

Programming VEX with MPLAB Tutorial

What you need:

[MPLAB 8.10 - click to download](#)

[WPILIB - click to download](#)

[mcc18 compiler 2.40v \(student edition\) - click to download](#)

[IFI Loader - click to download](#)

How to install:

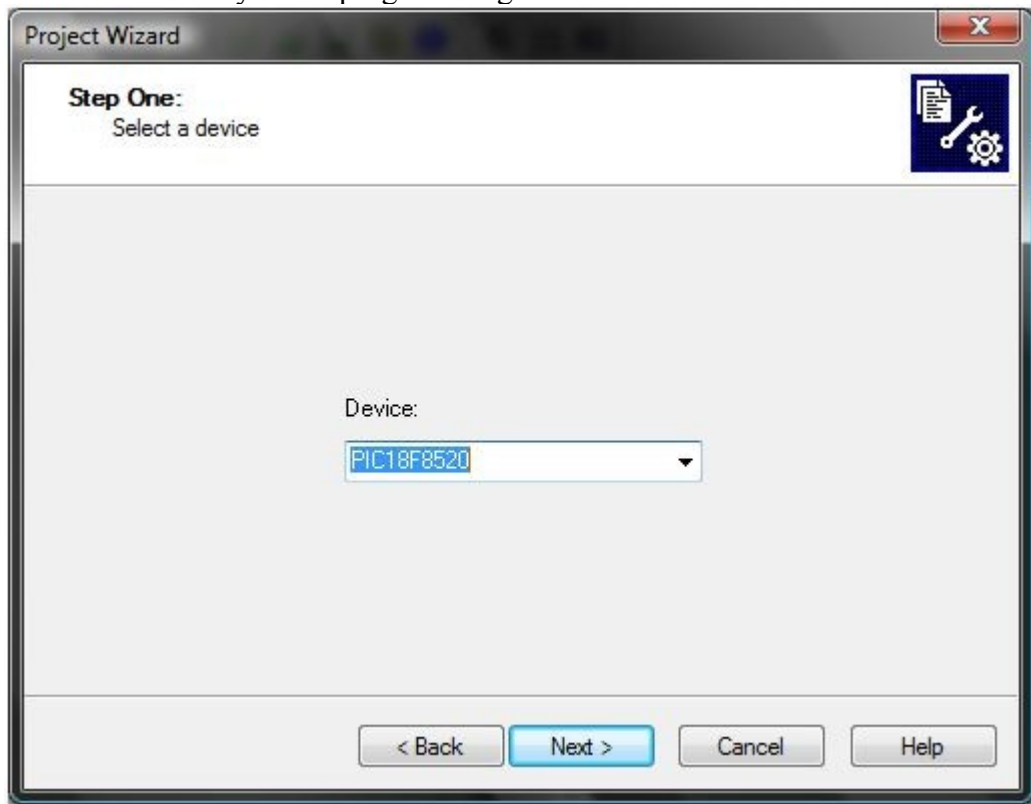
To install MPLAB just run through the wizard and you'll be good.

Installing WPILIB is even easier.

1. Just unzip the folder contents to "C:\wpilib"
2. Run the Setup.exe to install your IFI Loader.
3. Lastly I would recommend installing the mcc18 compiler to "[C:\mcc18](#)".

