();  //  // WINDOW8 BORDER  //  glBegin(GL\_LINES);  glColor3f(0.0f, 0.0f, 0.0f); //BLACK  glVertex2f(-8.0f, 11.0f);  glVertex2f(-11.0f, 11.0f);  glVertex2f(-11.0f, 11.0f);  glVertex2f(-11.0f, 15.0f);  glVertex2f(-11.0f, 15.0f);  glVertex2f(-8.0f, 15.0f);  glVertex2f(-8.0f, 15.0f);  glVertex2f(-8.0f, 11.0f);  glVertex2f(-9.5f, 11.0f); // DIVIDER  glVertex2f(-9.5f, 15.0f); // DIVIDER  glEnd();  //  // WINDOW9  //  glBegin(GL\_POLYGON);  glColor3f(0.5f, 1.0f, 1.0f); //CYAN  glVertex2f(-8.0f, 20.0f);  glVertex2f(-11.0f, 20.0f);  glVertex2f(-11.0f, 24.0f);  glVertex2f(-8.0f, 24.0f);  glEnd();  //  // WINDOW9 BORDER  //  glBegin(GL\_LINES);  glColor3f(0.0f, 0.0f, 0.0f); //BLACK  glVertex2f(-8.0f, 20.0f);  glVertex2f(-11.0f, 20.0f);  glVertex2f(-11.0f, 20.0f);  glVertex2f(-11.0f, 24.0f);  glVertex2f(-11.0f, 24.0f);  glVertex2f(-8.0f, 24.0f);  glVertex2f(-8.0f, 24.0f);  glVertex2f(-8.0f, 20.0f);  glVertex2f(-9.5f, 20.0f); // DIVIDER  glVertex2f(-9.5f, 24.0f); // DIVIDER  glEnd();  //  // WINDOW10  //  glBegin(GL\_POLYGON);  glColor3f(0.5f, 1.0f, 1.0f); //CYAN  glVertex2f(-8.0f, 29.0f);  glVertex2f(-11.0f, 29.0f);  glVertex2f(-11.0f, 33.0f);  glVertex2f(-8.0f, 33.0f);  glEnd();  //  // WINDOW10 BORDER  //  glBegin(GL\_LINES);  glColor3f(0.0f, 0.0f, 0.0f); //BLACK  glVertex2f(-8.0f, 29.0f);  glVertex2f(-11.0f, 29.0f);  glVertex2f(-11.0f, 29.0f);  glVertex2f(-11.0f, 33.0f);  glVertex2f(-11.0f, 33.0f);  glVertex2f(-8.0f, 33.0f);  glVertex2f(-8.0f, 33.0f);  glVertex2f(-8.0f, 29.0f);  glVertex2f(-9.5f, 33.0f); // DIVIDER  glVertex2f(-9.5f, 29.0f); // DIVIDER  glEnd();  // ################################  // ## ##  // ## D O O R ##  // ## ##  // ################################  glBegin(GL\_POLYGON);  glColor3f(0.0f, 1.0f, 0.0f);  glVertex2f(-22.0f, -10.0f);  glVertex2f(-22.2f, -10.0f);  glVertex2f(-22.2f, -3.8f);  glVertex2f(-22.0f, -4.0f);  glEnd();  glBegin(GL\_POLYGON);  glColor3f(0.0f, 1.0f, 0.0f);  glVertex2f(-22.0f, -4.0f);  glVertex2f(-22.2f, -3.8f);  glVertex2f(-17.8f, -3.8f);  glVertex2f(-18.0f, -4.0f);  glEnd();  glBegin(GL\_POLYGON);  glColor3f(0.0f, 1.0f, 0.0f);  glVertex2f(-18.0f, -10.0f);  glVertex2f(-17.8f, -10.0f);  glVertex2f(-17.8f, -3.8f);  glVertex2f(-18.0f, -4.0f);  glEnd();  // DOOR FILL  glBegin(GL\_POLYGON);  glColor3f(0.5f, 0.35f, 0.05f);  glVertex2f(-22.0f, -4.0f);  glVertex2f(-18.0f, -4.0f);  glVertex2f(-18.0f, -10.0f);  glVertex2f(-22.0f, -10.0f);  glEnd();  //DOOR DIVIDER LINE  glBegin(GL\_LINES);  glColor3f(1.0f, 1.0f, 1.0f);  glVertex2f(-20.0f, -4.0f);  glVertex2f(-20.0f, -10.0f);  