**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>**  **#include <GL/glut.h>**  **void display() {**  **glClearColor(1.0f, 1.0f, 1.0f, 1.0f);**  **glClear(GL\_COLOR\_BUFFER\_BIT);**  **glLineWidth(10.0);**  **glColor3f(1.0f,0.0f,0.0f);**  **glBegin(GL\_QUADS);**  **glVertex2f(2.0f,1.0f);**  **glVertex2f(10.0f,1.0f);**  **glVertex2f(10.0f,2.0f);**  **glVertex2f(2.0f,2.0f);**  **glEnd();**  **glColor3f(1.0f,1.0f,0.0f);**  **glBegin(GL\_QUADS);**  **glVertex2f(2.0f,2.0f);**  **glVertex2f(10.0f,2.0f);**  **glVertex2f(10.0f,3.0f);**  **glVertex2f(2.0f,3.0f);**  **glEnd();**  **glColor3ub(255, 165, 0);**  **glBegin(GL\_QUADS);**  **glVertex2f(2.0f,3.0f);**  **glVertex2f(10.0f,3.0f);**  **glVertex2f(10.0f,4.0f);**  **glVertex2f(2.0f,4.0f);**  **glEnd();**  **glColor3f(0.0f,1.0f,0.0f);**  **glBegin(GL\_QUADS);**  **glVertex2f(2.0f,4.0f);**  **glVertex2f(10.0f,4.0f);**  **glVertex2f(10.0f,5.0f);**  **glVertex2f(2.0f,5.0f);**  **glEnd();**  **glColor3ub(0,191,255);**  **glBegin(GL\_QUADS);**  **glVertex2f(2.0f,5.0f);**  **glVertex2f(10.0f,5.0f);**  **glVertex2f(10.0f,6.0f);**  **glVertex2f(2.0f,6.0f);**  **glEnd();**  **glColor3f(0.0f,0.0f,1.0f);**  **glBegin(GL\_QUADS);**  **glVertex2f(2.0f,6.0f);**  **glVertex2f(10.0f,6.0f);**  **glVertex2f(10.0f,7.0f);**  **glVertex2f(2.0f,7.0f);**  **glEnd();**  **glColor3ub(135,0,130);**  **glBegin(GL\_QUADS);**  **glVertex2f(2.0f,7.0f);**  **glVertex2f(10.0f,7.0f);**  **glVertex2f(10.0f,8.0f);**  **glVertex2f(2.0f,8.0f);**  **glEnd();**  **glFlush();**  **}**  **int main(int argc, char\*\* argv) {**  **glutInit(&argc, argv);**  **glutCreateWindow("Rainbow Flag");**  **glutInitWindowSize(150, 150);**  **gluOrtho2D(-20.0,20.0,-20.0,20.0);**  **glutDisplayFunc(display);**  **glutMainLoop();**  **return 0;**  **}** |
| **Output Screenshot (Full Screen)-** |

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| **Question- 2**  Draw 8X8 Chess Board |
| **Graph Plot (Picture)-** |
| **Code-**  **#include <windows.h>**  **#include <GL/glut.h>**  **void display() {**  **glClearColor(1.0f, 0.0f, 1.0f,0.0f);**  **glClear(GL\_COLOR\_BUFFER\_BIT);**  **glLineWidth(10.0);**  **glColor3f(0.0f,0.0f,0.0f);**  **glBegin(GL\_QUADS);**  **glVertex2f(0.0f,0.0f);**  **glVertex2f(2.0f,0.0f);**  **glVertex2f(2.0f,2.0f);**  **glVertex2f(0.0f,2.0f);**  **glEnd();**  **glColor3f(1.0f,1.0f,1.0f);**  **glBegin(GL\_QUADS);**  **glVertex2f(0.0f,2.0f);**  **glVertex2f(2.0f,2.0f);**  **glVertex2f(2.0f,4.0f);**  **glVertex2f(0.0f,4.0f);**  **glEnd();**  **glColor3f(0.0f,0.0f,0.0f);**  **glBegin(GL\_QUADS);**  **glVertex2f(0.0f,4.0f);**  **glVertex2f(2.0f,4.0f);**  **glVertex2f(2.0f,6.0f);**  **glVertex2f(0.0f,6.0f);**  **glEnd();**  **glColor3f(1.0f,1.0f,1.0f);**  **glBegin(GL\_QUADS);**  **glVertex2f(0.0f,6.0f);**  **glVertex2f(2.0f,6.0f);**  **glVertex2f(2.0f,8.0f);**  **glVertex2f(0.0f,8.0f);**  **glEnd();**  **//second column**  **glColor3f(1.0f,1.0f,1.0f);**  **glBegin(GL\_QUADS);**  **glVertex2f(2.0f,0.0f);**  **glVertex2f(4.0f,0.0f);**  **glVertex2f(4.0f,2.0f);**  **glVertex2f(2.0f,2.0f);**  **glEnd();**  **glColor3f(0.0f,0.0f,0.0f);**  **glBegin(GL\_QUADS);**  **glVertex2f(2.0f,2.0f);**  **glVertex2f(4.0f,2.0f);**  **glVertex2f(4.0f,4.0f);**  **glVertex2f(2.0f,4.0f);**  **glEnd();**  **glColor3f(1.0f,1.0f,1.0f);**  **glBegin(GL\_QUADS);**  **glVertex2f(2.0f,4.0f);**  **glVertex2f(4.0f,4.0f);**  **glVertex2f(4.0f,6.0f);**  **glVertex2f(2.0f,6.0f);**  **glEnd();**  **glColor3f(0.0f,0.0f,0.0f);**  **glBegin(GL\_QUADS);**  **glVertex2f(2.0f,6.0f);**  **glVertex2f(4.0f,6.0f);**  **glVertex2f(4.0f,8.0f);**  **glVertex2f(2.0f,8.0f);**  **glEnd();**  **//Third column**  **glColor3f(0.0f,0.0f,0.0f);**  **glBegin(GL\_QUADS);**  **glVertex2f(4.0f,0.0f);**  **glVertex2f(6.0f,0.0f);**  **glVertex2f(6.0f,2.0f);**  **glVertex2f(4.0f,2.0f);**  **glEnd();**  **glColor3f(1.0f,1.0f,1.0f);**  **glBegin(GL\_QUADS);**  **glVertex2f(4.0f,2.0f);**  **glVertex2f(6.0f,2.0f);**  **glVertex2f(6.0f,4.0f);**  **glVertex2f(4.0f,4.0f);**  **glEnd();**  **glColor3f(0.0f,0.0f,0.0f);**  **glBegin(GL\_QUADS);**  **glVertex2f(4.0f,4.0f);**  **glVertex2f(6.0f,4.0f);**  **glVertex2f(6.0f,6.0f);**  **glVertex2f(4.0f,6.0f);**  **glEnd();**  **glColor3f(1.0f,1.0f,1.0f);**  **glBegin(GL\_QUADS);**  **glVertex2f(4.0f,6.0f);**  **glVertex2f(6.0f,6.0f);**  **glVertex2f(6.0f,8.0f);**  **glVertex2f(4.0f,8.0f);**  **glEnd();**  **//Fourth Column**  **glColor3f(1.0f,1.0f,1.0f);**  **glBegin(GL\_QUADS);**  **glVertex2f(6.0f,0.0f);**  **glVertex2f(8.0f,0.0f);**  **glVertex2f(8.0f,2.0f);**  **glVertex2f(6.0f,2.0f);**  **glEnd();**  **glColor3f(0.0f,0.0f,0.0f);**  **glBegin(GL\_QUADS);**  **glVertex2f(6.0f,2.0f);**  **glVertex2f(8.0f,2.0f);**  **glVertex2f(8.0f,4.0f);**  **glVertex2f(6.0f,4.0f);**  **glEnd();**  **glColor3f(1.0f,1.0f,1.0f);**  **glBegin(GL\_QUADS);**  **glVertex2f(6.0f,4.0f);**  **glVertex2f(8.0f,4.0f);**  **glVertex2f(8.0f,6.0f);**  **glVertex2f(6.0f,6.0f);**  **glEnd();**  **glColor3f(0.0f,0.0f,0.0f);**  **glBegin(GL\_QUADS);**  **glVertex2f(6.0f,6.0f);**  **glVertex2f(8.0f,6.0f);**  **glVertex2f(8.0f,8.0f);**  **glVertex2f(6.0f,8.0f);**  **glEnd();**  **glFlush(); // Render now**  **}**  **int main(int argc, char\*\* argv) {**  **glutInit(&argc, argv);**  **glutCreateWindow("Chess Board");**  **glutInitWindowSize(320, 320);**  **gluOrtho2D(-15.0,15.0,-15.0,15.0);**  **glutDisplayFunc(display);**  **glutMainLoop();**  **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>**  **#include <GL/glut.h>**  **void Display(void)**  **{**  **glClear (GL\_COLOR\_BUFFER\_BIT);**  **glColor3ub (255, 255, 255);**  **glBegin(GL\_QUADS);**  **glVertex2i(0, 0);**  **glVertex2i(640, 0);**  **glVertex2i(640, 480);**  **glVertex2i(0, 480);**  **glEnd();**  **glColor3ub (0, 0, 0);**  **glBegin(GL\_QUADS);**  **glVertex2i(427, 440);**  **glVertex2i(427, 460);**  **glVertex2i(212, 460);**  **glVertex2i(212, 440);**  **glEnd();**  **glColor3ub (0, 0, 0);**  **glBegin(GL\_QUADS);**  **glVertex2i(212, 414);**  **glVertex2i(212, 440);**  **glVertex2i(148, 440);**  **glVertex2i(148, 414);**  **glEnd();**  **glColor3ub (0, 0, 0);**  **glBegin(GL\_QUADS);**  **glVertex2i(148, 390);**  **glVertex2i(148, 414);**  **glVertex2i(118, 414);**  **glVertex2i(118, 390);**  **glEnd();**  **glColor3ub (0, 0, 0);**  **glBegin(GL\_QUADS);**  **glVertex2i(118, 362);**  **glVertex2i(118,390);**  **glVertex2i(90, 390);**  **glVertex2i(90, 362);**  **glEnd();**  **glColor3ub (0, 0, 0);**  **glBegin(GL\_QUADS);**  **glVertex2i(90, 337);**  **glVertex2i(90,362);**  **glVertex2i(55, 362);**  **glVertex2i(55, 337);**  **glEnd();**  **glColor3ub (0, 0, 0);**  **glBegin(GL\_QUADS);**  **glVertex2i(55, 156);**  **glVertex2i(55,337);**  **glVertex2i(25, 337);**  **glVertex2i(25, 156);**  **glEnd();**  **glColor3ub (0, 0, 0);**  **glBegin(GL\_QUADS);**  **glVertex2i(82, 130);**  **glVertex2i(82,156);**  **glVertex2i(55, 156);**  **glVertex2i(55, 130);**  **glEnd();**  **glColor3ub (0, 0, 0);**  **glBegin(GL\_QUADS);**  **glVertex2i(114, 105);**  **glVertex2i(114,130);**  **glVertex2i(82, 130);**  **glVertex2i(82, 105);**  **glEnd();**  **glColor3ub (0, 0, 0);**  **glBegin(GL\_QUADS);**  **glVertex2i(145, 80);**  **glVertex2i(145,105);**  **glVertex2i(114, 105);**  **glVertex2i(114, 80);**  **glEnd();**  **glColor3ub (0, 0, 0);**  **glBegin(GL\_QUADS);**  **glVertex2i(210, 55);**  **glVertex2i(210,80);**  **glVertex2i(145, 80);**  **glVertex2i(145, 55);**  **glEnd();**  **glColor3ub (0, 0, 0);**  **glBegin(GL\_QUADS);**  **glVertex2i(427, 30);**  **glVertex2i(427,55);**  **glVertex2i(212, 55);**  **glVertex2i(212, 30);**  **glEnd();**  **glColor3ub (0, 0, 0);**  **glBegin(GL\_QUADS);**  **glVertex2i(490, 55);**  **glVertex2i(490,80);**  **glVertex2i(427, 80);**  **glVertex2i(427, 55);**  **glEnd();**  **glColor3ub (0, 0, 0);**  **glBegin(GL\_QUADS);**  **glVertex2i(520, 80);**  **glVertex2i(520,102);**  **glVertex2i(490, 102);**  **glVertex2i(490, 80);**  **glEnd();**  **glColor3ub (0, 0, 0);**  **glBegin(GL\_QUADS);**  **glVertex2i(550, 102);**  **glVertex2i(550,128);**  **glVertex2i(520, 128);**  **glVertex2i(520, 102);**  **glEnd();**  **glColor3ub (0, 0, 0);**  **glBegin(GL\_QUADS);**  **glVertex2i(580, 128);**  **glVertex2i(580,156);**  **glVertex2i(550, 156);**  **glVertex2i(550, 128);**  **glEnd();**  **glColor3ub (0, 0, 0);**  **glBegin(GL\_QUADS);**  **glVertex2i(610, 156);**  **glVertex2i(610,337);**  **glVertex2i(580, 337);**  **glVertex2i(580, 156);**  **glEnd();**  **glColor3ub (0, 0, 0);**  **glBegin(GL\_QUADS);**  **glVertex2i(580, 337);**  **glVertex2i(580,360);**  **glVertex2i(555, 360);**  **glVertex2i(555, 337);**  **glEnd();**  **glColor3ub (0, 0, 0);**  **glBegin(GL\_QUADS);**  **glVertex2i(555, 360);**  **glVertex2i(555,385);**  **glVertex2i(523, 385);**  **glVertex2i(523, 360);**  **glEnd();**  **glColor3ub (0, 0, 0);**  **glBegin(GL\_QUADS);**  **glVertex2i(523, 385);**  **glVertex2i(523,410);**  **glVertex2i(490, 410);**  **glVertex2i(490, 385);**  **glEnd();**  **glColor3ub (0, 0, 0);**  **glBegin(GL\_QUADS);**  **glVertex2i(490, 410);**  **glVertex2i(490,440);**  **glVertex2i(427, 440);**  **glVertex2i(427, 410);**  **glEnd();**  **glColor3ub (255, 255, 0);**  **glBegin(GL\_QUADS);**  **glVertex2i(580, 156);**  **glVertex2i(580,337);**  **glVertex2i(555, 337);**  **glVertex2i(550, 156);**  **glEnd();**  **glColor3ub (255, 255, 0);**  **glBegin(GL\_QUADS);**  **glVertex2i(550, 128);**  **glVertex2i(556,360);**  **glVertex2i(523, 360);**  **glVertex2i(520, 128);**  **glEnd();**  **glColor3ub (255, 255, 0);**  **glBegin(GL\_QUADS);**  **glVertex2i(520, 102);**  **glVertex2i(524,385);**  **glVertex2i(490, 385);**  **glVertex2i(490, 102);**  **glEnd();**  **glColor3ub (255, 255, 0);**  **glBegin(GL\_QUADS);**  **glVertex2i(490, 80);**  **glVertex2i(490,410);**  **glVertex2i(427, 410);**  **glVertex2i(427, 80);**  **glEnd();**  **glColor3ub (255, 255, 0);**  **glBegin(GL\_QUADS);**  **glVertex2i(427, 440);**  **glVertex2i(427,55);**  **glVertex2i(212, 55);**  **glVertex2i(212, 440);**  **glEnd();**  **glColor3ub (255, 255, 0);**  **glBegin(GL\_QUADS);**  **glVertex2i(212, 80);**  **glVertex2i(212,414);**  **glVertex2i(145, 414);**  **glVertex2i(145, 80);**  **glEnd();**  **glColor3ub (255, 255, 0);**  **glBegin(GL\_QUADS);**  **glVertex2i(145, 105);**  **glVertex2i(148,390);**  **glVertex2i(118, 390);**  **glVertex2i(114, 105);**  **glEnd();**  **glColor3ub (255, 255, 0);**  **glBegin(GL\_QUADS);**  **glVertex2i(115, 130);**  **glVertex2i(118,362);**  **glVertex2i(90, 362);**  **glVertex2i(82, 130);**  **glEnd();**  **glColor3ub (255, 255, 0);**  **glBegin(GL\_QUADS);**  **glVertex2i(83, 156);**  **glVertex2i(90,337);**  **glVertex2i(55, 337);**  **glVertex2i(55, 156);**  **glEnd();**  **//Body 1**  **glColor3ub (0, 0, 0);**  **glBegin(GL\_QUADS);**  **glVertex2i(550, 182);**  **glVertex2i(550, 306);**  **glVertex2i(523, 306);**  **glVertex2i(523, 182);**  **glEnd();**  **//BODY 2**  **glColor3ub (0, 0, 0);**  **glBegin(GL\_QUADS);**  **glVertex2i(523, 157);**  **glVertex2i(523, 334);**  **glVertex2i(490, 334);**  **glVertex2i(490, 157);**  **glEnd();**  **//BODY 3**  **glColor3ub (0, 0, 0);**  **glBegin(GL\_QUADS);**  **glVertex2i(490, 130);**  **glVertex2i(490, 360);**  **glVertex2i(460, 360);**  **glVertex2i(460, 130);**  **glEnd();**  **//BODY 4**  **glColor3ub (0, 0, 0);**  **glBegin(GL\_QUADS);**  **glVertex2i(460, 180);**  **glVertex2i(460, 310);**  **glVertex2i(430, 310);**  **glVertex2i(430, 180);**  **glEnd();**  **//BODY 5**  **glColor3ub (0, 0, 0);**  **glBegin(GL\_QUADS);**  **glVertex2i(430, 155);**  **glVertex2i(430, 280);**  **glVertex2i(400, 280);**  **glVertex2i(400, 155);**  **glEnd();**  **//BODY 6**  **glColor3ub (0, 0, 0);**  **glBegin(GL\_QUADS);**  **glVertex2i(400, 205);**  **glVertex2i(400, 310);**  **glVertex2i(365, 310);**  **glVertex2i(365, 205);**  **glEnd();**  **//BODY 7**  **glColor3ub (0, 0, 0);**  **glBegin(GL\_QUADS);**  **glVertex2i(365, 155);**  **glVertex2i(365, 360);**  **glVertex2i(275, 360);**  **glVertex2i(275, 155);**  **glEnd();**  **//BODY 8**  **glColor3ub (0, 0, 0);**  **glBegin(GL\_QUADS);**  **glVertex2i(275, 205);**  **glVertex2i(275, 310);**  **glVertex2i(245, 310);**  **glVertex2i(245, 205);**  **glEnd();**  **//BODY 9**  **glColor3ub (0, 0, 0);**  **glBegin(GL\_QUADS);**  **glVertex2i(245, 155);**  **glVertex2i(245, 280);**  **glVertex2i(215, 280);**  **glVertex2i(215, 155);**  **glEnd();**  **//BODY 10**  **glColor3ub (0, 0, 0);**  **glBegin(GL\_QUADS);**  **glVertex2i(215, 180);**  **glVertex2i(215, 310);**  **glVertex2i(185, 310);**  **glVertex2i(185, 180);**  **glEnd();**  **//BODY 11**  **glColor3ub (0, 0, 0);**  **glBegin(GL\_QUADS);**  **glVertex2i(185, 130);**  **glVertex2i(185, 360);**  **glVertex2i(155, 360);**  **glVertex2i(155, 130);**  **glEnd();**  **//BODY 12**  **glColor3ub (0, 0, 0);**  **glBegin(GL\_QUADS);**  **glVertex2i(155, 157);**  **glVertex2i(155, 334);**  **glVertex2i(125, 334);**  **glVertex2i(125, 157);**  **glEnd();**  **//BODY 13**  **glColor3ub (0, 0, 0);**  **glBegin(GL\_QUADS);**  **glVertex2i(125, 182);**  **glVertex2i(125, 306);**  **glVertex2i(95, 306);**  **glVertex2i(95, 182);**  **glEnd();**  **//BODY 14**  **glColor3ub (0, 0, 0);**  **glBegin(GL\_QUADS);**  **glVertex2i(350, 105);**  **glVertex2i(350, 360);**  **glVertex2i(290, 360);**  **glVertex2i(290, 105);**  **glEnd();**  **//Body 15**  **glColor3ub (0, 0, 0);**  **glBegin(GL\_QUADS);**  **glVertex2i(335, 80);**  **glVertex2i(335, 105);**  **glVertex2i(305, 105);**  **glVertex2i(305, 80);**  **glEnd();**  **glColor3ub (0, 0, 0);**  **glBegin(GL\_QUADS);**  **glVertex2i(365, 360);**  **glVertex2i(365, 385);**  **glVertex2i(335, 385);**  **glVertex2i(335, 360);**  **glEnd();**  **glColor3ub (0, 0, 0);**  **glBegin(GL\_QUADS);**  **glVertex2i(305, 360);**  **glVertex2i(305, 385);**  **glVertex2i(275, 385);**  **glVertex2i(275, 360);**  **glEnd();**  **glColor3ub (0, 0, 0);**  **glBegin(GL\_QUADS);**  **glVertex2i(460, 345);**  **glVertex2i(460, 370);**  **glVertex2i(430, 370);**  **glVertex2i(430, 345);**  **glEnd();**  **glColor3ub (0, 0, 0);**  **glBegin(GL\_QUADS);**  **glVertex2i(210, 345);**  **glVertex2i(210, 370);**  **glVertex2i(180, 370);**  **glVertex2i(180, 345);**  **glEnd();**  **glFlush ();**  **}**  **void myInit (void)**  **{**  **glClearColor(0.0, 0.0, 0.0, 0.0);**  **glMatrixMode(GL\_PROJECTION);**  **glLoadIdentity();**  **gluOrtho2D(0.0, 640.0, 0.0, 480.0);**  **}**  **int main(int argc, char\*\* argv)**  **{**  **glutInit(&argc, argv);**  **glutInitDisplayMode (GLUT\_SINGLE | GLUT\_RGB);**  **glutInitWindowSize (640, 480);**  **glutInitWindowPosition (100, 150);**  **glutCreateWindow ("Batman");**  **glutDisplayFunc(Display);**  **myInit ();**  **glutMainLoop();**  **return 0;**  **}** |
| **Output Screenshot (Full Screen)-** |