

## Creating an WPILib project using MPLab

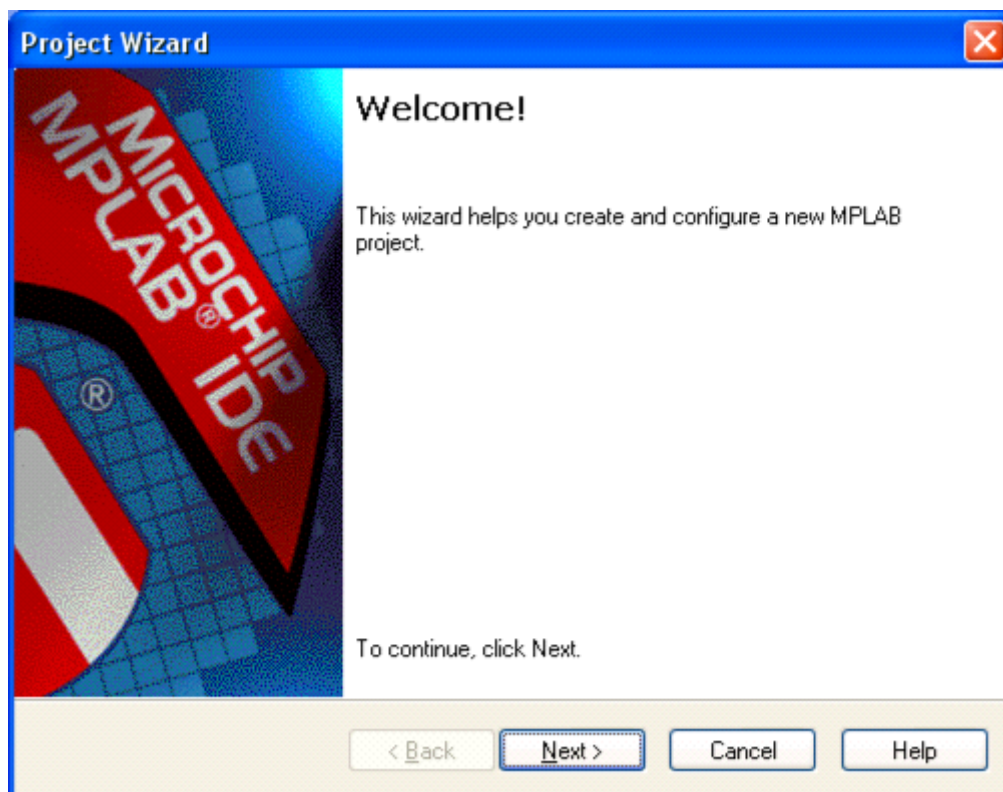
MPLab is the standard development environment shipped with the FRC robot standard kit of parts. You can use it to create projects for WPILib. Before starting make sure that MPLab and MCC18 C compiler are installed properly on your system. When installing, unless you are an expert, use the default options.

To install WPILib unzip the file into a directory on your hard drive. You will be importing the WPILib files into the project in one of the following steps.

