


OpenGL® Lectures
Install OpenGL in Codewarrior

By
Tom Duff
Pixar Animation Studios
Emeryville, California
and
George Ledin Jr
Sonoma State University
Rohnert Park, California

Program in C vs C++ OpenGL in Codewarrior

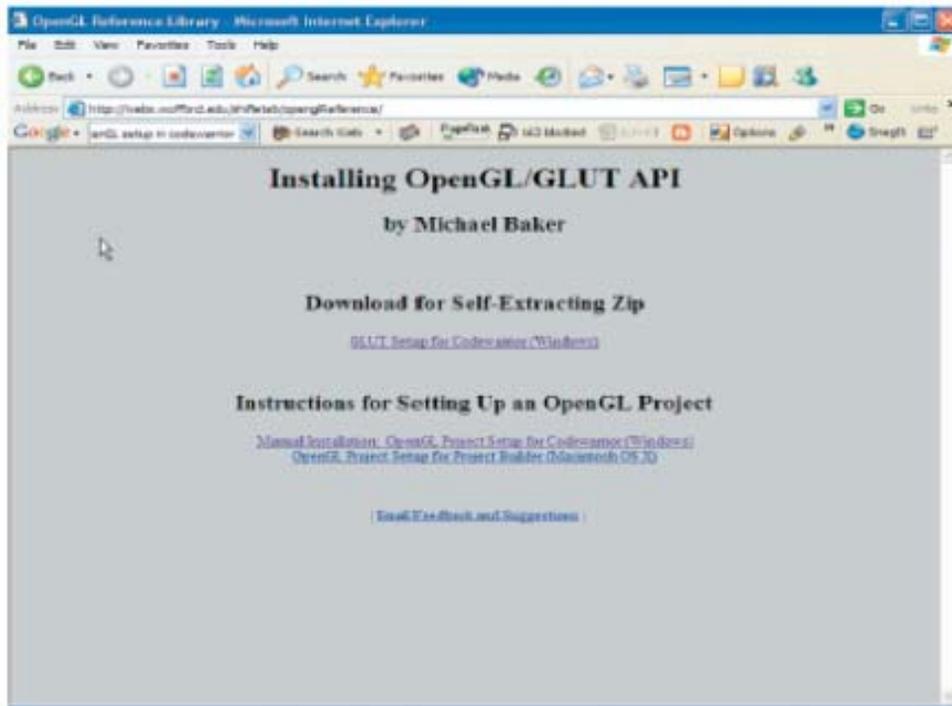
- It seems that standard glut.h works with C style OpenGL in Codewarrior.
- However, glut.h file needs to be modified to work with C++ in Codewarrior.

If you want to work in C style OpenGL in Codewarrior

- Michael Baker's website gives you a straightforward way to install C style OpenGL in Codewarrior.
- The advantage of using Baker's script to create C style OpenGL project:
 - After running Baker's script, every time when you start a new OpenGL project in codewarrior, a default file with OpenGL includes will be created for you.

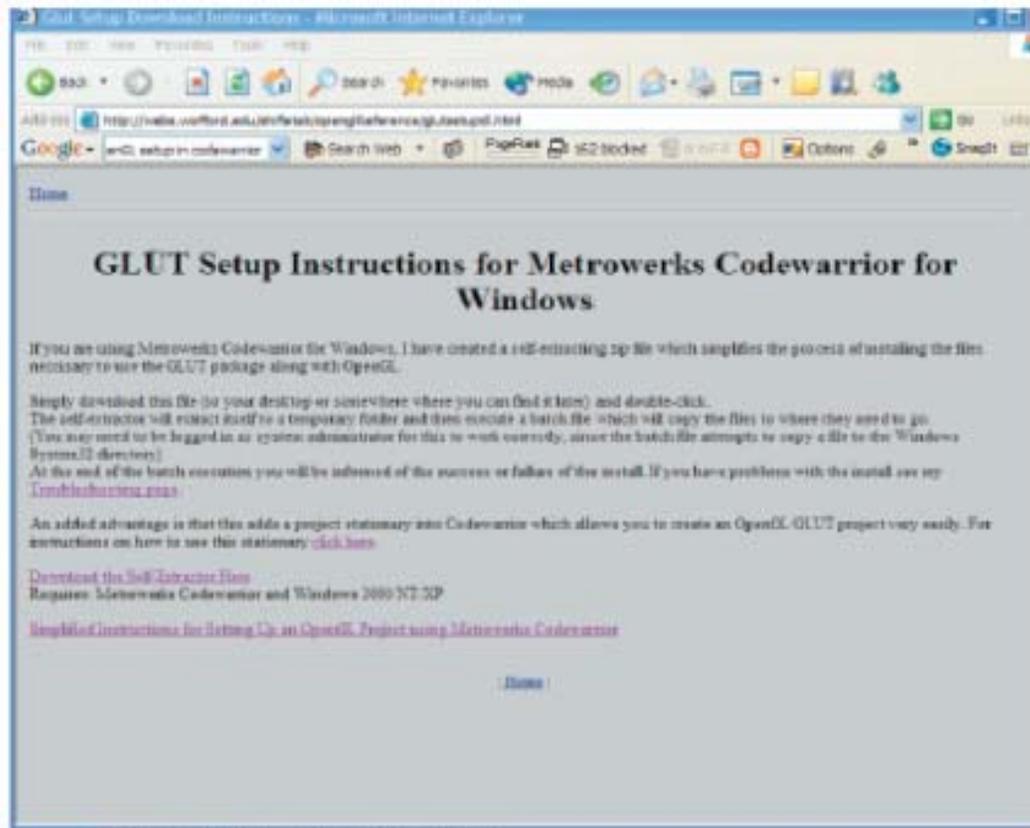
If you want to work in C style OpenGL in codewarrior

