**SCHOOL OF COMPUTER SCIENCE**

**UNIVERSITY OF PETROLEUM AND ENERGY STUDIES**

**DEHRADUN, UTTARAKHAND**



**COMPUTER GRAPHICS**

**LABORATORY FILE**

**(2024-2025)**

**For**

**Vth Semester**

**Submitted To: Submitted By:**

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**LAB EXPERIMENT – 9**

**Creating 3D Shapes like Cube, Sphere and others.**

Creating 3D Shapes like Cube, Sphere and others.

#include <GL/freeglut.h>

bool showSphere = true; // Toggle between sphere and cube

// Function to draw a wireframe sphere

void drawWireframeSphere() {

glColor3f(1.0f, 1.0f, 1.0f); // Set color to white

glLineWidth(0.5f); // Ensure thin lines

glutWireSphere(1.0, 20, 20); // Draw a wireframe sphere with radius 1 and resolution of 20 slices and stacks

}

// Function to draw a wireframe cube

void drawWireframeCube() {

glColor3f(1.0f, 1.0f, 1.0f); // Set color to white

glutWireCube(1.0); // Draw a wireframe cube with side length 1

}

// Display function to render the isometric view of the chosen object

void display() {

glClear(GL\_COLOR\_BUFFER\_BIT | GL\_DEPTH\_BUFFER\_BIT); // Clear color and depth buffers

// Set up the isometric view

glMatrixMode(GL\_MODELVIEW);

glLoadIdentity();

glTranslatef(0.0f, 0.0f, -3.0f); // Position object further from the camera

glRotatef(30, 1.0f, 1.0f, 0.0f); // Rotate for isometric effect

if (showSphere) {

drawWireframeSphere(); // Draw the sphere

}

else {

drawWireframeCube(); // Draw the cube

}

glutSwapBuffers(); // Swap buffers for double buffering

}

// Initialize OpenGL settings

void init() {

glEnable(GL\_DEPTH\_TEST); // Enable depth testing

glClearColor(0.0f, 0.0f, 0.0f, 1.0f); // Set background to black

// Set up projection

glMatrixMode(GL\_PROJECTION);

gluPerspective(85.0, 1.0, 1.0, 100.0); // Perspective projection for depth

}

// Keyboard function to toggle between sphere and cube

void keyboard(unsigned char key, int x, int y) {

if (key == 't') {

showSphere = !showSphere; // Toggle object

glutPostRedisplay(); // Request display update

}

}

int main(int argc, char\*\* argv) {

glutInit(&argc, argv);

glutInitDisplayMode(GLUT\_DOUBLE | GLUT\_RGB | GLUT\_DEPTH); // Double buffering and depth

glutInitWindowSize(600, 600); // Set window size

glutCreateWindow("Isometric View of Wireframe Sphere and Cube - Akshat Negi"); // Window title

init(); // Initialize OpenGL state

glutDisplayFunc(display); // Register display callback function

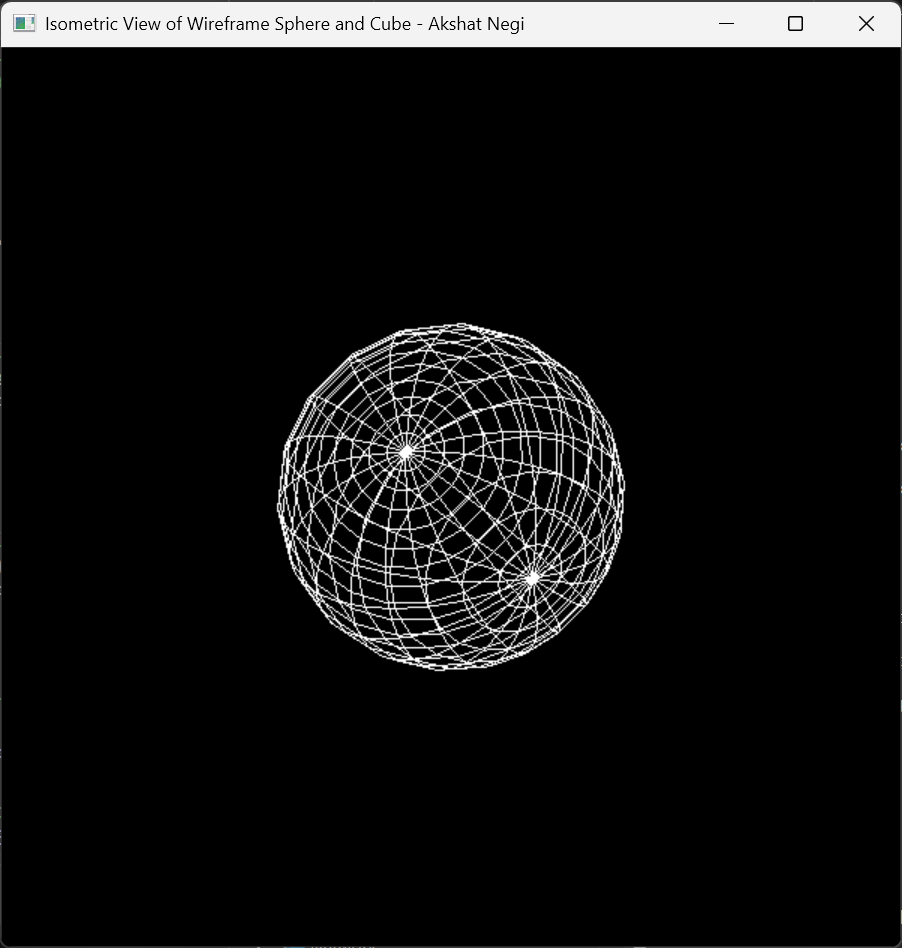
glutKeyboardFunc(keyboard); // Register keyboard callback function

