**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> // for MS Windows**  **#include <GL/glut.h> // GLUT, include glu.h and gl.h**  **void code()**  **{**  **glPointSize(5.0);**  **glBegin(GL\_POLYGON);**  **glColor3ub(255, 255, 255);**  **glVertex2f(-4.0f, 8.0f);**  **glVertex2f(4.0f, 8.0f);**  **glVertex2f(4.0f, -7.0f);**  **glVertex2f(-4.0f, -7.0f);**  **glEnd();**  **//5th**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 128); // Navy blue color**  **glVertex2f(-3.0f, 7.0f);**  **glVertex2f(-1.0f, 7.0f);**  **glVertex2f(-1.0f, 6.0f);**  **glVertex2f(-3.0f, 6.0f);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 128); // Navy blue color**  **glVertex2f(1.0f, 7.0f);**  **glVertex2f(3.0f, 7.0f);**  **glVertex2f(3.0f, 6.0f);**  **glVertex2f(1.0f, 6.0f);**  **glEnd();**  **//4th**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 128);**  **glVertex2f(1.0f, 4.0f);**  **glVertex2f(3.0f, 4.0f);**  **glVertex2f(3.0f, 3.0f);**  **glVertex2f(1.0f, 3.0f);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 128);**  **glVertex2f(-3.0f, 4.0f);**  **glVertex2f(-1.0f, 4.0f);**  **glVertex2f(-1.0f, 3.0f);**  **glVertex2f(-3.0f, 3.0f);**  **glEnd();**  **// 3rd**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 128);**  **glVertex2f(1.0f, 1.0f);**  **glVertex2f(3.0f, 1.0f);**  **glVertex2f(3.0f, 0.0f);**  **glVertex2f(1.0f, 0.0f);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 128);**  **glVertex2f(-3.0f, 1.0f);**  **glVertex2f(-1.0f, 1.0f);**  **glVertex2f(-1.0f, 0.0f);**  **glVertex2f(-3.0f, 0.0f);**  **glEnd();**  **//2nd**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 128);**  **glVertex2f(1.0f, -2.0f);**  **glVertex2f(3.0f, -2.0f);**  **glVertex2f(3.0f, -3.0f);**  **glVertex2f(1.0f, -3.0f);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 128);**  **glVertex2f(-3.0f, -2.0f);**  **glVertex2f(-1.0f, -2.0f);**  **glVertex2f(-1.0f, -3.0f);**  **glVertex2f(-3.0f, -3.0f);**  **glEnd();**  **//1st**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 128);**  **glVertex2f(1.5f, -5.0f);**  **glVertex2f(3.0f, -5.0f);**  **glVertex2f(3.0f, -6.0f);**  **glVertex2f(1.5f, -6.0f);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 0, 128);**  **glVertex2f(-3.0f, -5.0f);**  **glVertex2f(-1.5f, -5.0f);**  **glVertex2f(-1.5f, -6.0f);**  **glVertex2f(-3.0f, -6.0f);**  **glEnd();**  **//Door**  **glBegin(GL\_POLYGON);**  **glColor3ub(139, 69, 19); //medium brown**  **glVertex2f(-1.0f, -4.6f);**  **glVertex2f(1.0f, -4.6f);**  **glVertex2f(1.0f, -7.0f);**  **glVertex2f(-1.0f, -7.0f);**  **glEnd();**  **//floor**  **glPointSize(5.0);**  **glLineWidth(5.0);**  **glBegin(GL\_LINES);**  **glColor3ub(101, 67, 33);**  **glVertex2f(-4.0f, -4.0f);**  **glVertex2f(4.0f, -4.0f);**  **glVertex2f(-4.0f, -1.0f);**  **glVertex2f(4.0f, -1.0f);**  **glVertex2f(-4.0f, 2.0f);**  **glVertex2f(4.0f, 2.0f);**  **glVertex2f(-4.0f, 5.0f);**  **glVertex2f(4.0f, 5.0f);**  **glVertex2f(-4.0f, 8.0f);**  **glVertex2f(4.0f, 8.0f);**  **glVertex2f(-4.0f, -7.0f);**  **glVertex2f(4.0f, -7.0f);**  **glEnd();**  **glFlush();**  **}**  **void display()**  **{**  **glClearColor(0.0f, 0.0f, 0.0f, 1.0f);**  **glClear(GL\_COLOR\_BUFFER\_BIT);**  **code();**  **glEnd();**  **glFlush();**  **}**  **int main(int argc, char\*\* argv)**  **{**  **glutInit(&argc, argv);**  **glutInitWindowSize(500,500);**  **glutInitWindowPosition(10,10);**  **glutCreateWindow("Task");**  **glutDisplayFunc(display);**  **gluOrtho2D(-10,10,-10,10);**  **glutMainLoop();**  **return 0;**  **}** |
| **Output Screenshot (Full Screen)-** |