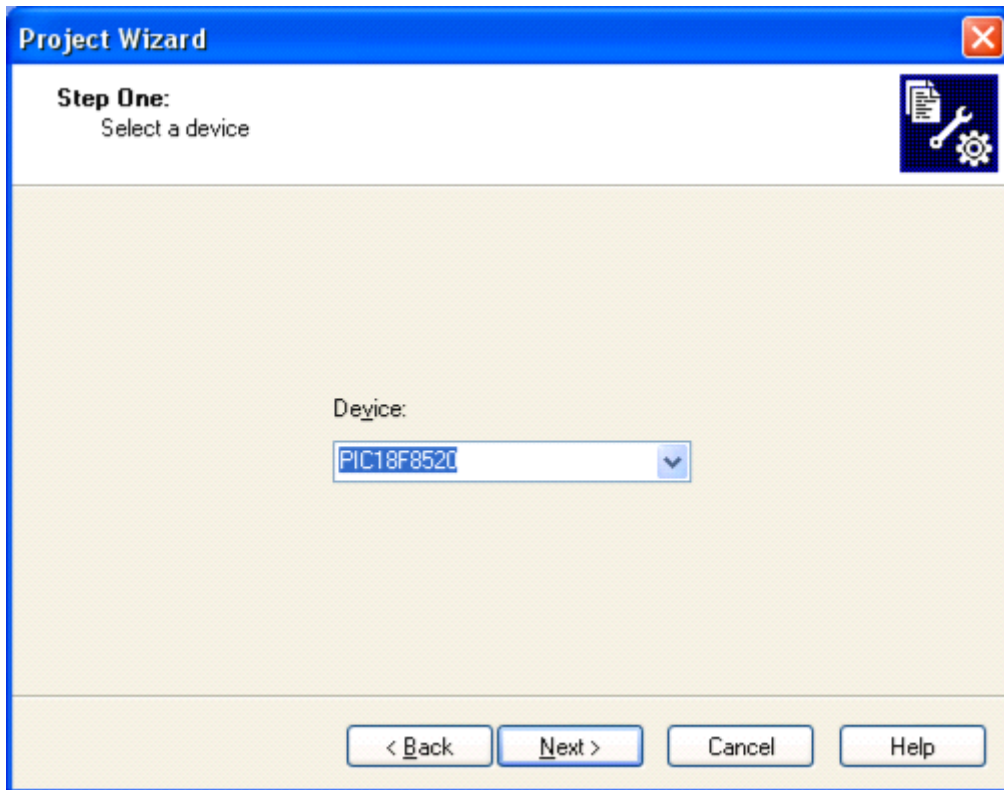
This simple example will be a program that just prints a message on the terminal window every second.

Let's get started.

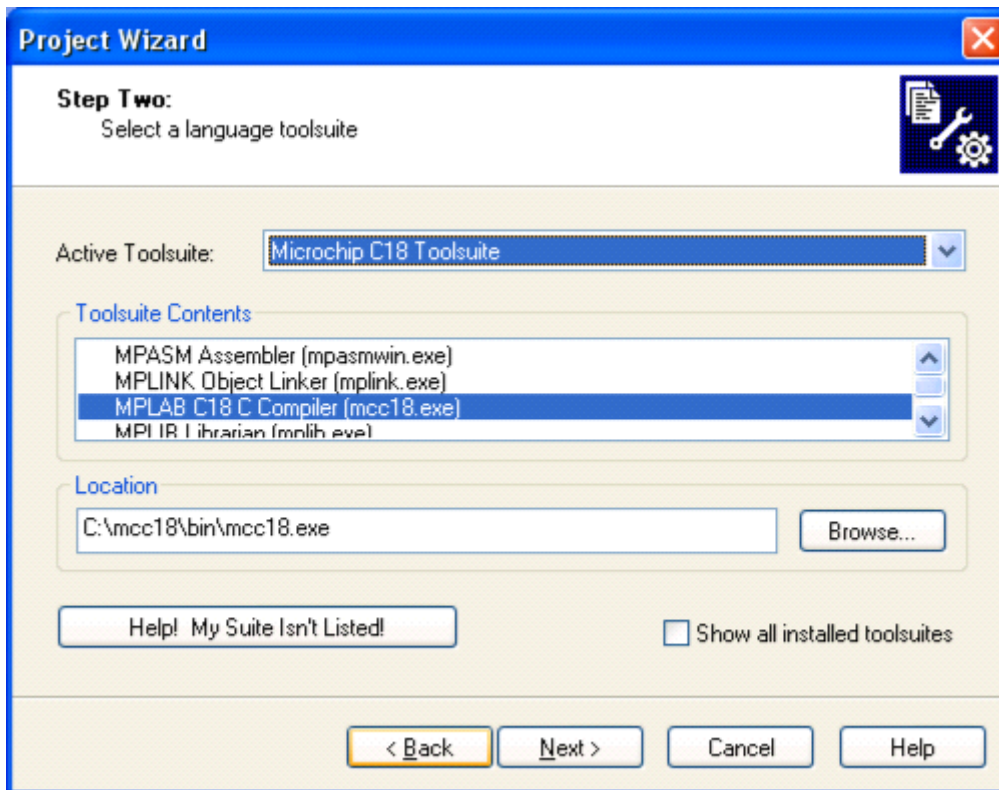
In MPLab start the project wizard from the Project menu. You will see something that looks like this. Click Next:



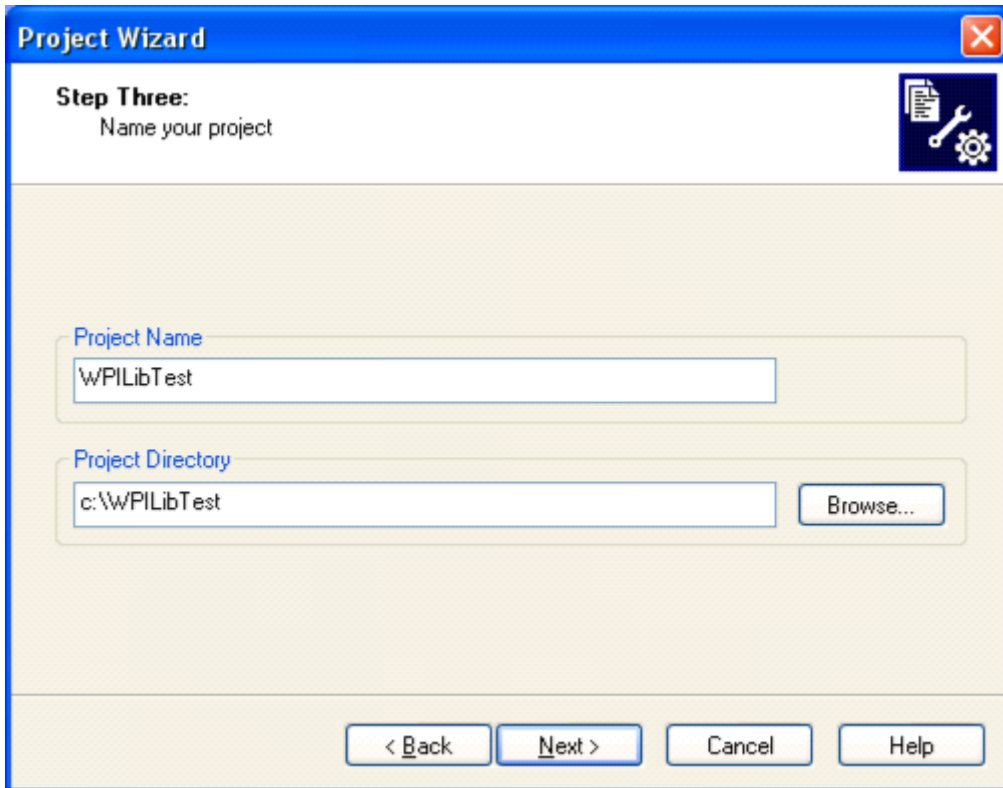
The next window asks you to select a device. For 2004 and 2005 controllers use PIC18F8520. For 2006 controllers use PIC18F8722. Be sure to make the correct choice or your programs won't build correctly.



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



Choose a project name and create a directory to hold the project. You should save the project on a writeable directory on your hard drive.



The image shows a Windows-style dialog box titled "Project Wizard". The title bar is blue with a red close button in the top right corner. The main area has a light beige background. At the top left, it says "Step Three:" followed by "Name your project". To the right of this text is a small icon of a document with a wrench and a gear. Below this, there are two input fields. The first is labeled "Project Name" and contains the text "WPILibTest". The second is labeled "Project Directory" and contains the text "c:\WPILibTest". To the right of the second input field is a button labeled "Browse...". At the bottom of the dialog, there are four buttons: "< Back", "Next >", "Cancel", and "Help".