1. Go to link: <http://webs.wofford.edu/shifletab/openglReference/>
2. Click on the link “Glut Setup for Codewarrior (Windows)”



Install C style OpenGL, continued

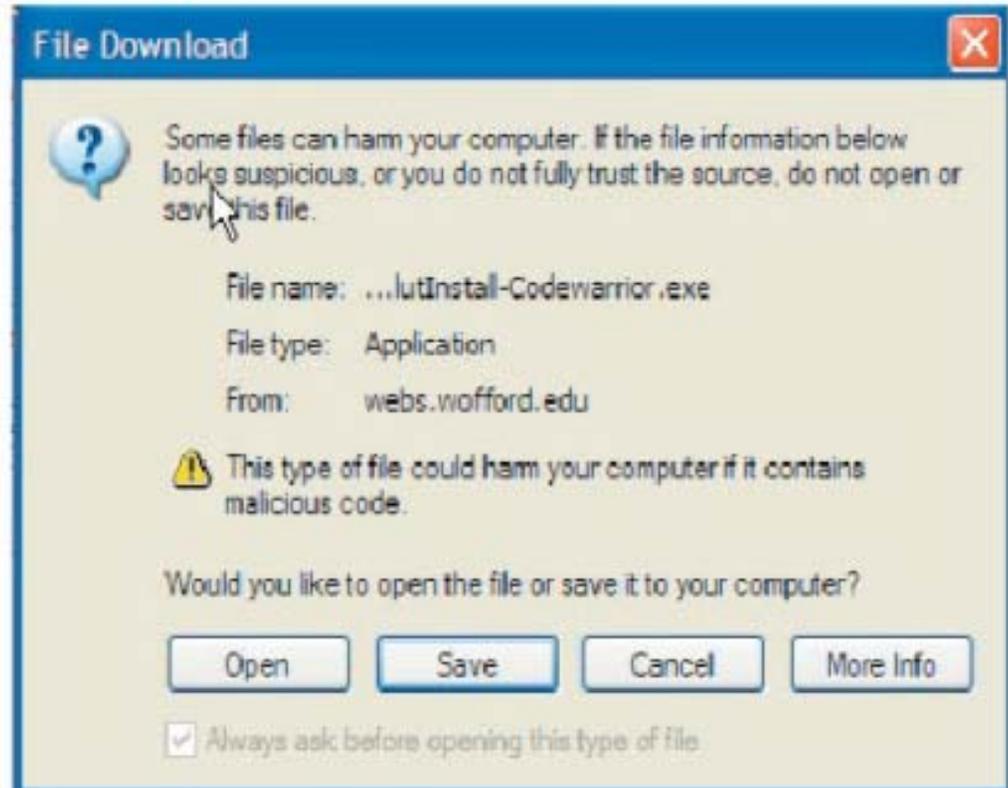
3. Click on “Download the Self-Extractor Here”



