Application Note: 207
Porting an mbed Project to MDK-ARM

Abstract

This Application Note demonstrates how to migrate a project based on mbed's online IDE to a Keil µVision based project which allows for offline development. This is possible because both environments use ARM's Real View tool suite which allows for a seamless migration.

Contents

Revision History

- March 2010: Initial Version

Prerequisites

a) The mbed µVision project included with this application note. The project contains all of the libraries and header files necessary to build mbed applications for both the LPC2368 and LPC1768 based mbed boards.

b) Keil MDK-ARM version 4.0 or later. The latest evaluation version can be downloaded from the following web page: http://www.keil.com/demo/eval/arm.htm. A license is required to generate programs with a ROM image larger than 32Kbytes.

c) mbed development board.

µVision Project Set Up

1. Open the folder containing the µVision mbed project file (Blinky.uvproj). Rename this file to the desired Project Name; be sure to keep the ".uvproj" extension (see figure 1).

2. Double click the project file to open µVision. This will produce an error message because the µVision mbed template does not include a ".uvopt" file. The error message can safely be ignored and will result in µVision creating a new ".uvopt" file based on your project's name.

Figure 1 Rename Project File
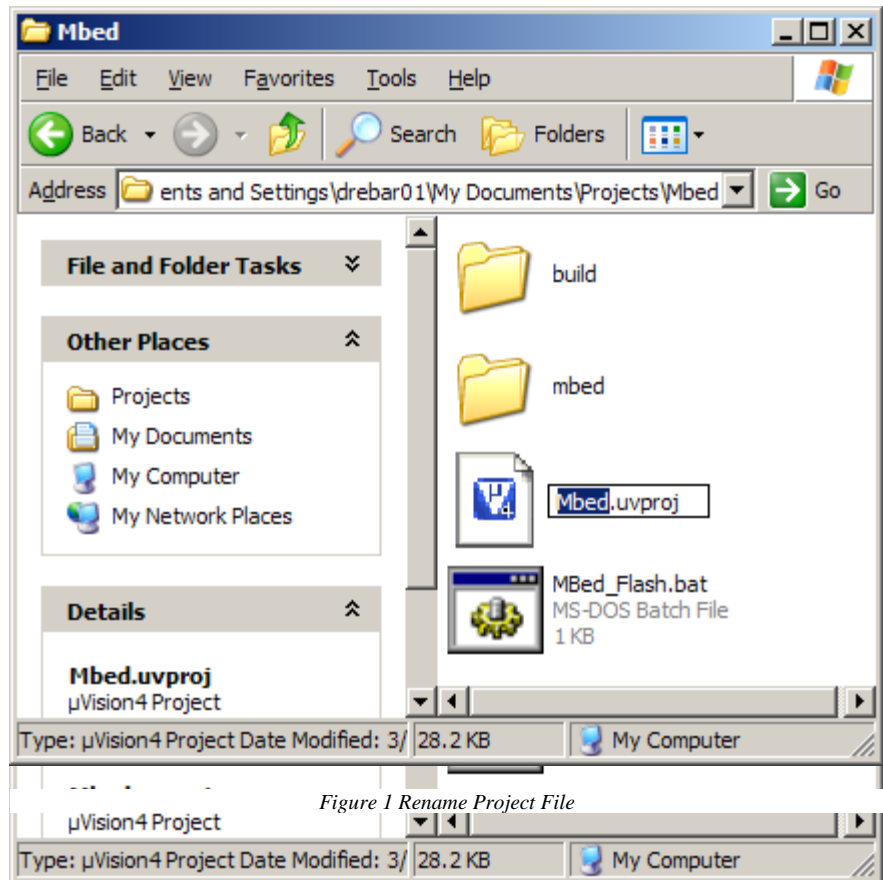
3. The mbed µVision template has two targets; one for the LPC2368 mbed board and one for the LPC1768 mbed board. Each target will automatically configure µVision to include the appropriate libraries and compiler settings necessary for mbed development.

