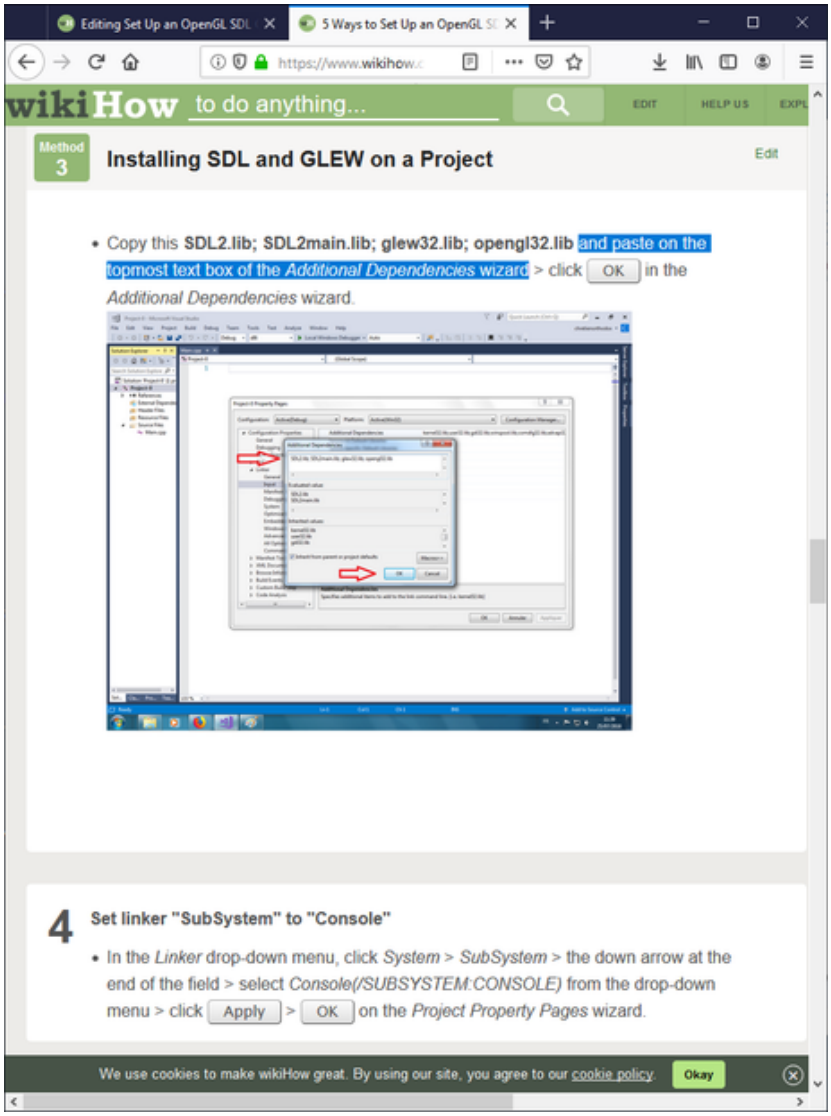
How to Set Up an OpenGL FreeGLUT GLEW Template Project in Visual Studio

Many programmers prefer OpenGL for graphics. If you are one of them, you are strongly advised by its producer, to use a window toolkit (such as freeGLUT) and an OpenGL loading libraries (such as GLEW). This guide will help you get over the...

Method 1 of 7:

Downloading freeGLUT and GLEW

1. 

Highlight what you expect to do. Highlight step or sub-step or part of it and then do it. For example see picture above.