glEnd();  // LOWER OUTLINE  glBegin(GL\_LINES);  glColor3f(1.0f, 1.0f, 1.0f); //WHITE  glVertex2f(-14.0f, -10.0f);  glVertex2f(-26.0f, -10.0f);  glEnd();  }  // ########################################################  // ########################################################  // T R E E  // ########################################################  // ########################################################  tree()  {  // ################################  // ## ##  // ## Perpendicular Portion ##  // ## ##  // ################################  glBegin(GL\_POLYGON);  glColor3f(0.35f, 0.0f, 0.0f);  glVertex2f(-50.0f, -10.0f);  glVertex2f(-54.0f, -10.0f);  glVertex2f(-54.0f, 2.0f);  glVertex2f(-50.0f, 2.0f);  glEnd();  // ################################  // ## ##  // ## Leaf CIRCLE ##  // ## ##  // ################################  glBegin(GL\_POLYGON);// Draw a Red 1x1 Square centered at origin  for(int i=0;i<200;i++)  {  glColor3f(0.0,1.0,0.0);  float pi=3.1416;  float A=(i\*2\*pi)/200;  float r=8.6659815004197;  float x = r \* cos(A);  float y = r \* sin(A);  glVertex2f(x-52,y+6);  }  glEnd();  glBegin(GL\_POLYGON);// Draw a Red 1x1 Square centered at origin  for(int i=0;i<200;i++)  {  glColor3f(0.0,1.0,0.0);  float pi=3.1416;  float A=(i\*2\*pi)/200;  float r=5.830845944313;  float x = r \* cos(A);  float y = r \* sin(A);  glVertex2f(x-58,y+2);  }  glEnd();  glBegin(GL\_POLYGON);// Draw a Red 1x1 Square centered at origin  for(int i=0;i<200;i++)  {  glColor3f(0.0,1.0,0.0);  float pi=3.1416;  float A=(i\*2\*pi)/200;  float r=5.4226234335593;  float x = r \* cos(A);  float y = r \* sin(A);  glVertex2f(x-56,y+10);  }  glEnd();  glBegin(GL\_POLYGON);// Draw a Red 1x1 Square centered at origin  for(int i=0;i<200;i++)  {  glColor3f(0.0,1.0,0.0);  float pi=3.1416;  float A=(i\*2\*pi)/200;  float r=6.4799888240209;  float x = r \* cos(A);  float y = r \* sin(A);  glVertex2f(x-52,y+12);  }  glEnd();  glBegin(GL\_POLYGON);// Draw a Red 1x1 Square centered at origin  for(int i=0;i<200;i++)  {  glColor3f(0.0,1.0,0.0);  float pi=3.1416;  float A=(i\*2\*pi)/200;  float r=5.2014196599334;  float x = r \* cos(A);  float y = r \* sin(A);  glVertex2f(x-48,y+10);  }  glEnd();  glBegin(GL\_POLYGON);// Draw a Red 1x1 Square centered at origin  for(int i=0;i<200;i++)  {  glColor3f(0.0,1.0,0.0);  float pi=3.1416;  float A=(i\*2\*pi)/200;  float r=5.9123382529913;  float x = r \* cos(A);  float y = r \* sin(A);  glVertex2f(x-46,y+2);  }  glEnd();  }  // ########################################################  // ########################################################  // L A M P P O S T  // ########################################################  // ########################################################  lampPost()  {  // ################################  // ## ##  // ## LOWER PORTION ##  // ## ##  // ################################  glBegin(GL\_POLYGON);  glColor3f(0.5f, 0.5f, 0.5f);  glVertex2f(3.5f, -10.0f);  glVertex2f(2.0f, -10.0f);  glVertex2f(2.3f, -9.5f);  glVertex2f(3.2f, -9.5f);  glEnd();  // OUTLINE  glBegin(GL\_LINES);  glColor3f(1.f, 1.0f, 1.0f);  glVertex2f(3.5f, -10.0f);  glVertex2f(2.0f, -10.0f);  glVertex2f(2.0f, -10.0f);  glVertex2f(2.3f, -9.5f);  glVertex2f(2.3f, -9.5f);  glVertex2f(3.2f, -9.5f);  glVertex2f(3.2f, -9.5f);  glVertex2f(3.5f, -10.0f);  glEnd();  glBegin(GL\_POLYGON);  glColor3f(0.5f, 0.5f, 0.5f);  glVertex2f(3.1f, -9.5f);  glVertex2f(2.4f, -9.5f);  glVertex2f(2.5f, -9.3f);  glVertex2f(3.0f, -9.3f);  glEnd();  // OUTLINE  glBegin(GL\_LINES);  glColor3f(1.0f, 1.0f, 1.0f);  glVertex2f(3.1f, -9.5f);  glVertex2f(2.4f, -9.5f);  glVertex2f(2.4f, -9.5f);  glVertex2f(2.5f, -9.3f);  glVertex2f(2.5f, -9.3f);  glVertex2f(3.0f, -9.3f);  glVertex2f(3.0f, -9.3f);  glVertex2f(3.1f, -9.5f);  glEnd();  // ################################  // ## ##  // ## STAND PORTION ##  // ## ##  // ################################  glBegin(GL\_POLYGON);  glColor3f(0.5f, 0.5f, 0.5f);  glVertex2f(2.9f, -9.3f);  glVertex2f(2.6f, -9.3f);  glVertex2f(2.6f, 0.0f);  glVertex2f(2.9f, 0.0f);  glEnd();  // OUTLINE  glBegin(GL\_LINES);  glColor3f(1.0f, 1.0f, 1.0f);  glVertex2f(2.9f, -9.3f);  glVertex2f(2.6f, -9.3f);  glVertex2f(2.6f, -9.3f);  glVertex2f(2.6f, 0.0f);  glVertex2f(2.6f, 0.0f);  glVertex2f(2.9f, 0.0f);  glVertex2f(2.9f, 0.0f);  glVertex2f(2.9f, -9.3f);  glEnd();  // ################################  // ## ##  // ## UPPER PORTION ##  // ## ##  // ################################  glBegin(GL\_POLYGON);  glColor3f(1.0f, 0.0f, 0.0f); //RED  glVertex2f(3.0f, 0.0f);  glVertex2f(2.5f, 0.0f);  glVertex2f(2.5f, 0.2f);  glVertex2f(3.0f, 0.2f);  glEnd();  // OUTLINE  glBegin(GL\_LINES);  glColor3f(1.0f, 1.0f, 1.0f);  glVertex2f(3.0f, 0.0f);  glVertex2f(2.5f, 0.0f);  glVertex2f(2.5f, 0.0f);  glVertex2f(2.5f, 0.2f);  glVertex2f(2.5f, 0.2f);  glVertex2f(3.0f, 0.2f);  glVertex2f(3.0f, 0.2f);  glVertex2f(3.0f, 0.0f);  glEnd();  glBegin(GL\_POLYGON);  glColor3f(1.0f, 0.0, 0.0f); // RED  glVertex2f(3.2f, 0.2f);  glVertex2f(2.3f, 0.2f);  glVertex2f(2.3f, 0.4f);  glVertex2f(3.2f, 0.4f);  glEnd();  // OUTLINE  glBegin(GL\_LINES);  