Install C style OpenGL, continued

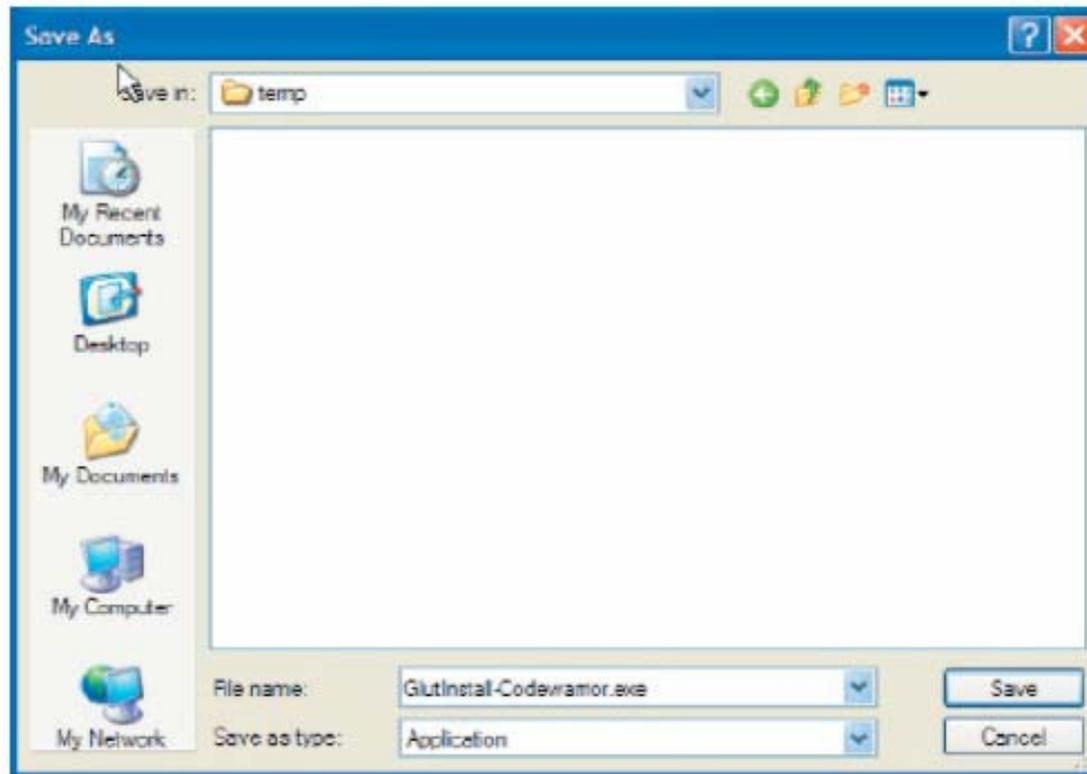
4. After step 3, you will see a “File Downloaded” window popup as follows.

Click Save to save the executable file.



Install C style OpenGL, continued

5. Save the “GlutInstall-Codewarrior.exe” file anywhere on your computer.

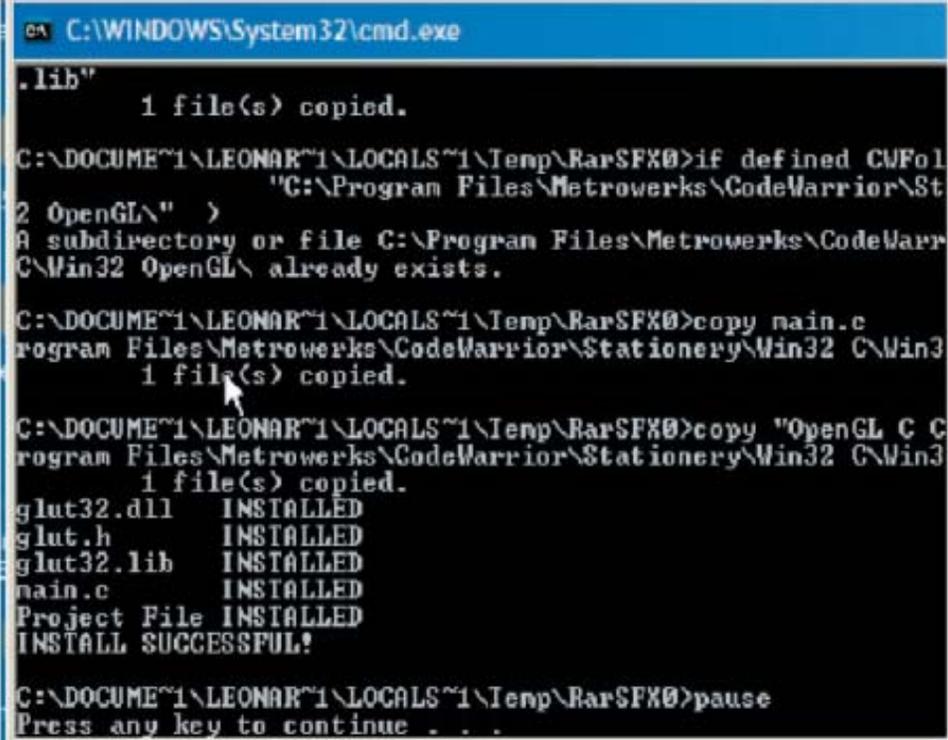


Install C style OpenGL, continued

6. Double click "GlutInstall-Codewarrior.exe" to run the executable file.

After execution, you will see this window.

