



FAKULTAS TEKNIK

UNIVERSITAS NEGERI YOGYAKARTA

LAB. SHEET PRAKTIKUM GRAFIKA KOMPUTER 1

No. : ST/EKA/PTI223/08

Revisi : 02

Senin 010510

Hal. 1 dari 14 hal.

Sem.: Genap

Texture

4 x 50 menit

Pengantar

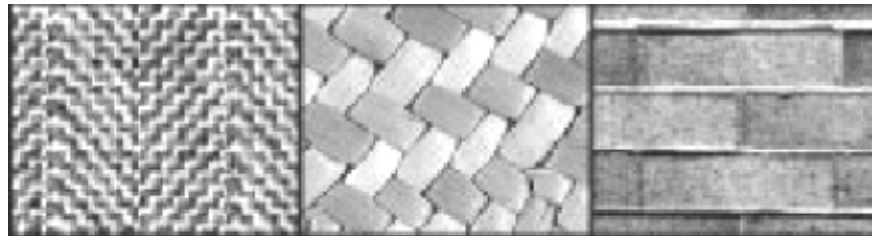
Tekstur adalah tampilan permukaan (corak) dari suatu benda yang dapat dinilai dengan cara dilihat atau diraba. Pada prakteknya, tekstur sering dikategorikan sebagai corak dari suatu permukaan benda, misalnya permukaan karpet, baju, kulit kayu, dan lain sebagainya.

Tekstur merupakan karakteristik intrinsik dari suatu citra yang terkait dengan tingkat kekasaran (*roughness*), granularitas (*granulation*), dan keteraturan (*regularity*) susunan struktural piksel. Aspek tekstural dari sebuah citra dapat dimanfaatkan sebagai dasar dari segmentasi, klasifikasi, maupun interpretasi citra.

Tekstur dapat didefinisikan sebagai fungsi dari variasi spasial intensitas piksel (nilai keabuan) dalam citra. Berdasarkan strukturnya, tekstur dapat diklasifikasikan dalam dua golongan :

- **Makrostruktur**

Tekstur makrostruktur memiliki perulangan pola lokal secara periodik pada suatu daerah citra, biasanya terdapat pada pola-pola buatan manusia dan cenderung mudah untuk direpresentasikan secara matematis.



Gambar 1. Contoh tekstur makrostruktur

- **Mikrostruktur**

Pada tekstur mikrostruktur, pola-pola lokal dan perulangan tidak terjadi begitu jelas, sehingga tidak mudah untuk memberikan definisi tekstur yang komprehensif.



Gambar 2. Contoh tekstur mikrostruktur



FAKULTAS TEKNIK

UNIVERSITAS NEGERI YOGYAKARTA

LAB. SHEET PRAKTIKUM GRAFIKA KOMPUTER 1

No. : ST/EKA/PTI223/08

Revisi : 02

Senin 010510

Hal. 2 dari 14 hal.

Sem.: Genap

Texture

4 x 50 menit

Program 1

```
/* Program evaluasi untuk mengevaluasi kurva
```

```
* permukaan secara otomatis menentukan koordinat texture
```

```
*/
```

