

EMBSYS CP100

Toolchain Setup Instructions

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Preliminaries

Introduction

This guide presents the steps you need to follow to download, install, and test the ARM toolchain.

It is recommended to read this guide once before installing and testing the toolchain. It is also recommended to downloading all the installers before installing any software.

Note: Do not plug your board into a USB port until after installing the drivers otherwise you may have to uninstall the “default” drivers.

Requirements

This install guide is written with the perspective that you have a Windows operating system. If you don't have Windows, you may need to setup a virtual machine with Windows in order to complete this program.

Preparation

It is recommended that you have two folders. One to store downloaded files, and one to hold your projects. I recommend that you choose a data drive or folder off of the root directory for the project workspace, which is the fold you create to hold your projects.

For example, if you only have one drive (C:\), create a directory called UW_Workspace at the root (C:\UW_Workspace). You can then use this directory to hold your projects and project archives.

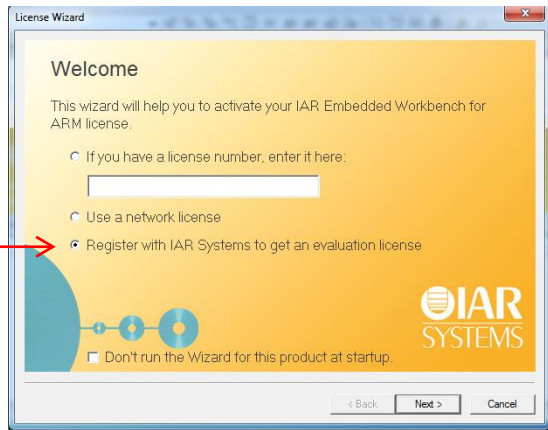
IAR Embedded Workbench for ARM

Go to the IAR home page at (<http://supp.iar.com/Download/SW/?item=EWARM-EVAL>) and click on the “Download software” link. This is the install file for the IAR software.

Note: You will need to be computer administrator to install the software and drivers.

Run the installer and follow the installation steps. Allow IAR to install all the debug probe drivers (default). Wait for IAR Embedded Workbench to install.

On the first run of the IAR Embedded Workbench IDE, it will ask you to activate your license. Select the option “Register with IAR Systems to get an evaluation license”. You will need to be connected to the internet to proceed.



Click “Next >”

Now, click on the large “Register” button.

When the webpage loads, you will be asked to fill out a form for the license.

IMPORTANT! Select the “Code size limited” option. This license will never expire.

Complete the form. You will receive an email with a link to follow. Follow the instructions to complete the registration. You can now exit the IAR Embedded Workbench installer.

Course Downloads

Download the following files from Canvas:

1. **CP100_wk1_files.zip** (course documents and board USB driver)
2. **HelloWorld.zip** (sample project)
3. **Teraterm-4.88.exe** (terminal emulator for communicating with the Nucleo board)

Nucleo Driver Install

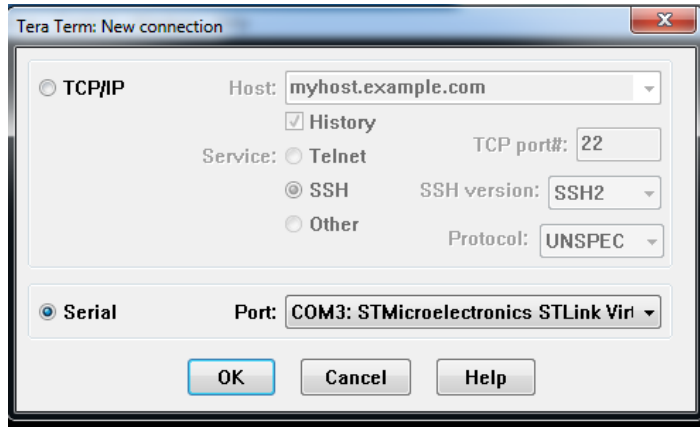
Extract **CP100_wk1_files.zip**. Within the CP100_wk1_files folder, there is a folder named “Driver”. Click into that folder and extract the **stlinknucleodriversigned.zip** file.