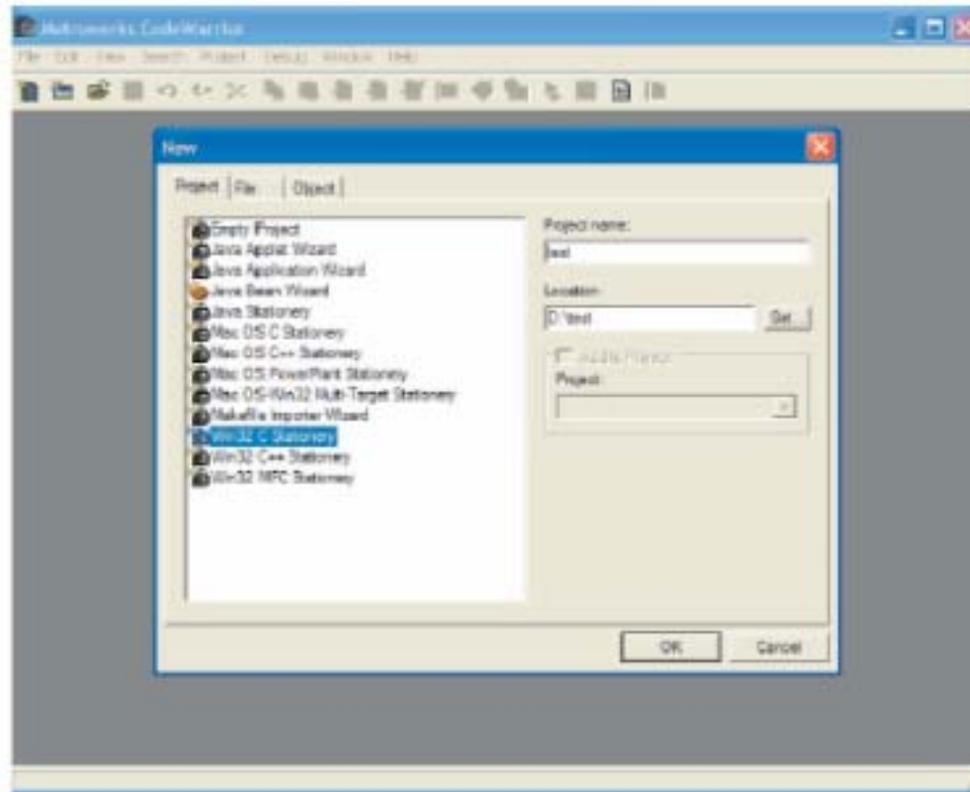
Click Enter to continue the execution. Then the execution window will disappear.



```
C:\WINDOWS\System32\cmd.exe
.lib"
    1 file(s) copied.
C:\DOCUME~1\LEONAR~1\LOCALS~1\Temp\BarSFX0>if defined CWFol
"C:\Program Files\Metrowerks\CodeWarrior\St
2 OpenGL" >
A subdirectory or file C:\Program Files\Metrowerks\CodeWarr
C:\Win32 OpenGL\ already exists.
C:\DOCUME~1\LEONAR~1\LOCALS~1\Temp\BarSFX0>copy main.c
rogram Files\Metrowerks\CodeWarrior\Stationery\Win32 C:\Win3
    1 file(s) copied.
C:\DOCUME~1\LEONAR~1\LOCALS~1\Temp\BarSFX0>copy "OpenGL C C
rogram Files\Metrowerks\CodeWarrior\Stationery\Win32 C:\Win3
    1 file(s) copied.
glut32.dll    INSTALLED
glut.h        INSTALLED
glut32.lib    INSTALLED
main.c        INSTALLED
Project File INSTALLED
INSTALL SUCCESSFUL!
C:\DOCUME~1\LEONAR~1\LOCALS~1\Temp\BarSFX0>pause
Press any key to continue . . .
```