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

```
#include <stdlib.h>
```

```
#include <math.h>
```

```
GLfloat ctrlpoints[4][4][3] = {  
    {{ -1.5, -1.5, 4.0}, { -0.5, -1.5, 2.0},  
      { 0.5, -1.5, -1.0}, { 1.5, -1.5, 2.0}},  
    {{ -1.5, -0.5, 1.0}, { -0.5, -0.5, 3.0},  
      { 0.5, -0.5, 0.0}, { 1.5, -0.5, -1.0}},  
    {{ -1.5, 0.5, 4.0}, { -0.5, 0.5, 0.0},  
      { 0.5, 0.5, 3.0}, { 1.5, 0.5, 4.0}},  
    {{ -1.5, 1.5, -2.0}, { -0.5, 1.5, -2.0},  
      { 0.5, 1.5, 0.0}, { 1.5, 1.5, -1.0}}  
};
```

```
GLfloat texpts[2][2][2] = {{{0.0, 0.0}, {0.0, 1.0}},  
                           {{1.0, 0.0}, {1.0, 1.0}}};
```

```
void display(void)
```

```
{  
    glClear(GL_COLOR_BUFFER_BIT | GL_DEPTH_BUFFER_BIT);  
    glColor3f(1.0, 1.0, 1.0);  
    glEvalMesh2(GL_FILL, 0, 20, 0, 20);  
    glFlush();  
}
```

```
#define imageWidth 64
```

```
#define imageHeight 64
```

```
GLubyte image[3*imageWidth*imageHeight];
```

```
void makelImage(void)
```

```
{  
    int i, j;  
    float ti, tj;  
  
    for (i = 0; i < imageWidth; i++) {  
        ti = 2.0*3.14159265*i/imageWidth;  
        for (j = 0; j < imageHeight; j++) {  
            tj = 2.0*3.14159265*j/imageHeight;
```



FAKULTAS TEKNIK

UNIVERSITAS NEGERI YOGYAKARTA

LAB. SHEET PRAKTIKUM GRAFIKA KOMPUTER 1

No. : ST/EKA/PTI223/08

Revisi : 02

Senin 010510

Hal. 3 dari 14 hal.

Sem.: Genap

Texture

4 x 50 menit

```
    image[3*(imageHeight*i+j)] = (GLubyte) 127*(1.0+sin(ti));
    image[3*(imageHeight*i+j)+1] = (GLubyte) 127*(1.0+cos(2*tj));
    image[3*(imageHeight*i+j)+2] = (GLubyte) 127*(1.0+cos(ti+tj));
}
}
}

void init(void)
{
    glMap2f(GL_MAP2_VERTEX_3, 0, 1, 3, 4, 0, 1, 12, 4, &ctrlpoints[0][0][0]);
    glMap2f(GL_MAP2_TEXTURE_COORD_2, 0, 1, 2, 2, 0, 1, 4, 2, &texpts[0][0][0]);
    glEnable(GL_MAP2_TEXTURE_COORD_2);
    glEnable(GL_MAP2_VERTEX_3);
    glMapGrid2f(20, 0.0, 1.0, 20, 0.0, 1.0);
    makeImage();
    glTexEnvf(GL_TEXTURE_ENV, GL_TEXTURE_ENV_MODE, GL_DECAL);
    glTexParameteri(GL_TEXTURE_2D, GL_TEXTURE_WRAP_S, GL_REPEAT);
    glTexParameteri(GL_TEXTURE_2D, GL_TEXTURE_WRAP_T, GL_REPEAT);
    glTexParameteri(GL_TEXTURE_2D, GL_TEXTURE_MAG_FILTER, GL_NEAREST);
    glTexParameteri(GL_TEXTURE_2D, GL_TEXTURE_MIN_FILTER, GL_NEAREST);
    glTexImage2D(GL_TEXTURE_2D, 0, GL_RGB, imageWidth, imageHeight, 0, GL_RGB,
GL_UNSIGNED_BYTE, image);
    glEnable(GL_TEXTURE_2D);
    glEnable(GL_DEPTH_TEST);
    glShadeModel (GL_FLAT);
}

void reshape(int w, int h)
{
    glViewport(0, 0, (GLsizei) w, (GLsizei) h);
    glMatrixMode(GL_PROJECTION);
    glLoadIdentity();
    if (w <= h)
        glOrtho(-4.0, 4.0, -4.0*(GLfloat)h/(GLfloat)w, 4.0*(GLfloat)h/(GLfloat)w, -4.0, 4.0);
    else
        glOrtho(-4.0*(GLfloat)w/(GLfloat)h, 4.0*(GLfloat)w/(GLfloat)h, -4.0, 4.0, -4.0, 4.0);
    glMatrixMode(GL_MODELVIEW);
    glLoadIdentity();
    glRotatef(85.0, 1.0, 1.0, 1.0);
}

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

```



FAKULTAS TEKNIK

UNIVERSITAS NEGERI YOGYAKARTA

LAB. SHEET PRAKTIKUM GRAFIKA KOMPUTER 1

No. : ST/EKA/PTI223/08

Revisi : 02

Senin 010510

Hal. 4 dari 14 hal.

