UTS
KOMPUTER GRAFIK (B)

DISUSUN OLEH:

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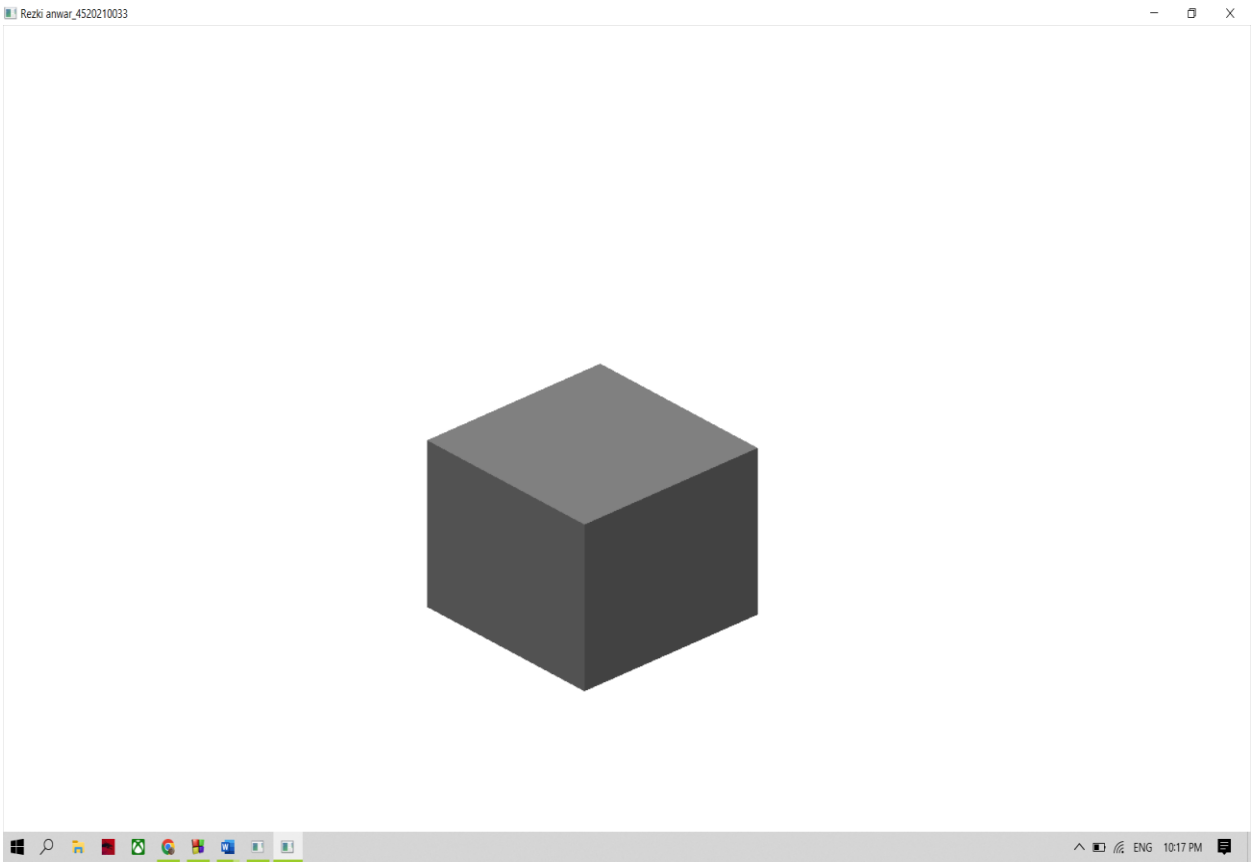
1. **Source Code Objek pertama: Kubus**