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| **Question- 2**  Draw a tree |
| **Graph Plot (Picture)-** |
| **Code-**  **#include <windows.h> // for MS Windows**  **#include <GL/glut.h> // GLUT, include glu.h and gl.h**  **void code()**  **{**  **glPointSize(5.0);**  **glBegin(GL\_POLYGON);**  **glColor3f(0.3529f, 0.2235f, 0.0902f);**  **glBegin(GL\_POLYGON);**  **glVertex2f(6.0f, -1.0f);**  **glVertex2f(6.5f, -1.0f);**  **glVertex2f(6.5f, 2.0f);**  **glVertex2f(6.0f, 2.0f);**  **glEnd();**  **glColor3f(0.0f, 0.50f, 0.0f); //Green**  **glBegin(GL\_POLYGON);**  **glVertex2f(6.2f, 6.0f);**  **glVertex2f(8.0f, 4.4f);**  **glVertex2f(7.44f,4.4f);**  **glVertex2f(8.35f,3.21f);**  **glVertex2f(7.63f,3.21f);**  **glVertex2f(8.77f,2.0f);**  **glVertex2f(6.5f,2.0f);**  **glVertex2f(6.0f,2.0f);**  **glVertex2f(4.0f,2.0f);**  **glVertex2f(5.15f,3.21f);**  **glVertex2f(4.4f,3.21f);**  **glVertex2f(5.5f,4.4f);**  **glVertex2f(4.6f,4.4f);**  **}**  **void display()**  **{**  **glClearColor(0.5294f, 0.8078f, 0.9216f, 1.0f);**  **glClear(GL\_COLOR\_BUFFER\_BIT);**  **code();**  **glEnd();**  **glFlush();**  **}**  **int main(int argc, char\*\* argv)**  **{**  **glutInit(&argc, argv);**  **glutInitWindowSize(500,500);**  **glutInitWindowPosition(10,10);**  **glutCreateWindow("LAB TASK");**  **glutDisplayFunc(display);**  **gluOrtho2D(-10,20,-5,10);**  **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> // for MS Windows**  **#include <GL/glut.h> // GLUT, include glu.h and gl.h**  **void code()**  **{**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 128, 128); // Teal color**  **glVertex2f(-2.0f, -4.0f);**  **glVertex2f(2.0f, -4.0f);**  **glVertex2f(2.0f, -3.0f);**  **glVertex2f(0.8f, -2.0f);**  **glVertex2f(-0.8f, -2.0f);**  **glVertex2f(-2.0f, -3.0f);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glColor3ub(50, 50, 50); // Dark gray color for lamp post**  **glVertex2f(0.8f, -2.0f);**  **glVertex2f(0.8f, 3.3f);**  **glVertex2f(-0.8f, 3.3f);**  **glVertex2f(-0.8f, -2.0f);**  **glEnd();**  **// stand**  **glBegin(GL\_POLYGON);**  **glColor3ub(50, 50, 50); // Dark gray**  **glVertex2f(0.8f, 2.0f);**  **glVertex2f(4.0f, 3.0f);**  **glVertex2f(4.0f, 3.5f);**  **glVertex2f(0.8f, 2.5f);**  **glEnd();**  **// light**  **glBegin(GL\_POLYGON);**  **glColor3ub(255, 69, 0);**  **glVertex2f(4.0f, 2.25f);**  **glVertex2f(6.0f, 2.25f);**  **glVertex2f(6.0f, 4.0f);**  **glVertex2f(4.0f, 4.0f);**  **glEnd();**  **glFlush();**  **}**  **void display()**  **{**  **glClearColor(0.0f, 0.0f, 0.0f, 1.0f);**  **glClear(GL\_COLOR\_BUFFER\_BIT);**  **code();**  **glEnd();**  **glFlush();**  **}**  **int main(int argc, char\*\* argv)**  **{**  **glutInit(&argc, argv);**  **glutInitWindowSize(500,500);**  **glutInitWindowPosition(10,10);**  **glutCreateWindow("Task");**  **glutDisplayFunc(display);**  **gluOrtho2D(-10,10,-10,10);**  **glutMainLoop();**  **return 0;**  **}** |