Sem.: Genap

Texture

4 x 50 menit

```
switch (key) {  
    case 27:  
        exit(0);  
        break;  
}  
}
```

```
int main(int argc, char** argv)  
{  
    glutInit(&argc, argv);  
    glutInitDisplayMode (GLUT_SINGLE | GLUT_RGB | GLUT_DEPTH);  
    glutInitWindowSize (500, 500);  
    glutInitWindowPosition (100, 100);  
    glutCreateWindow (argv[0]);  
    init ();  
    glutDisplayFunc(display);  
    glutReshapeFunc(reshape);  
    glutKeyboardFunc(keyboard);  
    glutMainLoop();  
    return 0;  
}
```

Program 2

```
/*   program mendemonstrasikan texture menggunakan glBindTexture()  
 *   untuk membuat dan mengatur 2 texture                               */  
/*   membuat texture papan catur                                       */
```

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

```
#include <stdlib.h>
```

```
#include <stdio.h>
```

```
#ifdef GL_VERSION_1_1
```

```
#define checkImageWidth 64
```

```
#define checkImageHeight 64
```

```
static GLubyte checkImage[checkImageHeight][checkImageWidth][4];
```

```
static GLubyte otherImage[checkImageHeight][checkImageWidth][4];
```

```
static GLuint texName[2];
```

```
void makeCheckImages(void)
```

```
{
```

```
    int i, j, c;
```

```
    for (i = 0; i < checkImageHeight; i++) {
```



FAKULTAS TEKNIK

UNIVERSITAS NEGERI YOGYAKARTA

LAB. SHEET PRAKTIKUM GRAFIKA KOMPUTER 1

No. : ST/EKA/PTI223/08

Revisi : 02

Senin 010510

Hal. 5 dari 14 hal.

Sem.: Genap

Texture

4 x 50 menit

```
for (j = 0; j < checkImageWidth; j++) {
    c = (((i&0x8)==0)^(j&0x8)==0)*255;
    checkImage[i][j][0] = (GLubyte) c;
    checkImage[i][j][1] = (GLubyte) c;
    checkImage[i][j][2] = (GLubyte) c;
    checkImage[i][j][3] = (GLubyte) 255;
    c = (((i&0x10)==0)^(j&0x10)==0)*255;
    otherImage[i][j][0] = (GLubyte) c;
    otherImage[i][j][1] = (GLubyte) 0;
    otherImage[i][j][2] = (GLubyte) 0;
    otherImage[i][j][3] = (GLubyte) 255;
}
}
}

void init(void)
{
    glClearColor (0.0, 0.0, 0.0, 0.0);
    glShadeModel(GL_FLAT);
    glEnable(GL_DEPTH_TEST);

    makeCheckImages();
    glPixelStorei(GL_UNPACK_ALIGNMENT, 1);

    glGenTextures(2, texName);
    glBindTexture(GL_TEXTURE_2D, texName[0]);
    glTexParameteri(GL_TEXTURE_2D, GL_TEXTURE_WRAP_S, GL_CLAMP);
    glTexParameteri(GL_TEXTURE_2D, GL_TEXTURE_WRAP_T, GL_CLAMP);
    glTexParameteri(GL_TEXTURE_2D, GL_TEXTURE_MAG_FILTER, GL_NEAREST);
    glTexParameteri(GL_TEXTURE_2D, GL_TEXTURE_MIN_FILTER, GL_NEAREST);
    glTexImage2D(GL_TEXTURE_2D, 0, GL_RGBA, checkImageWidth,
        checkImageHeight, 0, GL_RGBA, GL_UNSIGNED_BYTE,
        checkImage);

    glBindTexture(GL_TEXTURE_2D, texName[1]);
    glTexParameteri(GL_TEXTURE_2D, GL_TEXTURE_WRAP_S, GL_CLAMP);
    glTexParameteri(GL_TEXTURE_2D, GL_TEXTURE_WRAP_T, GL_CLAMP);
    glTexParameteri(GL_TEXTURE_2D, GL_TEXTURE_MAG_FILTER, GL_NEAREST);
    glTexParameteri(GL_TEXTURE_2D, GL_TEXTURE_MIN_FILTER, GL_NEAREST);
    glTexEnvf(GL_TEXTURE_ENV, GL_TEXTURE_ENV_MODE, GL_DECAL);
    glTexImage2D(GL_TEXTURE_2D, 0, GL_RGBA, checkImageWidth,
        checkImageHeight, 0, GL_RGBA, GL_UNSIGNED_BYTE, otherImage);
    glEnable(GL_TEXTURE_2D);
}
```