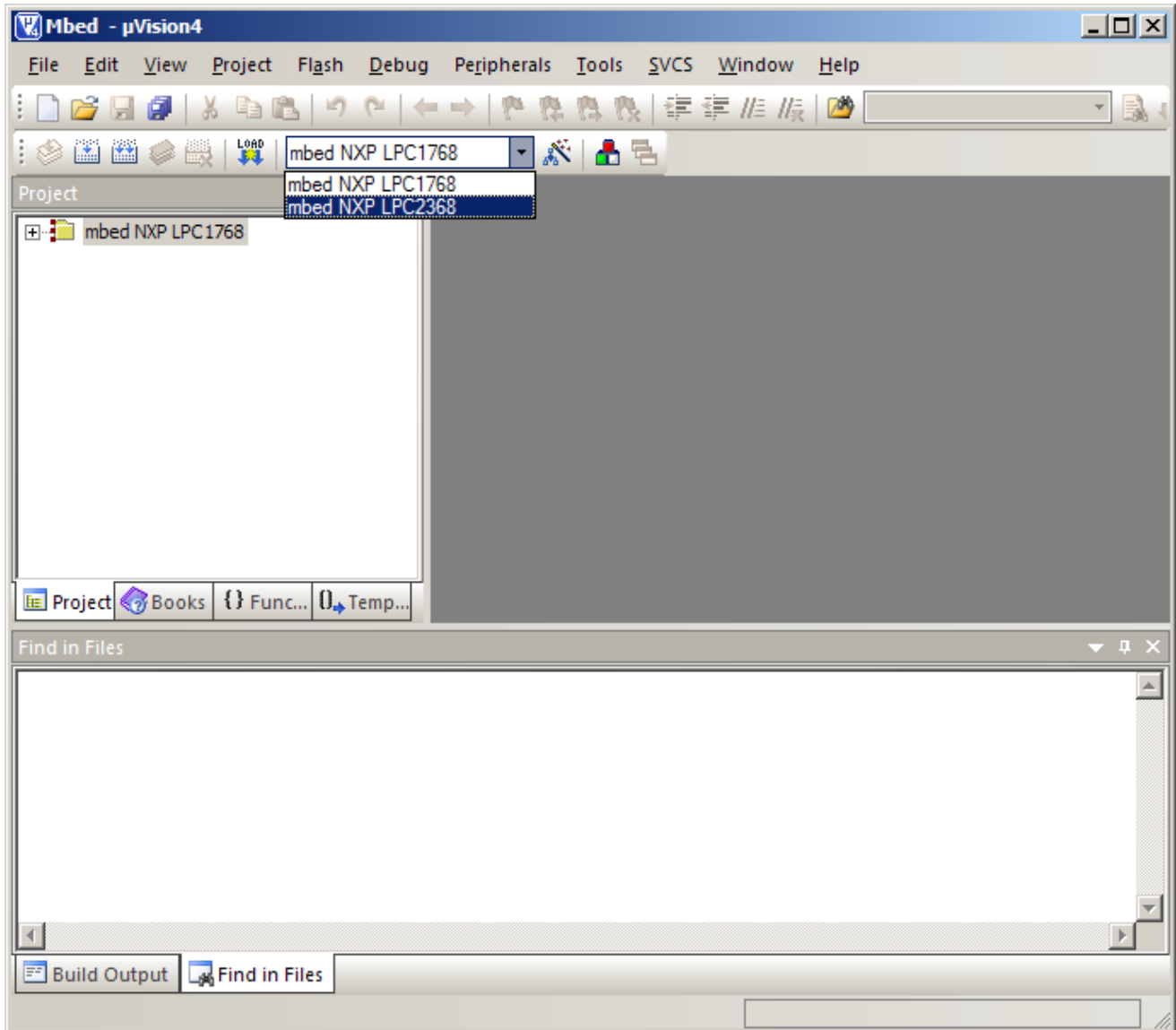Once µVision finishes opening, select the appropriate target from the drop down list (see figure 2).