| **Output Screenshot (Full Screen)-** |

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| **Question- 4**  Draw a bench |
| **Graph Plot (Picture)-** |
| **Code-**  **#include <windows.h> // for MS Windows**  **#include <GL/glut.h> // GLUT, include glu.h and gl.h**  **void code()**  **{**  **//hooves**  **glBegin(GL\_POLYGON);**  **glColor3ub(255, 255, 0); // Yellow color**  **glVertex2f(-5.2f, -2.74f);**  **glVertex2f(-4.3f, -2.76f);**  **glVertex2f(-4.0f, -0.5f);**  **glVertex2f(-4.7f, -0.5f);**  **glEnd();**  **//2nd hooves**  **glBegin(GL\_POLYGON);**  **glColor3ub(255, 255, 0); // Yellow color**  **glVertex2f(-3.88f, -1.86f);**  **glVertex2f(-3.24f, -1.86f);**  **glVertex2f(-3.5f, -0.5f);**  **glVertex2f(-4.0f, -0.5f);**  **glEnd();**  **//3rd h**  **glBegin(GL\_POLYGON);**  **glColor3ub(255, 255, 0); // Yellow color**  **glVertex2f(2.3f, -2.0f);**  **glVertex2f(3.0f, -2.0f);**  **glVertex2f(3.3f, -0.5f);**  **glVertex2f(2.8f, -0.5f);**  **glEnd();**  **//4th**  **glBegin(GL\_POLYGON);**  **glColor3ub(255, 255, 0); // Yellow color**  **glVertex2f(3.92f, -2.76f);**  **glVertex2f(4.74f, -2.76f);**  **glVertex2f(4.52f, -0.56f);**  **glVertex2f(3.9f, -0.5f);**  **glEnd();**  **// bench**  **glBegin(GL\_POLYGON);**  **glColor3ub(255, 0, 0); // Red color**  **glVertex2f(-5.8f, -0.50f);**  **glVertex2f(-5.82f, -0.04f);**  **glVertex2f(5.68f, 0.04f);**  **glVertex2f(5.7f, -0.50f);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glColor3ub(255, 255, 0); // Yellow color**  **glVertex2f(-5.82f, -0.04f);**  **glVertex2f(-4.5f, 0.8f);**  **glVertex2f(4.6f, 0.8f);**  **glVertex2f(5.68f, 0.02f);**  **glEnd();**  **// helana**  **glBegin(GL\_POLYGON);**  **glColor3ub(128, 128, 0); // Olive color**  **glVertex2f(-4.5f, 0.8f);**  **glVertex2f(-3.8f, 3.5f);**  **glVertex2f(4.0f, 3.5f);**  **glVertex2f(4.6f, 0.8f);**  **glEnd();**  **glFlush();**  **}**  **void display()**  **{**  **glClearColor(0.0f, 0.0f, 0.0f, 1.0f);**  **glClear(GL\_COLOR\_BUFFER\_BIT);**  **code();**  **}**  **int main(int argc, char\*\* argv)**  **{**  **glutInit(&argc, argv);**  **glutInitWindowSize(500,500);**  **glutInitWindowPosition(10,10);**  **glutCreateWindow("Task");**  **glutDisplayFunc(display);**  **gluOrtho2D(-10,10,-10,10);**  **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> // for MS Windows**  **#include <GL/glut.h> // GLUT, include glu.h and gl.h**  **void code()**  **{**  **// first hooves**  **glBegin(GL\_POLYGON);**  **glColor3ub(255, 255, 0); // Yellow color**  **glVertex2f(-5.2f, -2.74f);**  **glVertex2f(-4.3f, -2.74f);**  **glVertex2f(-4.2f, -0.5f);**  **glVertex2f(-4.7f, -0.5f);**  **glEnd();**  **// Second hooves**  **glBegin(GL\_POLYGON);**  **glColor3ub(255, 255, 0); // Yellow color**  **glVertex2f(-3.88f, -1.86f);**  **glVertex2f(-3.24f, -1.86f);**  **glVertex2f(-3.5f, -0.5f);**  **glVertex2f(-4.0f, -0.5f);**  **glEnd();**  **// Third hooves**  **glBegin(GL\_POLYGON);**  **glColor3ub(255, 255, 0); // Yellow color**  **glVertex2f(0.4f, -2.0f);**  **glVertex2f(1.2f, -2.0f);**  **glVertex2f(1.5f, -0.5f);**  **glVertex2f(0.9f, -0.5f);**  **glEnd();**  **// Fourth hooves**  **glBegin(GL\_POLYGON);**  **glColor3ub(255, 255, 0); // Yellow color**  **glVertex2f(2.2f, -2.7f);**  **glVertex2f(3.05f, -2.7f);**  **glVertex2f(2.7f, -0.5f);**  **glVertex2f(2.07f, -0.5f);**  **glEnd();**  **// bench**  **glBegin(GL\_POLYGON);**  **glColor3ub(255, 0, 0); // Red color**  **glVertex2f(-5.8f, -0.50f);**  **glVertex2f(-5.82f, -0.04f);**  **glVertex2f(3.34f, 0.0f);**  **glVertex2f(3.34f, -0.5f);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glColor3ub(255, 255, 0); // Yellow color**  **glVertex2f(-5.82f, -0.04f);**  **glVertex2f(-4.5f, 1.0f);**  **glVertex2f(3.5f, 1.0f);**  **glVertex2f(3.34f, 0.0f);**  **glEnd();**  **// helana**  **glBegin(GL\_POLYGON);**  **glColor3ub(128, 128, 0); // Olive color**  **glVertex2f(-4.5f, 1.0f);**  **glVertex2f(-4.0f, 3.0f);**  **glVertex2f(3.0f, 3.0f);**  **glVertex2f(3.5f, 1.0f);**  **glEnd();**  **// Lamp\_post**  **glBegin(GL\_POLYGON);**  **glColor3ub(0, 128, 128); // Teal color**  **glVertex2f(-10.0f, -3.0f);**  **glVertex2f(-8.0f, -3.0f);**  **glVertex2f(-8.0f, -2.0f);**  **glVertex2f(-8.4f, -1.3f);**  **glVertex2f(-9.5f, -1.3f);**  **glVertex2f(-10.0f, -2.0f);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glColor3ub(50, 50, 50); // Dark gray color for lamp post**  **glVertex2f(-9.5f, -1.3f);**  **glVertex2f(-8.4f, -1.3f);**  **glVertex2f(-8.4f, 6.0f);**  **glVertex2f(-9.5f, 6.0f);**  **glEnd();**  **// stand**  **glBegin(GL\_POLYGON);**  **glColor3ub(50, 50, 50); // Dark gray**  **glVertex2f(-8.4f, 4.76f);**  **glVertex2f(-6.42f, 5.2f);**  **glVertex2f(-6.41f, 5.7f);**  **glVertex2f(-8.4f, 5.2f);**  **glEnd();**  **// light**  **glBegin(GL\_POLYGON);**  **glColor3ub(255, 69, 0); // Orange color**  **glVertex2f(-6.41f, 4.7f);**  **glVertex2f(-5.0f, 4.7f);**  **glVertex2f(-5.0f, 6.0f);**  **glVertex2f(-6.41f, 6.0f);**  **glEnd();**  **//tree**  **glPointSize(5.0);**  **glBegin(GL\_POLYGON);**  **glColor3f(0.3529f, 0.2235f, 0.0902f);**  **glVertex2f(-14.0f, -2.0f);**  **glVertex2f(-13.23f, -2.0f);**  **glVertex2f(-13.23f, 4.0f);**  **glVertex2f(-14.0f, 4.0f);**  **glEnd();**  **glColor3f(0.0f, 0.50f, 0.0f); // Green color**  **glBegin(GL\_POLYGON);**  **glVertex2f(-13.6f, 8.41f);**  **glVertex2f(-11.6f, 6.82f);**  **glVertex2f(-12.4f, 6.82f);**  **glVertex2f(-11.2f, 5.2f);**  **glVertex2f(-11.9f, 5.2f);**  **glVertex2f(-11.0f, 4.0f);**  **glVertex2f(-16.4f, 4.0f);**  **glVertex2f(-15.2f, 5.2f);**  **glVertex2f(-15.98f, 5.2f);**  **glVertex2f(-14.4f, 6.82f);**  **glVertex2f(-15.2f, 6.82f);**  **glEnd();**  **// Bulding**  **glPointSize(5.0);**  **glBegin(GL\_POLYGON);**  **glColor3ub(139, 69, 19);**  **glVertex2f(6.0f, -4.0f);**  **glVertex2f(14.0f, -4.0f);**  **glVertex2f(14.0f, 11.0f);**  **glVertex2f(6.0f, 11.0f);**  **glEnd();**  **// 5th window**  **glBegin(GL\_POLYGON);**  **glColor3ub(209, 203, 27); // Yellow color**  **glVertex2f(7.0f, 9.0f); // Top-left vertex**  **glVertex2f(9.0f, 9.0f); // Top-right vertex**  **glVertex2f(9.0f, 10.0f); // Bottom-right vertex**  **glVertex2f(7.0f, 10.0f); // Bottom-left