

MSP Design Workshop Installation Guide

Install Guide v4.60

Introduction

The objective of this guide is to download and install Code Composer Studio, as well as the various other support documents and software to be used with the MSP LaunchPad.

The Introduction to the MSP Launchpad, as well as detailed instructions for how to use Code Composer Studio (CCS) will come in the lab exercises for Chapters 2 and 3.

For future reference, the main Wiki for this workshop is located here:

http://processors.wiki.ti.com/index.php/MSP_Design_Workshop

Installation and Setup Topics

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Workshop Equipment & Requirements

You must provide:

- Windows computer using Windows 7 or greater.

You are required to provide your own Windows laptop computer. It should have an available USB port. You will also need at least 1.5 GB of space available on your disc drive to hold the necessary software.

Warning: To install the TI software (or any software), you must have administrative rights on your computer. In many cases, you may also need to be able to temporarily turn off your antivirus software. Please confer with your IT support team if either of these poses a problem.

If you have a Mac or Linux notebook computer, we have seen students be successful running the development tools in a virtual machine, such as VMware or VM Fusion. That said, we cannot guarantee that our instructors will be able to help you with managing these types of environments.

- Audio headphones – you will need these for use in class
- A means of watching MP4 videos on your computer. If you do not already have software that can play these types of files, we highly recommend the free VLC media player:

<http://www.videolan.org/vlc/index.html>

- Pen or pencil
- Magnifying glass ... if your eyes are getting a bit older. (We're not kidding. Reading the labels on the Launchpad boards can be challenging to those who need reading glasses.)
- Before coming to the workshop, you should install all the software outlined in this document.

MSP LaunchPad

To complete the lab exercises as part of this workshop, you will need to purchase a LaunchPads from the TI eStore or one of TI's authorized distributors. Some additional items are also required, as listed here.

- a) One of the following MSP LaunchPads:
 - MSP430F5529 USB LaunchPad Kit ([MSP-EXP430F5529LP](#)) (US \$12.99)
 - MSP430FR4133 FRAM Launchpad ([MSP-EXP430FR4133](#)) (US \$13.99)
 - MSP430FR5969 FRAM Launchpad ([MSP-EXP430FR5969](#)) (US \$15.99)
 - MSP430FR5969 FRAM Launchpad ([MSP-EXP430FR5994](#))
 - MSP430FR6989 FRAM Launchpad ([MSP-EXP430FR6989](#)) (US \$17.99)
 - MSP432P401R 32-bit ARM LaunchPad ([MSP-EXP432P401R](#)) (US \$12.99)
- b) One female-to-female jumper wire is required to complete some of the *Timer_A* lab exercises. (Here's a pack of them, as an example, from [adafruit](#) .)
- c) ('F5529 LaunchPad only) [MSP-FET](#) (Flash/FRAM Emulation Tool) (US \$115.00)
If using the 'F5529 USB Launchpad, you will need the MSP-FET for measuring energy usage during the *Low Power Optimization* lab exercise. Being the first LaunchPad supported by this workshop, its emulation (FET) hardware does not contain the required EnergyTrace logic.

Additional Tools and Documentation

The installation locations and directions are noted in the upcoming installation procedures.

Description	Source Location	Action	File Name
<input type="checkbox"/> MSP430Flasher	<input type="checkbox"/> http://www.ti.com/tool/MSP430-Flasher	Install	MSP430Flasher-1_03_07_00-windows-installer.exe

Additional information:

- MSP Device Selection Guide: [slab034ad.pdf](#)
- CCSv6 User's Guide for MSP430: [slau157am.pdf](#)
- CCSv6 User's Guide for MSP432: [slau575c.pdf](#)
- MSP430 FRAM Tech – How To and Best Practices: [slaa628.pdf](#)
- Segmented LCD Displays: [slaa654a.pdf](#)
- www.ti.com/launchpadwiki
- www.ti.com/launchpad
- [MSP430Flasher Wiki page](#)

Third Party Websites

There are many, many third party MSP430 websites out there. Here's one of them:

- <http://www.43oh.com>

Installation

Code Composer Studio

Note: If CCSv6.1 or higher, is already installed you may skip the CCS installation procedure.