**Project Wizard**

**Step Three:**  
Name your project

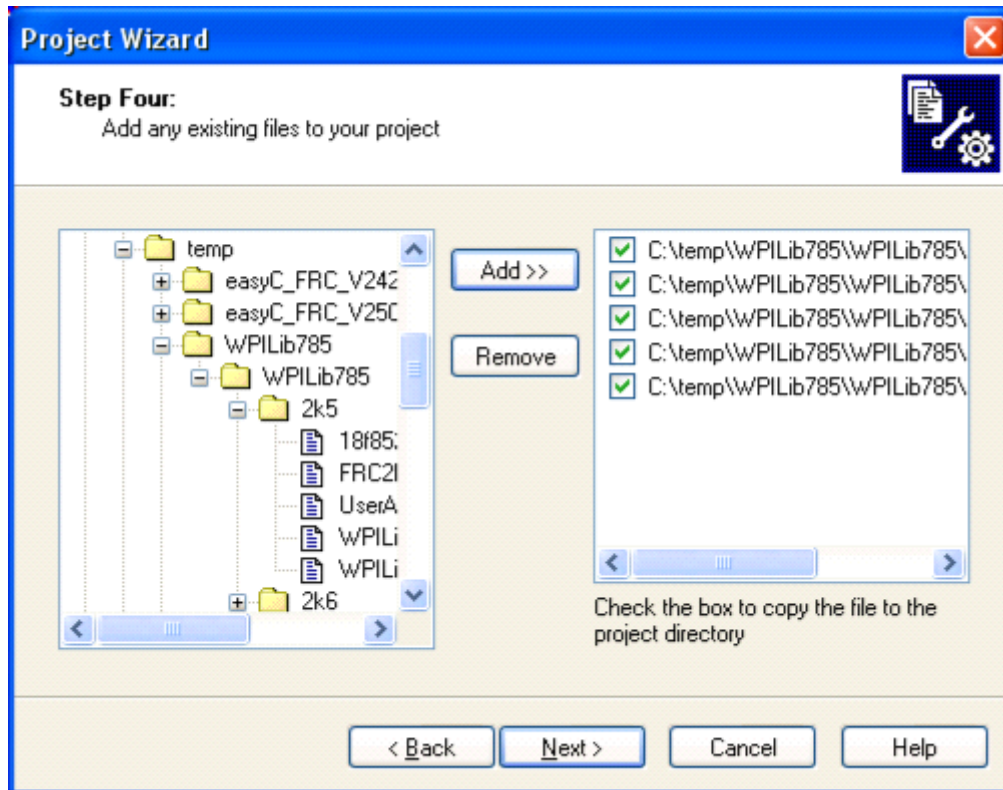
Project Name  
WPILibTest

Project Directory  
c:\WPILibTest

Browse...

< Back   Next >   Cancel   Help

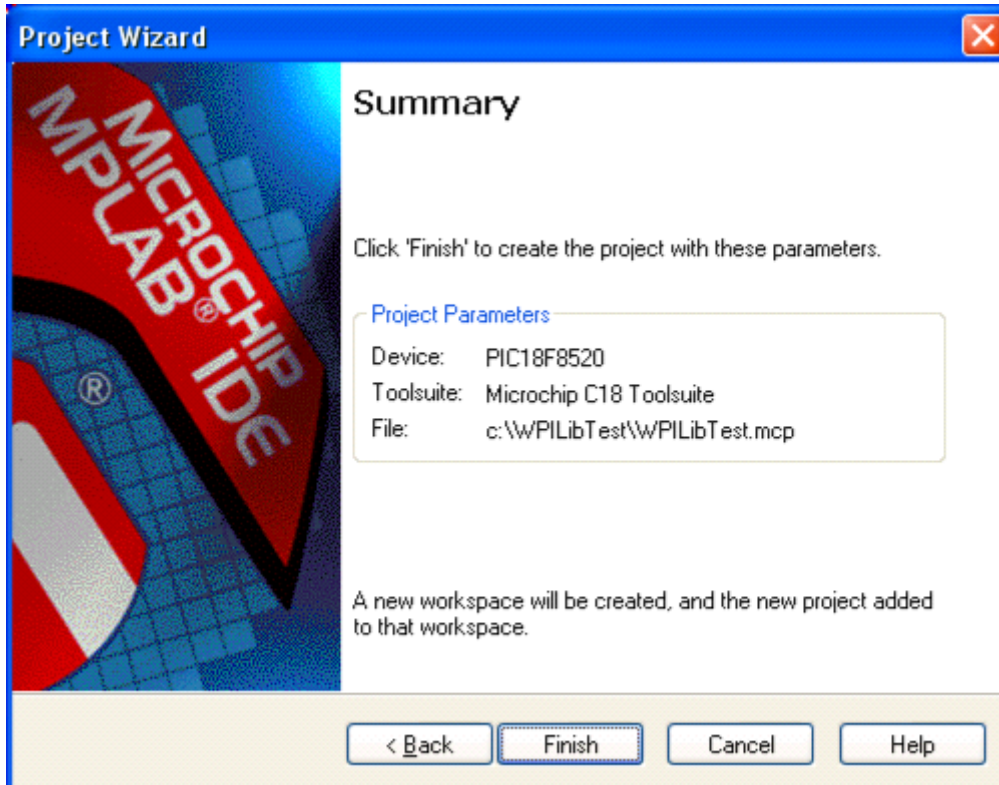
Now you need to add the WPILib files to the project directory. There must be a linker file (.lkr), a WPI Library file (.lib), an IFI library file (.lib), and the WPILib.h and UserAPI.h header files. These files come from the appropriate directory in the WPILib distribution. You must choose the directory that matches your processor (2k5 for 2004-5 or 2k6 for 2006). Again, choosing the wrong one will make your project build incorrectly.