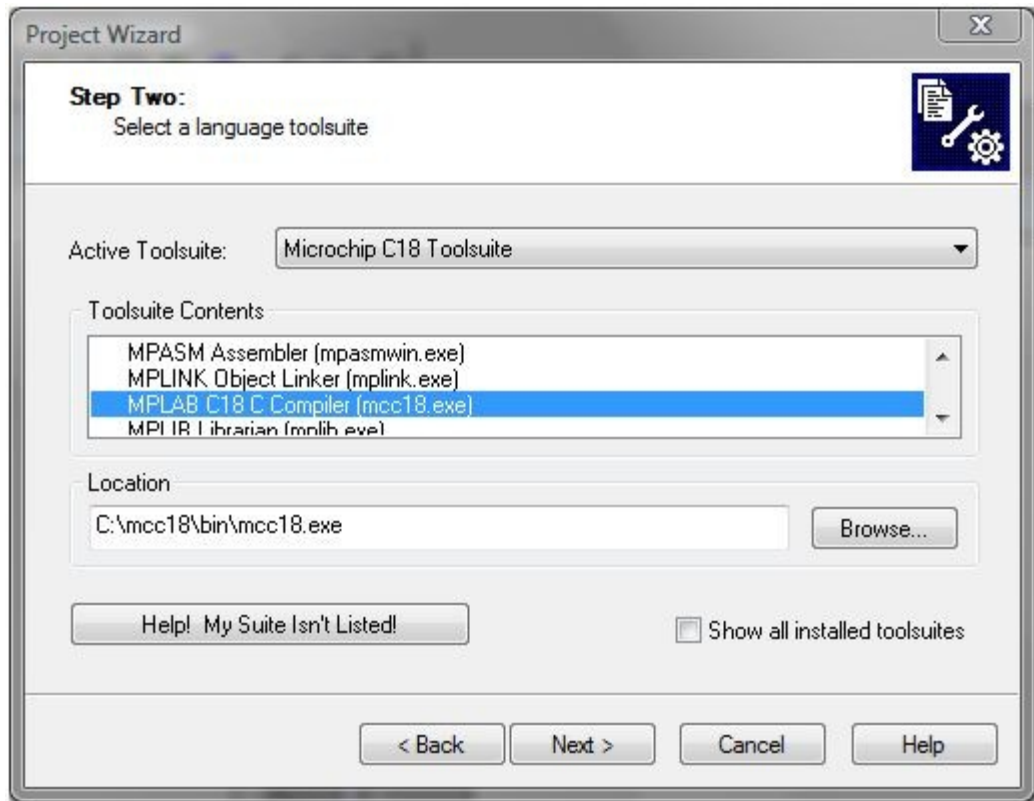
Creating Your First Project:

In MPLAB go to Project --> Project Wizard, and select "PIC18F8520", if you're programming vex robots, and "PIC18F8522" if you are programming FRC robots.

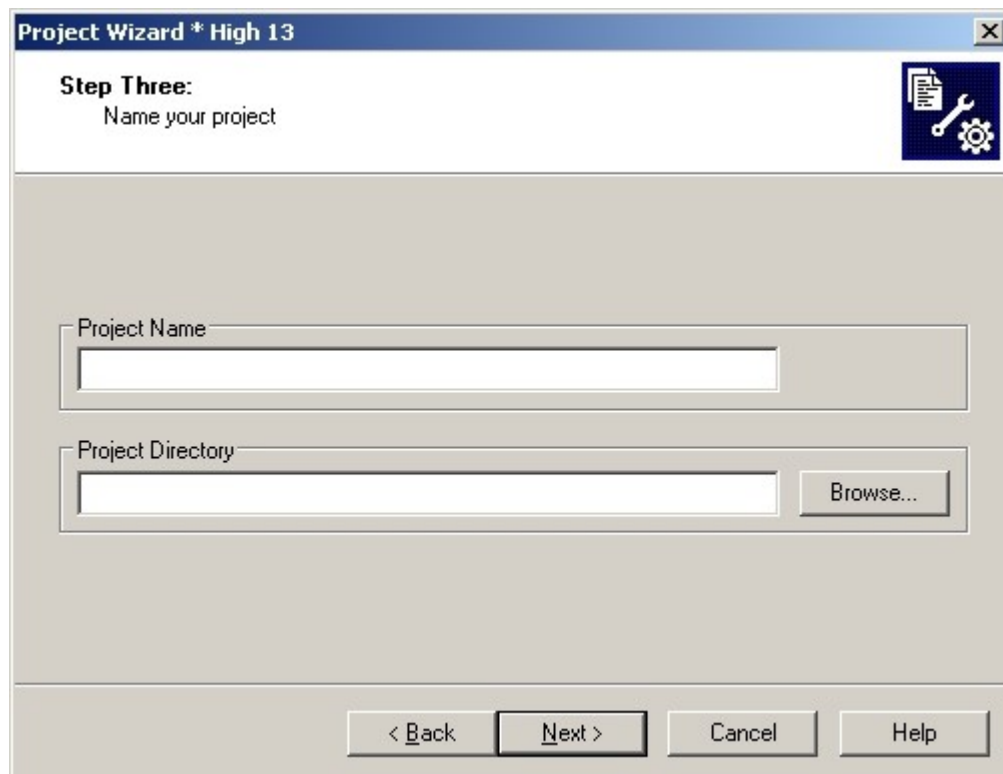


Next choose a language toolsuite. This simply means that we need to create a project for writing C programs (C18 compiler toolsuite).