2. **Create a new folder called *GL*.** In directory (disk) C:, right click > select **New** > **Folder** > type **GL** > hit ? Enter.
3. **Download the application GLEW.** Right-click on following link and select *Open Link in New Window* http://glew.sourceforge.net. Below the **Downloads** heading, click *Windows 32-bit and 64-bit*.
    1. In downloading window click folder *glew-2.1.0* > right click > select *Copy*.
    2. Navigate to C: > GL. Right click > select *Paste*. Click on name *glew-2.1.0* and rename it to *glew*.
    3. If folder *glew-2.1.0-win32* is downloaded, double click it to get *glew-2.1.0*.
4. **Download the *freeglut 3.0.0 MSVC Package*.** In following link right click and select *Open Link in New Window* https://www.transmissionzero.co.uk/software/freeglut-devel/. In section **freeglut 3.0.0 MSVC Package** click **Download freeglut 3.0.0 for MSVC**.
    1. In downloading window right click folder *freeglut*
    2. Navigate to *C:* > *GL*. Right click > select *Paste*.
    3. Now in folder *GL* you have two folders: *freeglut* and *glew*.

Method 2 of 7:

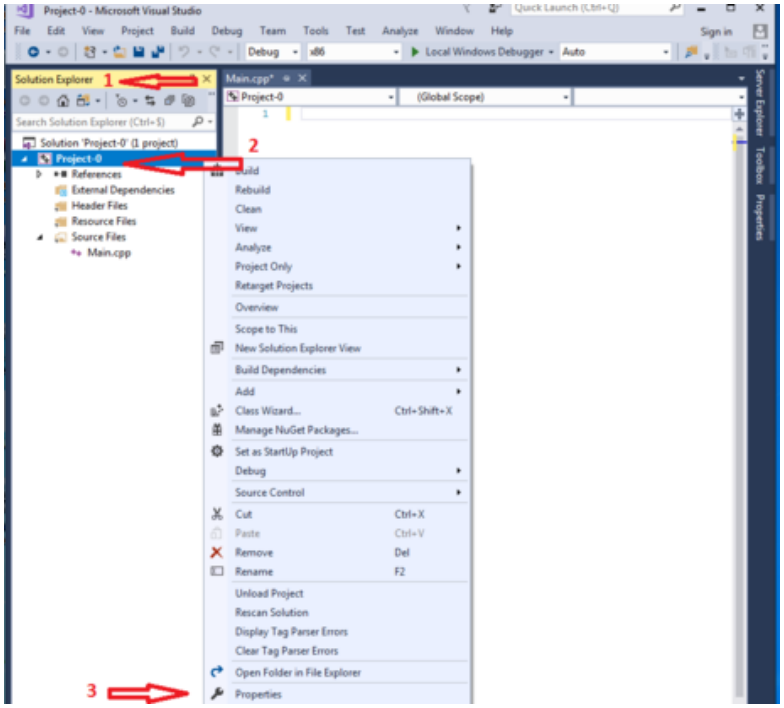
Creating a Visual Studio Project

1. **Create an empty project.**
    1. With Visual Studio 2017
        1. In V.S. main menu, click *File*. Then go to *New* > *Project…*
        2. In the left part of the new project window, click *Visual C++* if it is not clicked.
        3. In the center of the screen click *Empty Project*.
        4. Below that, find the *Name* text box, type *Project-0*.
        5. Next to *Location* text box, click *Browse...* and navigate to C: > GL.
        6. Click *Select a folder*. The *Location* in *New Project* window is C:GL.
        7. Make sure the *Create directory for solution* box is not checked.
        8. Click OK.
    2. With Visual Studio 2019
        1. **If it's not opened**. Open it > Click Create a new project > Empty Project > Next.
        2. In **Configure your new project** wizard for "Project name" type: **Project-0**.
        3. Next to "Location" text field click ... . Navigate to C: > GL > click Select folder. Now "Location" is **C:GL**.
        4. Check "Place solution and project in the same directory" > click Create.
        5. Wait till *Visual Studio 2019* instance appears.
        6. **If it's opened**. Click File > New > Project… > Create a new project > Empty Project > Next. The rest as above.
2. **Add your source file to the Project.**
    1. In the solution explorer window, right click the *Source Files* folder (the last one) > click *Add* > *New Item.…*.
    2. In the *Add New Item - Project-0* window, click *C++ File (.cpp)* (the first one) from the middle of the window. In the *Name* text box, type *Main.cpp*.
    3. The *Location* is C:GLProject-0.
    4. Click the Add button. The file will open in the main text editor but leave the file blank for now.

