**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

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **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**  **void rectangle1()**  **{**  **glBegin(GL\_POLYGON);**  **glVertex2f(-5.0, 0.0);**  **glVertex2f(5.0, 0.0);**  **glVertex2f(5.0, 2.0);**  **glVertex2f(-5.0, 2.0);**  **glEnd();**  **}**  **void rectangle2()**  **{**  **glBegin(GL\_POLYGON);**  **glVertex2f(-5.0, 2.0);**  **glVertex2f(5.0, 2.0);**  **glVertex2f(5.0, 4.0);**  **glVertex2f(-5.0, 4.0);**  **glEnd();**  **}**  **void rectangle3()**  **{**  **glBegin(GL\_POLYGON);**  **glVertex2f(5.0, 6.0);**  **glVertex2f(-5.0, 6.0);**  **glVertex2f(-5.0, 4.0);**  **glVertex2f(5.0, 4.0);**  **glEnd();**  **}**  **void rectangle4()**  **{**  **glBegin(GL\_POLYGON);**  **glVertex2f(5.0, 8.0);**  **glVertex2f(-5.0, 8.0);**  **glVertex2f(-5.0, 6.0);**  **glVertex2f(5.0, 6.0);**  **glEnd();**  **}**  **void rectangle5()**  **{**  **glBegin(GL\_POLYGON);**  **glVertex2f(-5.0, -2.0);**  **glVertex2f(5.0, -2.0);**  **glVertex2f(5.0, 0.0);**  **glVertex2f(-5.0, 0.0);**  **glEnd();**  **}**  **void rectangle6()**  **{**  **glBegin(GL\_POLYGON);**  **glVertex2f(-5.0, -2.0);**  **glVertex2f(-5.0, -4.0);**  **glVertex2f(5.0, -4.0);**  **glVertex2f(5.0, -2.0);**  **glEnd();**  **}**  **void rectangle7()**  **{**  **glBegin(GL\_POLYGON);**  **glVertex2f(-5.0, -4.0);**  **glVertex2f(-5.0, -6.0);**  **glVertex2f(5.0, -6.0);**  **glVertex2f(5.0, -4.0);**  **glEnd();**  **}**  **void display() {**  **glClearColor(1.0f, 1.0f, 1.0f, 1.0f);**  **glClear(GL\_COLOR\_BUFFER\_BIT);**  **glLineWidth(2);**  **glColor3ub(0, 176, 80);**  **rectangle1();**  **glColor3ub(75, 172, 198);**  **rectangle2();**  **glColor3ub(79, 129, 189);**  **rectangle3();**  **glColor3ub(128, 100, 162);**  **rectangle4();**  **glColor3ub(255, 255, 0);**  **rectangle5();**  **glColor3ub(247, 150, 70);**  **rectangle6();**  **glColor3ub(255, 0, 0);**  **rectangle7();**  **glFlush();**  **}**  **int main(int argc, char\*\* argv) {**  **glutInit(&argc, argv);**  **glutInitWindowSize(1080, 1080);**  **glutCreateWindow("OpenGL Rainbow:21-45620-3");**  **glutDisplayFunc(display);**  **gluOrtho2D(-10,10,-10,10);**  **glutMainLoop();**  **return 0;**  **}** |
| **Output Screenshot (Full Screen)-** |

|  |
| --- |
| **Question- 2**  Draw 4X4 Chess Board |
| **Graph Plot (Picture)-** |
| **Code-**  **#include <windows.h>**  **#include <GL/glut.h>**  **void board1() {**  **glBegin(GL\_POLYGON);**  **glVertex2f(0.0, 0.0);**  **glVertex2f(0.5, 0.0);**  **glVertex2f(0.5, 0.5);**  **glVertex2f(0.0, 0.5);**  **glEnd();**  **}**  **void board2() {**  **glBegin(GL\_POLYGON);**  **glVertex2f(0.5, 0.0);**  **glVertex2f(1.0, 0.0);**  **glVertex2f(1.0, 0.5);**  **glVertex2f(0.5, 0.5);**  **glEnd();**  **}**  **void board3() {**  **glBegin(GL\_POLYGON);**  **glVertex2f(0.5, 0.5);**  **glVertex2f(1.0, 0.5);**  **glVertex2f(1.0, 1.0);**  **glVertex2f(0.5, 1.0);**  **glEnd();**  **}**  **void board4() {**  **glBegin(GL\_POLYGON);**  **glVertex2f(0.0, 0.5);**  **glVertex2f(0.5, 0.5);**  **glVertex2f(0.5, 1.0);**  **glVertex2f(0.0, 1.0);**  **glEnd();**  **}**  **void board5() {**  **glBegin(GL\_POLYGON);**  **glColor3ub(247, 249, 249);**  **glVertex2f(0.0, 0.0);**  **glVertex2f(-0.5, 0.0);**  **glVertex2f(-0.5, 0.5);**  **glVertex2f(0.0, 0.5);**  **glEnd();**  **}**  **void board6() {**  **glBegin(GL\_POLYGON);**  **glVertex2f(-0.5, 0.5);**  **glVertex2f(0.0, 0.5);**  **glVertex2f(0.0, 1.0);**  **glVertex2f(-0.5, 1.0);**  **glEnd();**  **}**  **void board7() {**  **glBegin(GL\_POLYGON);**  **glVertex2f(-0.5, 0.0);**  **glVertex2f(-1.0, 0.0);**  **glVertex2f(-1.0, 0.5);**  **glVertex2f(-0.5, 0.5);**  **glEnd();**  **}**  **void board8() {**  **glBegin(GL\_POLYGON);**  **glVertex2f(-0.5, 0.5);**  **glVertex2f(-1.0, 0.5);**  **glVertex2f(-1.0, 1.0);**  **glVertex2f(-0.5, 1.0);**  **glEnd();**  **}**  **void board9() {**  **glBegin(GL\_POLYGON);**  **glVertex2f(0.0, 0.0);**  **glVertex2f(0.0, -0.5);**  **glVertex2f(0.5, -0.5);**  **glVertex2f(0.5, 0.0);**  **glEnd();**  **}**  **void board10() {**  **glBegin(GL\_POLYGON);**  **glVertex2f(0.5, 0.0);**  **glVertex2f(0.5, -0.5);**  **glVertex2f(1.0, -0.5);**  **glVertex2f(1.0, 0.0);**  **glEnd();**  **}**  **void board11() {**  **glBegin(GL\_POLYGON);**  **glVertex2f(0.0, -0.5);**  **glVertex2f(0.0, -1.0);**  **glVertex2f(0.5, -1.0);**  **glVertex2f(0.5, -0.5);**  **glEnd();**  **}**  **void board12() {**  **glBegin(GL\_POLYGON);**  **glVertex2f(0.5, -0.5);**  **glVertex2f(0.5, -1.0);**  **glVertex2f(1.0, -1.0);**  **glVertex2f(1.0, -0.5);**  **glEnd();**  **}**  **void board13() {**  **glBegin(GL\_POLYGON);**  **glVertex2f(0.0, 0.0);**  **glVertex2f(-0.5, 0.0);**  **glVertex2f(-0.5, -0.5);**  **glVertex2f(0.0, -0.5);**  **glEnd();**  **}**  **void board14() {**  **glBegin(GL\_POLYGON);**  **glVertex2f(-0.5, 0.0);**  **glVertex2f(-0.5, -0.5);**  **glVertex2f(-1.0, -0.5);**  **glVertex2f(-1.0, 0.0);**  **glEnd();**  **}**  **void board15() {**  **glBegin(GL\_POLYGON);**  **glVertex2f(0.0, -0.5);**  **glVertex2f(0.0, -1.0);**  **glVertex2f(-0.5, -1.0);**  **glVertex2f(-0.5, -0.5);**  **glEnd();**  **}**  **void board16() {**  **glBegin(GL\_POLYGON);**  **glVertex2f(-0.5, -0.5);**  **glVertex2f(-0.5, -1.0);**  **glVertex2f(-1.0, -1.0);**  **glVertex2f(-1.0, -0.5);**  **glEnd();**  **}**  **void display() {**  **glClear(GL\_COLOR\_BUFFER\_BIT);**  **glColor3ub(0, 0, 0);**  **board1();**  **glColor3ub(247, 249, 249);**  **board2();**  **glColor3ub(0, 0, 0);**  **board3();**  **glColor3ub(247, 249, 249);**  **board4();**  **glColor3ub(247, 249, 249);**  **board5();**  **glColor3ub(0, 0, 0);**  **board6();**  **glColor3ub(0, 0, 0);**  **board7();**  **glColor3ub(247, 249, 249);**  **board8();**  **glColor3ub(247, 249, 249);**  **board9();**  **glColor3ub(0, 0, 0);**  **board10();**  **glColor3ub(0, 0, 0);**  **board11();**  **glColor3ub(247, 249, 249);**  **board12();**  **glColor3ub(0, 0, 0);**  **board13();**  **glColor3ub(247, 249, 249);**  **board14();**  **glColor3ub(247, 249, 249);**  **board15();**  **glColor3ub(0, 0, 0);**  **board16();**  **glFlush();**  **}**  **int main(int argc, char\*\* argv) {**  **glutInit(&argc, argv);**  **glutInitWindowSize(800, 800);**  **glutCreateWindow("Chess Board:21-45620-3");**  **glClearColor(0.9, 0.9, 0.9, 1.0);**  **gluOrtho2D(-5.0, 5.0, -5.0, 5.0);**  **glutDisplayFunc(display);**  **glutMainLoop();**  **return 0;**  **}** |
| **Output Screenshot (Full Screen)-** |

|  |
| --- |
| **Question- 3**  Create the batman logo given below- |
| **Graph Plot (Picture)-** |
