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CS148

OpenGL Install Guide

Disclaimer

We will be using OpenGL for all the projects in this class. You can use any platform and compiler that you wish, but you must make sure that your program works correctly on Linux before submitting. The TA's will be grading all projects on the Sweet Hall Firebirds (in the basement graphics lab). They will not modify your source code to get your program to run. All sample solutions will run only on Linux, and although we will try to help you get up and running on any platform, the TA's are only "officially" supporting Linux. The easiest path for you is to work on a Linux workstation.

Windows

Install your favorite IDE. This tutorial assumes that you have Microsoft Visual Studio 6.0 (available from the CS Department Software Library as of Autumn 2004) installed on your machine. See specific IDE guides at the end of this document for more information.

Install OpenGL

OpenGL v1.1 software runtime is included as part of operating system for WinXP, Windows 2000, Windows 98, Windows 95 (OSR2) and Windows NT. If you think your copy is missing, the OpenGL v1.1 libraries are also available as the self-extracting archive file from the Microsoft website, via this url:

<http://download.microsoft.com/download/win95upg/info/1/W95/EN-US/Opengl95.exe>

OpenGL Libraries and header files are

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

Install GLUT

GLUT is not normally pre-installed. You can download it from:

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

Install GLUT by following the instructions in the README file (copy and pasted here):

Copy the files:

1. glut32.dll to %WinDir%\System,
2. glut32.lib to \$(MSDevDir)\..\VC98\lib
3. glut.h to \$(MSDevDir)\..\VC98\include\GL.

Use OpenGL & GLUT in your source code

1. Start Visual C++ and create a new empty project of type “Win32 Console Application.”
2. To test your setup, add a simple GLUT program to the project like “drawCircle.cpp” from our sample programs.
3. You should only need to #include <GL/glut.h>. It includes the other necessary dependent libraries. You might need to modify our example programs to fit this requirement.

Troubleshooting

- If you get an error that says “unexpected end of file while looking for precompiled header directive”, try turning off precompiled headers by selecting Projects -> Settings, then goto the C++ tab, select Precompiled Headers from the Category listbox, then select the "Not using precompiled headers" radio button.

Mac OS X

Install an IDE. Apple includes Project Builder / Xcode on the Developer CD included with all OS releases.

- If you are using Mac OS 10.1 to 10.5 download and install the April 2002 version of Project Builder.
- For all Jaguar revisions (v10.2 to v10.2.8) use the Dec 2002 version of Project Builder.
- For Panther use Xcode.

Install OpenGL & GLUT

These are already installed with the OS.

Using OpenGL and GLUT in you source

1. Start Project Builder and create a new project of type “C++ Tool”. “Tool” is Apple’s terminology for GUI-less executable.
2. [This step only necessary in 10.2 and earlier] Go to the Target tab and make sure that no prefix headers are used. The exact location of this varies with the version of the Project Builder. However this is usually in the section on compiler settings.
3. Add the correct Frameworks to your project by selecting Project -> Add Frameworks and add two frameworks: OpenGL Framework and the GLUT Framework.
4. Replace main.cpp with whatever GLUT code you wish to run (i.e. drawCircle.cpp from our demo programs) and make sure to include (in addition to any specialized libraries like math.h) only (glut.h automatically includes gl.h and glu.h):
 - #include <GLUT/glut.h>

Linux

Download Starter Code

The TAs will provide starter code for the assignments that includes a Makefile. Log in to any of the sweet hall Linux machines (the Raptors in the basement or the Firebirds on the 2nd floor) and get the assignment directory `/usr/class/cs148/assignments`.

Specific IDEs

Microsoft Visual Studio .NET 2002 / 2003

1. From the start screen, click on New Project
2. In the C++ folder, choose C/C++ Console Application
3. Copy the source files into the project directory. Add them to the project, and you should be good! (Make sure to add `glui32.lib` to your project, just like any other source file.)

Other Notes (thanks to Eric Furtado)

- Header files go into Microsoft Visual Studio .NET 2003/Vc7/PlatformSDK/Include and Vc7/PlatformSDK/Lib respectively.
- Turn off Precompiled Headers: Precompiled headers must be turned off (on a per project basis). To do this go to Project Properties, then choose C/C++ Precompiled Headers. Set “Create/Use Precompiled Headers” to “Not using precompiled Headers”
- Change the file save format: If you have problems with the debugger saying “Invalid file line. This breakpoint will not be hit” it’s because UNIX uses a different end-line format than Windows. What you need to do is go to File -> Advanced Save Options and set Line Endings to “Windows (CR LF)” and resave your file. This may need to be done on a per-file basis.

Microsoft Visual Studio 6.0

1. Create a workspace for CS148. (File-New-Workspaces-Blank Workspace)
2. Create a new project in that workspace.
 - a. File-New-Projects
 - b. Choose “Win32 Console Application” as the project type, and add it to the current workspace (assuming that your CS148 workspace is open).
 - c. Choose “An empty project” in the next screen.
3. Go to Project-Settings. Click on the “Link” tab for your project and add `opengl32.lib`, `glu32.lib`, `glut32.lib`, and if the project uses GLUI, then also include `glui32.lib`. These libs must either be in your “Microsoft Visual Studio\VC98\lib” folder, or the root folder for the current project.
4. Copy the source files into the project directory. Add them to the project, and you’re ready to go!