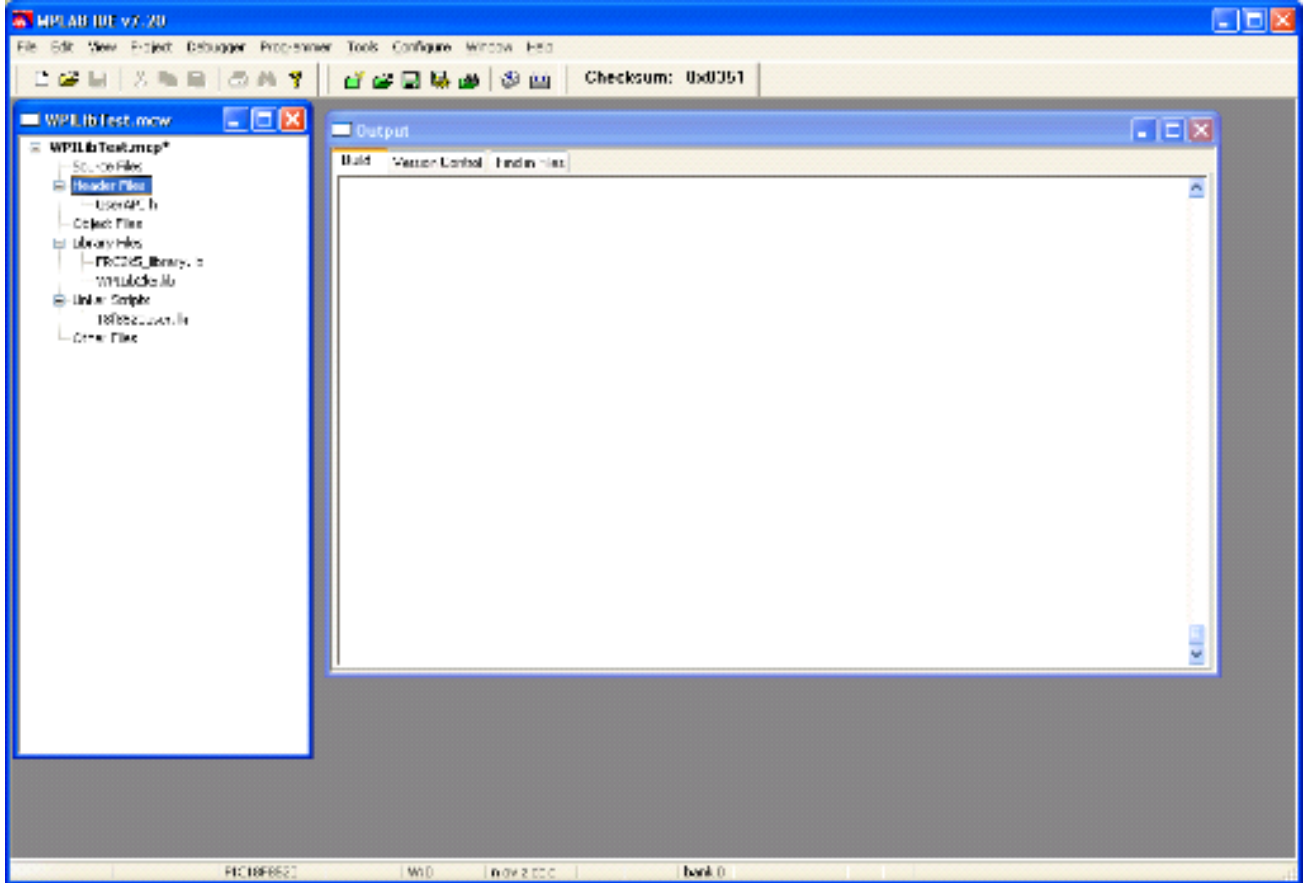
As you get more experience you might just refer the files in the WPILib directory rather than copying them into your project directory. The advantage of this approach is that you can update versions of WPILib as they become available by copying them in one place that all your projects refer to.