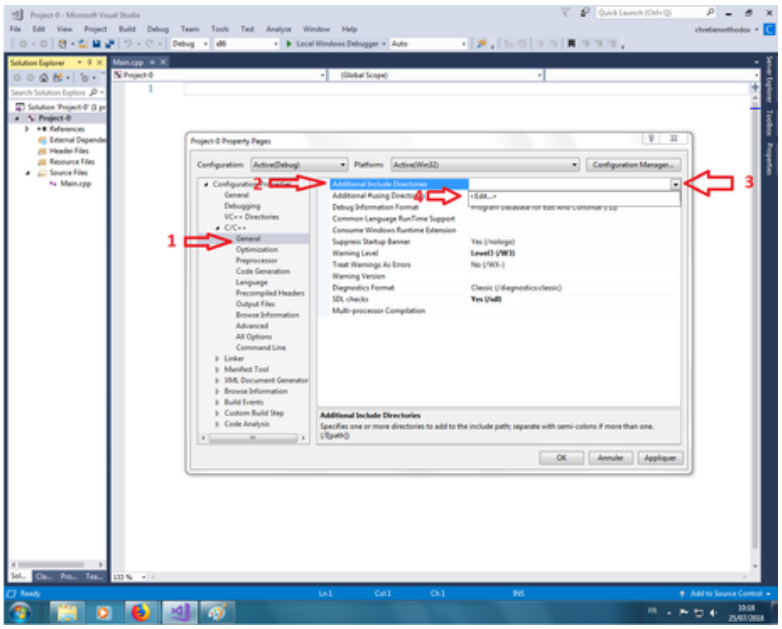
Method 3 of 7:

Installing freeGLUT and GLEW on a Project

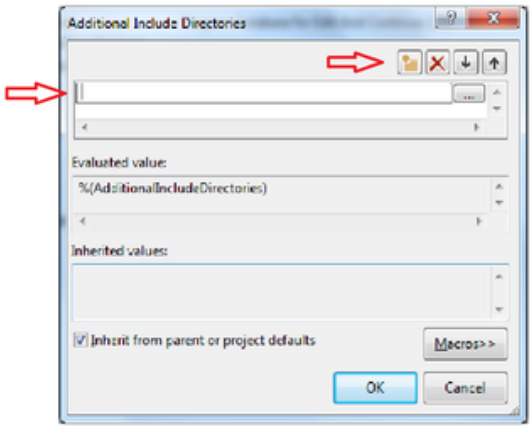
1. **Configure "Additional Include Directories"**
    1. In *Solution Explorer*, right click on the name of your project, that is *Project-0*, and select *Properties*. Leave default settings: Configuration: Active(Debug), and Platform: Active(Win32).



2. Open the C/C++ drop-down menu. Click *General* > *Additional Include Directories* > click the down arrow at the right of the field > click in the drop down menu.

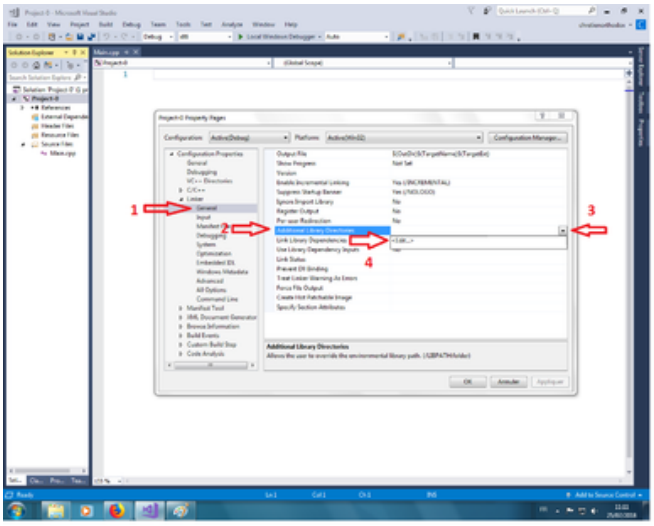


3. **Add *freeglutinclude* folder:** Copy **C:GLfreeglutinclude** > in *Additional Include Directories* wizard, click first icon > paste.



