**Lab Taks-2**

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-2
* Must include resources for all the section in the table

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| **Question- 1**  Draw a Rainbow Flag   |  | | --- | |  | |  | |  | |  | |  | |  | |  | |
| **Graph Plot (Picture)-** |
| **Code-**  **#include <windows.h> // for MS Windows**  **#include <GL/glut.h> // GLUT, include glu.h and gl.h**  **/\* Handler for window-repaint event. Call back when the window first appears and**  **whenever the window needs to be re-painted. \*/**  **void display() {**  **glClearColor(255.0f, 255.0f, 255.0f, 1.0f); // Set background color to black and opaque**  **glClear(GL\_COLOR\_BUFFER\_BIT); // Clear the color buffer (background)**  **glLineWidth(2);**  **// Draw a Red 1x1 Square centered at origin**  **//For square 1**  **glBegin(GL\_LINES);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(-5.0f,-3.0f);**  **glVertex2f(5.0f,-3.0f);**  **glVertex2f(5.0f,-3.0f);**  **glVertex2f(5.0f,-2.0f);**  **glVertex2f(5.0f,-2.0f);**  **glVertex2f(-5.0f,-2.0f);**  **glVertex2f(-5.0f,-2.0f);**  **glVertex2f(-5.0f,-3.0f);**  **glEnd();**  **//For square 1 //red**  **glBegin(GL\_POLYGON);**  **glColor3ub(255, 0, 0); // Each set of 4 vertices form a quad// x, y**  **glVertex2f(-4.99f,-2.99f);**  **glVertex2f(4.99f,-2.99f);**  **glVertex2f(4.99f,-1.99f);**  **glVertex2f(-4.99f,-1.99f);**  **glEnd();**  **//For square 2**  **glBegin(GL\_LINES);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(-5.0f,-2.0f);**  **glVertex2f(5.0f,-2.0f);**  **glVertex2f(5.0f,-2.0f);**  **glVertex2f(5.0f,-1.0f);**  **glVertex2f(5.0f,-1.0f);**  **glVertex2f(-5.0f,-1.0f);**  **glVertex2f(-5.0f,-1.0f);**  **glVertex2f(-5.0f,-2.0f);**  **glEnd();**  **//For square 2// yellow**  **glBegin(GL\_POLYGON);**  **glColor3ub(255, 255, 0); // Each set of 4 vertices form a quad// yellow // x, y**  **glVertex2f(-4.99f,-1.99f);**  **glVertex2f(4.99f,-1.99f);**  **glVertex2f(4.99f,-0.99f);**  **glVertex2f(-4.99f,-0.99f);**  **glEnd();**  **//For square 3**  **glBegin(GL\_LINES);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad// x, y**  **glVertex2f(-5.0f,-1.0f);**  **glVertex2f(5.0f,-1.0f);**  **glVertex2f(5.0f,-1.0f);**  **glVertex2f(5.0f,0.0f);**  **glVertex2f(5.0f,0.0f);**  **glVertex2f(-5.0f,0.0f);**  **glVertex2f(-5.0f,0.0f);**  **glVertex2f(-5.0f,-1.0f);**  **glEnd();**  **//For square 3// orange**  **glBegin(GL\_POLYGON);**  **glColor3ub(255,165,0); // Each set of 4 vertices form a quad// orange // x, y**  **glVertex2f(-4.99f,-0.99f);**  **glVertex2f(4.99f,-0.99f);**  **glVertex2f(4.99f,0.01f);**  **glVertex2f(-4.99f,0.01f);**  **glEnd();**  **//For square 4**  **glBegin(GL\_LINES);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(-5.0f,0.0f);**  **glVertex2f(5.0f,0.0f);**  **glVertex2f(5.0f,0.0f);**  **glVertex2f(5.0f,1.0f);**  **glVertex2f(5.0f,1.0f);**  **glVertex2f(-5.0f,1.0f);**  **glVertex2f(-5.0f,1.0f);**  **glVertex2f(-5.0f,0.0f);**  **glEnd();**  **//For square 4// green**  **glBegin(GL\_POLYGON);**  **glColor3ub(50,205,50); // Each set of 4 vertices form a quad// green // x, y**  **glVertex2f(-4.99f,-0.01f);**  **glVertex2f(4.99f,-0.01f);**  **glVertex2f(4.99f,1.01f);**  **glVertex2f(-4.99f,1.01f);**  **glEnd();**  **//For square 5**  **glBegin(GL\_LINES);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(-5.0f,1.0f);**  **glVertex2f(5.0f,1.0f);**  **glVertex2f(5.0f,1.0f);**  **glVertex2f(5.0f,2.0f);**  **glVertex2f(5.0f,2.0f);**  **glVertex2f(-5.0f,2.0f);**  **glVertex2f(-5.0f,2.0f);**  **glVertex2f(-5.0f,1.0f);**  **glEnd();**  **//For square 5// sky blue**  **glBegin(GL\_POLYGON);**  **glColor3ub(135,206,235); // Each set of 4 vertices form a quad// sky blue // x, y**  **glVertex2f(-4.99f,1.01f);**  **glVertex2f(4.99f,1.01f);**  **glVertex2f(4.99f,2.01f);**  **glVertex2f(-4.99f,2.01f);**  **glEnd();**  **//For square 6**  **glBegin(GL\_LINES);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(-5.0f,2.0f);**  **glVertex2f(5.0f,2.0f);**  **glVertex2f(5.0f,2.0f);**  **glVertex2f(5.0f,3.0f);**  **glVertex2f(5.0f,3.0f);**  **glVertex2f(-5.0f,3.0f);**  **glVertex2f(-5.0f,3.0f);**  **glVertex2f(-5.0f,2.0f);**  **glEnd();**  **//For square 6// blue**  **glBegin(GL\_POLYGON);**  **glColor3ub(0,0,255); // Each set of 4 vertices form a quad// blue // x, y**  **glVertex2f(-4.99f,2.01f);**  **glVertex2f(4.99f,2.01f);**  **glVertex2f(4.99f,3.01f);**  **glVertex2f(-4.99f,3.01f);**  **glEnd();**  **//For square 7**  **glBegin(GL\_LINES);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(-5.0f,3.0f);**  **glVertex2f(5.0f,3.0f);**  **glVertex2f(5.0f,3.0f);**  **glVertex2f(5.0f,4.0f);**  **glVertex2f(5.0f,4.0f);**  **glVertex2f(-5.0f,4.0f);**  **glVertex2f(-5.0f,4.0f);**  **glVertex2f(-5.0f,3.0f);**  **glEnd();**  **//For square 7// purple**  **glBegin(GL\_POLYGON);**  **glColor3ub(138,43,226); // Each set of 4 vertices form a quad// purple // x, y**  **glVertex2f(-4.99f,3.01f);**  **glVertex2f(4.99f,3.01f);**  **glVertex2f(4.99f,4.01f);**  **glVertex2f(-4.99f,4.01f);**  **glEnd();**  **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**  **glutCreateWindow("OpenGL Setup Test"); // Create a window with the given title**  **glutInitWindowSize(320, 320);**  **gluOrtho2D(-8,8,-8,8); // Set the window's initial width & height**  **glutDisplayFunc(display); // Register display callback handler for window re-paint**  **glutMainLoop(); // Enter the event-processing loop**  **return 0;**  **}** |
| **Output Screenshot (Full Screen)-** |

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| **Question- 2**  Draw 4X4 Chess Board |
| **Graph Plot (Picture)-** |
| **Code-**  **#include <windows.h> // for MS Windows**  **#include <GL/glut.h> // GLUT, include glu.h and gl.h**  **/\* Handler for window-repaint event. Call back when the window first appears and**  **whenever the window needs to be re-painted. \*/**  **void display() {**  **glClearColor(255.0f, 255.0f, 255.0f, 1.0f); // Set background color to white and opaque**  **glClear(GL\_COLOR\_BUFFER\_BIT); // Clear the color buffer (background)**  **glLineWidth(2);**  **glBegin(GL\_POLYGON);**  **glColor3ub(255, 255, 255); // Each set of 4 vertices form a quad// x, y**  **glVertex2f(0.0f,1.0f);**  **glVertex2f(1.0f,1.0f);**  **glVertex2f(1.0f,2.0f);**  **glVertex2f(0.0f,2.0f);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(1.0f,1.0f);**  **glVertex2f(2.0f,1.0f);**  **glVertex2f(2.0f,2.0f);**  **glVertex2f(1.0f,2.0f);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glColor3ub(255, 255, 255); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(2.0f,1.0f);**  **glVertex2f(3.0f,1.0f);**  **glVertex2f(3.0f,2.0f);**  **glVertex2f(2.0f,2.0f);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(3.0f,1.0f);**  **glVertex2f(4.0f,1.0f);**  **glVertex2f(4.0f,2.0f);**  **glVertex2f(3.0f,2.0f);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(0.0f,2.0f);**  **glVertex2f(1.0f,2.0f);**  **glVertex2f(1.0f,3.0f);**  **glVertex2f(0.0f,3.0f);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glColor3ub(255, 255, 255); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(1.0f,2.0f);**  **glVertex2f(2.0f,2.0f);**  **glVertex2f(2.0f,3.0f);**  **glVertex2f(1.0f,3.0f);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad// x, y**  **glVertex2f(2.0f,2.0f);**  **glVertex2f(3.0f,2.0f);**  **glVertex2f(3.0f,3.0f);**  **glVertex2f(2.0f,3.0f);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glColor3ub(255, 255, 255); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(3.0f,2.0f);**  **glVertex2f(4.0f,2.0f);**  **glVertex2f(4.0f,3.0f);**  **glVertex2f(3.0f,3.0f);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glColor3ub(255, 255, 255); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(0.0f,3.0f);**  **glVertex2f(1.0f,3.0f);**  **glVertex2f(1.0f,4.0f);**  **glVertex2f(0.0f,4.0f);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(1.0f,3.0f);**  **glVertex2f(2.0f,3.0f);**  **glVertex2f(2.0f,4.0f);**  **glVertex2f(1.0f,4.0f);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glColor3ub(255, 255, 255); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(2.0f,3.0f);**  **glVertex2f(3.0f,3.0f);**  **glVertex2f(3.0f,4.0f);**  **glVertex2f(2.0f,4.0f);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(3.0f,3.0f);**  **glVertex2f(4.0f,3.0f);**  **glVertex2f(4.0f,4.0f);**  **glVertex2f(3.0f,4.0f);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad// x, y**  **glVertex2f(0.0f,4.0f);**  **glVertex2f(1.0f,4.0f);**  **glVertex2f(1.0f,5.0f);**  **glVertex2f(0.0f,5.0f);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glColor3ub(255, 255, 255); // Each set of 4 vertices form a quad// x, y**  **glVertex2f(1.0f,4.0f);**  **glVertex2f(2.0f,4.0f);**  **glVertex2f(2.0f,5.0f);**  **glVertex2f(1.0f,5.0f);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(2.0f,4.0f);**  **glVertex2f(3.0f,4.0f);**  **glVertex2f(3.0f,5.0f);**  **glVertex2f(2.0f,5.0f);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glColor3ub(255, 255, 255); // Each set of 4 vertices form a quad// x, y**  **glVertex2f(3.0f,4.0f);**  **glVertex2f(4.0f,4.0f);**  **glVertex2f(4.0f,5.0f);**  **glVertex2f(3.0f,5.0f);**  **glEnd();**  **// Draw a border**  **glBegin(GL\_LINES);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad// x, y**  **glVertex2f(0.0f,1.0f);**  **glVertex2f(4.0f,1.0f);**  **glVertex2f(4.0f,1.0f);**  **glVertex2f(4.0f,5.0f);**  **glVertex2f(4.0f,5.0f);**  **glVertex2f(0.0f,5.0f);**  **glVertex2f(0.0f,5.0f);**  **glVertex2f(0.0f,1.0f);**  **glEnd();**  **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**  **glutCreateWindow("OpenGL Setup Test"); // Create a window with the given title**  **glutInitWindowSize(320, 320);**  **gluOrtho2D(-2,6,-2,6); // Set the window's initial width & height**  **glutDisplayFunc(display); // Register display callback handler for window re-paint**  **glutMainLoop(); // Enter the event-processing loop**  **return 0;**  **}** |