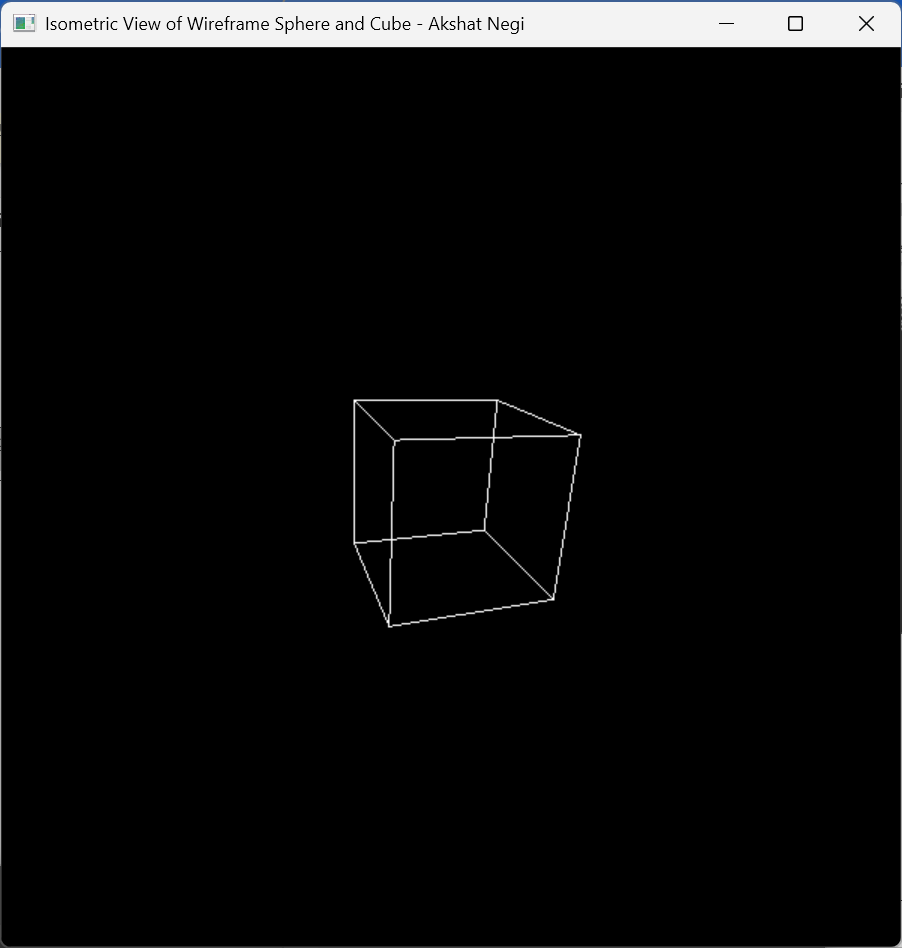
glutMainLoop();

return 0;

}

This program should display either the sphere or cube in an isometric view, allowing you to switch between them by pressing 't'.

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