Install Code Composer Studio 6

1. If you haven't already done so, download CCS. (Refer to the *Download Checklist*, on page 3, for details.)

2. If you downloaded the full, all-in-one installer you must **unzip** it first.

Windows makes zip files look like folders, but trying to run an installer from a zipped file does not work well. Please unzip the file before starting the installer.

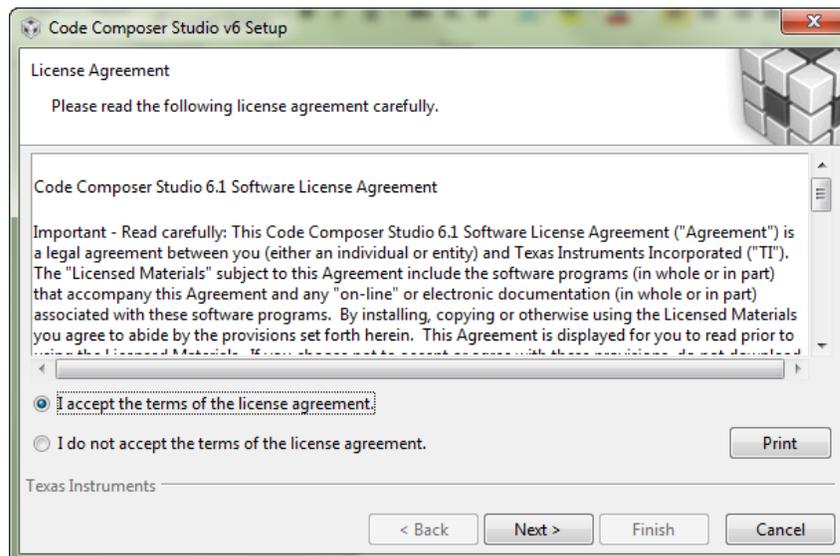
3. Run the CCS Installer.

`ccs_setup_CCSv6.1.3.00033.exe` (latest version available when this document was printed)

4. You may see a warning message indicating you that you have an anti-virus program running.

If the CCS installer detects an antivirus program is running on your computer, it will warn you that this could be a problem. It is recommended that you temporarily disable your anti-virus tool and continue with the installation.

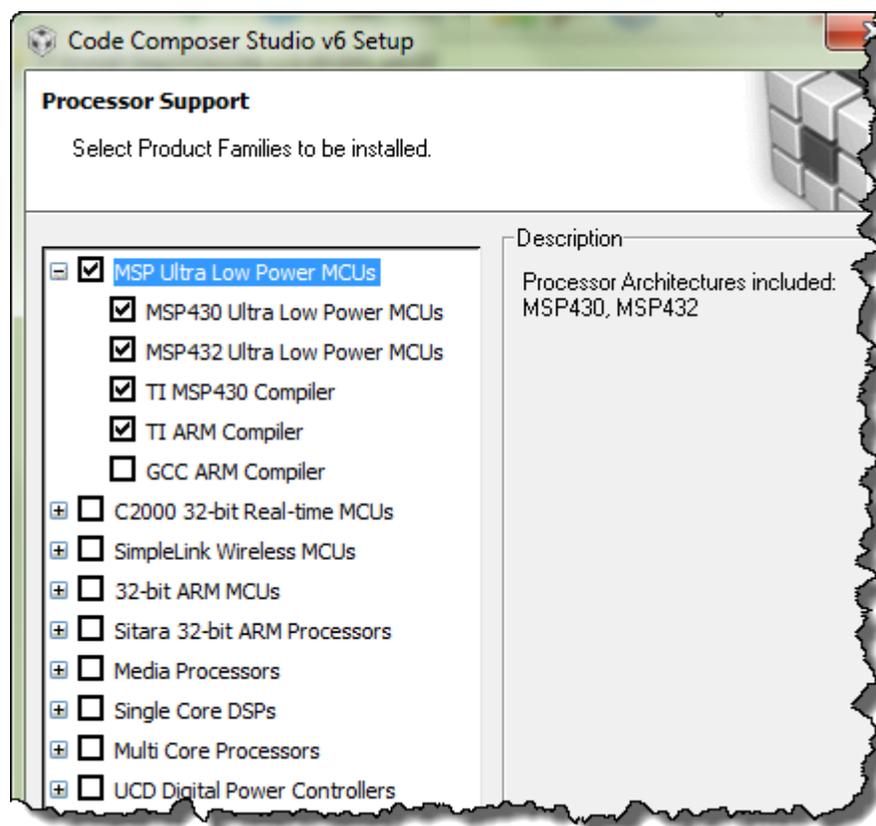
5. When the installation program runs, accept the license agreement and click *Next*.