Figure 2 Select the Correct mbed Target

4. Click the **Target Options…** button to open the **Options For Target** dialog. Click the **Output** tab and change the **Name of Executable** field to the desired output file name. This will be the name of the .bin file created by µVision.
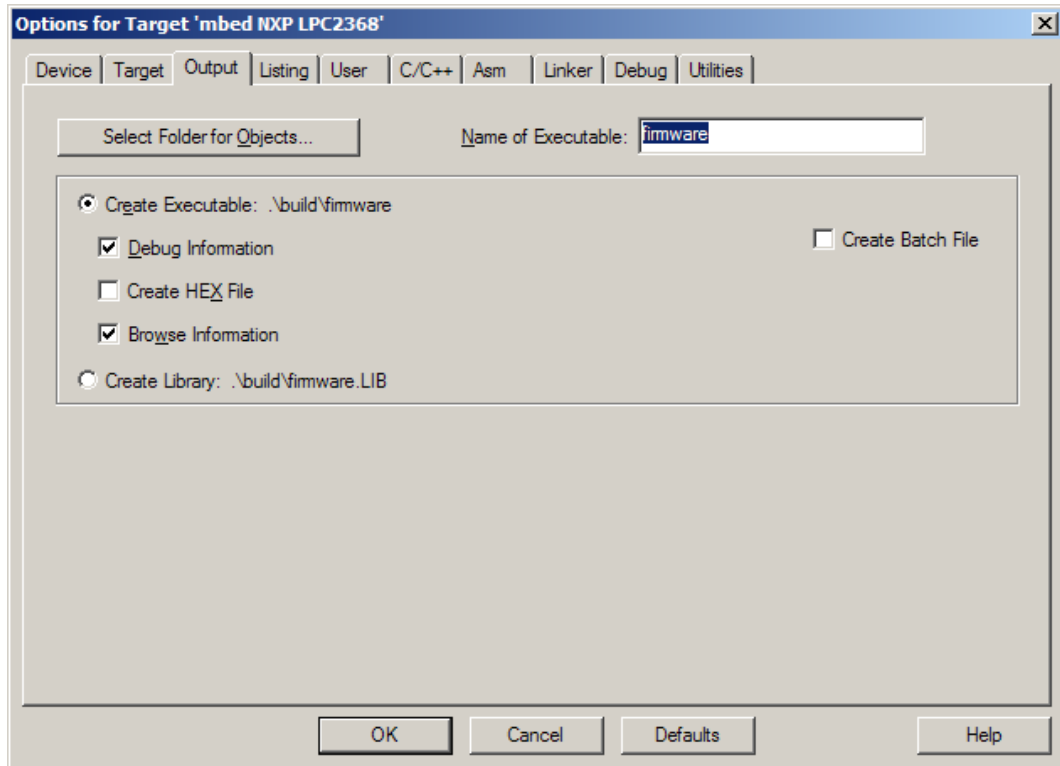

Figure 3 Output File Name

Importing mbed Project Source Files

1. Open the mbed IDE (https://mbed.org/compiler/)

2. In the Program Workspace, Right-click on the desired project and select **Export**. This will automatically download a zip file to your desktop containing all of the project's source files and a .lib file. Extract the source files to the mbed µVision project directory (Note: the .lib file is not needed for the µVision project).
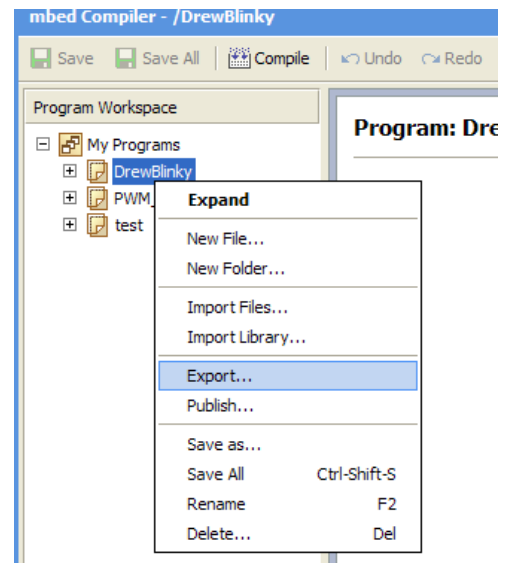

Figure 4 Exporting MbedMbed project

3. In µVision's Project window, expand the root folder and double-click the src folder. This will open the **Add Files to Group** dialog. Select all of the source files extracted from the mbed project and click the **Add** button. It may be necessary to change the **Files of Type** field so that .cpp (or other) file types may be selected.