| **Output Screenshot (Full Screen)-** |

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| **Question- 3**  Create the batman logo given below- |
| **Graph Plot (Picture)-**  **(Not Needed)** |
| **Code-**  **#include <windows.h> // for MS Windows**  **#include <GL/glut.h> // GLUT, include glu.h and gl.h**  **/\* Handler for window-repaint event. Call back when the window first appears and**  **whenever the window needs to be re-painted. \*/**  **void display() {**  **glClearColor(255.0f, 255.0f, 255.0f, 1.0f); // Set background color to black and opaque**  **glClear(GL\_COLOR\_BUFFER\_BIT); // Clear the color buffer (background)**  **glLineWidth(1);**  **// For border**  **glBegin(GL\_LINES);**  **glColor3ub(0, 0, 0); // x, y**  **//1**  **glVertex2f(11.2f,14.2f);**  **glVertex2f(-10.8f,14.2f);**  **//2**  **glVertex2f(-10.8f,14.2f);**  **glVertex2f(-18.5f,5.2f);**  **//3**  **glVertex2f(-18.5f,5.2f);**  **glVertex2f(-18.5f,-5.0f);**  **//4**  **glVertex2f(-18.5f,-5.0f);**  **glVertex2f(-10.8f,-13.8f);**  **//5**  **glVertex2f(-10.8f,-13.8f);**  **glVertex2f(11.2f,-13.8f);**  **//6**  **glVertex2f(11.2f,-13.8f);**  **glVertex2f(18.8f,-5.0f);**  **//7**  **glVertex2f(18.8f,-5.0f);**  **glVertex2f(18.8f,5.2f);**  **//8**  **glVertex2f(18.8f,5.2f);**  **glVertex2f(11.2f,14.2f);**  **glEnd();**  **//for yellow background**  **glBegin(GL\_POLYGON);**  **glColor3ub(255,255,0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(11.2f,14.2f);**  **glVertex2f(-10.8f,14.2f);**  **glVertex2f(-18.5f,5.2f);**  **glVertex2f(-18.5f,-5.0f);**  **glVertex2f(-10.8f,-13.8f);**  **glVertex2f(11.2f,-13.8f);**  **glVertex2f(18.8f,-5.0f);**  **glVertex2f(18.8f,5.2f);**  **glVertex2f(11.2f,14.2f);**  **glEnd();**  **//upper block 1**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(-10.8f,15.8f);**  **glVertex2f(-10.8f,14.1f);**  **glVertex2f(11.4f,14.1f);**  **glVertex2f(11.4f,15.8f);**  **glEnd();**  **//lower block 2**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(-10.8f,-15.6f);**  **glVertex2f(-10.8f,-13.9f);**  **glVertex2f(11.4f,-13.9f);**  **glVertex2f(11.4f,-15.6f);**  **glEnd();**  **//left block**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(18.8f,5.1f);**  **glVertex2f(18.8f,-5.1f);**  **glVertex2f(20.1f,-5.1f);**  **glVertex2f(20.1f,5.1f);**  **glEnd();**  **//right block**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(-18.4f,5.1f);**  **glVertex2f(-18.4f,-5.1f);**  **glVertex2f(-19.7f,-5.1f);**  **glVertex2f(-19.7f,5.1f);**  **glEnd();**  **//little blocks upper left 1**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(-10.8f,14.2f);**  **glVertex2f(-10.8f,12.6f);**  **glVertex2f(-12.0f,12.6f);**  **glVertex2f(-12.0f,14.2f);**  **glEnd();**  **//little blocks upper left 2**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(-12.0f,12.7f);**  **glVertex2f(-12.0f,11.0f);**  **glVertex2f(-13.4f,11.0f);**  **glVertex2f(-13.4f,12.7f);**  **glEnd();**  **//little blocks upper left 3**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(-13.4f,11.1f);**  **glVertex2f(-13.4f,9.9f);**  **glVertex2f(-14.4f,9.9f);**  **glVertex2f(-14.4f,11.1f);**  **glEnd();**  **//little blocks upper left 4**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(-14.4f,10.0f);**  **glVertex2f(-14.4f,8.3f);**  **glVertex2f(-15.8f,8.3f);**  **glVertex2f(-15.8f,10.0f);**  **glEnd();**  **//little blocks upper left 5**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(-15.8f,8.4f);**  **glVertex2f(-15.8f,6.8f);**  **glVertex2f(-17.2f,6.8f);**  **glVertex2f(-17.2f,8.4f);**  **glEnd();**  **//little blocks upper left 6**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(-17.2f,6.8f);**  **glVertex2f(-17.2f,5.0f);**  **glVertex2f(-18.5f,5.0f);**  **glVertex2f(-18.5f,6.8f);**  **glEnd();**  **//little blocks lower left 1**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(-10.8f,-13.8f);**  **glVertex2f(-10.8f,-12.5f);**  **glVertex2f(-12.0f,-12.5f);**  **glVertex2f(-12.0f,-13.8f);**  **glEnd();**  **//little blocks lower left 2**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(-12.0f,-12.6f);**  **glVertex2f(-12.0f,-11.0f);**  **glVertex2f(-13.4f,-11.0f);**  **glVertex2f(-13.4f,-12.6f);**  **glEnd();**  **//little blocks lower left 3**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(-13.4f,-11.1f);**  **glVertex2f(-13.4f,-9.5f);**  **glVertex2f(-14.4f,-9.5f);**  **glVertex2f(-14.4f,-11.1f);**  **glEnd();**  **//little blocks lower left 4**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(-14.4f,-9.6f);**  **glVertex2f(-14.4f,-7.9f);**  **glVertex2f(-15.8f,-7.9f);**  **glVertex2f(-15.8f,-9.6f);**  **glEnd();**  **//little blocks lower left 5**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(-15.8f,-8.0f);**  **glVertex2f(-15.8f,-6.7f);**  **glVertex2f(-17.2f,-6.7f);**  **glVertex2f(-17.2f,-8.0f);**  **glEnd();**  **//little blocks lower left 6**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(-17.2f,-6.8f);**  **glVertex2f(-17.2f,-5.1f);**  **glVertex2f(-18.5f,-5.1f);**  **glVertex2f(-18.5f,-6.8f);**  **glEnd();**  **//little blocks upper right 1**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(11.2f,14.2f);**  **glVertex2f(11.2f,12.6f);**  **glVertex2f(12.4f,12.6f);**  **glVertex2f(12.4f,14.2f);**  **glEnd();**  **//little blocks upper right 2**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(12.4f,12.7f);**  **glVertex2f(12.4f,11.0f);**  **glVertex2f(13.8f,11.0f);**  **glVertex2f(13.8f,12.7f);**  **glEnd();**  **//little blocks upper right 3**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(13.8f,11.1f);**  **glVertex2f(13.8f,9.7f);**  **glVertex2f(15.0f,9.7f);**  **glVertex2f(15.0f,11.1f);**  **glEnd();**  **//little blocks upper right 4**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(15.0f,10.0f);**  **glVertex2f(15.0f,8.3f);**  **glVertex2f(16.3f,8.3f);**  **glVertex2f(16.3f,10.0f);**  **glEnd();**  **//little blocks upper right 5**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(16.3f,8.4f);**  **glVertex2f(16.3f,6.8f);**  **glVertex2f(17.5f,6.8f);**  **glVertex2f(17.5,8.4f);**  **glEnd();**  **//little blocks upper right 6**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(17.5f,6.8f);**  **glVertex2f(17.5f,5.0f);**  **glVertex2f(18.8f,5.0f);**  **glVertex2f(18.8f,6.8f);**  **glEnd();**  **//little blocks upper lower 1**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(11.2f,-13.8f);**  **glVertex2f(11.2f,-12.5f);**  **glVertex2f(12.4f,-12.5f);**  **glVertex2f(12.4f,-13.8f);**  **glEnd();**  **//little blocks upper lower 2**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(12.4f,-12.6f);**  **glVertex2f(12.4f,-11.0f);**  **glVertex2f(13.8f,-11.0f);**  **glVertex2f(13.8f,-12.6f);**  **glEnd();**  **//little blocks upper lower 3**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(13.8f,-11.1f);**  **glVertex2f(13.8f,-9.5f);**  **glVertex2f(15.0f,-9.5f);**  **glVertex2f(15.0f,-11.1f);**  **glEnd();**  **//little blocks upper lower 4**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(15.0f,-9.6f);**  **glVertex2f(15.0f,-7.9f);**  **glVertex2f(16.3f,-7.9f);**  **glVertex2f(16.3f,-9.6f);**  **glEnd();**  **//little blocks upper lower 5**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(16.3f,-8.0f);**  **glVertex2f(16.3f,-6.7f);**  **glVertex2f(17.5f,-6.7f);**  **glVertex2f(17.5,-8.0f);**  **glEnd();**  **//little blocks upper lower 6**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(17.5f,-6.8f);**  **glVertex2f(17.5f,-5.1f);**  **glVertex2f(18.8f,-5.1f);**  **glVertex2f(18.8f,-6.8f);**  **glEnd();**  **//for left head**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(-3.0f,12.5f);**  **glVertex2f(-3.0f,11.0f);**  **glVertex2f(-1.8,11.0f);**  **glVertex2f(-1.8,12.5f);**  **glEnd();**  **//for right head**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(2.0f,12.5f);**  **glVertex2f(2.0f,11.0f);**  **glVertex2f(3.2f,11.0f);**  **glVertex2f(3.2f,12.5f);**  **glEnd();**  **//for square 1**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(-3.0f,11.0f);**  **glVertex2f(-3.0f,-8.0f);**  **glVertex2f(3.2f,-8.0f);**  **glVertex2f(3.2f,11.0f);**  **glEnd();**  **//for square 2**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(-1.8f,-8.0f);**  **glVertex2f(-1.8f,-11.0f);**  **glVertex2f(2.1f,-11.0f);**  **glVertex2f(2.1f,-8.0f);**  **glEnd();**  **//for square 3**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(-0.5f,-11.0f);**  **glVertex2f(-0.5f,-12.5f);**  **glVertex2f(1.1f,-12.5f);**  **glVertex2f(1.1f,-11.0f);**  **glEnd();**  **//for square 4**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(3.2f,5.1f);**  **glVertex2f(3.2f,-6.8f);**  **glVertex2f(4.6f,-6.8f);**  **glVertex2f(4.6f,5.1f);**  **glEnd();**  **//for square -4**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(-3.0f,-6.8f);**  **glVertex2f(-3.0f,5.1f);**  **glVertex2f(-4.4f,5.1f);**  **glVertex2f(-4.4f,-6.8f);**  **glEnd();**  **//for square 5**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(4.6f,4.0f);**  **glVertex2f(4.6f,-7.8f);**  **glVertex2f(6.0f,-7.8f);**  **glVertex2f(6.0f,4.0f);**  **glEnd();**  **//for square -5**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(-4.4f,-7.8f);**  **glVertex2f(-4.4f,4.0f);**  **glVertex2f(-5.8f,4.0f);**  **glVertex2f(-5.8f,-7.8f);**  **glEnd();**  **//for square 6**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(6.0f,4.0f);**  **glVertex2f(6.0f,-9.4f);**  **glVertex2f(7.2f,-9.4f);**  **glVertex2f(7.2f,4.0f);**  **glEnd();**  **//for square -6**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(-5.8f,-9.4f);**  **glVertex2f(-5.8f,4.0f);**  **glVertex2f(-7.0f,4.0f);**  **glVertex2f(-7.0f,-9.4f);**  **glEnd();**  **//for square 7**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(7.2f,5.1f);**  **glVertex2f(7.2f,-12.5f);**  **glVertex2f(8.6f,-12.5f);**  **glVertex2f(8.6f,5.1f);**  **glEnd();**  **//for square -7**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(-7.0f,5.1f);**  **glVertex2f(-7.0f,-12.5f);**  **glVertex2f(-8.4f,-12.5f);**  **glVertex2f(-8.4f,5.1f);**  **glEnd();**  **//for square 8**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(8.6f,11.0f);**  **glVertex2f(8.6f,-11.0f);**  **glVertex2f(11.2f,-11.0f);**  **glVertex2f(11.2f,11.0f);**  **glEnd();**  **//for square -8**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(-8.4f,11.0f);**  **glVertex2f(-8.4f,-11.0f);**  **glVertex2f(-11.0f,-11.0f);**  **glVertex2f(-11.0f,11.0f);**  **glEnd();**  **//for wing tip right**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(7.2f,11.0f);**  **glVertex2f(7.2f,9.8f);**  **glVertex2f(8.6f,9.8f);**  **glVertex2f(8.6f,11.0f);**  **glEnd();**  **//for wing tip left**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(-6.8f,9.8f);**  **glVertex2f(-6.8f,11.0f);**  **glVertex2f(-8.4f,11.0f);**  **glVertex2f(-8.4f,9.8f);**  **glEnd();**  **//for square 9**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(11.2f,9.8f);**  **glVertex2f(11.2f,-9.3f);**  **glVertex2f(12.2f,-9.3f);**  **glVertex2f(12.2f,9.8f);**  **glEnd();**  **//for square -9**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(-11.0f,9.8f);**  **glVertex2f(-11.0f,-9.3f);**  **glVertex2f(-12.0f,-9.3f);**  **glVertex2f(-12.0f,9.8f);**  **glEnd();**  **//for square 10**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(12.2f,8.2f);**  **glVertex2f(12.2f,-7.9f);**  **glVertex2f(13.8f,-7.9f);**  **glVertex2f(13.8f,8.2f);**  **glEnd();**  **//for square -10**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(-12.0f,8.2f);**  **glVertex2f(-12.0f,-7.9f);**  **glVertex2f(-13.6f,-7.9f);**  **glVertex2f(-13.6f,8.2f);**  **glEnd();**  **//for square 11**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(13.8f,6.8f);**  **glVertex2f(13.8f,-6.8f);**  **glVertex2f(15.0f,-6.8f);**  **glVertex2f(15.0f,6.8f);**  **glEnd();**  **//for square -11**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(-13.6f,6.8f);**  **glVertex2f(-13.6f,-6.8f);**  **glVertex2f(-14.8f,-6.8f);**  **glVertex2f(-14.8f,6.8f);**  **glEnd();**  **//for square 12**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(15.0f,5.1f);**  **glVertex2f(15.0f,-5.1f);**  **glVertex2f(16.4f,-5.1f);**  **glVertex2f(16.4f,5.1f);**  **glEnd();**  **//for square -12**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(-14.8f,5.1f);**  **glVertex2f(-14.8f,-5.1f);**  **glVertex2f(-16.2f,-5.1f);**  **glVertex2f(-16.2f,5.1f);**  **glEnd();**  **//for square 13**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(16.4f,4.0f);**  **glVertex2f(16.4f,-4.0f);**  **glVertex2f(17.5f,-4.0f);**  **glVertex2f(17.5f,4.0f);**  **glEnd();**  **//for square -13**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 0); // Each set of 4 vertices form a quad // x, y**  **glVertex2f(-16.2f,4.0f);**  **glVertex2f(-16.2f,-4.0f);**  **glVertex2f(-17.3f,-4.0f);**  **glVertex2f(-17.3f,4.0f);**  **glEnd();**  **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**  **glutCreateWindow("OpenGL Setup Test"); // Create a window with the given title**  **glutInitWindowSize(320, 320);**  **gluOrtho2D(-30,30,-30,30); // Set the window's initial width & height**  **glutDisplayFunc(display); // Register display callback handler for window re-paint**  **glutMainLoop(); // Enter the event-processing loop**  **return 0;**  **}** |
| **Output Screenshot (Full Screen)-** |