Sometimes nothing appears here, and I have to restart the process all over again. I don't know if it's just my computer or if a newer version of MPLAB would be better.

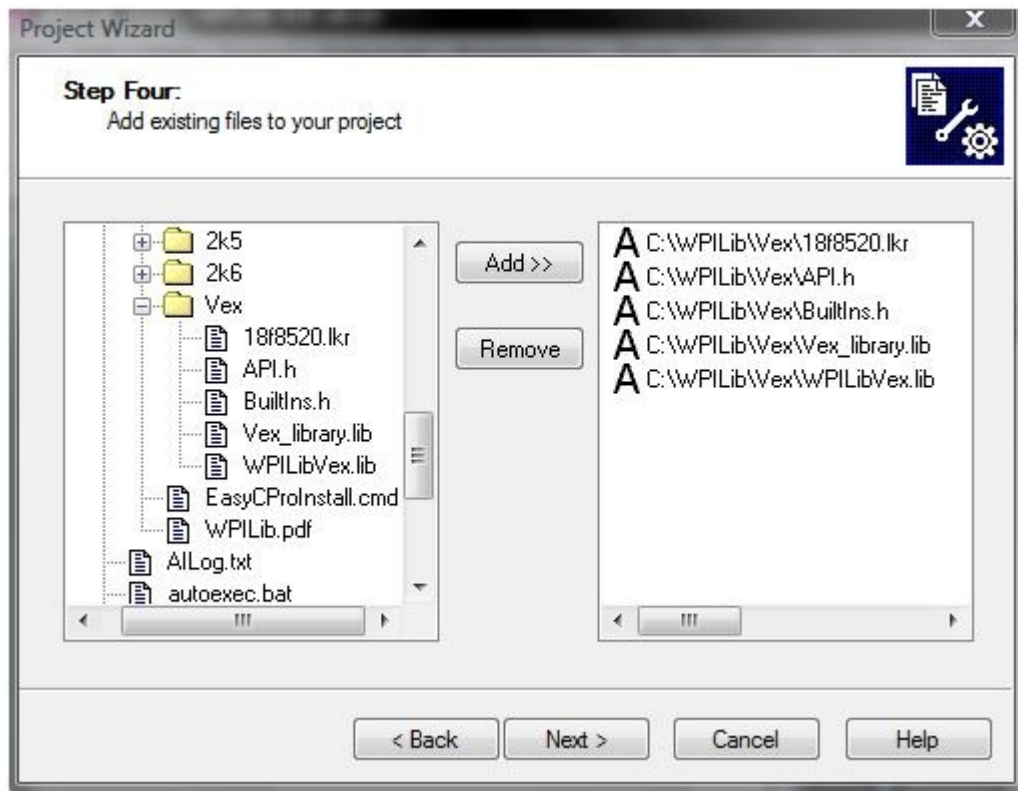


Now choose a name for your project (I chose EXAMPLE). Now comes the trickier part. You have to add ALL the files in from "C:\wpilib\Vex\" to your project. After that is done click Next and then Finish.

