**Lab Taks-3**

Submission Guidelines-

* Rename the file to your id only. If your id is 18-XXXXX-1, then the file name must be 18-XXXXX-1.docx.
* Must submit within time that will be discussed in class VUES to the section named Lab Tak-3
* Must include resources for all the section in the table

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| **Question- 1**  Draw five storied building with windows and a front door |
| **Graph Plot (Picture)-** |
| **Code-**  #include <windows.h>  #include <GL/glut.h>  #include <math.h>  void display() {  glClear(GL\_COLOR\_BUFFER\_BIT);  glBegin(GL\_POLYGON);  glColor3f(1, 1, 1);  glVertex2f(30.0, -35.0);  glVertex2f(30, 35.0);  glVertex2f(-30, 35.0);  glVertex2f(-30.0, -35.0);  glEnd();  glBegin(GL\_POLYGON);  glColor3f(.98, .25, .25);  glVertex2f(5,10);  glVertex2f(5,14);  glVertex2f(-5,14);  glVertex2f(-5,10);  glEnd();  glBegin(GL\_POLYGON);  glColor3f(.98, .35, .35);  glVertex2f(5,14);  glVertex2f(5,18);  glVertex2f(-5,18);  glVertex2f(-5,14);  glEnd();  glBegin(GL\_POLYGON);  glColor3f(.98, .5, .5);  glVertex2f(5,18);  glVertex2f(5,22);  glVertex2f(-5,22);  glVertex2f(-5,18);  glEnd();  glBegin(GL\_POLYGON);  glColor3f(.99, .65, .63);  glVertex2f(5,22);  glVertex2f(5,26);  glVertex2f(-5,26);  glVertex2f(-5,22);  glEnd();  glBegin(GL\_POLYGON);  glColor3f(.98, .7, .7);  glVertex2f(5,26);  glVertex2f(5,30);  glVertex2f(-5,30);  glVertex2f(-5,26);  glEnd();  glBegin(GL\_POLYGON);  glColor3f(.53, .55, .95);  glVertex2f(5,30);  glVertex2f(0,32);  glVertex2f(-5,30);  glEnd();  //window  glBegin(GL\_POLYGON);  glColor3f(.72, .901, .79);  glVertex2f(-3,15);  glVertex2f(-4,15);  glVertex2f(-4,16);  glVertex2f(-3,16);  glEnd();  glBegin(GL\_POLYGON);  glColor3f(.72, .901, .79);  glVertex2f(3,15);  glVertex2f(4,15);  glVertex2f(4,16);  glVertex2f(3,16);  glEnd();  glBegin(GL\_POLYGON);  glColor3f(.72, .901, .79);  glVertex2f(-3,19);  glVertex2f(-4,19);  glVertex2f(-4,20);  glVertex2f(-3,20);  glEnd();  glBegin(GL\_POLYGON);  glColor3f(.72, .901, .79);  glVertex2f(3,19);  glVertex2f(4,19);  glVertex2f(4,20);  glVertex2f(3,20);  glEnd();  glBegin(GL\_POLYGON);  glColor3f(.72, .901, .79);  glVertex2f(-3,23);  glVertex2f(-4,23);  glVertex2f(-4,24);  glVertex2f(-3,24);  glEnd();  glBegin(GL\_POLYGON);  glColor3f(.72, .901, .79);  glVertex2f(3,23);  glVertex2f(4,23);  glVertex2f(4,24);  glVertex2f(3,24);  glEnd();  glBegin(GL\_POLYGON);  glColor3f(.72, .901, .79);  glVertex2f(-3,27);  glVertex2f(-4,27);  glVertex2f(-4,28);  glVertex2f(-3,28);  glEnd();  glBegin(GL\_POLYGON);  glColor3f(.72, .901, .79);  glVertex2f(3,27);  glVertex2f(4,27);  glVertex2f(4,28);  glVertex2f(3,28);  glEnd();  glBegin(GL\_POLYGON);  glColor3f(.98, .89, .34);  glVertex2f(2,10);  glVertex2f(2,12);  glVertex2f(-2,12);  glVertex2f(-2,10);  glEnd();  glFlush();  }  int main(int argc, char\*\* argv) {  glutInit(&argc, argv);  glutInitWindowSize(1200,1000);  glutCreateWindow("BUILDING");  glutDisplayFunc(display);  gluOrtho2D(-30,30,-35,35);  glutMainLoop();  return 0;  } |