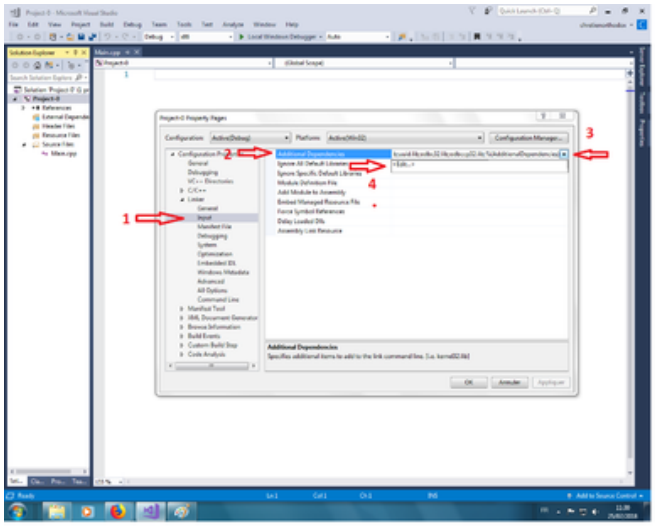
4. **Add *glewinclude* folder:** Copy **C:GLglewinclude** > click again first icon > paste > on *Additional Include Directories* wizard click OK .

2. **Configure linker "Additional Library Directories"**
    1. Open the Linker drop-down menu, and click *General*. Click *Additional Library Directories* entry > down arrow at the right of the field > in the drop-down menu.

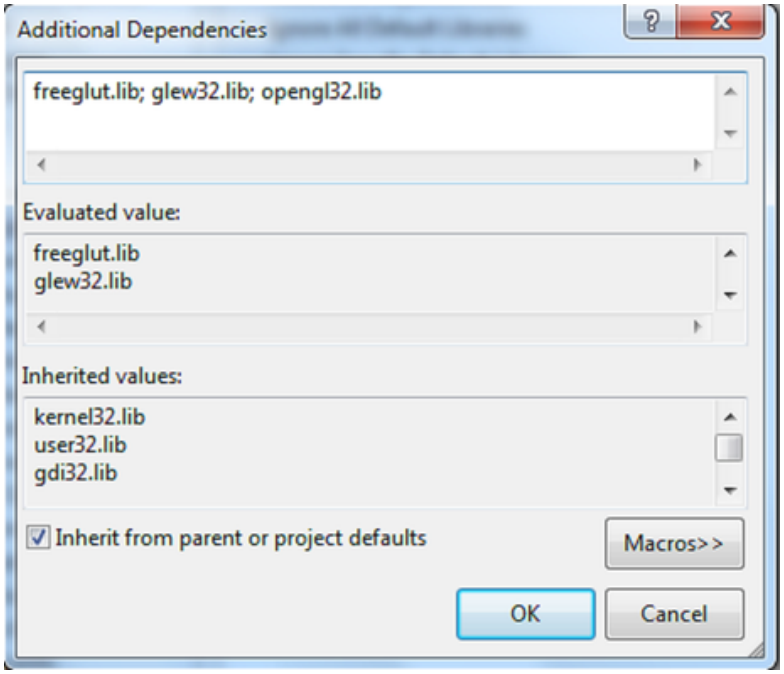


2. **Add the *freeglutlib* folder:** Copy **C:GLfreeglutlib** > in *Additional Library Directories* wizard click first icon > paste.
3. **Add the *glewlibReleaseWin32* folder:** Copy **C:GLglewlibReleaseWin32** > click first icon > paste > in *Additional Library Directories* wizard click OK.