6. When the Choose Installation Location dialog appears, we suggest that you install Code Composer in the **default** `C:/ti` folder. Click *Next*.

7. Choose the devices you will be using the *Processor Support* dialog.

At a minimum, choose **MSP Ultra Low Power MCUs**, as this is needed for the MSP Design Workshop.

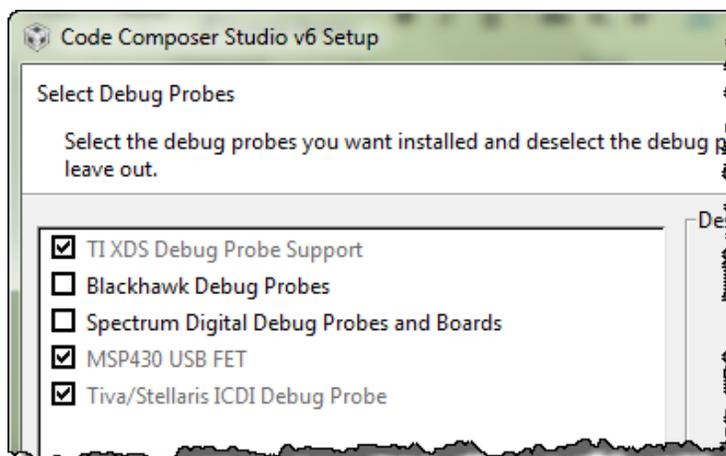


The more devices you choose, the longer the installation time. If you have a slower computer, we recommend choosing as few as possible. (It's not really about CPU performance; installations are all about copying a lot of files.)

When done selecting processors, click **Next**.

8. When the *Select Emulators* dialog appears, take the default and hit *Next*.

You are welcome to include Blackhawk and Spectrum, if you own those emulators.



9. CCS App Center selections.

CCSv6 now includes its own *App Center*. This is available during installation, as well as from within Code Composer Studio once it has been installed and running.

Note: The message (pointed to by the arrow) below states that any App Center selections will be installed the first time you run CCS. It will require internet access to download and install these selections – and CCS will need to be restarted after they've been installed.

We recommend that you select **MSPWare**. You can also download [MSPWare](#) from the TI website and install it independently, but if you have internet access, it's easier to install it this way.



You may also want to install the new MSP430 GCC beta compiler. At this point, the MSP Workshop does not support this compiler, as there are a few minor variations in syntax (such as #pragma support). Please note, though, that MSPWare supports the GCC compiler.

Click **Finish** once you've made your selections.

Note: A version of MSPWare is also available online as part of the TI Resource Explorer Cloud. When using CCS Desktop, though, it's more convenient to install MSPWare so that it is available right inside of CCS.