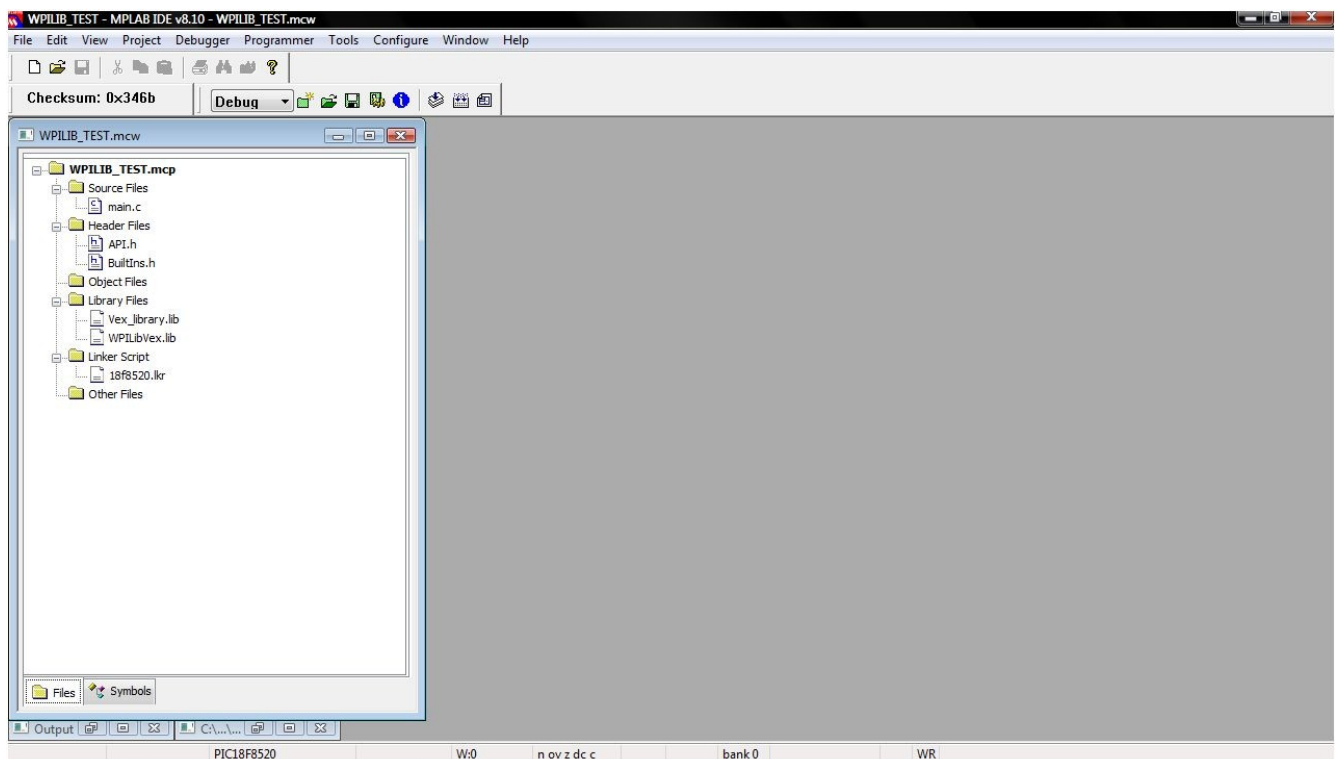


Here's where some users have encountered a bit of trouble recently:

The trouble they have is in added the important files that make this thing work. If you clicked next from the previous window, you should be at a screen like this:



Obviously, yours won't have the files in it as mine does, but you get the general idea. My files that I added were located in C:\wpilib\Vex\. Find that directory and add all of it's files to your project by highlighting one and clicking the “Add>>” button. After you are done, click “Next>”. Your screen should look like this:



**** It is important that the library link order has WPILib first before the Vex_library.lib since some of the WPILib modules replace Vex_library.lib modules. To set the build order right-click on the "Library Files" heading in the project window and select "Library link order...". Change the order of the libraries so that WPILib is first using the arrow buttons on the side of the window. ****

Writing Some Source Code

Now you need to click File --> New and save it as "main.c". After this go right-click on "Source Folders" in the project Window (if you do not see the project window click View --> Project), and click "Add Files...". Now select your main.c file that you made and click OK. The text of your main.c file must start out like this:

```
#include "API.h"
#include "BuiltIns.h"
void main(void)
{
    SetPWM (1, 255);
    SetPWM (2, 0);
    Wait (3000);
    SetPWM (1, 127);
    SetPWM (2,127);
}
```

Now save your file. You can add your custom code to this file at anytime.

To build your project click Project --> Build All. If you followed these instructions correctly you should have made a successful project. If not, there's a troubleshooting section below where Error [1027] is addressed.

