

# TUGAS 4

## KOMPUTER GRAFIK (B)



DISUSUN OLEH:

Rezki anwar - 4520210033

Teknik Informatika Universitas Pancasila  
Tahun ajaran 2022/2023

## CODE PROGRAM: Phases of the Moon

```
#ifdef __APPLE_CC__
#include <GLUT/glut.h>
#else
#include <GL/glut.h>
#endif
#include <cmath>

class Moon {
    int displayListId;
public:
    void create() {
        displayListId = glGenLists(1);
        glNewList(displayListId, GL_COMPILE);
        GLfloat direction[] = {-1.0, -1.0, -1.0, 0.0};
        glLightfv(GL_LIGHT0, GL_POSITION, direction);
        glutSolidSphere(1.0, 25, 25);
        glEndList();
    }
    void draw() {
        glCallList(displayListId);
    }
};

static Moon moon;

class Orbiter {
    double radius;
    double u;
```

public:

```
Orbiter(double radius): radius(radius), u(0.0) {}  
void advance(double delta) {u += delta;}  
void getPosition(double& x, double& y, double& z) {  
    x = radius * cos(u);  
    y = 0;  
    z = radius * sin(u);  
}  
};
```

```
static Orbiter orbiter(5.0);
```

```
void display() {  
    glClear(GL_COLOR_BUFFER_BIT | GL_DEPTH_BUFFER_BIT);  
    glMatrixMode(GL_MODELVIEW);  
    glPushMatrix();  
    glLoadIdentity();  
    double x, y, z;  
    orbiter.getPosition(x, y, z);  
    gluLookAt(x, y, z, 0.0, 0.0, 0.0, 1.0, 0.0);  
    moon.draw();  
    glPopMatrix();  
    glutSwapBuffers();  
}
```

```
void timer(int v) {  
    orbiter.advance(0.01);  
    glutPostRedisplay();  
    glutTimerFunc(1000/60, timer, v);  
}
```

```
void reshape(GLint w, GLint h) {  
    glViewport(0, 0, w, h);
```

```

glMatrixMode(GL_PROJECTION);
glLoadIdentity();
gluPerspective(40.0, GLfloat(w) / GLfloat(h), 1.0, 10.0);
}

void init() {
    glEnable(GL_DEPTH_TEST);
    GLfloat yellow[] = {1.0, 1.0, 0.5, 1.0};
    glLightfv(GL_LIGHT0, GL_DIFFUSE, yellow);
    glEnable(GL_LIGHTING);
    glEnable(GL_LIGHT0);
    moon.create();
}

int main(int argc, char** argv) {
    glutInit(&argc, argv);
    glutInitDisplayMode(GLUT_DOUBLE | GLUT_RGB | GLUT_DEPTH);
    glutInitWindowPosition(80, 80);
    glutInitWindowSize(500, 500);
    glutCreateWindow("Rezki anwar_4520210033");
    glutDisplayFunc(display);
    glutTimerFunc(100, timer, 0);
    glutReshapeFunc(reshape);
    init();
    glutMainLoop();
}

```

## RUN PROGRAM:

