**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 Rainbow()**  **{**  **glBegin(GL\_POLYGON);**  **glColor3f(0.61,0.47,0.82);**  **glVertex2f(-3,3);**  **glVertex2f(3,3);**  **glVertex2f(3,2.42);**  **glVertex2f(-3,2.4);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glColor3f(0.27,0.57,0.79 );**  **glVertex2f(-3,2.4);**  **glVertex2f(3,2.42);**  **glVertex2f(3,1.8);**  **glVertex2f(-3,1.8);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glColor3f(0.38, .81, .85);**  **glVertex2f(-3,1.8);**  **glVertex2f(3,1.8);**  **glVertex2f(3,1.22);**  **glVertex2f(-3,1.2);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glColor3f(0.15, 0.79, 0.27);**  **glVertex2f(-3,1.2);**  **glVertex2f(3,1.22);**  **glVertex2f(3,0.56);**  **glVertex2f(-3,0.56);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glColor3f(0.98,.64, 0.39);**  **glVertex2f(-3,0.56);**  **glVertex2f(3,0.56);**  **glVertex2f(3,-0.16);**  **glVertex2f(-3,-0.16);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glColor3f(1,1,0);**  **glVertex2f(-3,-0.16);**  **glVertex2f(3,-0.16);**  **glVertex2f(3,-0.8);**  **glVertex2f(-3,-0.8);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glColor3f(1.0, 0.0, 0.0);**  **glVertex2f(-3,-0.8);**  **glVertex2f(3,-0.8);**  **glVertex2f(3,-1.5);**  **glVertex2f(-3,-1.5);**  **glEnd();**  **}**  **void Line()**  **{**  **glLineWidth(2);**  **glBegin(GL\_LINES);**  **glColor3f(0,0,0);**  **glVertex2f(-3,3);**  **glVertex2f(3,3);**  **glVertex2f(3,2.42);**  **glVertex2f(-3,2.4);**  **glVertex2f(-3,2.4);**  **glVertex2f(3,2.42);**  **glVertex2f(3,1.8);**  **glVertex2f(-3,1.8);**  **glVertex2f(-3,1.8);**  **glVertex2f(3,1.8);**  **glVertex2f(3,1.22);**  **glVertex2f(-3,1.2);**  **glVertex2f(-3,1.2);**  **glVertex2f(3,1.22);**  **glVertex2f(3,0.56);**  **glVertex2f(-3,0.56);**  **glVertex2f(-3,0.56);**  **glVertex2f(3,0.56);**  **glVertex2f(3,-0.16);**  **glVertex2f(-3,-0.16);**  **glVertex2f(-3,-0.16);**  **glVertex2f(3,-0.16);**  **glVertex2f(3,-0.8);**  **glVertex2f(-3,-0.8);**  **glVertex2f(-3,-0.8);**  **glVertex2f(3,-0.8);**  **glVertex2f(3,-1.5);**  **glVertex2f(-3,-1.5);**  **glVertex2f(3,3);**  **glVertex2f(3,-1.5);**  **glVertex2f(-3,3);**  **glVertex2f(-3,-1.5);**  **glEnd();**  **}**  **void display()**  **{**  **glClear(GL\_COLOR\_BUFFER\_BIT);**  **glClearColor(1.0, 1.0, 1.0, 1.0);**  **glClear(GL\_COLOR\_BUFFER\_BIT);**  **Rainbow();**  **Line();**  **int main(int argc, char\*\* argv)**  **{**  **glutInit(&argc, argv);**  **glutInitDisplayMode(GLUT\_RGB | GLUT\_SINGLE);**  **glutInitWindowSize(500,500);**  **glutCreateWindow("OpenGL Rainbow");**  **glutDisplayFunc(display);**  **gluOrtho2D(-10,10,-10,10);**  **glutMainLoop();**  **return 0;**  **}** |
| **Output Screenshot (Full Screen)-** |