Lastly, use your IFI Loader to upload the .HEX file onto your VEX robot's controller.

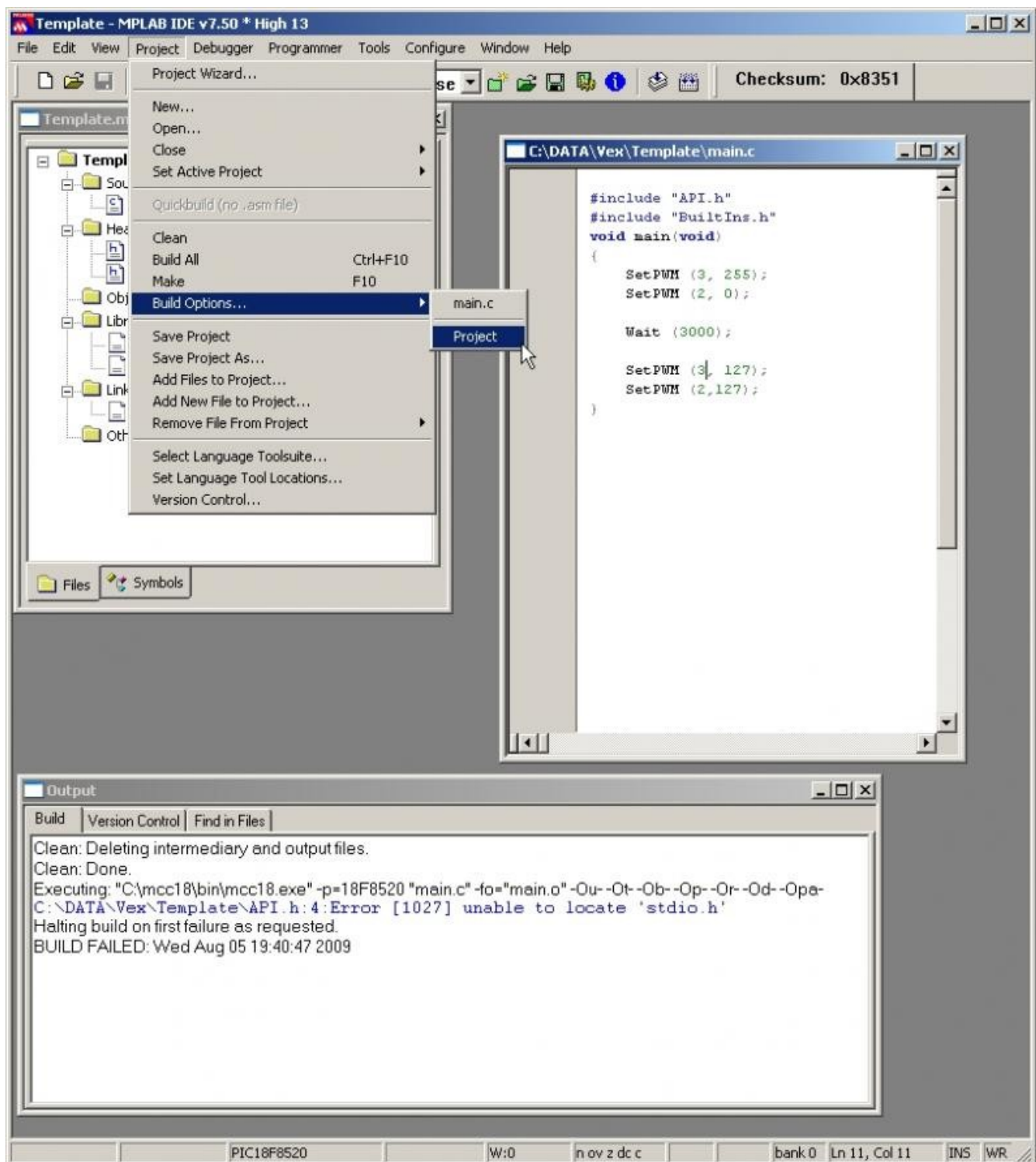
I hope this tutorial has been helpful to you! If you have any questions about how to get MPLAB set up please contact me through the Vex Forum, my username is "GGCO". There is also a [forum thread dedicated to this very tutorial](#), so please feel free to post your questions.