Run the batch file named: “**stlink_winusb_install.bat**”. This will install the drivers to the Nucleo board. It is now okay to plug in your Nucleo board.

Install and Configure TeraTerm

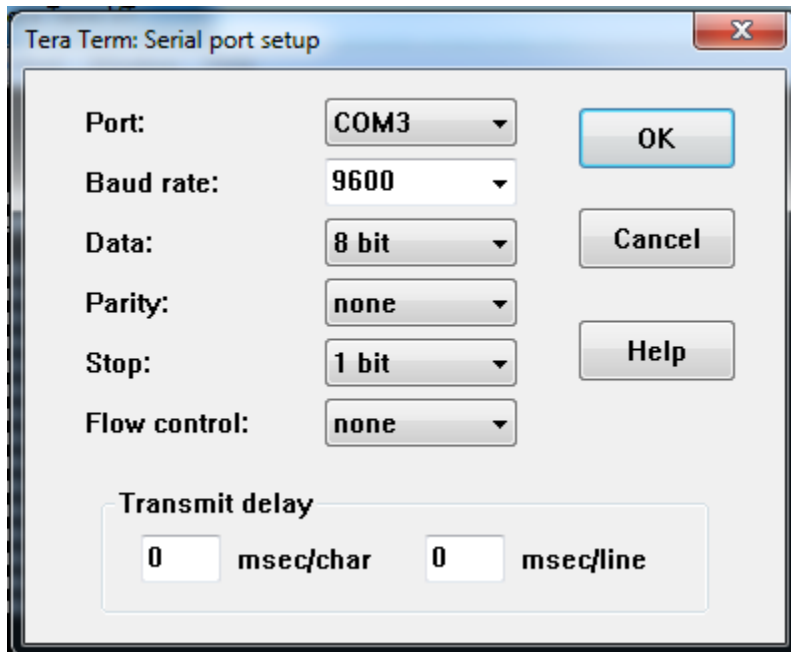
Install TeraTerm-4.88.exe

Start TeraTerm. When TeraTerm starts, it presents a new connection dialog box:



Select the serial port for the “STMicroelectronics STLink Virtual COM Port [COM x]” where x is the com port that the computer assigned to your STLink Virtual COM Port.

Initially, TeraTerm should setup the com port as 9600 baud, 8 data bits, 1 stop bits, no (or none) parity, and no (or none) flow control. You can check this by going into **Setup > Serial Port...**



Click OK once you have the proper settings.

Import HelloWorld Project into IAR

These steps adds the HelloWorld project to IAR.

Step 1: Unzip the project

Copy, or unzip, the project into the root of your workspace so that the path is
C:\UW_WorkSpace\HelloWorld\

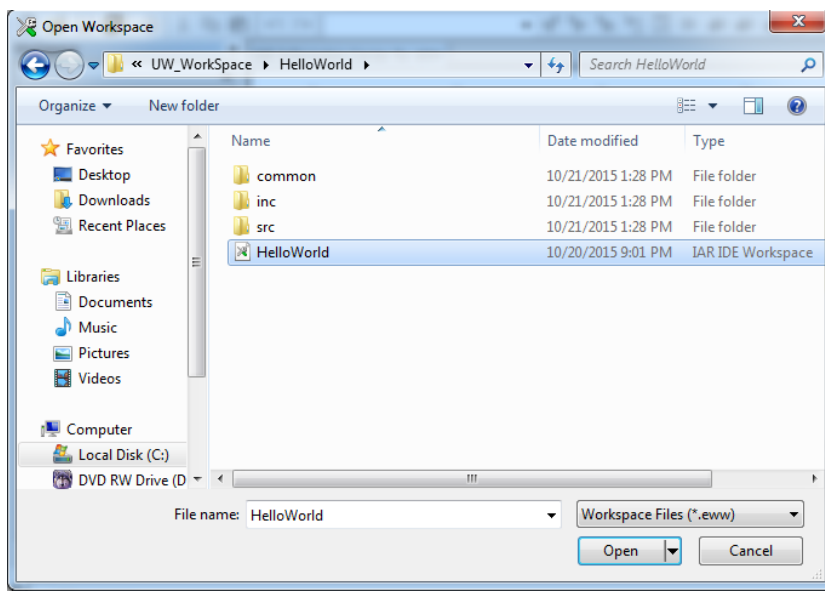
Step 2: Launch IAR

Launch IAR Workbench. If you haven't already registered IAR, do that now as the software won't compile code without a license.