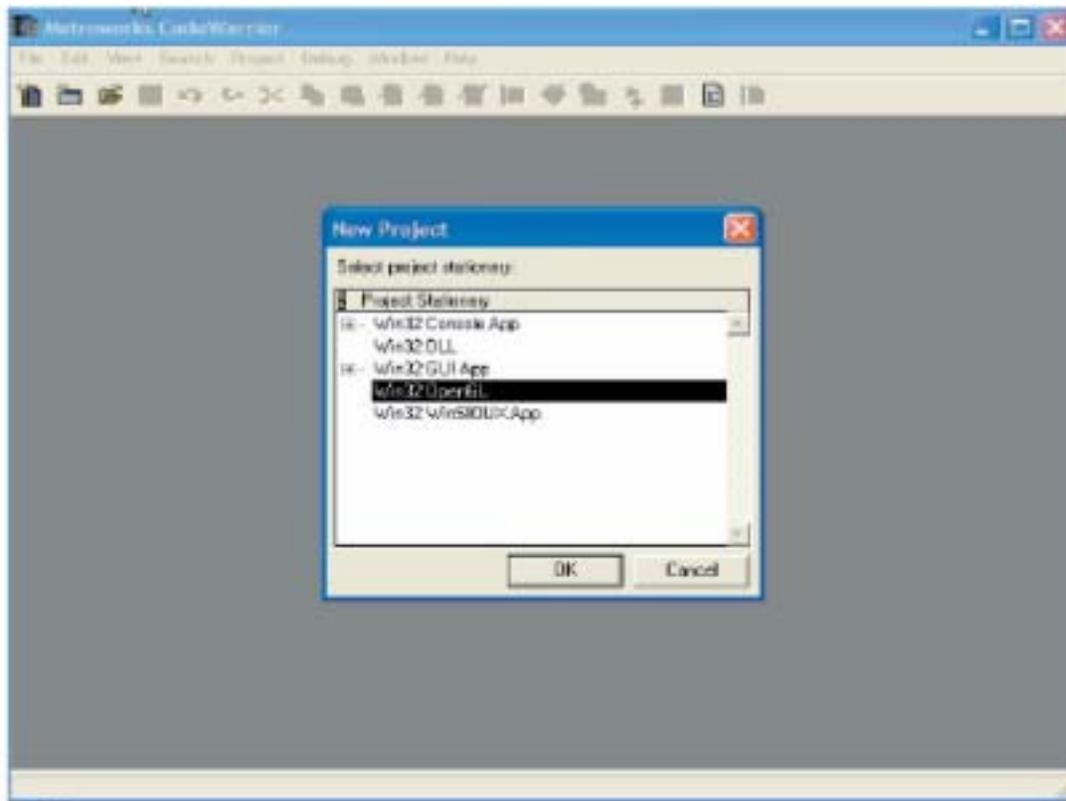
Install C style OpenGL, continued

7. Open Codewarrior. Go to File, click New, Choose win32C stationary. Type in your project name under the “Project name”. Choose the directory under “Location”. Click “OK”.



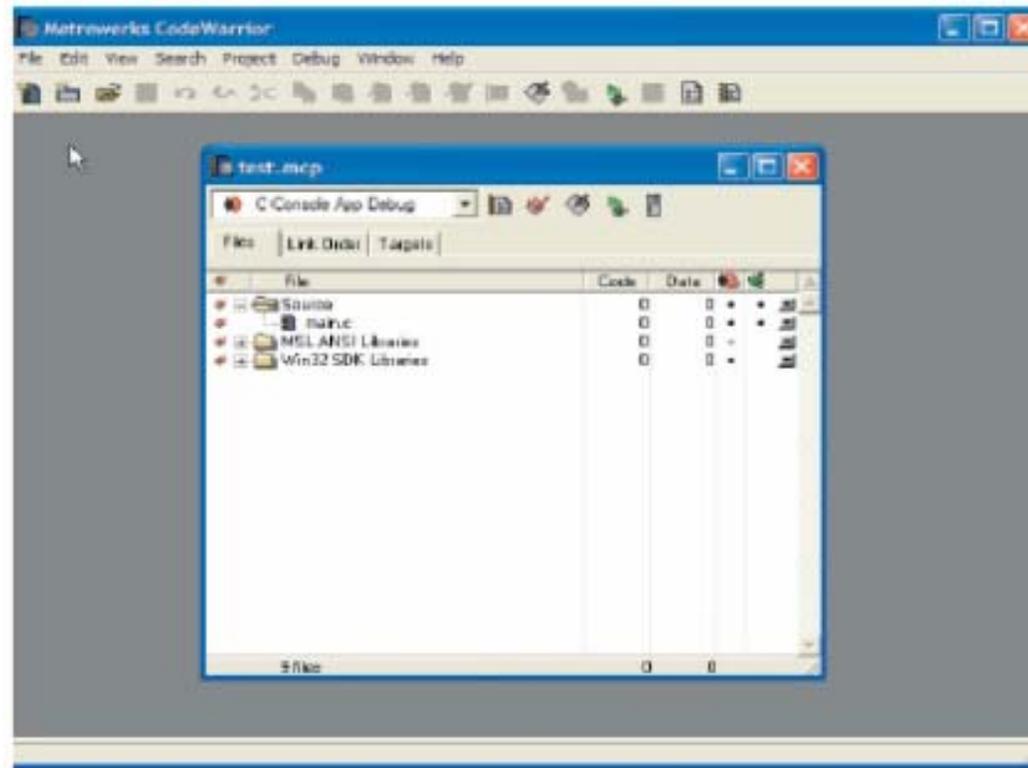
Install C Style OpenGL, continued

8. After step 7, you will see the following window. Click Win32 OpenGL to open a new OpenGL project. Click “OK”.



Install C style OpenGL, continued

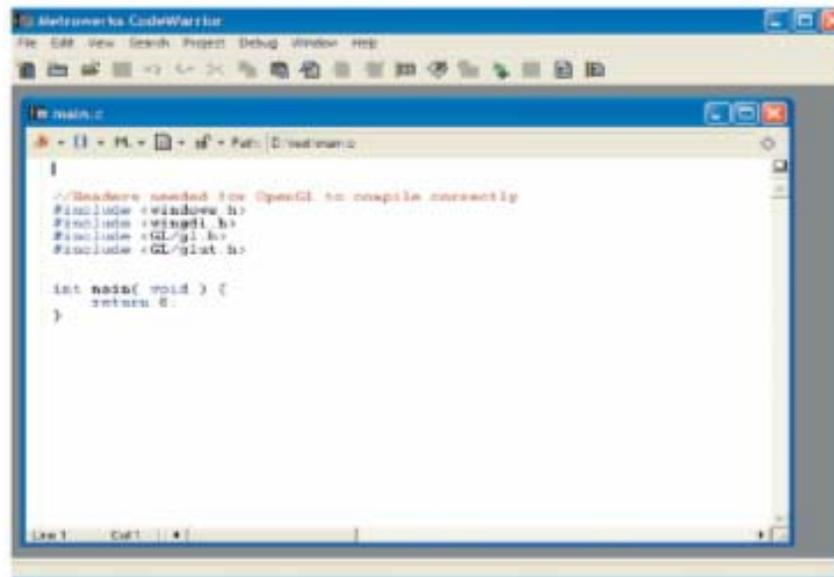
9. After step 8, you will see a code warrior window with your project in it as follows.