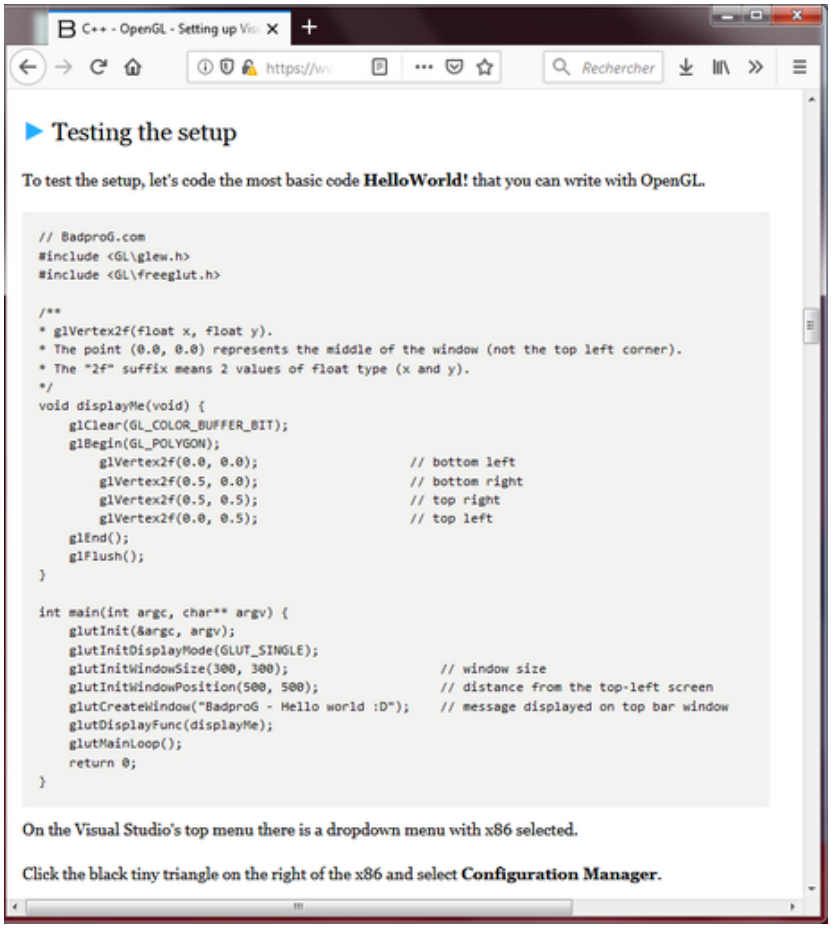
3. **Configure linker "Additional Dependencies"**
    1. In the *Linker* drop-down menu, click *Input* > click the *Additional Dependencies* entry > the down arrow at the right of the field > click in the drop-down menu.



2. Copy **freeglut.lib; glew32.lib; opengl32.lib** and paste on the top-most text box of the *Additional Dependencies* wizard > click OK in the *Additional Dependencies* wizard.



4. **Set linker "SubSystem" to "Console"**
    1. In the *Linker* drop-down menu, click *System* > *SubSystem*. Click the down arrow and select *Console(/SUBSYSTEM:CONSOLE)* from the dropdown menu. Click Apply, then OK on the *Project Property Pages* window.
5. **Copy *freeglut.dll* file and paste to *Project-0* folder.**
    1. Navigate to C: > GL > freeglut > bin. Inside *bin* folder click *freeglut.dll* file > right-click > *Copy*.
    2. Navigate to C: > GL > Project-0. Right-click an empty area in *Project-0* folder, and select *Paste*.
    3. The *freeglut.dll* file should now be in your project directory along with your *Main.cpp* file and a few other files created by Visual Studio.

6. **Copy *glew32.dll* file and paste to *Project* folder**
    1. Navigate to C: > GL > glew > bin > Release > Win32. Click glew32.dll > right-click > *Copy*.
    2. Navigate to C: > GL > Project-0. Right-click an empty area in *Project-0* folder, and select *Paste*.
    3. The *glew32.dll* file should now be in Project-0 folder along with *Main.cpp*, *freeglut.dll*, and 4 other files created by Visual Studio.
7. 