vertex**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glColor3ub(209, 203, 27); // Yellow color**  **glVertex2f(11.0f, 9.0f);**  **glVertex2f(13.0f, 9.0f);**  **glVertex2f(13.0f, 10.0f);**  **glVertex2f(11.0f, 10.0f);**  **glEnd();**  **// 4th window**  **glBegin(GL\_POLYGON);**  **glColor3ub(209, 203, 27); // Yellow color**  **glVertex2f(7.0f, 6.0f);**  **glVertex2f(9.0f, 6.0f);**  **glVertex2f(9.0f, 7.0f);**  **glVertex2f(7.0f, 7.0f);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glColor3ub(209, 203, 27); // Yellow color**  **glVertex2f(11.0f, 6.0f);**  **glVertex2f(13.0f, 6.0f);**  **glVertex2f(13.0f, 7.0f);**  **glVertex2f(11.0f, 7.0f);**  **glEnd();**  **// 3rd window**  **glBegin(GL\_POLYGON);**  **glColor3ub(209, 203, 27); // Yellow color**  **glVertex2f(7.0f, 3.0f);**  **glVertex2f(9.0f, 3.0f);**  **glVertex2f(9.0f, 4.0f);**  **glVertex2f(7.0f, 4.0f);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glColor3ub(209, 203, 27); // Yellow color**  **glVertex2f(11.0f, 4.0f);**  **glVertex2f(13.0f, 4.0f);**  **glVertex2f(13.0f, 3.0f);**  **glVertex2f(11.0f, 3.0f);**  **glEnd();**  **// 2nd window**  **glBegin(GL\_POLYGON);**  **glColor3ub(209, 203, 27); // Yellow color**  **glVertex2f(7.0f, 1.0f);**  **glVertex2f(9.0f, 1.0f);**  **glVertex2f(9.0f, 0.0f);**  **glVertex2f(7.0f, 0.0f);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glColor3ub(209, 203, 27); // Yellow color**  **glVertex2f(11.0f, 1.0f);**  **glVertex2f(13.0f, 1.0f);**  **glVertex2f(13.0f, 0.0f);**  **glVertex2f(11.0f, 0.0f);**  **glEnd();**  **// 1st window**  **glBegin(GL\_POLYGON);**  **glColor3ub(209, 203, 27); // Yellow color**  **glVertex2f(7.0f, -2.0f);**  **glVertex2f(7.0f, -3.0f);**  **glVertex2f(8.6f, -3.0f);**  **glVertex2f(8.6f, -2.0f);**  **glEnd();**  **glBegin(GL\_POLYGON);**  **glColor3ub(209, 203, 27); // Yellow color**  **glVertex2f(11.4f, -3.0f);**  **glVertex2f(13.0f, -3.0f);**  **glVertex2f(13.0f, -2.0f);**  **glVertex2f(11.4f, -2.0f);**  **glEnd();**  **// Door**  **glBegin(GL\_POLYGON);**  **glColor3ub(212, 187,126);**  **glVertex2f(9.23f, -4.0f);**  **glVertex2f(10.82f, -4.0f);**  **glVertex2f(10.82f, -1.7f);**  **glVertex2f(9.23f, -1.7f);**  **glEnd();**  **// Floor**  **glPointSize(5.0);**  **glLineWidth(5.0);**  **glBegin(GL\_LINES);**  **glColor3ub(122, 172, 33); // Brown color**  **glVertex2f(6.0f, -4.0f);**  **glVertex2f(14.0f, -4.0f);**  **glVertex2f(14.0f, -1.0f);**  **glVertex2f(6.0f, -1.0f);**  **glVertex2f(14.0f, 2.0f);**  **glVertex2f(6.0f, 2.0f);**  **glVertex2f(14.0f, 5.0f);**  **glVertex2f(6.0f, 5.0f);**  **glVertex2f(14.0f, 8.0f);**  **glVertex2f(6.0f, 8.0f);**  **glVertex2f(14.0f, 11.0f);**  **glVertex2f(6.0f, 11.0f);**  **glEnd();**  **glFlush();**  **}**  **void display()**  **{**  **glClearColor(0.0f, 0.0f, 0.0f, 1.0f);**  **glClear(GL\_COLOR\_BUFFER\_BIT);**  **code();**  **}**  **int main(int argc, char\*\* argv)**  **{**  **glutInit(&argc, argv);**  **glutInitWindowSize(500,500);**  **glutInitWindowPosition(10,10);**  **glutCreateWindow("Task");**  **glutDisplayFunc(display);**  **gluOrtho2D(-18,15,-15,18);**  **glutMainLoop();**  **return 0;**  **}** |
| **Output Screenshot (Full Screen)-** |