Install C style OpenGL, continued

10. If you click on main.c, you will see that all the includes which are needed to run OpenGL has been added to this main.c already for you.

In fact, only “windows.h” and “glut.h” are absolutely needed. We need “window.h” for running OpenGL in windows. Most of the time, “glut.h” includes “gl.h” and “glut.h”, therefore, you only need to include “glut.h”.



```

//Headers needed for OpenGL to compile correctly
#include <windows.h>
#include <windef.h>
#include <GL/gl.h>
#include <GL/glut.h>

int main( void ) {
    return 0;
}

```

Congratulations!

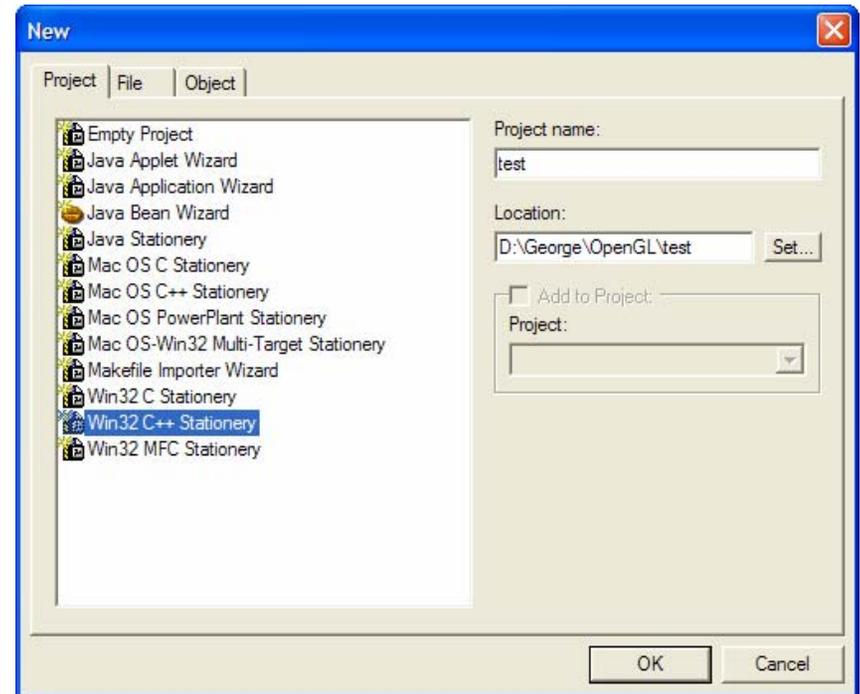
You have successfully installed OpenGL in Codewarrior and opened a new project which includes OpenGL on your own.

If you want to work in C++ style OpenGL in Codewarrior

- You need to add 3 files to your C++ project:
 - glu32.lib
 - glut32.lib
 - opengl32.lib
- You need to modify the glut.h file and include the modified glut.h file into your program.

Add 3 OpenGL files to your C++ project

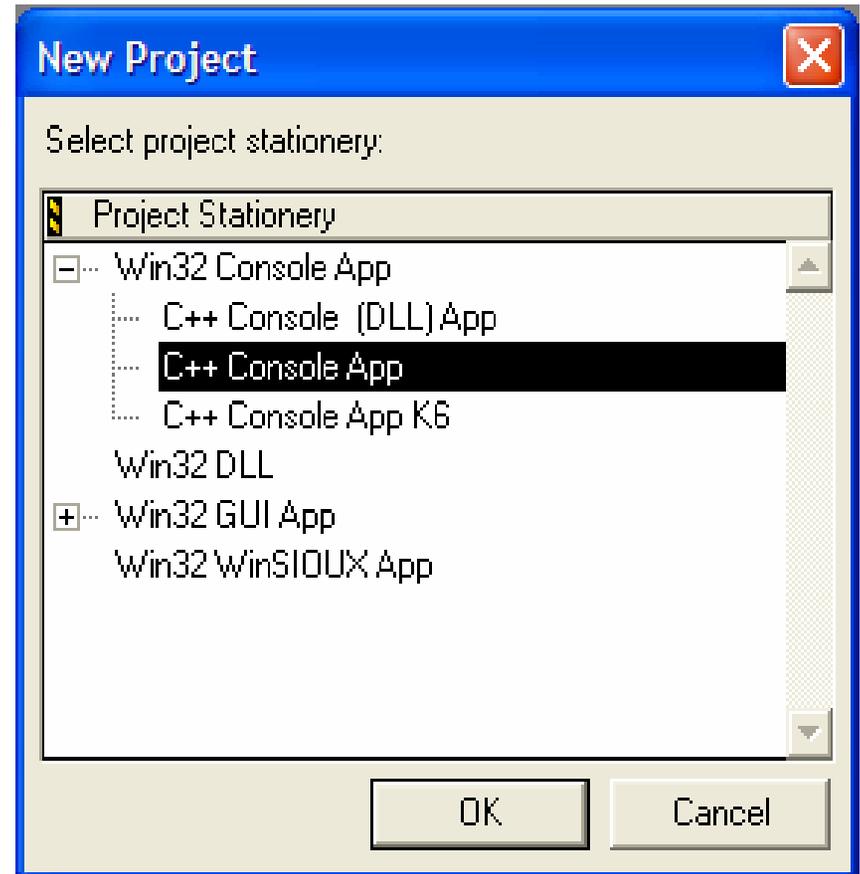
- Open up Codewarrior.
- Go to File → New.
- Add project name under “Project name”.
- Select your project path under “Location”.
- Click “OK”.