    Test your project. Right click on following link and select *Open Link in New Window* badprog. Scroll down the page and find section **Testing the setup** (see image above). Copy code and paste in *Main.cpp* code area > hit Ctrl + F5. You should see two windows: one black (the console) and other with white square in black background. If you do not see that, do bellow step.
8. **Correct any errors.** In "Error List" if you see error about
    1. file with extension .h go to part (Method) 3, step 1, "Configure the "Additional Include Directories"" and follow instructions.
    2. file with extension .lib go to part (Method) 3, step 2, "Configure the linker "Additional Library Directories"", and follow instructions. Also to step 3, "Configure the linker "Additional Library Directories"".
    3. "entry point must be defined" go to step 4, Set linker "SubSystem" to "CONSOLE" and follow instructions.
    4. file .dll go to step 5, "Copy *freeglut.dll* file and paste to *Project-0* folder" and follow instructions.
    5. For other errors, if you cannot correct them, close Visual Studio > delete project folder *Projetc-0* which lives in C:GL > open Visual Studio > repeat set up from part **Method 2**. Good job.

Method 4 of 7:

Creating a Project with OpenGL-freeGLUT-GLEW Template

1. **Create template.** Go to Visual Studio main menu and, **while *Project-0* is open**, click *Project* > *Export Template...*. On *Export template Wizard* check *Project Template*, if it's not checked. Click Next >. On *Select Template Options*, in *Template name* text box type: *OpenGL-freeGLUT-GLEW*. Click Finish. The Template has been created.
2. **Create project.**
    1. **With V.S. 2017**. Click *File* > *New* > *Project...*.
        1. On the *New Project* window, click template: *OpenGL-freeGLUT-GLEW*.
        2. In *Name* text field, type: *Project-1*. Be sure *Create directory for solution* is unchecked. Click OK.
    2. **With V.S. 2019**. Click *File* > *New* > *Project...*.
        1. In **Create a new project** wizard scroll down the list of templates and select *OpenGL-freeGLUT-GLEW* > click Next.
        2. In **Configure your new project** wizard, in "Project name" text field type *Project-1*.
        3. *Location* should be C:GL. If it's not, click ... at the end of the field > navigate C:GL > *Folder* should be *GL* > click Select a folder. Now *Location is C:GL*.
        4. Be sure *Place solution and project in the same directory* is checked. Click Create.
    3. In the *Solution Explorer*, double click *Source Files* > double click *++Main.cpp*. Its code appears in the code area. Run it. If code does not appear, right click *++Main.cpp* > click *Exclude From Project* . Now create new *Main.cpp*.
3. **Add *freeglut.dll* file to new project-folder**
    1. Navigate to C: > GL > Project-0 > click file *freeglut.dll* > right click > click *Copy*.
    2. Navigate to C: > GL > Project-1 > click on empty area > right click > click *Paste*.
    3. Now file *freeglut.dll* is in folder *Project-1* among *Main.cpp* and other 4 files.
4. **Add *glew32.dll* file to new project-folder**
    1. Navigate to C: > GL > Project-0 > click file *glew32.dll* > right click > click *Copy*.
    2. Navigate to C: > GL > Project-1 > click on empty area > right click > click *Paste*.
    3. Now the file *glew32.dll* is in the folder *Project-1* among *freeglut.dll*, *Main.cpp* and other 4 files.
5. **Test your project as above.** Good job!

Method 5 of 7:

Create project to target x64 platform

1. **Create empty project as above with name *Project-2*, and add *Main.cpp* file.**
2. **SDLproject's Properties settings.** Go to "Solution Explorer" > right click on the name of your project that is *Project-2* > select "Properties". In *Platform:* entry, choose *x64* > Click Configuration manager...
    1. In *Active solution platform:* select x64
    2. In *Platform* entry select x64
    3. Click Close
3. **Additional Include Directories.** As with targeting x86 platform, see above Method 3, step 1.
4. **Additional Library Directories.** Open the "Linker" drop-down menu, and click "General". Click "Additional Library Directories" entry > down arrow at the end of the field > "Edit" in the drop-down menu.
    1. Copy this **C:GLfreeglutlibx64** > in *Additional Library Directories* click first icon > paste.