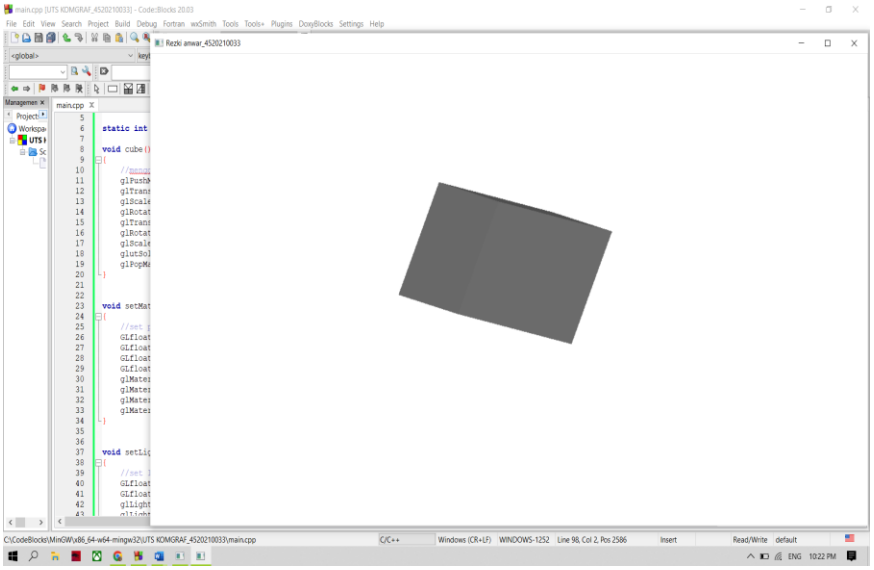
```
#include <gl\GL.h>
#include <gl\GLU.h>
#include <gl\glut.h>
#include <math.h>

static int year = 0, day = 0;

void cube()
{
    //menggambar kubus dan transformasi tarnslasi ke titik 0.5 0.5 0.5
dan skala 1 1 1
    glPushMatrix();
    glTranslated(0.-2,0.0,0.1);//cube
    glScaled(1.0,1.0,1.0);
    glRotatef ((GLfloat) year, 1.0, 0.1, 0.0);
    glTranslatef (2.0, 0.0, 0.0);
    glRotatef ((GLfloat) day, 0.0, 1.0, 0.0);
    glScalef(0.5,0.5,0.5);
    glutSolidCube(1.0);
    glPopMatrix();
}


void setMaterial()
{
    //set properties of surfaces material
    GLfloat mat_ambient[] = {0.7f,0.7f,0.7f,1.0f}; // ada 4 jenis
material yang dipakai, dengan kombinasi warna tertentu
    GLfloat mat_diffuse[] = {0.6f,0.6f,0.6f,1.0f};
    GLfloat mat_specular[] = {1.0f,1.0f,1.0f,1.0f};
    GLfloat mat_shininess[] = {50.0f};
    glMaterialfv(GL_FRONT,GL_AMBIENT,mat_ambient);
    glMaterialfv(GL_FRONT,GL_DIFFUSE,mat_diffuse);
    glMaterialfv(GL_FRONT,GL_SPECULAR,mat_specular);
    glMaterialfv(GL_FRONT,GL_SHININESS,mat_shininess);
}


void setLighting()
{
    //set light sources
```

```
    GLfloat lightIntensity[] = {0.7f,0.7f,0.7f,1.0f};//mensetting
pencahayaan
    GLfloat light_position[] = {2.0f,6.0f,3.0f,0.0f};
    glLightfv(GL_LIGHT0,GL_DIFFUSE,lightIntensity);
    glLightfv(GL_LIGHT0,GL_POSITION,light_position);
}

void setViewport()
{
    glMatrixMode(GL_PROJECTION);
    glLoadIdentity();
    double winHt = 1.0;//half height of the window
    glOrtho(-winHt*64/48,winHt*64/48,-winHt,winHt,0.1,100.0);
}


void setCamera()
{
    //set the camera
    glMatrixMode(GL_MODELVIEW);
    glLoadIdentity();
    gluLookAt(3.3,3.3,3.0,0,0.25,0,0.0,1.0,0.0);
}


void displayObject()
{
    setMaterial();
    setLighting();
    setViewport();
    setCamera();
    //startDrawing
    glClear(GL_COLOR_BUFFER_BIT|GL_DEPTH_BUFFER_BIT);
    cube();//memanggil fungsi menggambar kubus
    glFlush();//mengirim smua objek untuk dirender
}

void keyboard (unsigned char key, int x, int y)
{
    switch (key) {
        case 'X':
             day = (day + 10) % 360;
             glutPostRedisplay();
             break;
        case 'x':
```

```
            day = (day - 10) % 360;
            glutPostRedisplay();
            break;
        case 'y':
            year = (year + 5) % 360;
            glutPostRedisplay();
            break;
             case 'Y':
            year = (year - 5) % 360;
            glutPostRedisplay();
            break;
        default:
           break;
    }
}
int main(int argc, char **argv)
{
    glutInit(&argc,argv);
    glutInitDisplayMode(GLUT_SINGLE|GLUT_RGB|GLUT_DEPTH);
    glutInitWindowSize(640,480);
    glutInitWindowPosition(100,100);
    glutCreateWindow("Rezki anwar_4520210033");
    glutDisplayFunc(displayObject);//fungsi dari display object yang
menggabungkan kubus lighting material dan kamera
    glEnable(GL_LIGHTING);
    glEnable(GL_LIGHT0);
    glShadeModel(GL_SMOOTH);
    glEnable(GL_DEPTH_TEST);
    glEnable(GL_NORMALIZE);
    glutKeyboardFunc(keyboard);
    glClearColor(1.0f,1.0f,1.0f,0.0f);
    glViewport(0,0,640,480);
    glutMainLoop();
}
```



Jika menekan tombol ‘y’, ‘Y’ , ‘x’ dan ‘X’ objek akan melakukan transformasi secara translasi, rotasi, scaling