Add 3 OpenGL files to your C++ project

Continued...

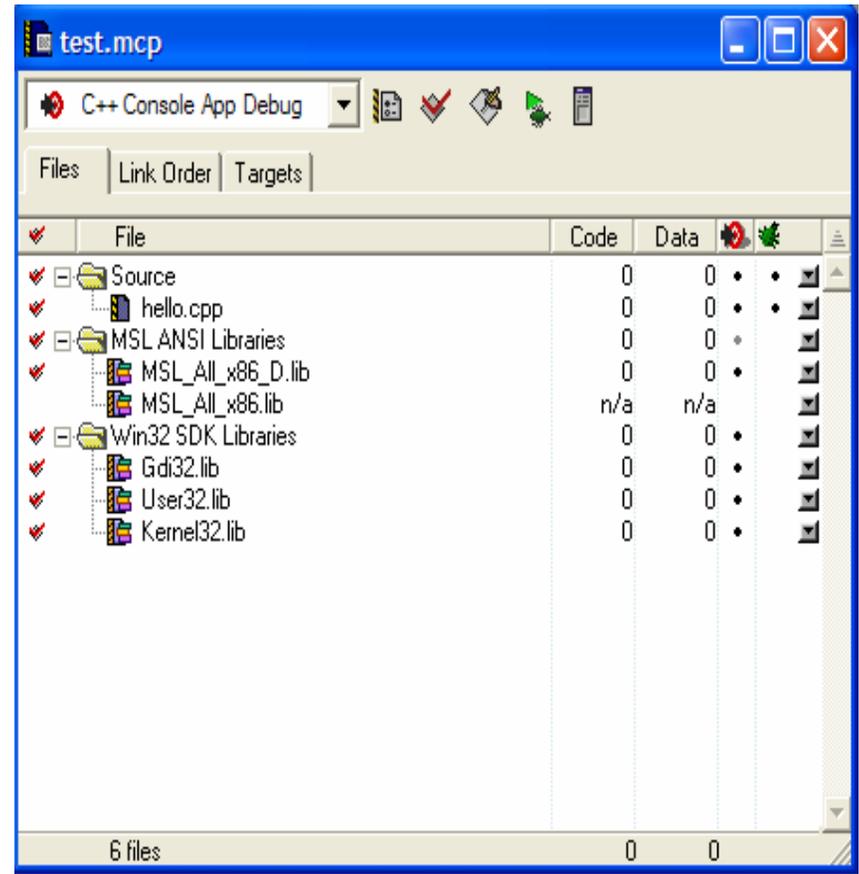
- After you click “OK” in the previous screen, you will see the screen on the right.
- Choose “Win32 Console App”.
- Click “C++ Console App”.
- Then click “OK”.



Add 3 OpenGL files to your C++ project Continued...

- After you click “OK” in the previous screen, you will see the screen on the right.
- Then you will need to go to “Project → Add Files...” to add the following three files:
 - glu32.lib
 - glut32.lib
 - opengl32.lib