FAKULTAS TEKNIK

UNIVERSITAS NEGERI YOGYAKARTA

LAB. SHEET PRAKTIKUM GRAFIKA KOMPUTER 1

No. : ST/EKA/PTI223/08

Revisi : 02

Senin 010510

Hal. 6 dari 14 hal.

Sem.: Genap

Texture

4 x 50 menit

void display(void)

```
{
    glClear(GL_COLOR_BUFFER_BIT | GL_DEPTH_BUFFER_BIT);
    glBindTexture(GL_TEXTURE_2D, texName[0]);
    glBegin(GL_QUADS);
    glTexCoord2f(0.0, 0.0); glVertex3f(-2.0, -1.0, 0.0);
    glTexCoord2f(0.0, 1.0); glVertex3f(-2.0, 1.0, 0.0);
    glTexCoord2f(1.0, 1.0); glVertex3f(0.0, 1.0, 0.0);
    glTexCoord2f(1.0, 0.0); glVertex3f(0.0, -1.0, 0.0);
    glEnd();
    glBindTexture(GL_TEXTURE_2D, texName[1]);
    glBegin(GL_QUADS);
    glTexCoord2f(0.0, 0.0); glVertex3f(1.0, -1.0, 0.0);
    glTexCoord2f(0.0, 1.0); glVertex3f(1.0, 1.0, 0.0);
    glTexCoord2f(1.0, 1.0); glVertex3f(2.41421, 1.0, -1.41421);
    glTexCoord2f(1.0, 0.0); glVertex3f(2.41421, -1.0, -1.41421);
    glEnd();
    glFlush();
}
```

void reshape(int w, int h)

```
{
    glViewport(0, 0, (GLsizei) w, (GLsizei) h);
    glMatrixMode(GL_PROJECTION);
    glLoadIdentity();
    gluPerspective(60.0, (GLfloat) w/(GLfloat) h, 1.0, 30.0);
    glMatrixMode(GL_MODELVIEW);
    glLoadIdentity();
    glTranslatef(0.0, 0.0, -3.6);
}
```

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

```
{
    switch (key) {
        case 27:
            exit(0);
            break;
    }
}
```

int main(int argc, char argv)**

```
{
    glutInit(&argc, argv);
```



FAKULTAS TEKNIK

UNIVERSITAS NEGERI YOGYAKARTA

LAB. SHEET PRAKTIKUM GRAFIKA KOMPUTER 1

No. : ST/EKA/PTI223/08

Revisi : 02

Senin 010510

Hal. 7 dari 14 hal.