IAR should open with an IAR information Center page of ARM.

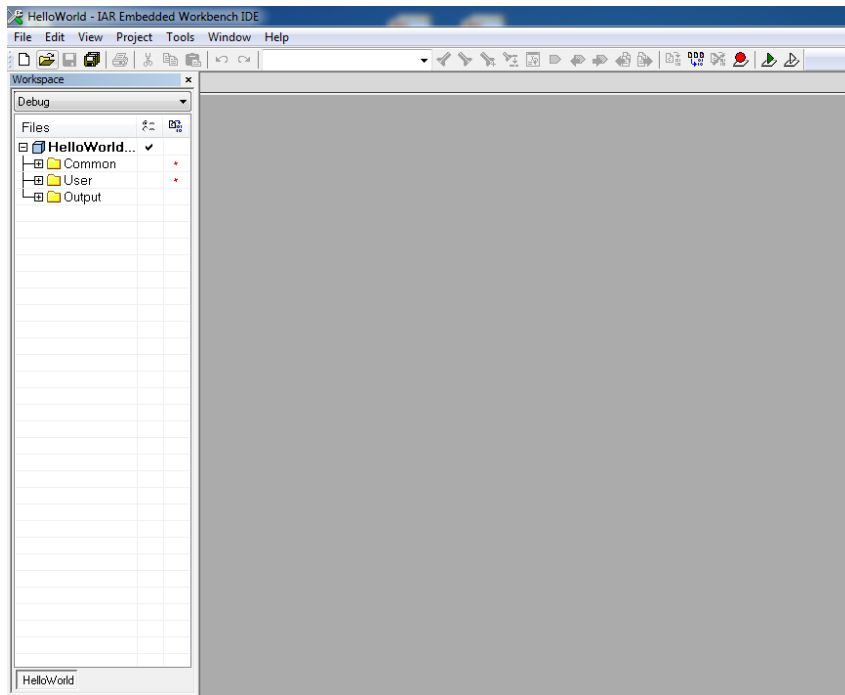
Step 3: Open the Workspace

Click on **File > Open > Workspace...** This will open the following dialog box. Browse to the folder that you copied HelloWorld to, and open the HelloWorld file.



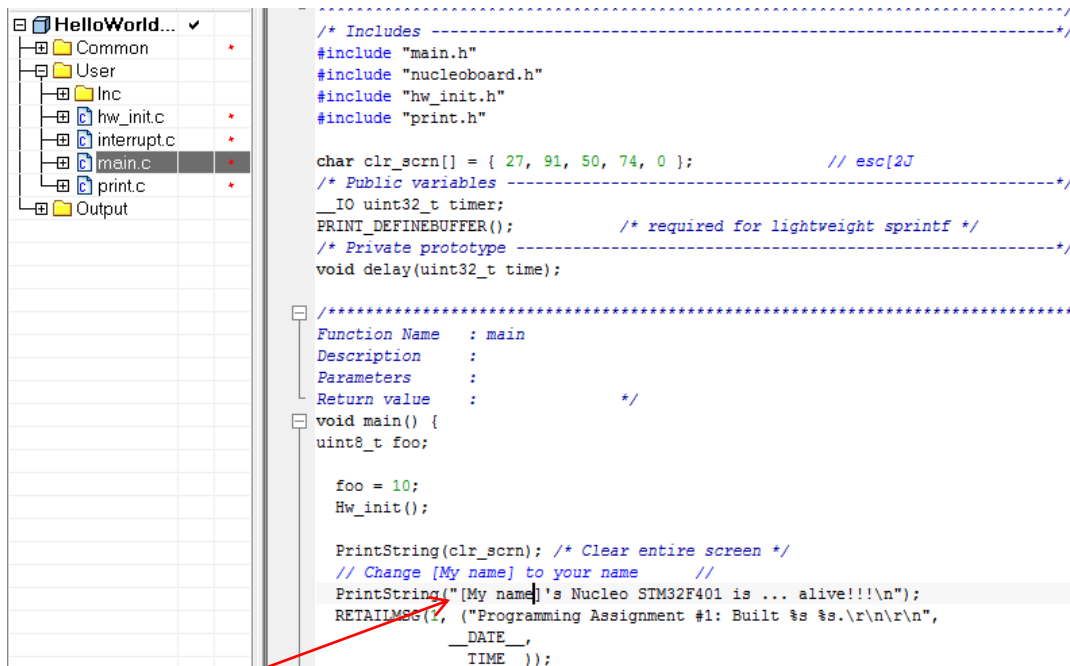
It should open cleanly.