2. Copy this **C:GLglewlibReleasex64** > click first icon > paste > click OK.
5. **Additional Dependencies.** As with targeting x86 platform, see above Method 3, step 3.
6. **Subsystem.** As with targeting x86 platform, see above Method 3, step 4.
7. **Copy dll files and paste into *Project-2*.**
    1. **Copy freeglut.dll file and paste into *Project-2*.** In Windows's "File Explorer" navigate to
        1. C:GLfreeglutbinx64. In "x64" folder click "freeglut.dll" file > right-click > "Copy".
        2. C: > GL > Project-2. Right-click on empty area in "Project-2" folder, and select "Paste".
    2. **Copy glew32.dll file and paste into *Project-2*.** In Windows's "File Explorer" navigate to
        1. C: > GL > glew > bin > Release > x64. In "x64" folder click "glew32.dll" file > right-click > "Copy".
        2. C: > GL > Project-2. Right-click on empty area in "Project-2" folder, and select "Paste".
8. **Test your project and correct errors if any.** As with targeting x86 platform, see above, Method 3 steps 7 and 8.
9. **Tip:** Even if in *Property Pages* main settings it is *Platform:* x64, click Configuration manager... and in *Active solution platform:* select x64.
10. **Create template.** As in Method 4.
    1. Tip: In every project you create with it, select x64 (next to Debug) in Visual Studio's GUI.

Method 6 of 7:

Setting up Built FreeGLUT and Built GLEW

1. **In directory C, create folder *GL*.** If folder with this name exists, close Visual Studio > in *File Explorer* > directory C > right click *GL* folder > select *Delete* > again right click > select *New* > *Folder* > type: *GL* > hit ? Enter.
2. **Install CMake.** Right-click on following link and select *Open Link in New Window* Use CMake to Get Binaries from Source Code. Follow Method 1 **Installing CMake**.
3. **Download FreeGLUT source.** Right-click on following address and select Open Link in New Window https://sourceforge.net/projects/freeglut/. Click Download
    1. In downloading window click zip folder freeglut-3.2.1 (or latest version) > right click > select *Copy*.
    2. In File Explorer navigate to C: > GL > right click > select *Paste*. Click twice on folder's name > delete name > type: *freeglut* > hit ? Enter.
4. **Download GLEW source.** Right-click on following address and select Open Link in New Window http://glew.sourceforge.net/. Beside **Source** click ZIP.
    1. In download in window click folder glew-2.1.0 (or latest) > right click > Copy.
    2. Navigate to C: > GL. Right click > Paste. Click twice on folder's name and rename **glew** > hit ? Enter. Now in folder GL you have folders *glew* and *freeglut*.
5. **Build FreeGLUT by CMake and Visual Studio.** Go to CMake GUI.
    1. Copy **C:/GL/freeglut** and paste in first text field.
    2. Copy **C:/GL/freeglut/build** and paste in second text field.
    3. Configure and generate. In CMake GUI, click Configure > in wizard *Create Directory* click Yes > select *Visual Studio 16 2019* > click Finish.
        1. When, in CMake GUI, you read: "Configuring done", click Generate. You should read: "Generating done".
    4. Build your solution.
        1. Navigate to C: > GL > freeglut > build. Double click "freeglut.sln", or "freeglut", or "ALL_BUILD.vcxproj". An instance of Visual Studio appears. Wait until in main menu *Build* entry appears. Click it > "Build Solution".

2. Wait till you read the last line in "Output" window: ========== Build: XX succeeded, 0 failed, 0 up-to-date, 1 skipped" ==========
    1. Number XX of "succeeded" changes in freeglut versions. Today (11-Feb-2020) is 28.
5. Navigate to C:GLfreeglutbuildlibDebug. Inside you should see file *freeglutd.lib* among other two files.