Sem.: Genap

Texture

4 x 50 menit

```
glutInitDisplayMode(GLUT_SINGLE | GLUT_RGB | GLUT_DEPTH);
glutInitWindowSize(250, 250);
glutInitWindowPosition(100, 100);
glutCreateWindow(argv[0]);
init();
glutReshapeFunc(reshape);
glutDisplayFunc(display);
glutKeyboardFunc (keyboard);
glutMainLoop();
return 0;
}
#else
int main(int argc, char** argv)
{
    fprintf (stderr, "program tekstur didemonstrasikan dengan OpenGL Versi 1.0.\n");

    return 0;
}
#endif
```

Program 3

```
/* membuat texture papan catur */
```

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

```
#include <stdlib.h>
```

```
#include <stdio.h>
```

```
#ifdef GL_VERSION_1_1
```

```
#define checkImageWidth 64
```

```
#define checkImageHeight 64
```

```
#define subImageWidth 16
```

```
#define subImageHeight 16
```

```
static GLubyte checkImage[checkImageHeight][checkImageWidth][4];
```

```
static GLubyte subImage[subImageHeight][subImageWidth][4];
```

```
static GLuint texName;
```

```
void makeCheckImages(void)
```

```
{
```

```
    int i, j, c;
```

```
    for (i = 0; i < checkImageHeight; i++) {
```

```
        for (j = 0; j < checkImageWidth; j++) {
```

```
            c = (((i&0x8)==0)^((j&0x8)==0))*255;
```

```
            checkImage[i][j][0] = (GLubyte) c;
```



FAKULTAS TEKNIK

UNIVERSITAS NEGERI YOGYAKARTA

LAB. SHEET PRAKTIKUM GRAFIKA KOMPUTER 1

No. : ST/EKA/PTI223/08

Revisi : 02

Senin 010510

Hal. 8 dari 14 hal.

Sem.: Genap

Texture

4 x 50 menit

```
    checkImage[i][j][1] = (GLubyte) c;
    checkImage[i][j][2] = (GLubyte) c;
    checkImage[i][j][3] = (GLubyte) 255;
}
}
for (i = 0; i < subImageHeight; i++) {
    for (j = 0; j < subImageWidth; j++) {
        c = (((i&0x4)==0)^(j&0x4))==0)*255;
        subImage[i][j][0] = (GLubyte) c;
        subImage[i][j][1] = (GLubyte) 0;
        subImage[i][j][2] = (GLubyte) 0;
        subImage[i][j][3] = (GLubyte) 255;
    }
}
}

void init(void)
{
    glClearColor (0.0, 0.0, 0.0, 0.0);
    glShadeModel(GL_FLAT);
    glEnable(GL_DEPTH_TEST);

    makeCheckImages();
    glPixelStorei(GL_UNPACK_ALIGNMENT, 1);

    glGenTextures(1, &texName);
    glBindTexture(GL_TEXTURE_2D, texName);

    glTexParameteri(GL_TEXTURE_2D, GL_TEXTURE_WRAP_S, GL_REPEAT);
    glTexParameteri(GL_TEXTURE_2D, GL_TEXTURE_WRAP_T, GL_REPEAT);
    glTexParameteri(GL_TEXTURE_2D, GL_TEXTURE_MAG_FILTER, GL_NEAREST);
    glTexParameteri(GL_TEXTURE_2D, GL_TEXTURE_MIN_FILTER, GL_NEAREST);
    glTexImage2D(GL_TEXTURE_2D, 0, GL_RGBA, checkImageWidth, checkImageHeight, 0, GL_RGBA,
GL_UNSIGNED_BYTE, checkImage);
}

void display(void)
{
    glClear(GL_COLOR_BUFFER_BIT | GL_DEPTH_BUFFER_BIT);
    glEnable(GL_TEXTURE_2D);
    glTexEnvf(GL_TEXTURE_ENV, GL_TEXTURE_ENV_MODE, GL_DECAL);
    glBindTexture(GL_TEXTURE_2D, texName);
    glBegin(GL_QUADS);
    glVertex2f(0.0, 0.0); glVertex3f(-2.0, -1.0, 0.0);
```




FAKULTAS TEKNIK

UNIVERSITAS NEGERI YOGYAKARTA

LAB. SHEET PRAKTIKUM GRAFIKA KOMPUTER 1

No. : ST/EKA/PTI223/08

Revisi : 02

Senin 010510

Hal. 9 dari 14 hal.