glColor3f(1.0f, 1.0f, 1.0f);  glVertex2f(3.2f, 0.2f);  glVertex2f(2.3f, 0.2f);  glVertex2f(2.3f, 0.2f);  glVertex2f(2.3f, 0.4f);  glVertex2f(2.3f, 0.4f);  glVertex2f(3.2f, 0.4f);  glVertex2f(3.2f, 0.4f);  glVertex2f(3.2f, 0.2f);  glEnd();  // ################################  // ## ##  // ## LAMP PORTION ##  // ## ##  // ################################  glBegin(GL\_POLYGON);  glColor3f(0.5f, 1.0f, 1.0f);  glVertex2f(3.2f, 0.4f);  glVertex2f(2.3f, 0.4f);  glVertex2f(1.7f, 1.8f);  glVertex2f(3.8f, 1.8f);  glEnd();  // TRIANGLE  glBegin(GL\_POLYGON);  glColor3f(0.8f, 0.0f, 0.0f);  glVertex2f(4.0f, 1.8f);  glVertex2f(1.5f, 1.8f);  glVertex2f(2.75f, 3.0f);  glEnd();  // L1  glBegin(GL\_POLYGON);  glColor3f(1.f, 1.0f, 0.0f);  glVertex2f(2.695f, 0.45f);  glVertex2f(2.32, 0.45f);  glVertex2f(2.0429f, 1.105f);  glVertex2f(2.695f, 1.105f);  glEnd();  // L2  glBegin(GL\_POLYGON);  glColor3f(1.f, 1.0f, 0.0f);  glVertex2f(2.695f, 1.205f);  glVertex2f(2.0006, 1.205f);  glVertex2f(1.77f, 1.75f);  glVertex2f(2.695f, 1.75f);  glEnd();  // L3  glBegin(GL\_POLYGON);  glColor3f(1.f, 1.0f, 0.0f);  glVertex2f(3.4778077f, 1.205f);  glVertex2f(2.795, 1.205f);  glVertex2f(2.795f, 1.75f);  glVertex2f(3.7f, 1.75f);  glEnd();  // L4  glBegin(GL\_POLYGON);  glColor3f(1.f, 1.0f, 0.0f);  glVertex2f(3.17f, 0.45f);  glVertex2f(2.795, 0.45f);  glVertex2f(2.795f, 1.105f);  glVertex2f(3.437f, 1.105f);  glEnd();  }  // ########################################################  // ########################################################  // B E N C H  // ########################################################  // ########################################################  bench()  {  // ################################  // ## ##  // ## ALL BAR ##  // ## ##  // ################################  // BAR1  glBegin(GL\_POLYGON);  glColor3f(0.5f, 0.5f, 0.5f);  glVertex2f(8.0f, -10.0f);  glVertex2f(7.6f, -10.0f);  glVertex2f(7.6f, -8.2f);  glVertex2f(8.0f, -8.2f);  glEnd();  // BAR2  glBegin(GL\_POLYGON);  glColor3f(0.5f, 0.5f, 0.5f);  glVertex2f(9.3f, -10.0f);  glVertex2f(9.0f, -10.0f);  glVertex2f(9.0f, -8.2f);  glVertex2f(9.3f, -8.2f);  glEnd();  // BAR3  glBegin(GL\_POLYGON);  glColor3f(0.5f, 0.5f, 0.5f);  glVertex2f(15.0f, -10.0f);  glVertex2f(14.7f, -10.0f);  glVertex2f(14.7f, -8.2f);  glVertex2f(15.0f, -8.2f);  glEnd();  // BAR4  glBegin(GL\_POLYGON);  glColor3f(0.5f, 0.5f, 0.5f);  glVertex2f(16.4f, -10.0f);  glVertex2f(16.0f, -10.0f);  glVertex2f(16.0f, -8.2f);  glVertex2f(16.4f, -8.2f);  glEnd();  // BAR5  glBegin(GL\_POLYGON);  