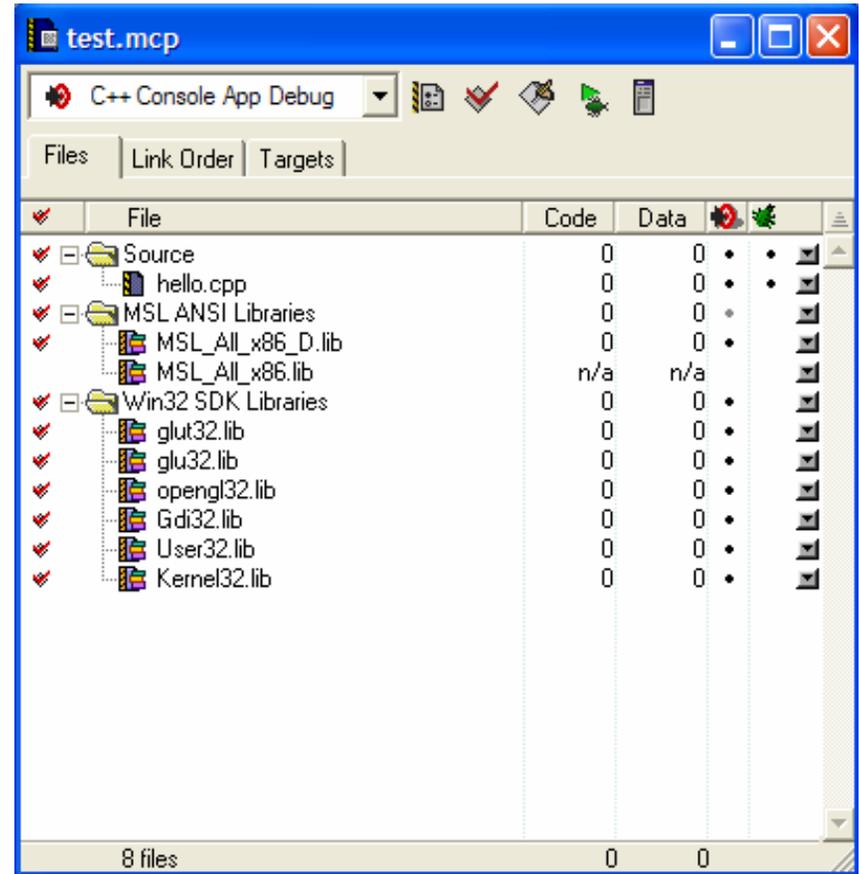
These three lib files are essential for running your OpenGL code.



Add 3 OpenGL files to your C++ project

Continued...

- After you added three lib files to your C++ codewarrior project, you will see that your project looks similar to the window on the right.
- Notice that “glu32.lib”, “glut32.lib” and “opengl32.lib” in this case have been moved under “Win32 SDK Libraries”. This is up to you.
- If you want, you can set up your Code Warrior path to permanently include these three lib files in your C++ CodeWarrior projects.



Include OpenGL header files

- You need to include OpenGL header files to make C++ style OpenGL work with Codewarrior.

- The following are necessary includes.

```
#include <windows.h>
```

```
#include <wingdi.h>
```

```
#include <GL\gl.h>
```

```
#include "glut.h"
```

- Instead of include <GL\glut.h>, we use our modified glut.h file, because the original glut.h file seems to have unresolved compiling problems with C++ in Codewarrior.

Modify the original glut.h file

- Prior to modifying the glut.h file, be sure to make a copy of it.
- In the glut.h file, change the following three lines.
 - Note the underlined words are added to the original code.
- `static void APIENTRY glutInit_ATEXIT_HACK(int *argcp, char **argv) {
__glutInitWithExit(argcp, argv, std::exit); }`
- `static int APIENTRY glutCreateWindow_ATEXIT_HACK(const char *title) {
return __glutCreateWindowWithExit(title, std::exit); }`
- `int APIENTRY glutCreateMenu_ATEXIT_HACK(void (GLUTCALLBACK
*func)(int)) { return __glutCreateMenuWithExit(func, std::exit); }`

In the hello.cpp file, put the following code to test whether your installation of C++ style OpenGL in Codewarrior works correctly

```
#include <windows.h>
#include <wingdi.h>
#include <GL\gl.h>
#include "glut.h"
#include <iostream>
using namespace std;

void myInit();
void myDisplay();

void myInit(){
    glClearColor(0.0, 0.0, 0.0, 1.0);
    glColor3f(1.0, 1.0, 1.0);
    glMatrixMode(GL_PROJECTION);
    glLoadIdentity();
    gluOrtho2D(-1.0, 1.0, -1.0, 1.0);
} // end of myInit()

void myDisplay() {
    glClear(GL_COLOR_BUFFER_BIT);
    glColor3f(0.0, 0.0, 0.0);
    glBegin(GL_LINES);
        glVertex2f(1.0, 1.0);
        glVertex2f(-1.0, -1.0);
        glVertex2f(-1.0, 1.0);
        glVertex2f(1.0, -1.0);
    glEnd();
    glFlush();
} // end of myDisplay()

int main(int argc, char **argv)
{
    cout << "Hello World, this is
CodeWarrior!" << endl;

    glutInit(&argc, argv);

    glutInitDisplayMode( GLUT_SINGLE |
GLUT_RGB );
    glutInitWindowSize(400, 400);
    glutInitWindowPosition(30, 30);
    glutCreateWindow("Generic OpenGL
Program");

    /* register callback functions */
    glutDisplayFunc( myDisplay );

    /* call special initialization
function */
    myInit();

    /* start the event loop */
    glutMainLoop();

    return 0;
} // end of main
```

If your installation is successful, you should see the following output