TROUBLESHOOTING:

The most common problem people have been having is that for what ever reason when they complete step four (adding files to their project) their work space will show that they have all the files, but when they go to build the project they get an error saying "Error [1027] Unable to locate file: 'x', 'y', 'z', Build Failed".

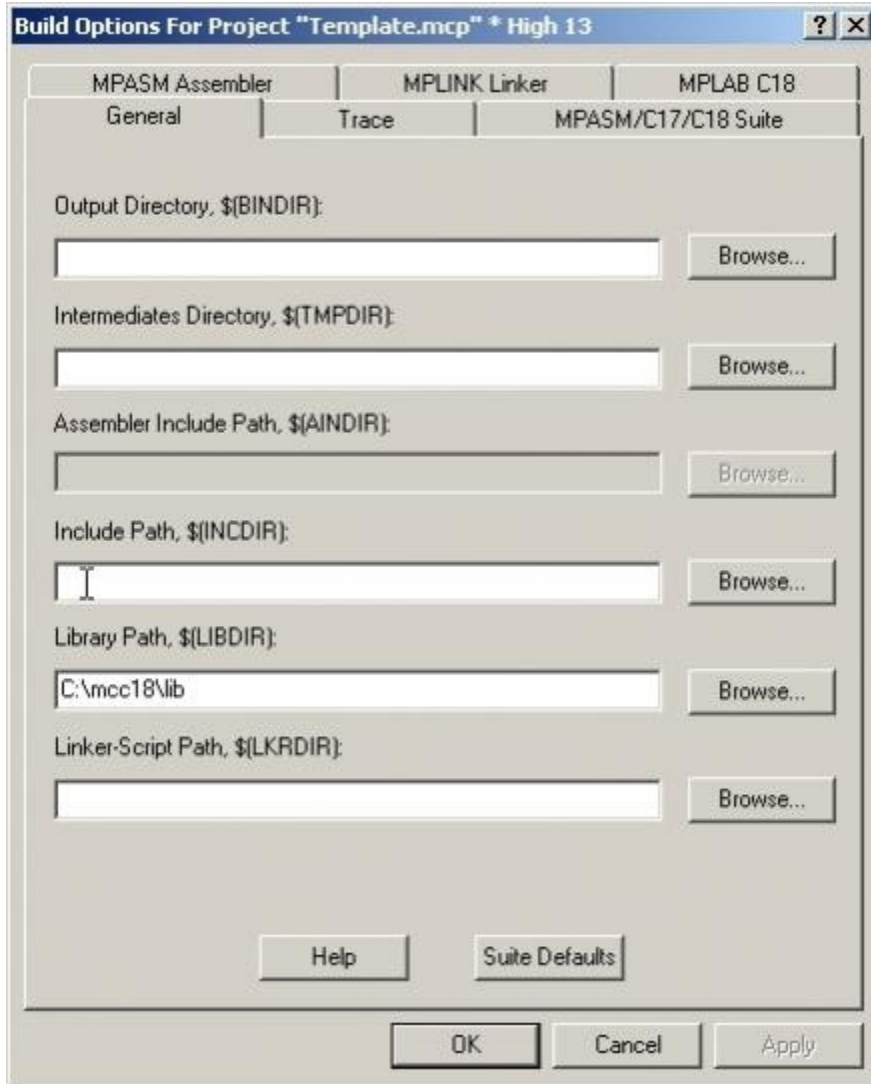
Here's how to fix this - (Thank [MarkO](#) for this part):