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| **Question- 2**  Draw 4X4 Chess Board |
| **Graph Plot (Picture)-** |
| **Code-**  **#include <windows.h>**  **#include <GL/glut.h>**  **void ChessBoard()**  **{**  **glBegin(GL\_QUADS);**  **glColor3f(0,0,0);**  **glVertex2f(1,1);**  **glVertex2f(1,0);**  **glVertex2f(0,0);**  **glVertex2f(0,1);**  **glEnd();**  **glBegin(GL\_QUADS);**  **glColor3f(0,0,0);**  **glVertex2f(2,2);**  **glVertex2f(2,1);**  **glVertex2f(1,1);**  **glVertex2f(1,2);**  **glEnd();**  **glBegin(GL\_QUADS);**  **glColor3f(0,0,0);**  **glVertex2f(0,2);**  **glVertex2f(0,1);**  **glVertex2f(-1,1);**  **glVertex2f(-1,2);**  **glEnd();**  **glBegin(GL\_QUADS);**  **glColor3f(0,0,0);**  **glVertex2f(-1,1);**  **glVertex2f(-1,0);**  **glVertex2f(-2,0);**  **glVertex2f(-2,1);**  **glEnd();**  **glBegin(GL\_QUADS);**  **glColor3f(0,0,0);**  **glVertex2f(0,0);**  **glVertex2f(0,-1);**  **glVertex2f(-1,-1);**  **glVertex2f(-1,0);**  **glEnd();**  **glBegin(GL\_QUADS);**  **glColor3f(0,0,0);**  **glVertex2f(-1,-1);**  **glVertex2f(-1,-2);**  **glVertex2f(-2,-2);**  **glVertex2f(-2,-1);**  **glEnd();**  **glBegin(GL\_QUADS);**  **glColor3f(0,0,0);**  **glVertex2f(2,0);**  **glVertex2f(2,-1);**  **glVertex2f(1,-1);**  **glVertex2f(1,0);**  **glEnd();**  **glBegin(GL\_QUADS);**  **glColor3f(0,0,0);**  **glVertex2f(1,-1);**  **glVertex2f(1,-2);**  **glVertex2f(0,-2);**  **glVertex2f(0,-1);**  **glEnd();**  **glBegin(GL\_LINES);**  **glColor3f(0,0,0);**  **glVertex2f(-2,2);**  **glVertex2f(2,2);**  **glEnd();**  **glBegin(GL\_LINES);**  **glColor3f(0,0,0);**  **glVertex2f(2,-2);**  **glVertex2f(2,2);**  **glEnd();**  **glBegin(GL\_LINES);**  **glColor3f(0,0,0);**  **glVertex2f(-2,-2);**  **glVertex2f(2,-2);**  **glEnd();**  **glBegin(GL\_LINES);**  **glColor3f(0,0,0);**  **glVertex2f(-2,2);**  **glVertex2f(2,2);**  **glEnd();**  **glBegin(GL\_LINES);**  **glColor3f(0,0,0);**  **glVertex2f(-2,-2);**  **glVertex2f(-2,2);**  **glEnd();**  **glBegin(GL\_LINES);**  **glColor3f(0,0,0);**  **glVertex2f(2,2);**  **glVertex2f(2,-2);**  **glEnd();**  **}**  **void display()**  **{**  **glClear(GL\_COLOR\_BUFFER\_BIT);**  **glClearColor(1.0, 1.0, 1.0, 1.0);**  **glClear(GL\_COLOR\_BUFFER\_BIT);**  **ChessBoard();**  **glFlush();**  **}**  **int main(int argc, char\*\* argv)**  **{**  **glutInit(&argc, argv);**  **glutCreateWindow("ChessBoard");**  **glutInitWindowSize(320, 320);**  **glutInitWindowPosition(50, 50);**  **glutDisplayFunc(display);**  **gluOrtho2D(-3,3,-3,3);**  **glutMainLoop();**  **return 0;**  **}** |
| **Output Screenshot (Full Screen)-** |

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| **Question- 3**  Create the batman logo given below- |
| **Graph Plot (Picture)-** |
