**DEERWALK INSTITUTE OF TECHNOLOGY**

**Tribhuvan University**

**Faculties of Computer Science**

**A logo of a sea creature

Description automatically generated**

**Bachelors of Science in Computer Science and Information Technology (BSc. CSIT)**

**Course: Computer Graphics (CSC214)**

**Year/Semester: II/III**

**A Lab report on:**

**Introduction to Open GL**

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**THEORY:**

OpenGL is the most widely adopted 2D and 3D graphics API in the industry, bringing thousands of applications to a wide variety of computer platforms. It is a window-system and operating-system independent as well as network-transparent. OpenGL enables developers of software for PC, workstation, and supercomputing hardware to create high-performance, visually compelling graphics software applications, in markets such as CAD, content creation, energy, entertainment, game development, manufacturing, medical, and virtual reality. OpenGL exposes all the features of the latest graphics hardware.

**Program**

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| --- |
| *#include <GLFW/glfw3.h>*  *#include <math.h>*  *// Rotation angles float angleX = 0.0f, angleY = 0.0f;*  *// Function to draw a cube void drawCube() { glBegin(GL\_QUADS);*  *// Front face glColor3f(1, 0, 0); // Red glVertex3f(-0.5, -0.5, 0.5); glVertex3f(0.5, -0.5, 0.5); glVertex3f(0.5, 0.5, 0.5); glVertex3f(-0.5, 0.5, 0.5);*  *// Back face glColor3f(0, 1, 0); // Green glVertex3f(-0.5, -0.5, -0.5); glVertex3f(-0.5, 0.5, -0.5); glVertex3f(0.5, 0.5, -0.5); glVertex3f(0.5, -0.5, -0.5);*  *// Left face glColor3f(0, 0, 1); // Blue glVertex3f(-0.5, -0.5, -0.5); glVertex3f(-0.5, -0.5, 0.5); glVertex3f(-0.5, 0.5, 0.5); glVertex3f(-0.5, 0.5, -0.5);*  *// Right face glColor3f(1, 1, 0); // Yellow glVertex3f(0.5, -0.5, -0.5); glVertex3f(0.5, 0.5, -0.5); glVertex3f(0.5, 0.5, 0.5); glVertex3f(0.5, -0.5, 0.5);*  *// Top face glColor3f(1, 0, 1); // Magenta glVertex3f(-0.5, 0.5, -0.5); glVertex3f(-0.5, 0.5, 0.5); glVertex3f(0.5, 0.5, 0.5); glVertex3f(0.5, 0.5, -0.5);*  *// Bottom face glColor3f(0, 1, 1); // Cyan glVertex3f(-0.5, -0.5, -0.5); glVertex3f(0.5, -0.5, -0.5); glVertex3f(0.5, -0.5, 0.5); glVertex3f(-0.5, -0.5, 0.5);*  *glEnd();*  *}*  *int main() {*  *// Initialize GLFW if (!glfwInit()) return -1;*  *// Create a windowed mode window*  *GLFWwindow\* window = glfwCreateWindow(600, 600, "3D Rotating Cube", NULL,*  *NULL);*  *if (!window) { glfwTerminate();*  *return -1;*  *}*  *glfwMakeContextCurrent(window);*  *// Enable depth testing for proper 3D rendering glEnable(GL\_DEPTH\_TEST);*  *// Main loop*  *while (!glfwWindowShouldClose(window)) {*  *glClear(GL\_COLOR\_BUFFER\_BIT | GL\_DEPTH\_BUFFER\_BIT);*  *glLoadIdentity();*  *// Apply rotation glRotatef(angleX, 1, 0, 0); glRotatef(angleY, 0, 1, 0);*  *// Draw the cube drawCube();*  *// Increment rotation angles angleX += 0.5f; angleY += 0.3f;*  *glfwSwapBuffers(window);*  *glfwPollEvents();*  *}*  *glfwTerminate(); return 0; }*  **Output**  A screenshot of a computer  AI-generated content may be incorrect. |