Click Project → Build Options... → Project



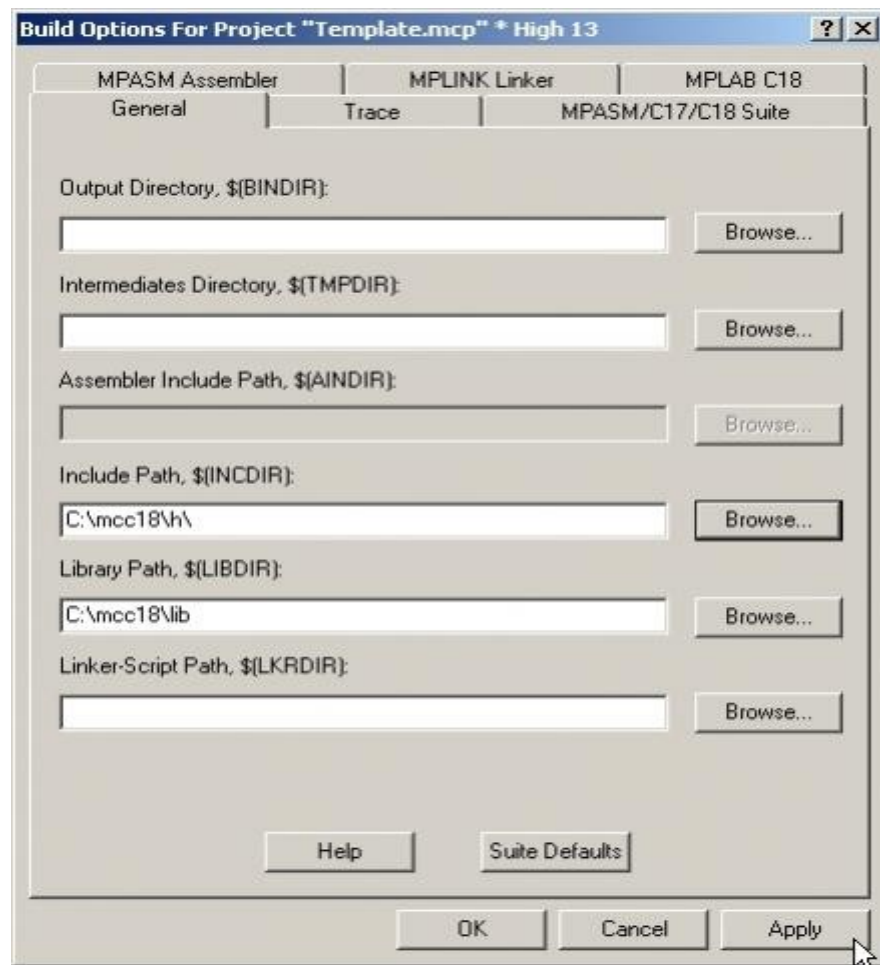
You should see a screen like this now:

Click on the General tab and move your cursor to the Include Path field.



Type in or **Browse** for the MCC18 Header Files, (Those are the *.h Files). I chose the **Browse** method, so there is a Back Slash at the end of the Path. That is fine, it will compile OK.