Sem.: Genap

Texture

4 x 50 menit

```
glTexCoord2f(0.0, 1.0); glVertex3f(-2.0, 1.0, 0.0);
glTexCoord2f(1.0, 1.0); glVertex3f(0.0, 1.0, 0.0);
glTexCoord2f(1.0, 0.0); glVertex3f(0.0, -1.0, 0.0);
```

```
glTexCoord2f(0.0, 0.0); glVertex3f(1.0, -1.0, 0.0);
glTexCoord2f(0.0, 1.0); glVertex3f(1.0, 1.0, 0.0);
glTexCoord2f(1.0, 1.0); glVertex3f(2.41421, 1.0, -1.41421);
glTexCoord2f(1.0, 0.0); glVertex3f(2.41421, -1.0, -1.41421);
glEnd();
glFlush();
glDisable(GL_TEXTURE_2D);
}
```

```
void reshape(int w, int h)
```

```
{
    glViewport(0, 0, (GLsizei) w, (GLsizei) h);
    glMatrixMode(GL_PROJECTION);
    glLoadIdentity();
    gluPerspective(60.0, (GLfloat) w/(GLfloat) h, 1.0, 30.0);
    glMatrixMode(GL_MODELVIEW);
    glLoadIdentity();
    glTranslatef(0.0, 0.0, -3.6);
}
```

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

```
{
    switch (key) {
        case 's':
        case 'S':
            glBindTexture(GL_TEXTURE_2D, texName);
            glTexSubImage2D(GL_TEXTURE_2D, 0, 12, 44, subImageWidth, subImageHeight, GL_RGBA,
                GL_UNSIGNED_BYTE, subImage);
            glutPostRedisplay();
            break;
        case 'r':
        case 'R':
            glBindTexture(GL_TEXTURE_2D, texName);
            glTexImage2D(GL_TEXTURE_2D, 0, GL_RGBA, checkImageWidth, checkImageHeight, 0, GL_RGBA,
                GL_UNSIGNED_BYTE, checkImage);
            glutPostRedisplay();
            break;
        case 27:
            exit(0);
            break;
    }
```



FAKULTAS TEKNIK

UNIVERSITAS NEGERI YOGYAKARTA

LAB. SHEET PRAKTIKUM GRAFIKA KOMPUTER 1

No. : ST/EKA/PTI223/08

Revisi : 02

Senin 010510

Hal. 10 dari 14 hal.

Sem.: Genap

Texture

4 x 50 menit

default:

break;

}

}

```
int main(int argc, char** argv)
```

```
{
```

```
    glutInit(&argc, argv);
```

```
    glutInitDisplayMode(GLUT_SINGLE | GLUT_RGB | GLUT_DEPTH);
```

```
    glutInitWindowSize(250, 250);
```

```
    glutInitWindowPosition(100, 100);
```

```
    glutCreateWindow(argv[0]);
```

```
    init();
```

```
    glutDisplayFunc(display);
```

```
    glutReshapeFunc(reshape);
```

```
    glutKeyboardFunc(keyboard);
```

```
    glutMainLoop();
```

```
    return 0;
```

```
}
```

```
#else
```

```
int main(int argc, char** argv)
```

```
{
```

```
    fprintf(stderr, "program didemonstrasikan dengan OpenGL Versi 1.0.\n");
```

```
    return 0;
```

```
}
```

```
#endif
```

Program 4

```
/* program menggambar texture teapot */
```

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

```
#include <stdlib.h>
```

```
#include <stdio.h>
```

```
#define stripelImageWidth 32
```

```
GLubyte stripelImage[4*stripelImageWidth];
```

```
#ifdef GL_VERSION_1_1
```

```
static GLuint texName;
```

```
#endif
```

```
void makeStripelImage(void)
```

```
{
```

```
    int j;
```



FAKULTAS TEKNIK

UNIVERSITAS NEGERI YOGYAKARTA

LAB. SHEET PRAKTIKUM GRAFIKA KOMPUTER 1

No. : ST/EKA/PTI223/08

Revisi : 02

Senin 010510

Hal. 11 dari 14 hal.