| **Output Screenshot (Full Screen)-** |

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| **Question- 2**  Draw a tree |
| **Graph Plot (Picture)-** |
| **Code-**  #include <windows.h>  #include <GL/glut.h>  #include <math.h>  void circle(float radius, float cX, float cY)  {  glBegin(GL\_POLYGON);// Draw a Red 1x1 Square centered at origin  for(int i=0;i<200;i++)  {  glColor3f(0.77,.95,0.560);  float pi=3.1416;  float A=(i\*2\*pi)/200;  float r=radius;  float x = r \* cos(A);  float y = r \* sin(A);  glVertex2f(x+cX,y+cY);  }  }  void display() {  glClear(GL\_COLOR\_BUFFER\_BIT);  glBegin(GL\_POLYGON);  glColor3f(1, 1, 1);  glVertex2f(30.0, -35.0);  glVertex2f(30, 35.0);  glVertex2f(-30, 35.0);  glVertex2f(-30.0, -35.0);  glEnd();  glBegin(GL\_POLYGON);  glColor3f(.58, .50, .460);  glVertex2f(-10.0, -6.0);  glVertex2f(-11, 5.0);  glVertex2f(-13, 5.0);  glVertex2f(-14.0, -6.0);  glEnd();  circle(4,-9,7);  circle(4,-15,7);  circle(4,-12,9);  glEnd();  glFlush();  }  int main(int argc, char\*\* argv) {  glutInit(&argc, argv);  glutInitWindowSize(1200,1000);  glutCreateWindow(" TREE");  glutDisplayFunc(display);  gluOrtho2D(-25,25,-35,35);  glutMainLoop();  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>**  **#include <GL/glut.h>**  **#include <math.h>**  **void circle1(float radius, float cX, float cY)**  **{**  **glBegin(GL\_POLYGON);// Draw a Red 1x1 Square centered at origin**  **for(int i=0;i<200;i++)**  **{**  **glColor3f(.98,.98,.255);**  **float pi=3.1416;**  **float A=(i\*2\*pi)/200;**  **float r=radius;**  **float x = r \* cos(A);**  **float y = r \* sin(A);**  **glVertex2f(x+cX,y+cY);**  **}**  **}**  **void display() {**  **glClear(GL\_COLOR\_BUFFER\_BIT);**  **glBegin(GL\_POLYGON);**  **glColor3f(.94, .66, .74);**  **glVertex2f(18, -6.0);**  **glVertex2f(17, 12.0);**  **glVertex2f(16, 12.0);**  **glVertex2f(15.0, -6.0);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glVertex2f(17, 11);**  **glVertex2f(20, 13);**  **glVertex2f(20, 14);**  **glVertex2f(17, 12);**  **glVertex2f(17, 11);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glVertex2f(16, 11);**  **glVertex2f(13, 13);**  **glVertex2f(13, 14);**  **glVertex2f(16, 12);**  **glVertex2f(16, 11);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glVertex2f(13,13);**  **glVertex2f(13, 16);**  **glVertex2f(14, 16);**  **glVertex2f(14, 13);**  **glVertex2f(13, 13);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glVertex2f(17,11);**  **glVertex2f(17, 14);**  **glVertex2f(16, 14);**  **glVertex2f(16, 11);**  **glVertex2f(17, 11);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glVertex2f(17,11);**  **glVertex2f(17, 14);**  **glVertex2f(16, 14);**  **glVertex2f(16, 11);**  **glVertex2f(17, 11);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glVertex2f(20,13);**  **glVertex2f(20, 16);**  **glVertex2f(19, 16);**  **glVertex2f(19, 13);**  **glVertex2f(20, 13);**  **glEnd();**  **circle1 (2,13.5,18);**  **glEnd();**  **circle1 (2,19.5,18);**  **glEnd();**  **circle1 (1,16.5,15);**  **glEnd();**  **glFlush();**  **}**  **int main(int argc, char\*\* argv) {**  **glutInit(&argc, argv);**  **glutInitWindowSize(1200,1000);**  **glutCreateWindow("LAMP");**  **glutDisplayFunc(display);**  **gluOrtho2D(-30,30,-30,30);**  **glutMainLoop();**  **return 0;**  **}** |