Launch CCS and Let App Center Complete Its Installations

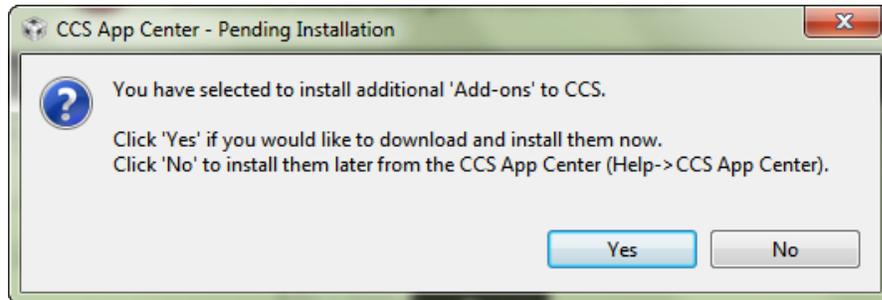
10. When CCS finishes installing, go ahead and *Launch CCS*.

11. Choose the default *Workspace* location.

We recommend that you take the default *Workspace* location at this point in time. Later on, during our lab exercises, we'll choose a better location for our working location.

12. Let App Center continue with its installations

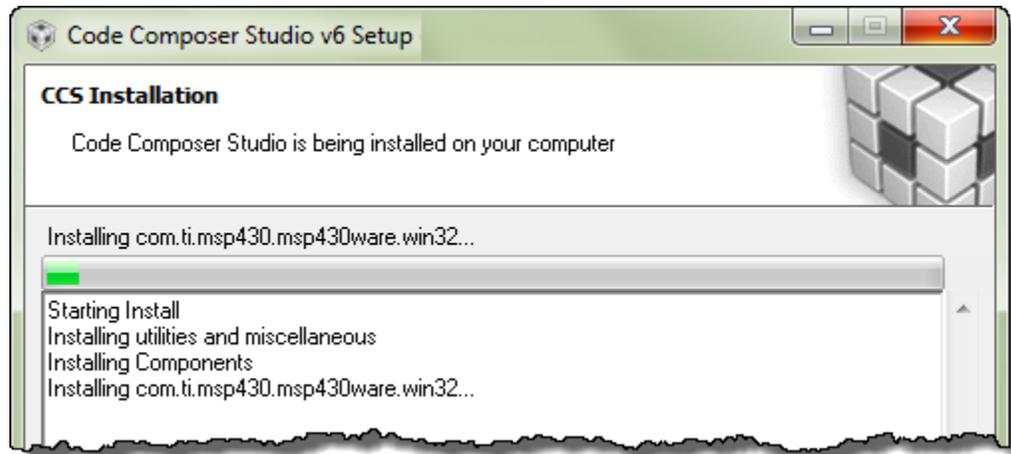
If you elected to install any items that were part of the CCS App Center, select **Yes** to let CCS install them. Note: you need internet access for this step.