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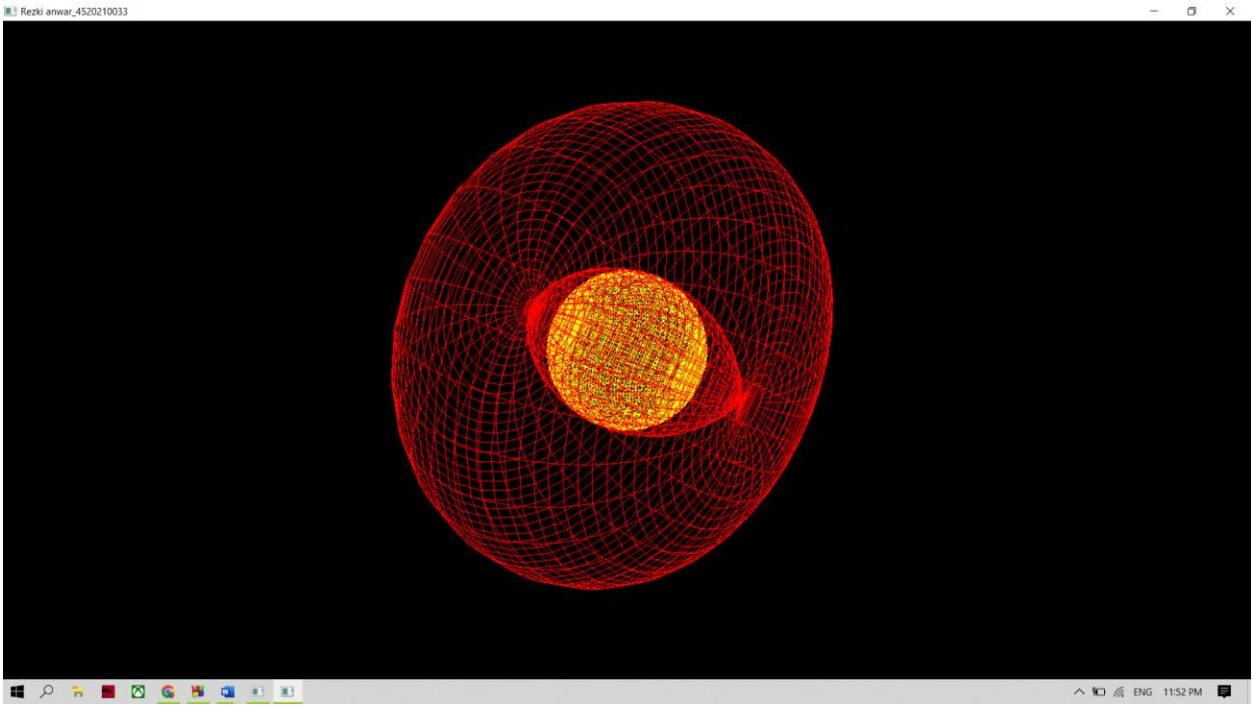
2. Source Code Objek Kedua: Lampion

```
#include <GL/glut.h>
#include <windows.h>

static int putar = 0;
int w=100, h=-10, z=0;
int x1=0, y1=0, z1=0, sudut=0;
void renderScene (void) {
static float alpha =0;
glClear(GL_COLOR_BUFFER_BIT | GL_DEPTH_BUFFER_BIT);
glClearColor (0, 0, 0, 0);
glLoadIdentity ();
glTranslatef (0, 0, h);
glScaled(1.0,1.0,1.0);
glRotatef (sudut, x1, y1, z1);
glRotatef (alpha,1,1,1);
glScalef(0.5,0.5,0.5);
glColor3f(1, 1, 0);
alpha = alpha +0.5;
//glutWireCube (3);//fungsi kubus
//glutSolidCube(3);//kubus penuh warna
glutWireSphere(2,90,90);//fungsi bola
//glutWireCone(2, 4, 25, 25);//fungsi kerucut
glColor3f(1,0,0);
glutWireTorus (4, 2, 90, 30);//fungsi donat
//glutWireTeapot (4);//fungsi ceret
//glutSolidIcosahedron ();//fungsi delima
//glutWireDodecahedron ();//fungsi bola
//glutWireTetrahedron();//fungsi piramida
glutSwapBuffers ();
}
void resize (int w1, int h1) {
glViewport (0, 0, w1, h1);
glMatrixMode (GL_PROJECTION);
glLoadIdentity ();
gluPerspective (45.0,(float) w1/(float) h1,1.0, 100.0);
glMatrixMode (GL_MODELVIEW);
glLoadIdentity ();
}
```

```
      void keyboard (unsigned char key, int x, int y)
{
    switch (key) {
        case 'x':
             putar = (putar + 10) % 360;
             glutPostRedisplay();
             break;
        case 'y':
            putar = (putar - 10) % 360;
             glutPostRedisplay();
             break;
        case 'z':
             putar = (putar + 5) % 360;
             glutPostRedisplay();
             break;
        default:
            break;
    }
}

int main (int argc, char **argv) {
glutInit (&argc, argv);
glutInitDisplayMode(GLUT_DOUBLE | GLUT_DEPTH | GLUT_RGBA);
glutInitWindowPosition (100,100);
glutInitWindowSize (w,h);
glutCreateWindow ("Rezki anwar_4520210033");
gluOrtho2D (-w/2,w/2,-h/2,h/2);
glutDisplayFunc (renderScene);
glutReshapeFunc (resize);
glutKeyboardFunc(keyboard);
glutMainLoop ();
}
```



Jika menekan tombol ‘x’,’y’,dan ‘z’ objek akan melakukan transformasi secara translasi, rotasi, scaling