| **Code-**  **#include <windows.h>**  **#include <GL/glut.h>**  **#include <math.h>**  **void triangle1(){**  **glBegin(GL\_TRIANGLES);**  **glVertex2f(0.64, 1.81);**  **glVertex2f(0.58, 3.45);**  **glVertex2f(0.33, 2.35);**  **glEnd();**  **}**  **void triangle2(){**  **glBegin(GL\_TRIANGLES);**  **glVertex2f(-0.64, 1.81);**  **glVertex2f(-0.33, 2.35);**  **glVertex2f(-0.58, 3.45);**  **glEnd();**  **}**  **void rectangle1(){**  **glColor3f(0.0, 0.0, 0.0);**  **glBegin(GL\_QUADS);**  **glVertex2f(-1.29, 0.96);**  **glVertex2f(1.29, 0.96);**  **glVertex2f(0.64, 1.81);**  **glVertex2f(-0.64, 1.81);**  **glEnd();}**  **void rectangle2(){**  **glBegin(GL\_QUADS);**  **glVertex2f(-0.64, 1.81);**  **glVertex2f(0.64, 1.81);**  **glVertex2f(0.33, 2.35);**  **glVertex2f(-0.33, 2.35);**  **glEnd();**  **}**  **void shape(){**  **glBegin(GL\_POLYGON);**  **glVertex2f(-2.22, 0.85);**  **glVertex2f(-2.95, 0.88);**  **glVertex2f(-3.63, 0.99);**  **glVertex2f(-4.42, 1.1);**  **glVertex2f(-5.1, 1.33);**  **glVertex2f(-5.69, 1.81);**  **glVertex2f(-6.2, 2.4);**  **glVertex2f(-6.46, 3.05);**  **glVertex2f(-6.65, 3.67);**  **glVertex2f(-19.98, 3.73);**  **glVertex2f(-18.87, 3.23);**  **glVertex2f(-18.07, 2.87);**  **glVertex2f(-17.12, 2.29);**  **glVertex2f(-16.35,1.82);**  **glVertex2f(-15.54,1.14);**  **glVertex2f(-14.76,0.19);**  **glVertex2f(-14.22,-0.76);**  **glVertex2f(-14,-2);**  **glVertex2f(-14.17,-3.41);**  **glVertex2f(-12.99,-3.41);**  **glVertex2f(-11.61,-3.34);**  **glVertex2f(-10.2,-3.37);**  **glVertex2f(-8.76,-3.44);**  **glVertex2f(-7.68,-3.55);**  **glVertex2f(-6.62,-3.87);**  **glVertex2f(-5.45,-4.07);**  **glVertex2f(-4.45,-4.42);**  **glVertex2f(-3.53,-4.81);**  **glVertex2f(-2.67,-5.25);**  **glVertex2f(-1.91,-5.79);**  **glVertex2f(-1.23, -6.44);**  **glVertex2f(-0.69, -7.09);**  **glVertex2f(-0.23, -7.77);**  **glVertex2f(0, -8.77);**  **glVertex2f(0.23, -7.77);**  **glVertex2f(0.69, -7.09);**  **glVertex2f(1.23, -6.44);**  **glVertex2f(1.91, -5.79);**  **glVertex2f(2.67, -5.25);**  **glVertex2f(3.53, -4.81);**  **glVertex2f(4.45, -4.42);**  **glVertex2f(5.45, -4.07);**  **glVertex2f(6.62, -3.87);**  **glVertex2f(7.68, -3.55);**  **glVertex2f(8.76, -3.44);**  **glVertex2f(10.2, -3.37);**  **glVertex2f(11.61, -3.34);**  **glVertex2f(12.99, -3.41);**  **glVertex2f(14.17, -3.41);**  **glVertex2f(14, -2);**  **glVertex2f(14.22, -0.76);**  **glVertex2f(14.76, 0.19);**  **glVertex2f(15.54, 1.14);**  **glVertex2f(16.35, 1.82);**  **glVertex2f(17.12, 2.29);**  **glVertex2f(18.07, 2.87);**  **glVertex2f(18.87, 3.23);**  **glVertex2f(19.98, 3.73);**  **glVertex2f(6.65, 3.67);**  **glVertex2f(6.46, 3.05);**  **glVertex2f(6.2, 2.4);**  **glVertex2f(5.69, 1.81);**  **glVertex2f(5.1, 1.33);**  **glVertex2f(4.42, 1.1);**  **glVertex2f(3.63, 0.99);**  **glVertex2f(2.95, 0.88);**  **glVertex2f(2.22, 0.85);**  **glEnd();**  **}**  **void display() {**  **glClearColor(1.0f, 1.0f, 1.0f, 1.0f);**  **glClear(GL\_COLOR\_BUFFER\_BIT);**  **glColor3ub(0,0,0);**  **triangle1();**  **glColor3ub(0,0,0);**  **triangle2();**  **glColor3ub(0,0,0);**  **rectangle1();**  **glColor3ub(0,0,0);**  **rectangle2();**  **shape();**  **glFlush();**  **}**  **int main(int argc, char\*\* argv) {**  **glutInit(&argc, argv);**  **glutInitWindowSize(1080, 1080);**  **glutCreateWindow("BAT-21-45620-3");**  **glutDisplayFunc(display);**  **gluOrtho2D(-25,25,-25,25);**  **glutMainLoop();**  **return 0;**  **}** |
| **Output Screenshot (Full Screen)-** |