**Lab Practice-7**

Submission Guidelines-

* Rename the file with your serial number only
* Must submit within time that will be discussed in class VUES
* Must include resources for all the section in the table

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| **Question-**  Create a simple day and night scenario that will automatically change from day to night |
| **Graph**  **A screenshot of a computer  Description automatically generated** |
| **Code-**  **#include <GL/glut.h>**  **#include <cmath>**  **bool isDay = true;**  **int windowWidth = 800, windowHeight = 600;**  **void timer(int value) {**  **isDay = !isDay;**  **glutPostRedisplay();**  **glutTimerFunc(5000, timer, 0);**  **}**  **void drawCircle(float cx, float cy, float radius, int segments) {**  **glBegin(GL\_TRIANGLE\_FAN);**  **glVertex2f(cx, cy);**  **for (int i = 0; i <= segments; ++i) {**  **float angle = 2.0f \* 3.1415926f \* float(i) / float(segments);**  **float x = radius \* cosf(angle);**  **float y = radius \* sinf(angle);**  **glVertex2f(cx + x, cy + y);**  **}**  **glEnd();**  **}**  **void drawGrass() {**  **glColor3f(0.0f, 0.6f, 0.0f);**  **glBegin(GL\_QUADS);**  **glVertex2f(-1.0f, -1.0f);**  **glVertex2f(1.0f, -1.0f);**  **glVertex2f(1.0f, -0.5f);**  **glVertex2f(-1.0f, -0.5f);**  **glEnd();**  **}**  **void display() {**  **glClearColor(**  **isDay ? 0.4f : 0.0f,**  **isDay ? 0.8f : 0.0f,**  **isDay ? 1.0f : 0.1f,**  **1.0f**  **);**  **glClear(GL\_COLOR\_BUFFER\_BIT);**  **glLoadIdentity();**  **drawGrass();**  **if (isDay) glColor3f(1.0f, 1.0f, 0.0f);**  **else glColor3f(1.0f, 1.0f, 1.0f);**  **drawCircle(0.6f, 0.6f, 0.1f, 100);**  **glFlush();**  **}**  **void reshape(int w, int h) {**  **glViewport(0, 0, w, h);**  **glMatrixMode(GL\_PROJECTION);**  **glLoadIdentity();**  **gluOrtho2D(-1, 1, -1, 1);**  **glMatrixMode(GL\_MODELVIEW);**  **}**  **int main(int argc, char\*\* argv) {**  **glutInit(&argc, argv);**  **glutInitDisplayMode(GLUT\_SINGLE | GLUT\_RGB);**  **glutInitWindowSize(windowWidth, windowHeight);**  **glutCreateWindow("Day and Night Scene with Grass");**  **glutDisplayFunc(display);**  **glutReshapeFunc(reshape);**  **glutTimerFunc(0, timer, 0);**  **glutMainLoop();**  **return 0;**  **}** |
| **Output Screenshot (Full Screen)-**  A screen shot of a computer  Description automatically generated  A screenshot of a computer  Description automatically generated |

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| **Question-**  Create a simple day and night scenario using keyboard interaction. The key ‘D’ or ‘d’ will initiate the day mode and the key ‘N’ or ‘n’ will initiate the night mode. |
| **Graph**  **A screenshot of a computer  Description automatically generated** |
| **Code-**  **#include <GL/glut.h>**  **#include <cmath>**  **bool isDay = true;**  **int windowWidth = 800, windowHeight = 600;**  **void drawCircle(float cx, float cy, float radius, int segments) {**  **glBegin(GL\_TRIANGLE\_FAN);**  **glVertex2f(cx, cy);**  **for (int i = 0; i <= segments; ++i) {**  **float angle = 2.0f \* 3.1415926f \* float(i) / float(segments);**  **float x = radius \* cosf(angle);**  **float y = radius \* sinf(angle);**  **glVertex2f(cx + x, cy + y);**  **}**  **glEnd();**  **}**  **void drawGrass() {**  **glColor3f(0.0f, 0.6f, 0.0f);**  **glBegin(GL\_QUADS);**  **glVertex2f(-1.0f, -1.0f);**  **glVertex2f(1.0f, -1.0f);**  **glVertex2f(1.0f, -0.5f);**  **glVertex2f(-1.0f, -0.5f);**  **glEnd();**  **}**  **void display() {**  **glClearColor(**  **isDay ? 0.4f : 0.0f,**  **isDay ? 0.8f : 0.0f,**  **isDay ? 1.0f : 0.1f,**  **1.0f**  **);**  **glClear(GL\_COLOR\_BUFFER\_BIT);**  **glLoadIdentity();**  **drawGrass();**  **if (isDay) glColor3f(1.0f, 1.0f, 0.0f);**  **else glColor3f(1.0f, 1.0f, 1.0f);**  **drawCircle(0.6f, 0.6f, 0.1f, 100);**  **glFlush();**  **}**  **void reshape(int w, int h) {**  **glViewport(0, 0, w, h);**  **glMatrixMode(GL\_PROJECTION);**  **glLoadIdentity();**  **gluOrtho2D(-1, 1, -1, 1);**  **glMatrixMode(GL\_MODELVIEW);**  **}**  **void keyboard(unsigned char key, int x, int y) {**  **if (key == 'd' || key == 'D') {**  **isDay = true;**  **} else if (key == 'n' || key == 'N') {**  **isDay = false;**  **}**  **glutPostRedisplay();**  **}**  **int main(int argc, char\*\* argv) {**  **glutInit(&argc, argv);**  **glutInitDisplayMode(GLUT\_SINGLE | GLUT\_RGB);**  **glutInitWindowSize(windowWidth, windowHeight);**  **glutCreateWindow("Day and Night Scene (Keyboard)");**  **glutDisplayFunc(display);**  **glutReshapeFunc(reshape);**  **glutKeyboardFunc(keyboard);**  **glutMainLoop();**  **return 0;**  **}** |
| **Output Screenshot (Full Screen)-**  **A screenshot of a computer  Description automatically generated**  A screenshot of a computer  Description automatically generated |