This will be documented in the next version of these install instructions.

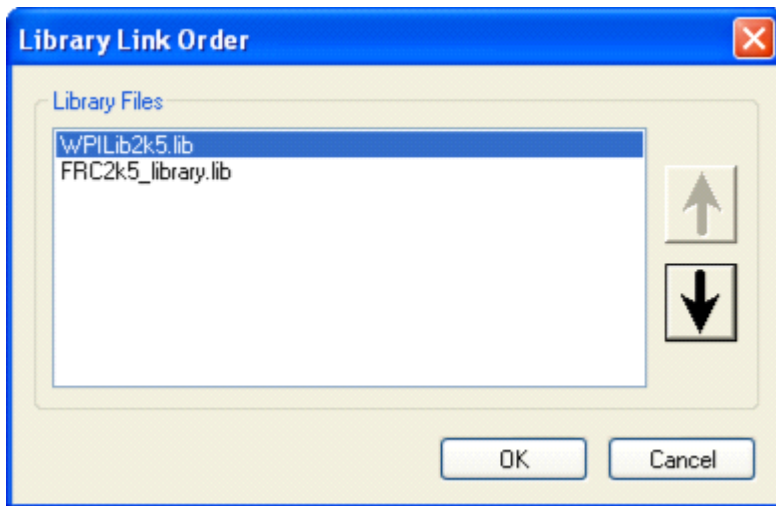
That's it... here's the summary just before MPLab creates the project directory.



When you are finished, MPLab should look something like this:

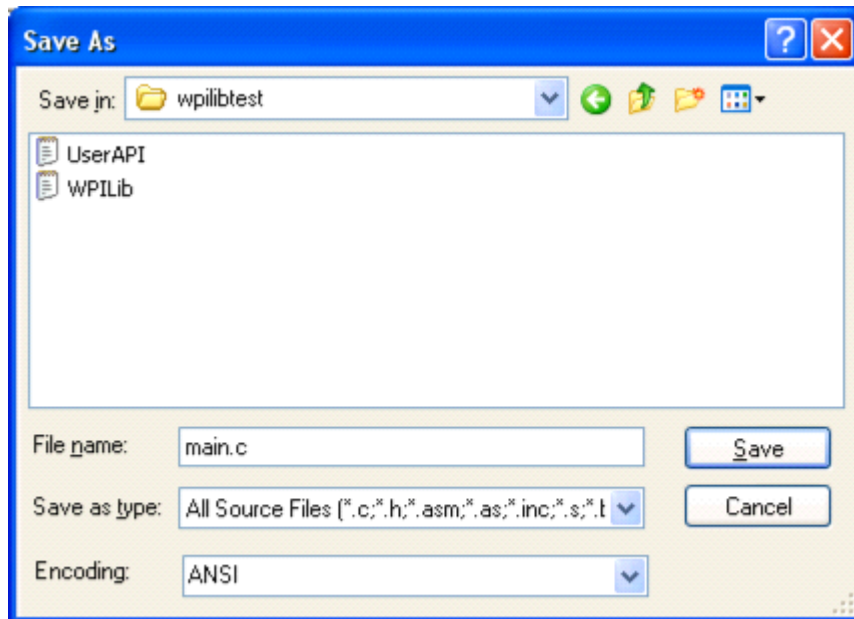


It is important that the library link order has WPILib first before the IFI FRC\_library since some of the WPILib modules replace FRC\_library modules. To set the build order right-click on the "Library Files" heading in in the project window and select "Library link order...". Change the order of the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