| **Code-**  **#include <windows.h>**  **#include <GL/glut.h>**  **#include <math.h>**  **void Batman\_Logo()**  **{**  **glColor3ub(0,0,0);**  **glBegin(GL\_POLYGON);**  **glVertex2f(-5,5);**  **glVertex2f(-1.53,5.01);**  **glVertex2f(1.53,5.01);**  **glVertex2f(5,5);**  **glVertex2f(3.01,2.97);**  **glVertex2f(-0.002,1.952);**  **glVertex2f(-3.01,2.98);**  **glEnd();**  **}**  **void Curve()**  **{**  **glBegin(GL\_POLYGON);**  **for(int i=0;i<200;i++)**  **{**  **glColor3ub(255,255,255);**  **float pi=3.1416;**  **float A=(i\*2\*pi)/200;**  **float r=5-3;**  **float x = r\*cos(A);**  **float y = r\*sin(A);**  **glVertex2f(x+5,y+3);**  **}**  **glEnd();**  **glBegin(GL\_POLYGON);**  **for(int i=0;i<200;i++)**  **{**  **glColor3ub(255,255,255);**  **float pi=3.1416;**  **float A=(i\*2\*pi)/200;**  **float r=1.2-1;**  **float x = r\*cos(A);**  **float y = r\*sin(A);**  **glVertex2f(x+2,y+1 );**  **}**  **glEnd();**  **glBegin(GL\_POLYGON);**  **for(int i=0;i<200;i++)**  **{**  **glColor3ub(255,255,255);**  **float pi=3.1416;**  **float A=(i\*2\*pi)/200;**  **float r=1.2-1;**  **float x = r\*cos(A);**  **float y = r\*sin(A);**  **glVertex2f(x-2,y+1);**  **}**  **glEnd();**  **glBegin(GL\_POLYGON);**  **for(int i=0;i<200;i++)**  **{**  **glColor3ub(255,255,255);**  **float pi=3.1416;**  **float A=(i\*2\*pi)/200;**  **float r=5-3;**  **float x = r\*cos(A);**  **float y = r\*sin(A);**  **glVertex2f(x-5,y+3 );**  **}**  **glEnd();**  **glBegin(GL\_POLYGON);**  **for(int i=0;i<200;i++)**  **{**  **glColor3ub(255,255,255);**  **float pi=3.1416;**  **float A=(i\*2\*pi)/200;**  **float r=6.7-4.01;**  **float x = r\*cos(A);**  **float y = r\*sin(A);**  **glVertex2f(x,y+6.7);**  **}**  **glEnd();**  **glBegin(GL\_POLYGON);**  **for(int i=0;i<200;i++)**  **{**  **glColor3ub(0,0,0);**  **float pi=3.1416;**  **float A=(i\*2\*pi)/200;**  **float r=1.3;**  **float x = r\*cos(A);**  **float y = r\*sin(A);**  **glVertex2f(x,y+4.01);**  **}**  **glEnd();**  **}**  **void Ear()**  **{**  **glColor3ub(0,0,0);**  **glBegin(GL\_POLYGON);**  **glVertex2f(-1.03,5.61);**  **glVertex2f(0,3.5);**  **glVertex2f(-1.2,4.01);**  **glEnd();**  **glColor3ub(0,0,0);**  **glBegin(GL\_POLYGON);**  **glVertex2f(1.03,5.61);**  **glVertex2f(0,3.5);**  **glVertex2f(1.2,4.02);**  **glEnd();**  **}**  **void display()**  **{**  **glClear(GL\_COLOR\_BUFFER\_BIT);**  **glClearColor(1.0, 1.0, 1.0, 1.0);**  **glClear(GL\_COLOR\_BUFFER\_BIT);**  **Batman\_Logo();**  **Curve();**  **Ear();**  **glFlush();**  **}**  **int main(int argc, char\*\* argv)**  **{**  **glutInit(&argc, argv);**  **glutCreateWindow("Batman\_Logo");**  **glutInitWindowSize(320,320);**  **glutInitWindowPosition(50,50);**  **glutDisplayFunc(display);**  **gluOrtho2D(-10,10,-10,10);**  **glutMainLoop();**  **return 0;**  **}** |
| **Output Screenshot (Full Screen)-** |