glColor3f(0.5f, 0.5f, 0.5f);  glVertex2f(9.3f, -6.0f);  glVertex2f(9.0f, -6.0f);  glVertex2f(9.0f, -2.5f);  glVertex2f(9.3f, -2.5f);  glEnd();  // BAR6  glBegin(GL\_POLYGON);  glColor3f(0.5f, 0.5f, 0.5f);  glVertex2f(15, -6.0f);  glVertex2f(14.7f, -6.0f);  glVertex2f(14.7f, -2.5f);  glVertex2f(15.0f, -2.5f);  glEnd();  // ################################  // ## ##  // ## SITING AREA ##  // ## ##  // ################################  // small portion  glBegin(GL\_POLYGON);  glColor3f(0.5f, 0.5f, 0.5f);  glVertex2f(17.0f, -8.2f);  glVertex2f(7.0f, -8.2f);  glVertex2f(7.0f, -8.0f);  glVertex2f(17.0f, -8.0f);  glEnd();  // large portion  glBegin(GL\_POLYGON);  glColor3f(0.8f, 0.5f, 0.0);  glVertex2f(17.0f, -8.0f);  glVertex2f(16.0f, -6.0f);  glVertex2f(8.0f, -6.0f);  glVertex2f(7.0f, -8.0f);  glEnd();  // ################################  // ## ##  // ## BACKREST AREA ##  // ## ##  // ################################  // it's from bottom to top  glBegin(GL\_POLYGON);  glColor3f(0.8f, 0.5f, 0.0f);  glVertex2f(8.0f, -5.5f);  glVertex2f(8.0f, -5.0f);  glVertex2f(16.0f, -5.0f);  glVertex2f(16.0f, -5.5f);  glEnd();  //  glBegin(GL\_POLYGON);  glColor3f(0.8f, 0.5f, 0.0f);  glVertex2f(16.0f, -4.8f);  glVertex2f(16.0f, -4.3f);  glVertex2f(8.0f, -4.3f);  glVertex2f(8.0f, -4.8);  glEnd();  //  glBegin(GL\_POLYGON);  glColor3f(0.8f, 0.5f, 0.0f);  glVertex2f(8.0f, -4.1f);  glVertex2f(8.0f, -3.6f);  glVertex2f(16.0f, -3.6f);  glVertex2f(16.0f, -4.1f);  glEnd();  //  glBegin(GL\_POLYGON);  glColor3f(0.8f, 0.5f, 0.0f);  glVertex2f(16.0f, -3.4f);  glVertex2f(16.0f, -2.9f);  glVertex2f(8.0f, -2.9f);  glVertex2f(8.0f, -3.4f);  glEnd();  }  void display() {  glClearColor(0.0f, 0.0f, 0.0f, 0.0f); // Set background color to black and opaque  glClear(GL\_COLOR\_BUFFER\_BIT); // Clear the color buffer (background)  glLineWidth(1);  building();  tree();  lampPost();  bench();  glFlush(); // Render now  }  /\* Main function: GLUT runs as a console application starting at main() \*/  int main(int argc, char\*\* argv) {  glutInit(&argc, argv); // Initialize GLUT  glutInitWindowSize(850, 450);// Set the window's initial width & height  glutCreateWindow("OpenGL Setup Test");  //gluOrtho2D(-0.1,0.7,-0.1,0.3); // Create a window with the given title  //glutInitWindowSize(320, 320);// Set the window's initial width & height  glutDisplayFunc(display);// Register display callback handler for window re-paint  gluOrtho2D(-65,25,-15,40);  glutMainLoop(); // Enter the event-processing loop  return 0;  } |
| **Output Screenshot (Full Screen)-** |