

Open GL

# Apa Itu Open GL ?

- Dibuat oleh Silicon Graphics (SGI) pada tahun 1991 dan dirilis tahun 1992
- Singkatan dari Open Graphics Library
- Merupakan Graphic API (Application Programming Interface)
- Cross language, multiplatform untuk grafik 2 dimensi dan 3 dimensi

# Contoh 1 : membuat segitiga

```
glBegin (GL_TRIANGLES)
    glColor3f (1, 0, 0) //warna
    glVertex3f ( 0, 1, -2) //vertex
    glColor3f (0, 1, 0)
    glVertex3f (-1,-1, -2)
    glColor3f (0, 0, 1)
    glVertex3f ( 1,-1, -2)
glEnd ()
```

## Contoh 2 : membuat kotak

```
glBegin(GL_QUADS)
  glColor3f(1,0,0)
  glVertex3f(1, 1, -2)
  glColor3f(0,1,0)
  glVertex3f(-1, 1, -2)
  glColor3f(0,0,1)
  glVertex3f(-1, -1, -2)
  glColor3f(1,0,1)
  glVertex3f(1, -1, -2)
glEnd()
```

# Contoh 3 : membuat garis

dim vertex#(8)(2)

vertex#(1) = vec3 (-1, 1, -5)

vertex#(2) = vec3 (-1,-1, -5)

vertex#(3) = vec3 ( 1,-1, -5)

vertex#(4) = vec3 ( 1, 1, -5)

vertex#(5) = vec3 (-1, 1, -7)

vertex#(6) = vec3 (-1,-1, -7)

vertex#(7) = vec3 ( 1,-1, -7)

vertex#(8) = vec3 ( 1, 1, -7)

```
glBegin (GL_LINE_LOOP)
```

```
    glVertex3fv (vertex#(1))
```

```
    glVertex3fv (vertex#(2))
```

```
    glVertex3fv (vertex#(3))
```

```
    glVertex3fv (vertex#(4))
```

```
glEnd ()
```

```
glBegin (GL_LINE_LOOP)
```

```
    glVertex3fv (vertex#(5))
```

```
    glVertex3fv (vertex#(6))
```

```
    glVertex3fv (vertex#(7))
```

```
    glVertex3fv (vertex#(8))
```

```
glEnd ()
```

```
glBegin (GL_LINES)
```

```
    glVertex3fv (vertex#(1))
```

```
    glVertex3fv (vertex#(5))
```

```
    glVertex3fv (vertex#(2))
```

```
    glVertex3fv (vertex#(6))
```

```
    glVertex3fv (vertex#(3))
```

```
    glVertex3fv (vertex#(7))
```

```
    glVertex3fv (vertex#(4))
```

```
    glVertex3fv (vertex#(8))
```

```
glEnd ()
```

# Contoh 4 : animasi

```
dim angle#
while true
  glClear (GL_COLOR_BUFFER_BIT or GL_DEPTH_BUFFER_BIT)
  glLoadIdentity ()
  glTranslatef (0, 0, -4)
  glRotatef (angle#, 0, 1, 0)
  glBegin (GL_TRIANGLE_FAN)
    glColor3f (0,.5, 1): glVertex3f ( 0, 1, 0)
    glColor3f (1, 0, 0): glVertex3f (-1,-1, 1)
    glColor3f (1, 1, 1): glVertex3f ( 1,-1, 1)
    glColor3f (0, 0, 1): glVertex3f ( 1,-1,-1)
    glColor3f (0, 1, 0): glVertex3f (-1,-1,-1)
    glColor3f (1, 0, 0): glVertex3f (-1,-1, 1)
  glEnd ()
  SwapBuffers ()
  angle# = angle# + 0.1
wend
```

# Contoh 5 : membuat kubus

```
glTranslatef(0,0,-5)
glColor3f(1,0,0)
glBegin(GL_QUADS)
    glVertex3f(1, 1, -1)
    glVertex3f(-1, 1, -1)
    glVertex3f(-1, -1, -1)
    glVertex3f(1, -1, -1)
glEnd()
glColor3f(0,1,0)
glBegin(GL_QUADS)
    glVertex3f(1, 1, 1)
    glVertex3f(-1, 1, 1)
    glVertex3f(-1, -1, 1)
    glVertex3f(1, -1, 1)
glEnd()
glColor3f(0,0,1)
glBegin(GL_QUADS)
    glVertex3f(1, 1, 1)
    glVertex3f(1, 1, -1)
    glVertex3f(1, -1,-1)
    glVertex3f(1, -1, 1)
glEnd()
```

```
glColor3f(1,1,0)
glBegin(GL_QUADS)
    glVertex3f(-1, 1, 1)
    glVertex3f(-1, 1, -1)
    glVertex3f(-1, -1,-1)
    glVertex3f(-1, -1, 1)
glEnd()
```

```
glColor3f(1,0,1)
glBegin(GL_QUADS)
    glVertex3f(-1, -1, 1)
    glVertex3f(-1, -1, -1)
    glVertex3f(1, -1,-1)
    glVertex3f(1, -1, 1)
glEnd()
```

```
glColor3f(0,1,1)
glBegin(GL_QUADS)
    glVertex3f(-1, 1, 1)
    glVertex3f(-1, 1, -1)
    glVertex3f(1, 1,-1)
    glVertex3f(1, 1, 1)
glEnd()
```

# Contoh 6 : texture

Dim tex1

```
tex1 = LoadMipmapTexture ("data/1.jpg")
```

```
glEnable (GL_TEXTURE_2D)
```

```
glTranslatef(0,0,-5)
```

```
glBindTexture(GL_TEXTURE_2D, tex1)
```

```
glBegin(GL_QUADS)
```

```
    glTexCoord2f(1.0, 1.0)
```

```
    glVertex3f(1, 1, -1)
```

```
    glTexCoord2f(0.0, 1.0)
```

```
    glVertex3f(-1, 1, -1)
```

```
    glTexCoord2f(0.0, 0.0)
```

```
    glVertex3f(-1, -1, -1)
```

```
    glTexCoord2f(1.0, 0.0)
```

```
    glVertex3f(1, -1, -1)
```

```
glEnd()
```



# Contoh 7 : keyboard

Dim tex2

Dim sudut#

Dim kecepatan#=0.4

Dim zoom#= -1

tex2 = LoadMipmapTexture ("data/2.jpg")

glEnable (GL\_TEXTURE\_2D)

while true

glClear(GL\_COLOR\_BUFFER\_BIT or GL\_DEPTH\_BUFFER\_BIT)

glLoadIdentity()

glTranslatef(0,0,zoom#)

glRotatef(sudut#,0,1,0)

glBindTexture(GL\_TEXTURE\_2D, tex2)

glBegin(GL\_QUADS)

glTexCoord2f(1.0, 1.0)

glVertex3f(1, 1, 0)

glTexCoord2f(0.0, 1.0)

glVertex3f(-1, 1, 0)

glTexCoord2f(0.0, 0.0)

glVertex3f(-1, -1, 0)

glTexCoord2f(1.0, 0.0)

glVertex3f(1, -1, 0)

glEnd()

swapBuffers()

if scankeydown(VK\_RIGHT) Then

    sudut# = sudut#+kecepatan#

elseif scankeydown(VK\_LEFT) Then

    sudut# = sudut#-kecepatan#

elseif scankeydown(VK\_UP) Then

    zoom# = zoom#-kecepatan#\*0.1

elseif scankeydown(VK\_DOWN) Then

    zoom# = zoom# +kecepatan#\*0.1

endif

wend