Sem.: Genap

Texture

4 x 50 menit

```
for (j = 0; j < stripImageWidth; j++) {
    stripImage[4*j] = (GLubyte) ((j<=4) ? 255 : 0);
    stripImage[4*j+1] = (GLubyte) ((j>4) ? 255 : 0);
    stripImage[4*j+2] = (GLubyte) 0;
    stripImage[4*j+3] = (GLubyte) 255;
}
}
```

```
/* pengaturan koordinat texture */
```

```
static GLfloat xequalzero[] = {1.0, 0.0, 0.0, 0.0};
```

```
static GLfloat slanted[] = {1.0, 1.0, 1.0, 0.0};
```

```
static GLfloat *currentCoeff;
```

```
static GLenum currentPlane;
```

```
static GLint currentGenMode;
```

```
void init(void)
```

```
{
```

```
    glClearColor (0.0, 0.0, 0.0, 0.0);
```

```
    glEnable(GL_DEPTH_TEST);
```

```
    glShadeModel(GL_SMOOTH);
```

```
    makeStripImage();
```

```
    glPixelStorei(GL_UNPACK_ALIGNMENT, 1);
```

```
#ifdef GL_VERSION_1_1
```

```
    glGenTextures(1, &texName);
```

```
    glBindTexture(GL_TEXTURE_1D, texName);
```

```
#endif
```

```
    glTexParameteri(GL_TEXTURE_1D, GL_TEXTURE_WRAP_S, GL_REPEAT);
```

```
    glTexParameteri(GL_TEXTURE_1D, GL_TEXTURE_MAG_FILTER, GL_LINEAR);
```

```
    glTexParameteri(GL_TEXTURE_1D, GL_TEXTURE_MIN_FILTER, GL_LINEAR);
```

```
#ifdef GL_VERSION_1_1
```

```
    glTexImage1D(GL_TEXTURE_1D, 0, GL_RGBA, stripImageWidth, 0, GL_RGBA, GL_UNSIGNED_BYTE, stripImage);
```

```
#else
```

```
    glTexImage1D(GL_TEXTURE_1D, 0, 4, stripImageWidth, 0, GL_RGBA, GL_UNSIGNED_BYTE, ripelImage);
```

```
#endif
```

```
    glTexEnvf(GL_TEXTURE_ENV, GL_TEXTURE_ENV_MODE, GL_MODULATE);
```

```
    currentCoeff = xequalzero;
```

```
    currentGenMode = GL_OBJECT_LINEAR;
```

```
    currentPlane = GL_OBJECT_PLANE;
```

```
    glTexGeni(GL_S, GL_TEXTURE_GEN_MODE, currentGenMode);
```



FAKULTAS TEKNIK

UNIVERSITAS NEGERI YOGYAKARTA

LAB. SHEET PRAKTIKUM GRAFIKA KOMPUTER 1

No. : ST/EKA/PTI223/08

Revisi : 02

Senin 010510

Hal. 12 dari 14 hal.

Sem.: Genap

Texture

4 x 50 menit

```
glTexGenfv(GL_S, currentPlane, currentCoeff);
```

```
glEnable(GL_TEXTURE_GEN_S);
glEnable(GL_TEXTURE_1D);
glEnable(GL_CULL_FACE);
glEnable(GL_LIGHTING);
glEnable(GL_LIGHT0);
glEnable(GL_AUTO_NORMAL);
glEnable(GL_NORMALIZE);
glFrontFace(GL_CW);
glCullFace(GL_BACK);
glMaterialf (GL_FRONT, GL_SHININESS, 64.0);
}
```

```
void display(void)
```

```
{
    glClear(GL_COLOR_BUFFER_BIT | GL_DEPTH_BUFFER_BIT);

    glPushMatrix ();
    glRotatef(45.0, 0.0, 0.0, 1.0);
    #ifdef GL_VERSION_1_1
    glBindTexture(GL_TEXTURE_1D, texName);
    #endif
    glutSolidTeapot(2.0);
    glPopMatrix ();
    glFlush();
}
```

```
void reshape(int w, int h)
```

```
{
    glViewport(0, 0, (GLsizei) w, (GLsizei) h);
    glMatrixMode(GL_PROJECTION);
    glLoadIdentity();
    if (w <= h)
        glOrtho (-3.5, 3.5, -3.5*(GLfloat)h/(GLfloat)w, 3.5*(GLfloat)h/(GLfloat)w, -3.5, 3.5);
    else
        glOrtho (-3.5*(GLfloat)w/(GLfloat)h, 3.5*(GLfloat)w/(GLfloat)h, -3.5, 3.5, -3.5, 3.5);
    glMatrixMode(GL_MODELVIEW);
    glLoadIdentity();
}
```