| **Output Screenshot (Full Screen)-** |

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| **Question- 4**  Draw a bench |
| **Graph Plot (Picture)-** |
| **Code-**  #include <windows.h>  #include <GL/glut.h>  #include <math.h>  void display() {  glBegin(GL\_POLYGON);  glColor3f(1, 1, 1);  glVertex2f(30.0, -35.0);  glVertex2f(30, 35.0);  glVertex2f(-30, 35.0);  glVertex2f(-30.0, -35.0);  glEnd();  glBegin(GL\_POLYGON);  glColor3f(.41, .37, .33);  glVertex2f(6, -6);  glVertex2f(4, -2);  glVertex2f(-3, -2.0);  glVertex2f(-4.0, -6.0);  glEnd();  glBegin(GL\_POLYGON);  glColor3f(.41, .37, .33);  glVertex2f(5, -9);  glVertex2f(5, -6);  glVertex2f(4, -6);  glVertex2f(4.0, -9);  glEnd();  glBegin(GL\_POLYGON);  glColor3f(.41, .37, .33);  glVertex2f(-3, -9);  glVertex2f(-3, -6);  glVertex2f(-2, -6);  glVertex2f(-2.0, -9);  glEnd();  glBegin(GL\_POLYGON);  glColor3f(.85, .77, .67);  glVertex2f(3, -7);  glVertex2f(3, -4);  glVertex2f(2, -4);  glVertex2f(2.0, -7);  glEnd();  glBegin(GL\_POLYGON);  glColor3f(.85, .77, .67);  glVertex2f(-0, -7);  glVertex2f(-0, -4);  glVertex2f(-1, -4);  glVertex2f(-1.0, -7);  glEnd();  glBegin(GL\_POLYGON);  glColor3f(.41, .37, .33);  glVertex2f(6, -6);  glVertex2f(4, -2);  glVertex2f(-3, -2.0);  glVertex2f(-4.0, -6.0);  glEnd();  glBegin(GL\_POLYGON);  glColor3f(.85, .77, .67);  glVertex2f(4, -1.9);  glVertex2f(4, 1.9);  glVertex2f(-3, 1.90);  glVertex2f(-3.0, -1.9);  glEnd();  glFlush();  }  int main(int argc, char\*\* argv) {  glutInit(&argc, argv);  glutInitWindowSize(1200,1000);  glutCreateWindow("BENCH");  glutDisplayFunc(display);  gluOrtho2D(-30,30,-30,30);  glutMainLoop();  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>**  **#include <GL/glut.h>**  **#include <math.h>**  **#include <math.h>**  **void circle(float radius, float cX, float cY)**  **{**  **glBegin(GL\_POLYGON);// Draw a Red 1x1 Square centered at origin**  **for(int i=0;i<200;i++)**  **{**  **glColor3f(0.77,.95,0.560);**  **float pi=3.1416;**  **float A=(i\*2\*pi)/200;**  **float r=radius;**  **float x = r \* cos(A);**  **float y = r \* sin(A);**  **glVertex2f(x+cX,y+cY);**  **}**  **}**  **void circle1(float radius, float cX, float cY)**  **{**  **glBegin(GL\_POLYGON);// Draw a Red 1x1 Square centered at origin**  **for(int i=0;i<200;i++)**  **{**  **glColor3f(.98,.98,.255);**  **float pi=3.1416;**  **float A=(i\*2\*pi)/200;**  **float r=radius;**  **float x = r \* cos(A);**  **float y = r \* sin(A);**  **glVertex2f(x+cX,y+cY);**  **}**  **}**  **void display() {**  **glClear(GL\_COLOR\_BUFFER\_BIT);**  **glBegin(GL\_POLYGON);**  **glColor3f(.67, .77, .96);**  **glVertex2f(30.0, 10.0);**  **glVertex2f(30, 35.0);**  **glVertex2f(-30, 