

# Installing OpenGL and Running OpenGL Programs on Microsoft Windows 7 and Higher

The development platform for our class is a Microsoft Visual Studio 2010 Integrated Development Environment (IDE) running on Windows 7. So, described below is how to install a free version of that IDE on Windows 7. However, your program should run, possibly with minor modification, even using later versions of Visual Studio and on Windows 8.

Go to <http://www.visualstudio.com/en-us/downloads#d-2010-express> and follow the links there to download and install Microsoft Visual C++ 2010 Express edition. After Visual C++ has been successfully installed, do the following.

## Install FreeGLUT:

1. Download and unzip the file *freeglut-MSVC-2.8.1-1.mp.zip* from <http://files.transmissionzero.co.uk/software/development/GLUT/freeglut-MSVC.zip>.

On 32-bit Windows:

- (a) Copy all the files from *freeglut\include\GL* to  
C:\Program Files\Microsoft SDKs\Windows\v7.0A\Include\GL.  
Note that you may have to create the GL folder.
- (b) Copy the file *freeglut.lib* from *freeglut\lib* to  
C:\Program Files\Microsoft SDKs\Windows\v7.0A\Lib.
- (c) Copy the file *freeglut.dll* from *freeglut\bin* to C:\Windows\System32.

On 64-bit Windows:

- (a) Copy all the files from *freeglut\include\GL* to  
C:\Program Files(x86)\Microsoft SDKs\Windows\v7.0A\Include\GL.  
Note that you may have to create the GL folder.
- (b) Copy the file *freeglut.lib* from *freeglut\lib\x64* to  
C:\Program Files(x86)\Microsoft SDKs\Windows\v7.0A\Lib.
- (c) Copy the file *freeglut.dll* from *freeglut\bin\x64* to C:\Windows\SysWOW64.

## Install GLEW:

1. Download *glext.h* from <http://www.opengl.org/registry/api/glext.h> to  
C:\Program Files\Microsoft Visual Studio 10.0\VC\include\GL.
2. Download and unzip the file *glew-1.10.0-win32.zip* from <http://glew.sourceforge.net/>.

On 32-bit Windows:

- (a) Copy all the files from *glew-1.10.0\include\GL* to

*C:\Program Files\Microsoft SDKs\Windows\v7.0A\Include\GL.*

(b) Copy all the files from *glew-1.10.0\lib\Release\Win32* to

*C:\Program Files\Microsoft SDKs\Windows\v7.0A\Lib.*

(c) Copy all the files from *glew-1.10.0\bin\Release\Win32* to *C:\Windows\System32*.

On 64-bit Windows:

(a) Copy all the files from *glew-1.10.0\include\GL* to

*C:\Program Files(x86)\Microsoft SDKs\Windows\v7.0A\Include\GL.*

(b) Copy all the files from *glew-1.10.0\lib\Release\Win32* to

*C:\Program Files(x86)\Microsoft SDKs\Windows\v7.0A\Lib.*

(c) Copy all the files from *glew-1.10.0\bin\Release\Win32* to *C:\Windows\SysWOW64*.

## Run a program:

1. Open Visual C++ 2010 from the *Start Menu* to bring up the welcome screen.
2. Create a new project by going to *File -> New -> Project*.
3. Select *Win32* from the *Installed Templates* panel and then *Win32 Console Application* from the next panel. Name your project and select the folder where you want to save it. Uncheck the box which says "Create directory for solution". Click *OK* to bring up a wizard welcome window.
4. Click *Application Settings* for the settings dialog box.
5. Uncheck the *Precompiled header* box, check the *Empty project* box and choose *Console application*. Click *Finish* to see a new project window.
6. Right click on *Source Files* and choose *Add -> New Item* to bring up a dialog box.
7. Select *Code* from the *Installed Templates* panel and *C++ File(.cpp)* from the next panel. Name your file and click *Add* to see an empty code panel in the project window titled with your chosen name.
8. Copy any of our note/sample programs into or write your own in the code panel.
9. Save and build your project by going to *Debug -> Build Solution*. Then execute the program with *Debug -> Start Debugging*. If the program has been built successfully, then you should see no error in the output window.

Note: If your graphics card doesn't support OpenGL 4.3 then programs using OpenGL 4.3 calls may compile but not run as the system is unable to provide the OpenGL 4.3 rendering context asked by the command *glutInitContextVersion(4, 3)* in the main routine. What you might do in this case is replace *glutInitContextVersion(4, 3)* with *glutInitContextVersion(3, 3)*, or even *glutInitContextVersion(2, 1)*, instead. Of course, then, programs using later-generation calls will not run, but you should be fine early on in the class.