6. **Build GLEW by CMake and Visual Studio.** Follow above step but
    1. In first text field paste **C:/GL/glew/build/cmake**
    2. In second paste **C:/GL/glew/build**
    3. Navigate to C: > GL > glew > build. Double click "glew.sln", or "glew", or "ALL_BUILD.vcxproj".
    4. In V.S. Output wizard, number of *succeeded* today (31-1-2020) is 6, may change in later version though.
    5. Navigate to C: > GL > glew > build > lib > Debug. Inside you should see file *glew32d.lib* among two other files.
7. **Set up built FreeGLUT and built GLEW in project.**
    1. Create empty project and add source file according to Method 2.
    2. Configure project's *Properties*. In *Solution Explorer* wizard, right click Project's name that is *Project-0* > select *Properties*.
        1. **(1) *Project-0 Property Pages* main menu.** In *Platform* entry select *x64* > click Configuration Manager....
            1. In *Active solution platform:* select *x64*.
            2. In *Platform* entry, *x64* is automatically selected.
            3. Click Close.
        2. **(2) *Additional Include Directories***. Click *C/C++* > *General* > In beside menu select the first one, *Additional Include Directories* > click the down arrow at the end of the field > click *Edit...* > first icon > three dots ...
            1. Navigate to C: > GL > freeglut > include > click include > click Select a folder.
            2. Click again first icon > three dots > navigate to C: > GL > glew > include > click include > click Select a folder > click OK.
        3. **(3) *Additional Library Directories***. Double click *Linker* > click *General* > *Additional Library Directories* > click the down arrow at the end of the field > click *Edit...* > first icon.
            1. Copy **C:GLfreeglutbuildlibDebug** and paste in upper-most text field.
            2. Click again first icon > copy **C:GLglewbuildlibDebug** and paste in upper-most text field > click OK.
        4. **(4) *Additional Dependencies***. In *Linker* drop-down menu select *Input* > in beside menu select the first one, *Additional Dependencies* > click the down arrow at the end of the field > *Edit...* > copy **opengl32.lib; freeglutd.lib; glew32d.lib** and paste in *Additional Dependencies* wizard's upper-most text box > click OK.
        5. **(5) Set System to SubSystem CONSOLE.** In *Linker* drop-down menu select *System* > in beside menu select the first one, *SubSystem* > click the down arrow at the end of the field > select *Console (/SUBSYSTEM:CONSOLE)*. Click Apply and OK.
    3. Copy files *freeglutd.dll* and *glew32d.dll*, and paste into *Project-0* folder.
        1. Navigate to C:GLfreeglutbuildbinDebug. Click freeglutd.dll > right-click > *Copy*.
        2. Navigate to C: > GL > Project-0. Right-click an empty area in *Project-0* folder, and select *Paste*.
        3. Navigate to C:GLglewbuildbinDebug. Click glew32d.dll > right-click > *Copy*.
        4. Navigate to C: > GL > Project-0. Right-click an empty area in *Project-0* folder, and select *Paste*.

5. Files *freeglutd.dll* and *glew32d.dll* should now be in Project-0 folder along with *Main.cpp*, and 4 other files created by Visual Studio.

8. **Test your project and correct errors if any.** As above Method 3, steps 7 and 8.
9. **Create Template.** As above Method 4 but in Visual Studio GUI, main menu select x64. Remember copy and paste dll files.

Method 7 of 7:

Choosing Set Up

1. **In this tutorial you learn 3 was to set up FreeGLUT and GLEW in Project with Visual Studio.**
    1. **Set up binaries x86 (32 bits).** It's the easiest. You should *start* learning set up from here.
    2. **Set up binaries x64 (64 bits).** It targets x64 platform. Choose it *only* when you have specific reason for doing so.
    3. **Compile FreeGLUT source, GLEW source, and set up them in project.** Targets x64 too.The most difficult. The *best* though.