35.0);**  **glVertex2f(-30.0, 10.0);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glColor3f(.27, .70, .078);**  **glVertex2f(30.0, -35.0);**  **glVertex2f(30.0, 10.0);**  **glVertex2f(-30.0, 10.0);**  **glVertex2f(-30, -35.0);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glColor3f(.58, .50, .460);**  **glVertex2f(-10.0, -6.0);**  **glVertex2f(-11, 5.0);**  **glVertex2f(-13, 5.0);**  **glVertex2f(-14.0, -6.0);**  **glEnd();**  **circle(4,-9,7);**  **circle(4,-15,7);**  **circle(4,-12,9);**  **glEnd();**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glColor3f(.98, .25, .25);**  **glVertex2f(5,10);**  **glVertex2f(5,14);**  **glVertex2f(-5,14);**  **glVertex2f(-5,10);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glColor3f(.98, .35, .35);**  **glVertex2f(5,14);**  **glVertex2f(5,18);**  **glVertex2f(-5,18);**  **glVertex2f(-5,14);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glColor3f(.98, .5, .5);**  **glVertex2f(5,18);**  **glVertex2f(5,22);**  **glVertex2f(-5,22);**  **glVertex2f(-5,18);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glColor3f(.99, .65, .63);**  **glVertex2f(5,22);**  **glVertex2f(5,26);**  **glVertex2f(-5,26);**  **glVertex2f(-5,22);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glColor3f(.98, .7, .7);**  **glVertex2f(5,26);**  **glVertex2f(5,30);**  **glVertex2f(-5,30);**  **glVertex2f(-5,26);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glColor3f(.53, .55, .95);**  **glVertex2f(5,30);**  **glVertex2f(0,32);**  **glVertex2f(-5,30);**  **glEnd();**  **//window**  **glBegin(GL\_POLYGON);**  **glColor3f(.72, .901, .79);**  **glVertex2f(-3,15);**  **glVertex2f(-4,15);**  **glVertex2f(-4,16);**  **glVertex2f(-3,16);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glColor3f(.72, .901, .79);**  **glVertex2f(3,15);**  **glVertex2f(4,15);**  **glVertex2f(4,16);**  **glVertex2f(3,16);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glColor3f(.72, .901, .79);**  **glVertex2f(-3,19);**  **glVertex2f(-4,19);**  **glVertex2f(-4,20);**  **glVertex2f(-3,20);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glColor3f(.72, .901, .79);**  **glVertex2f(3,19);**  **glVertex2f(4,19);**  **glVertex2f(4,20);**  **glVertex2f(3,20);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glColor3f(.72, .901, .79);**  **glVertex2f(-3,23);**  **glVertex2f(-4,23);**  **glVertex2f(-4,24);**  **glVertex2f(-3,24);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glColor3f(.72, .901, .79);**  **glVertex2f(3,23);**  **glVertex2f(4,23);**  **glVertex2f(4,24);**  **glVertex2f(3,24);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glColor3f(.72, .901, .79);**  **glVertex2f(-3,27);**  **glVertex2f(-4,27);**  **glVertex2f(-4,28);**  **glVertex2f(-3,28);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glColor3f(.72, .901, .79);**  **glVertex2f(3,27);**  **glVertex2f(4,27);**  **glVertex2f(4,28);**  **glVertex2f(3,28);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glColor3f(.98, .89, .34);**  **glVertex2f(2,10);**  **glVertex2f(2,12);**  **glVertex2f(-2,12);**  **glVertex2f(-2,10);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glColor3f(.41, .37, .33);**  **glVertex2f(6, -6);**  **glVertex2f(4, -2);**  **glVertex2f(-3, -2.0);**  **glVertex2f(-4.0, -6.0);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glColor3f(.41, .37, .33);**  **glVertex2f(5, -9);**  **glVertex2f(5, -6);**  **glVertex2f(4, -6);**  **glVertex2f(4.0, -9);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glColor3f(.41, .37, .33);**  **glVertex2f(-3, -9);**  **glVertex2f(-3, -6);**  **glVertex2f(-2, -6);**  **glVertex2f(-2.0, -9);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glColor3f(.85, .77, .67);**  **glVertex2f(3, -7);**  **glVertex2f(3, -4);**  **glVertex2f(2, -4);**  **glVertex2f(2.0, -7);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glColor3f(.85, .77, .67);**  **glVertex2f(-0, -7);**  **glVertex2f(-0, -4);**  **glVertex2f(-1, -4);**  **glVertex2f(-1.0, -7);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glColor3f(.41, .37, .33);**  **glVertex2f(6, -6);**  **glVertex2f(4, -2);**  **glVertex2f(-3, -2.0);**  **glVertex2f(-4.0, -6.0);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glColor3f(.85, .77, .67);**  **glVertex2f(4, -1.9);**  **glVertex2f(4, 1.9);**  **glVertex2f(-3, 1.90);**  **glVertex2f(-3.0, -1.9);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glColor3f(.94, .66, .74);**  **glVertex2f(18, -6.0);**  **glVertex2f(17, 12.0);**  **glVertex2f(16, 12.0);**  **glVertex2f(15.0, -6.0);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glVertex2f(17, 11);**  **glVertex2f(20, 13);**  **glVertex2f(20, 14);**  **glVertex2f(17, 12);**  **glVertex2f(17, 11);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glVertex2f(16, 11);**  **glVertex2f(13, 13);**  **glVertex2f(13, 14);**  **glVertex2f(16, 12);**  **glVertex2f(16, 11);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glVertex2f(13,13);**  **glVertex2f(13, 16);**  **glVertex2f(14, 16);**  **glVertex2f(14, 13);**  **glVertex2f(13, 13);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glVertex2f(17,11);**  **glVertex2f(17, 14);**  **glVertex2f(16, 14);**  **glVertex2f(16, 11);**  **glVertex2f(17, 11);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glVertex2f(17,11);**  **glVertex2f(17, 14);**  **glVertex2f(16, 14);**  **glVertex2f(16, 11);**  **glVertex2f(17, 11);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glVertex2f(20,13);**  **glVertex2f(20, 16);**  **glVertex2f(19, 16);**  **glVertex2f(19, 13);**  **glVertex2f(20, 13);**  **glEnd();**  **circle1 (2,13.5,18);**  **glEnd();**  **circle1 (2,19.5,18);**  **glEnd();**  **circle1 (1,16.5,15);**  **glEnd();**  **glFlush();**  **}**  **int main(int argc, char\*\* argv) {**  **glutInit(&argc, argv);**  **glutInitWindowSize(1200,1000);**  **glutCreateWindow("Scenario ");**  **glutDisplayFunc(display);**  **gluOrtho2D(-25,25,-20,35);**  **glutMainLoop();**  **return 0;**  **}** |
| **Output Screenshot (Full Screen)-** |