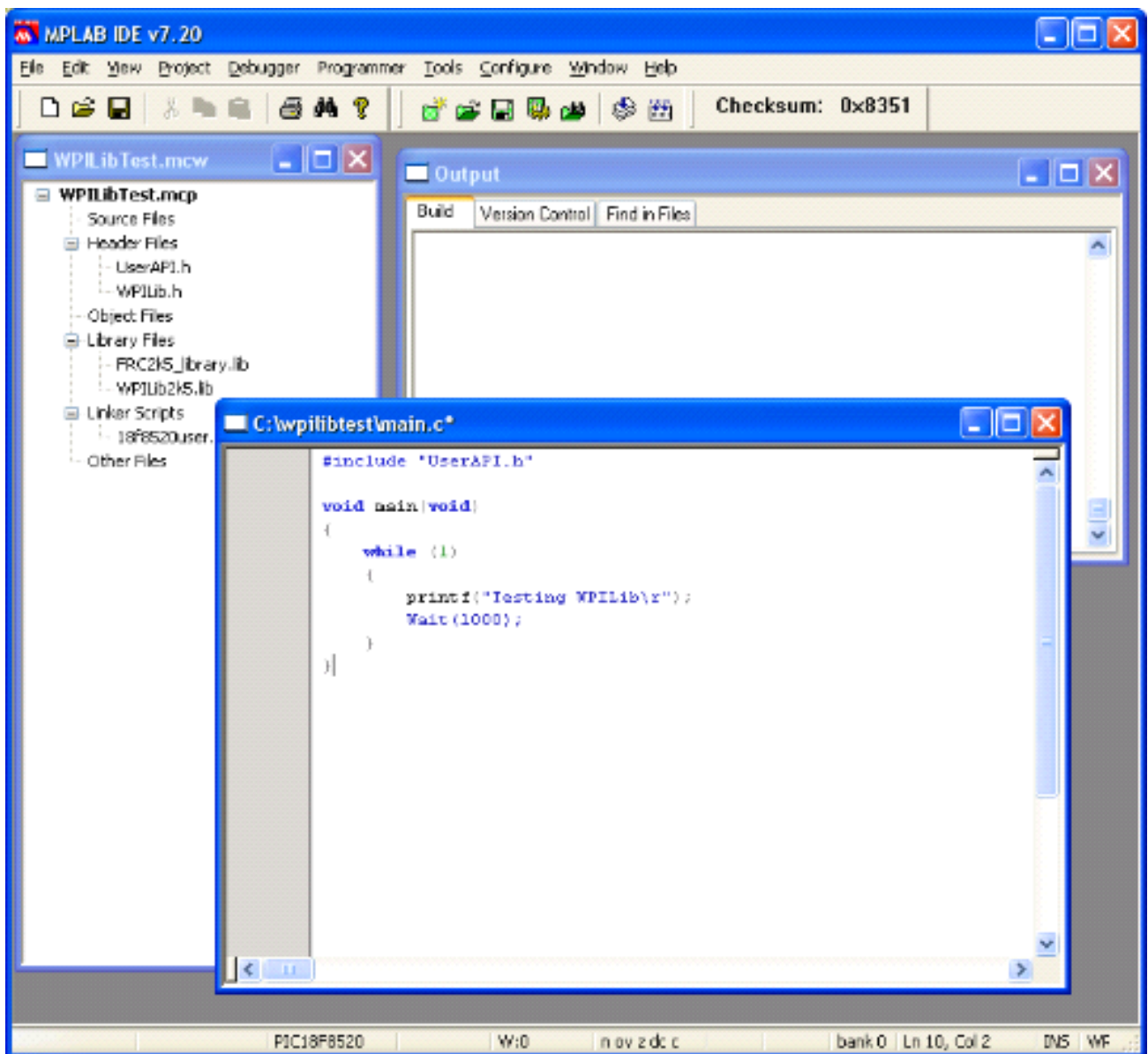
If the library link order is not correct, then you might see multiple definitions of globals like `Get_Analog_Value` when the project is linked.

Now all you need is a C source file that contains the program. Select New from the File menu. You will get an empty file.



