

# How to Install OpenGL

## WINDOWS

Install your favorite integrated development environment (IDE). This tutorial assumes that you have Microsoft Visual Studio installed on your machine.

### 1. Install OpenGL

OpenGL software runtime is included as part of operating system. So you only need to download this if you think your copy is somehow missing. The OpenGL libraries are also available as the self-extracting archive file from the Microsoft.

OpenGL libraries and header files are

- opengl32.lib
- glu32.lib
- gl.h
- glu.h

### 2. Install GLUT

If you do not have GLUT installed on your machine you can download it from:

<http://www.xmission.com/~nate/glut/glut-3.7.6-bin.zip>

GLUT Libraries and header files are

- glut32.lib
- glut.h

### 3. Use OpenGL & GLUT in your source code

Use the three header files (gl.h, glu.h and glut.h) in your source code. Please check the path of your project to see if these files are found by your compiler.

### 4. Change project settings

In Visual C/C++ and .NET you'll have to do the following in order to link an application using GLUT:

- Select Project/Settings.
- Go to linker settings.
- Add the following files to the Object/library modules:  
opengl32.lib, glut32.lib, glu32.lib.

### 5. Changes in code

Use the include file <windows.h> in your source code.

To learn how to use OpenGL and GLUT with Microsoft Visual Studio, see <http://www.cosc.brocku.ca/Offerings/3P98/course/OpenGL/3P98Examples/GettingStarted/msvcnetglut.html>

## MAC OS X

Install Xcode, which is a suite of software development tools for Mac OS X.

### 1. **Install OpenGL & GLUT**

These are already installed with the OS.

### 2. **Using OpenGL and GLUT in you source**

Start Xcode and choose File → New project from the drop-down menu; create a new Cocoa Application by choosing it from the menu. Deselect main.m, and instead add your source codes in the Other Sources folder. From the top-left drop-down menu in the window, click on Add → Existing Frameworks, and add two frameworks, OpenGL.framework and GLUT.framework, both from the Frameworks folder. (These frameworks are located in /System/Library/Frameworks/.)

Finally in your source include the files as needed

- #include <OpenGL/gl.h>
- #include <OpenGL/glu.h>
- #include <GLUT/glut.h>

## LINUX

### 1. **Install OpenGL**

OpenGL and GLX and the X server integration of GLX, are Linux system components, and should be part of the Debian, RedHat, SuSE, or Caldera distribution you use.

### 2. **Install GLUT**

Download glut source from

[http://www.opengl.org/resources/libraries/glut/glut\\_downloads.php](http://www.opengl.org/resources/libraries/glut/glut_downloads.php)

and follow the instructions in the package

Files to be included

```
#include <GL/glut.h> // Header File For The GLUT Library  
#include <GL/gl.h> // Header File For The OpenGL32 Library  
#include <GL/glu.h> // Header File For The GLu32 Library
```

### 3. **Linker settings in Makefile**

```
LIBRARIES = -lX11 -lXi -lXmu -lglut -lGL -lGLU -lm
```