IAR should look like this now:



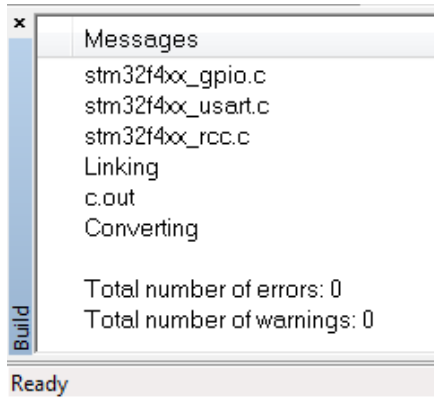
Step 4: About to Compile

Open the **User** folder, and then open the **main.c** file.



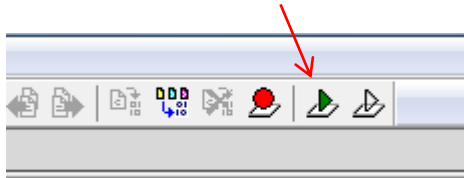
Change **[My name]** to your name. We are ready to compile the project! Push **F7**, or click on **Project > Make** (F7 is the hotkey).

Did the project build successfully? If it did, you are ready to download the project to the target.



Step 5: Debug

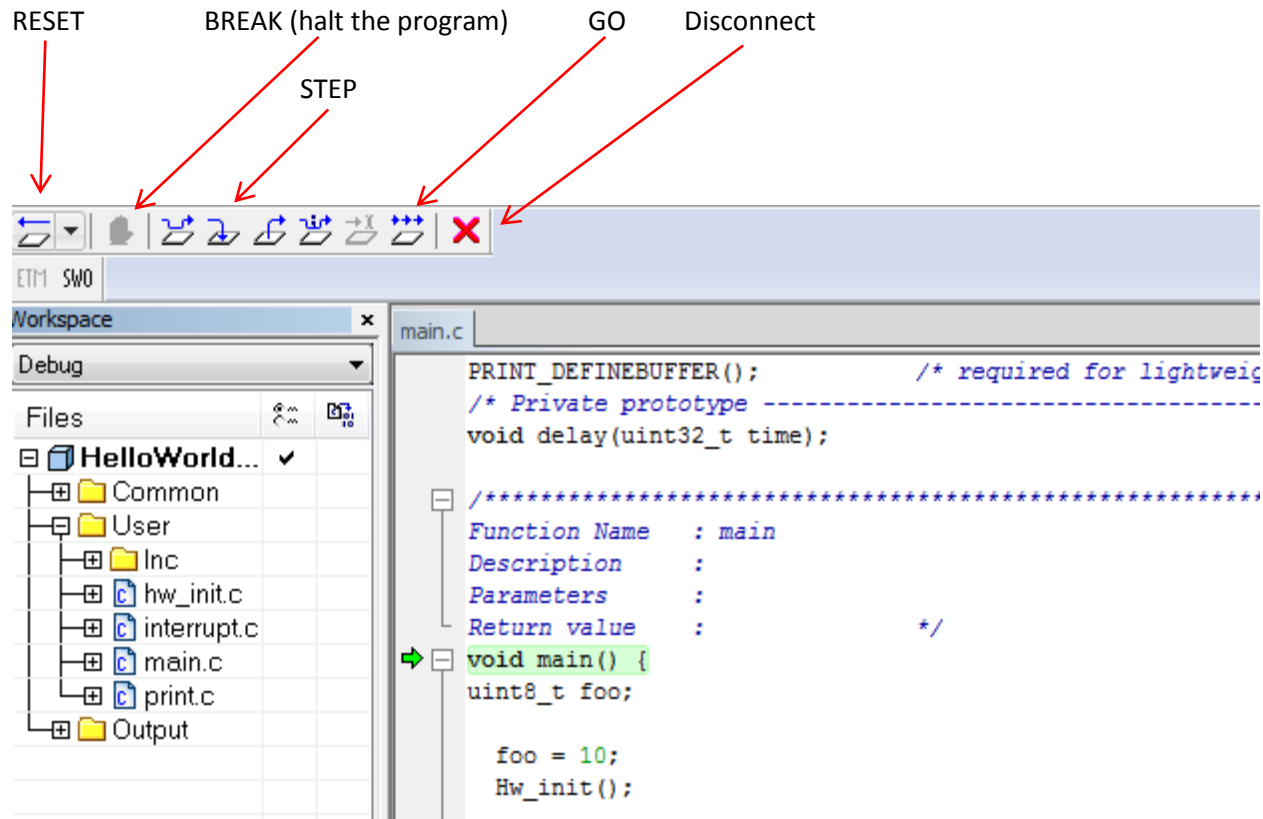
With your Nucleo drivers loaded, and the board plugged in, let's download the code into our target. Click on the small green play icon. This will download and debug your program.



Once the program is downloaded, the software is halted and waiting for you to tell it to go. Let's see the program in action. Push on the **GO** icon. This will start debugging the program. The red hand will halt the program. If you want to reset the program, clicking the **RESET** icon will bring the program back to the top of main().