Now complete the source file by adding some code. The `main.c` source file should look like this:

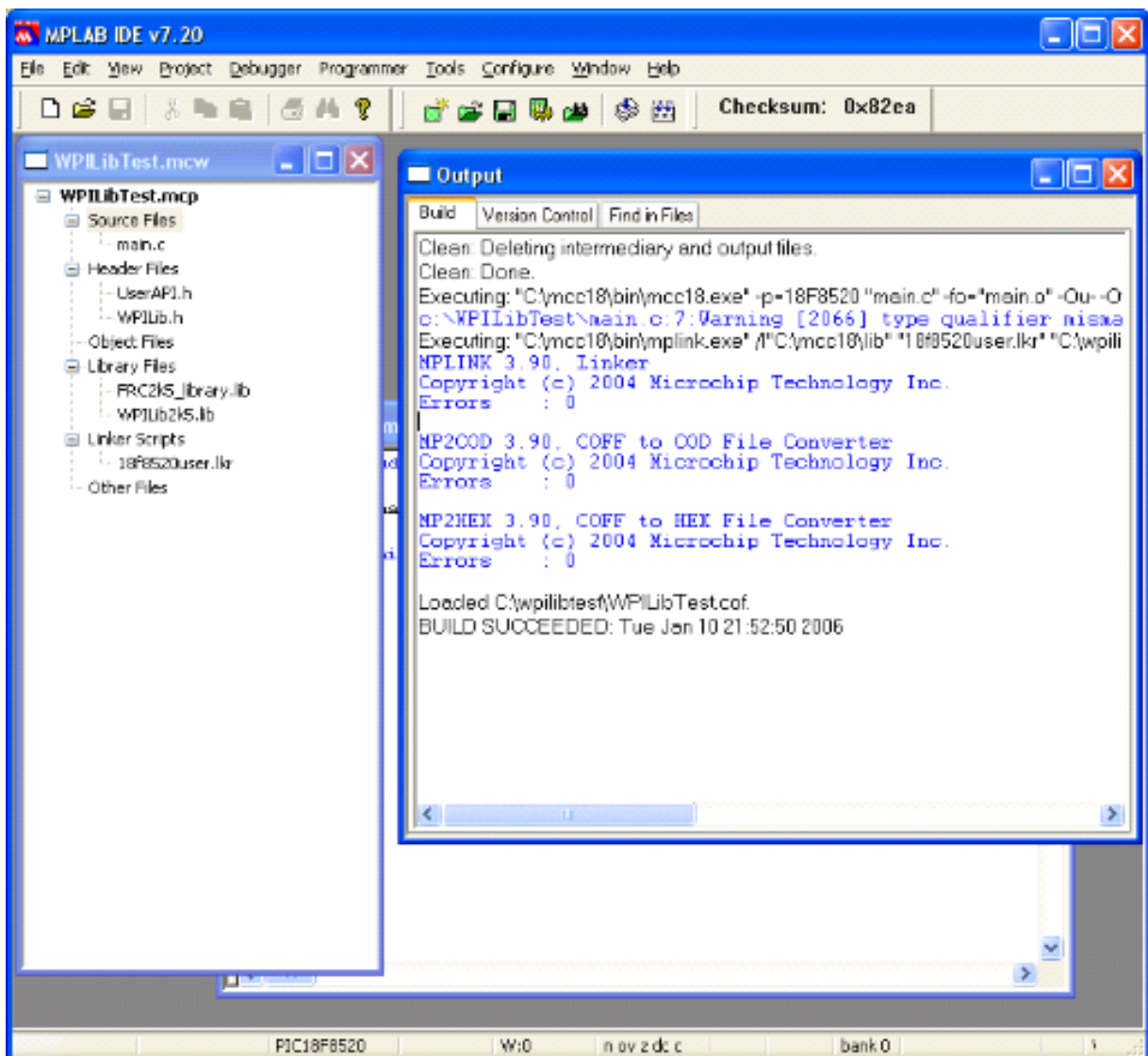




Save the source files by typing Ctrl-S.

You need to add the source file, main.c to the project. To do this right-click on the Source Files heading in the tree on the left side of the window and add the newly created main.c source file.

To build the application click on Build All from the Project menu. The build results will look like this:



That's it! Just load the finished hex file – in this case WPILibTest.hex into your robot controller using the IFI loader that you installed from the MPLab install CD.