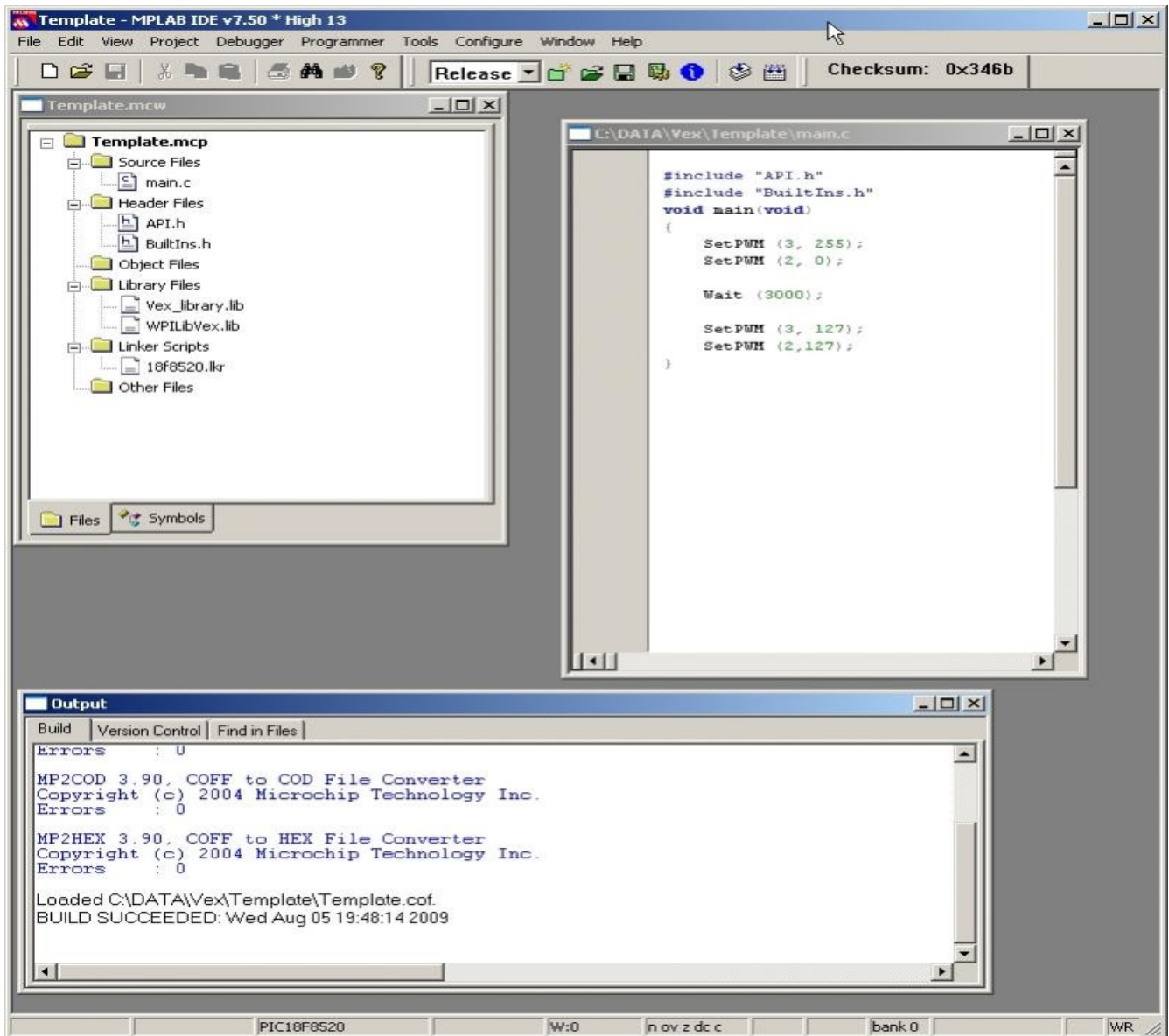
Check the **Library Path**, it should be in the same Parent Directory as the **Include Files**, but instead of "[path to mcc18]\h", should be "[path to mcc18]\lib"



(On my system, my **Include Directory** is "C:\mcc18\h", and **Library Directory** is "C:\mcc18\lib".)

Click Apply, and then Click OK.

Do a "Project-->Build All", it should look like this:



Save your **Work Space**, this is now a Starting Template for you to start all of your Vex projects from.

You might want to copy this entire Directory (Folder) to another area, so that in the Future, you won't have to go through all these steps again..

Also, if you still have this problem, use Windows Explorer to navigate to your project's directory and to C:\wpilib\Vex (or where ever your wpilib files are) and copy and paste those files into your directory.

If you have further Issues, please **don't hesitate** to post a message in the forum.. We were all beginners at one time too....

- MarkO

TROUBLESHOOTING (Cont.)

Some people were worried about their version of MPLAB (the one that this tutorial has you download) being the student or trial version. MarkO addressed this issue on the [forum thread for this tutorial](#):

“Don't Panic!! MPLAB is just the IDE, the actual compiler is MCC18.

The Student or DEMO version of MCC18 is "Full Featured", for the first 60 days after install, meaning that the User can "Compile With" the "Extended Mode Compiler" in that Time Period, without buying a License for the Full Version.

EasyC ships with the same Student or DEMO version of MCC18, and does not use the "Extended Mode Compiler", just the "Traditional Mode Compiler".

For that matter, the PIC18F8520 used in the Vex Controller is not even supported by the "Extended Mode Compiler". The PIC18F8722 used in the FRC Controllers from 2006-2008 is supported, FWIIW.

See the Microchip Compiler Guides for more information...

Bottom Line. just ignore the "demo becomes feature limited" message, the Vex does not need the extended features.”

- MarkO