Before you disconnect the board from the computer, it's always best to press on the red **X** icon, this will disconnect the target board from the software.

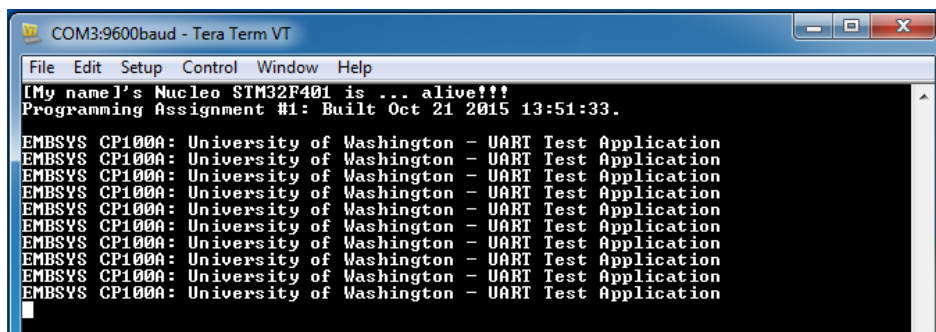
The icons



The **STEP** icon will allow you to step through the program, instead of it free running.

Screen Capture

If everything works successful, you should have an output like this on the terminal (TeraTerm) screen.



Using the Windows Snipping Tool, or pushing “CTRL-SHIFT-PRINTSCREEN”, will give you a screen capture of the terminal output. This is this week’s assignment. Turn in the screen capture for credit.

Note: If you use the “CTRL-SHIFT-PRINTSCREEN”, you will need to paste the image into a program, and save the file. Snipping tool does this for you, and all you need to do is save the image.

Conclusion

If you have issues, please post a message to the discussion board. I have started a discussion for this homework.

When posting, please indicate what step has caused a problem, and what you have done to try to resolve the issue. Include any error messages and system configurations information, such as what version of Windows you are operating.