



الأكاديمية العربية للعلوم والتكنولوجيا والنقل البحري

Arab Academy for Science, Technology & Maritime Transport

**COLLEGE OF ENGINEERING AND TECHNOLOGY**  
*DEPARTMENT OF COMPUTER ENGINEERING*

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**Lab #1**  
*OpenGL Template*

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## Installation

### Linux (*Ubuntu*)

```
# sudo apt-get update  
# sudo apt-get install build-essential  
# sudo apt-get install freeglut3-dev (or libglut3-dev)  
# sudo apt-get install libgl1-mesa-dev libglu1-mesa-dev
```

### Windows

Install *glut* library files. Copy the following files to their destination path.

| # | File       | Destination   |
|---|------------|---|
| 1 | glut.h     | C:\Program Files\Microsoft Visual Studio \VC98\Include\GL |
| 2 | glut32.lib | C:\Program Files\Microsoft Visual Studio \VC98\Lib        |
| 3 | glut32.dll | C:\WINDOWS\system32                                       |

### Jogl (*Java OpenGL*)

#### Ubuntu

```
# sudo apt-get install libjogl-java libjogl-java-doc
```

# C/C++ Template

Listing 1: template.c

```
1 #include <windows.h> // Only for Windows
2 #include <GL/gl.h>
3 #include <GL/glu.h>
4 #include <GL/glut.h>
5 #include <stdio.h>
6 #include <math.h>
7
8 void myStyleInit()
9 {
10     glClearColor(1.0, 1.0, 1.0, 0.0);
11     glPointSize(4.0);
12     glMatrixMode(GL_PROJECTION);
13     glLoadIdentity();
14     glOrtho(-250, 250, -250, 250, 0, -1);
15 }
16
17 void myDisplay()
18 {
19     glClear(GL_COLOR_BUFFER_BIT);
20     glColor3f(0.0,0.0,0.0);
21     glMatrixMode(GL_MODELVIEW);
22     glLoadIdentity();
23     glPointSize(4.0);
24
25     /*
26      Write your code here
27     */
28
29     glFlush();
30 }
31
32
33 int main(int argc, char **argv)
34 {
35     glutInit(&argc, argv);
36     glutInitDisplayMode(GLUT_SINGLE | GLUT_RGB);
37     glutInitWindowSize(600, 600);
38     glutInitWindowPosition(50, 50);
39     glutCreateWindow("OpenGL Template");
40     myStyleInit();
41     glutDisplayFunc(myDisplay);
42     glutMainLoop();
43     return 0;
44 }
```

## Compile with:

```
# gcc template.c -o template -lglut
```

## Run with:

```
# ./template
```

# Java

Listing 2: Template.java

```
1 import javax.swing.*;
2 import javax.media.opengl.*;
3 import com.sun.opengl.util.Animator;
4
5 public class Template extends JFrame implements GLEventListener{
6     public static void main(String[] args){
7         Template window = new Template();
8         window.setVisible(true);
9     }
10    public Template(){
11        setSize(600, 600);
12        setTitle("OpenGL Template");
13        setDefaultCloseOperation(EXIT_ON_CLOSE);
14        GLCanvas canvas = new GLCanvas(new GLCapabilities());
15        canvas.addGLEventListener(this);
16        getContentPane().add(canvas);
17        //Animator animator = new Animator(canvas);
18        //animator.start();
19    }
20    // Called by the drawable immediately after the OpenGL context is initialized
21    public void init(GLAutoDrawable drawable){
22        GL gl = drawable.getGL();
23        gl.glClearColor(1.0f, 1.0f, 1.0f, 0.0f);
24        gl.glMatrixMode(gl.GL_PROJECTION);
25        gl.glLoadIdentity();
26        gl.glOrtho(-250, 250, -250, 250, 0, -1);
27        gl.glMatrixMode(gl.GL_MODELVIEW);
28        gl.glLoadIdentity();
29    }
30    // Called by the drawable to initiate OpenGL rendering by the client
31    public void display(GLAutoDrawable drawable){
32        GL gl = drawable.getGL();
33        gl.glClear(GL.GL_COLOR_BUFFER_BIT | GL.GL_DEPTH_BUFFER_BIT);
34        gl.glColor3f(1.0f, 0.0f, 0.0f);
35        gl.glBegin(gl.GL_LINES);
36            gl.glVertex2i(-100, -100);
37            gl.glVertex2i(100, 100);
38        gl.glEnd();
39        gl.glFlush();
40    }
41    // Called by the drawable during the first repaint after the component has been resized
42    public void reshape(GLAutoDrawable drawable, int x, int y, int w, int h){
43    }
44    // Called by the drawable when the display mode or the display device associated with ←
45    // the GLAutoDrawable has changed
46    public void displayChanged(GLAutoDrawable drawable, boolean modeChanged, boolean ←
47    deviceChanged){
48    }
49 }
```

## Compile with:

```
# javac -cp /usr/share/java/jogl.jar:/usr/share/java/gluegen-rt.jar:. \
Template.java
```

## Run with:

```
# java -cp /usr/share/java/jogl.jar:/usr/share/java/gluegen-rt.jar:. \
```

-Djava.library.path=/usr/lib/jni/ Template