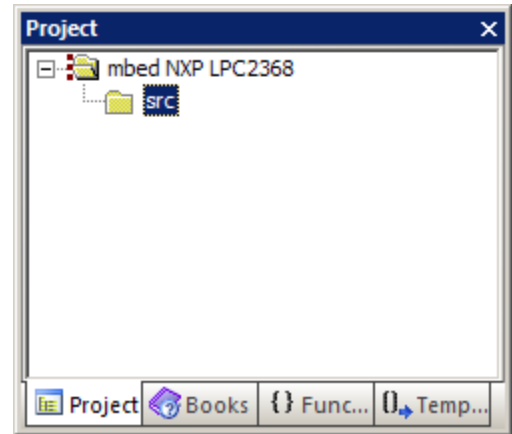4. Once all source files are added click the **Close** button.

Figure 5 µVision Project Window

Compiling and Loading

The project is now ready to be built, click the **Build** button . The build output window will display the results of the build; errors, code size, etc...
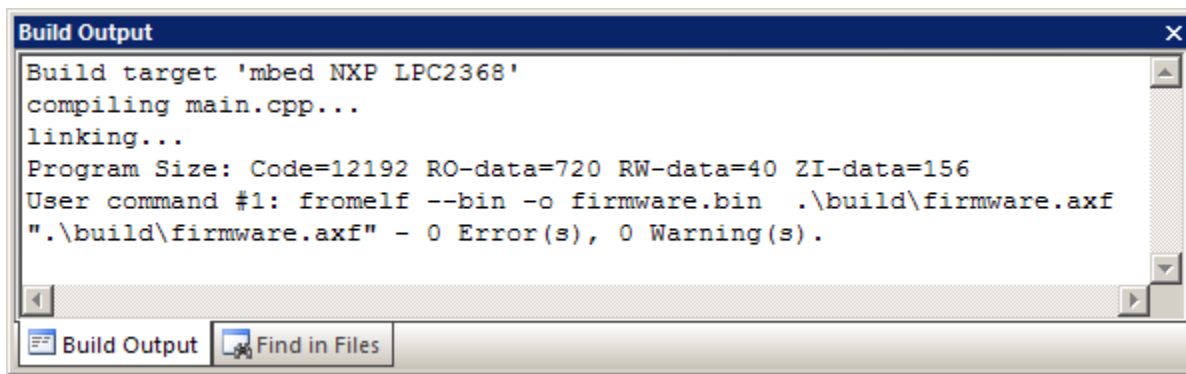
Figure 6 Build Output Window

A successful build will result in the .bin output file being placed in the same directory as the project file (.uvproj). To flash the mbed board, simply drag the .bin output file to the MBED drive using Window's Explorer and reset the mbed board.

The µVision mbed template is set up to automate the loading process. If the MBED drive is recognized as the Windows Drive E:\, simply clicking the **Load** button will execute a script that copies the .bin output file to the mbed board. To change the Windows Drive letter that the output file gets copied to, click the **Options** button and go to the **Utilities** tab. In the **Arguments** field change "E:\" to the mbed's Drive letter. For example, if the mbed is Windows drive H:, the arguments field should contain: *@L.bin H:* . Remember, you must press the mbed's reset button to start the new program.

It is also possible to have µVision generate the .bin file directly on the mbed's Drive avoiding the need to copy it all together. This can be done by clicking the **Options** button and selecting the **User** tab. Change the fromelf command from:

fromelf --bin -o @L.bin !L

to:

fromelf --bin -o E:\@L.bin !L

where "E:\" is the drive letter of the mbed board. Now after a successful build, fromelf will generate the .bin file directly on the mbed Drive and not in the µVision Project directory. Remember, you must press the mbed's reset button to start the new program.

More Information

mbed API documentation: http://mbed.org/handbook/

µVision 4 User's Guide: http://www.keil.com/support/man/docs/uv4/