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

```
{
    switch (key) {
```



FAKULTAS TEKNIK

UNIVERSITAS NEGERI YOGYAKARTA

LAB. SHEET PRAKTIKUM GRAFIKA KOMPUTER 1

No. : ST/EKA/PTI223/08

Revisi : 02

Senin 010510

Hal. 13 dari 14 hal.

Sem.: Genap

Texture

4 x 50 menit

case 'e':

case 'E':

```
currentGenMode = GL_EYE_LINEAR;
currentPlane = GL_EYE_PLANE;
glTexGeni(GL_S, GL_TEXTURE_GEN_MODE, currentGenMode);
glTexGenfv(GL_S, currentPlane, currentCoeff);
glutPostRedisplay();
break;
```

case 'o':

case 'O':

```
currentGenMode = GL_OBJECT_LINEAR;
currentPlane = GL_OBJECT_PLANE;
glTexGeni(GL_S, GL_TEXTURE_GEN_MODE, currentGenMode);
glTexGenfv(GL_S, currentPlane, currentCoeff);
glutPostRedisplay();
break;
```

case 's':

case 'S':

```
currentCoeff = slanted;
glTexGenfv(GL_S, currentPlane, currentCoeff);
glutPostRedisplay();
break;
```

case 'x':

case 'X':

```
currentCoeff = xequalzero;
glTexGenfv(GL_S, currentPlane, currentCoeff);
glutPostRedisplay();
break;
```

case 27:

```
exit(0);
```

```
break;
```

default:

```
break;
```

```
}
```

```
}
```

```
int main(int argc, char** argv)
```

```
{
```

```
glutInit(&argc, argv);
```

```
glutInitDisplayMode (GLUT_SINGLE | GLUT_RGB | GLUT_DEPTH);
```

```
glutInitWindowSize(256, 256);
```

```
glutInitWindowPosition(100, 100);
```

```
glutCreateWindow (argv[0]);
```

```
init ();
```



FAKULTAS TEKNIK

UNIVERSITAS NEGERI YOGYAKARTA

LAB. SHEET PRAKTIKUM GRAFIKA KOMPUTER 1

No. : ST/EKA/PTI223/08

Revisi : 02

Senin 010510

Hal. 14 dari 14 hal.

Sem.: Genap

Texture

4 x 50 menit

```
glutDisplayFunc(display);
glutReshapeFunc(reshape);
glutKeyboardFunc(keyboard);
glutMainLoop();
return 0;
}
```

Tugas

1. Cobalah program diatas
2. Lakukan perubahan sintak atau nilai yang ada dalam program diatas (yang berhubungan dengan texture saja)
3. Masukkan hasil pengamatan dan masukan hasilnya yang disertai gambar hasil compile dalam tabel pengamatan yang disesuaikan dengan pengamatan anda.
4. Pada labsheet praktikum topik ini belum di lengkapi dengan teori mengenai teksture secara detail oleh karena itu buatlah makalah yang berisi tentang texture dengan topik:
 - a. Tekture obyek serta Tekture koordinat → **NIM ganjil**
 - b. Teksture matrik serta Pencahayaan dan teksture → **NIM genap**Makalah minimal 2 halaman A4 1 spasi, font: new time roman 12, tidak termasuk contoh program – kumpulkan soft copy.

Hasil dikumpulkan minggu depan