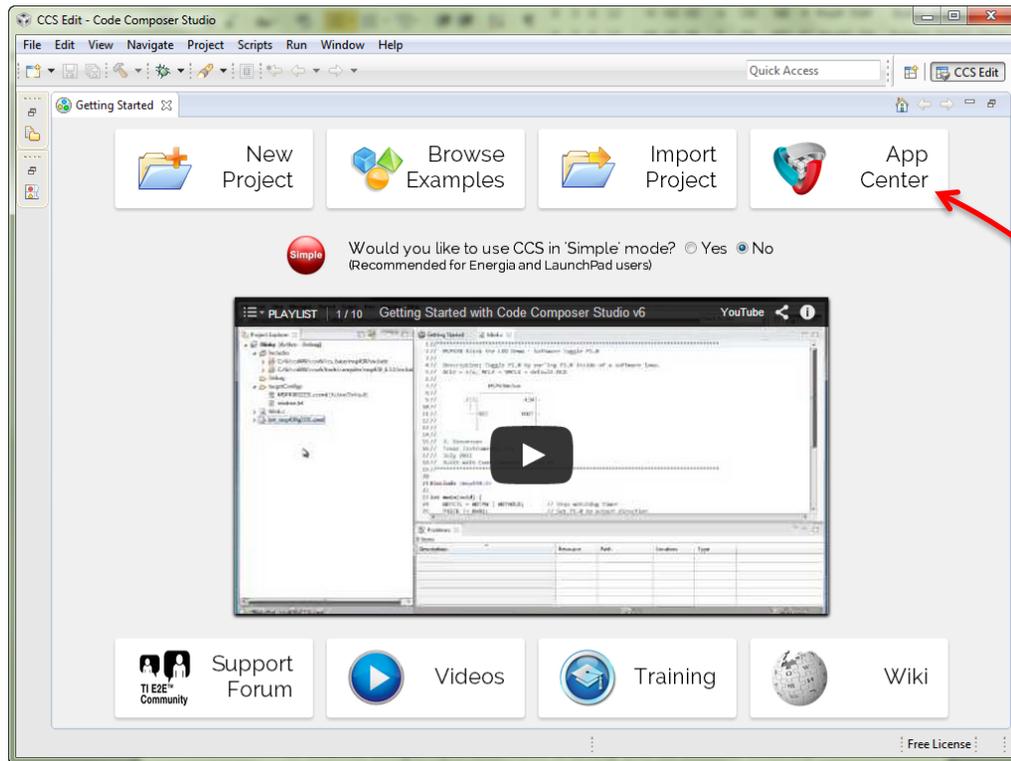
CCS then begins downloading the App Center install packages. Once downloaded, it will ask you to restart: choose **Yes**



And finally the installation of the App Center content (e.g. MSPWare) begins.



13. After installation completes, CCS should be ready to use. Launching CCS you should see:



Notice that a button for **App Center** appears on the Getting Started screen.

You can check this out later to see what other choices are available to you. For example, if you wanted to use TI-RTOS, there's a link in App Center that will download and install it for you.

14. **Final step of CCS installation** — check for any updates.

Help → Check for Updates

Apply any updates to CCS, MSP emulation, or MSPWare that are found.

Installing Energia

15. To use Energia you will need to have the LaunchPad drivers installed.

Thankfully, this was handled for us by the CCS installation. (If for some odd reason you are not using CCS, please refer to the Energia site for driver installation details.)

16. Download Energia, if you haven't done so already. (See the *Download Checklist*.)

17. Installing Energia just requires unzipping the file: `energia-0101E0017-windows.zip`

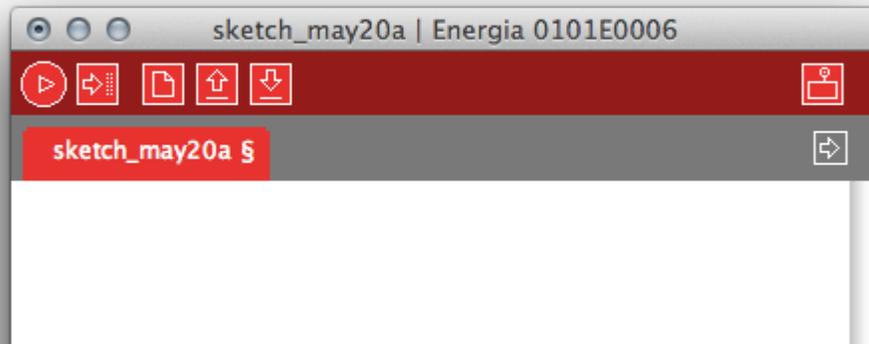
To keep all the TI tools together, we recommend unzipping the files to the following location:

```
C:\TI\energia-0101E0017\
```

Starting and Configuring Energia

18. Within the Energia folder, double-click `Energia.exe`.

Energia will start and an empty Sketch window will appear.



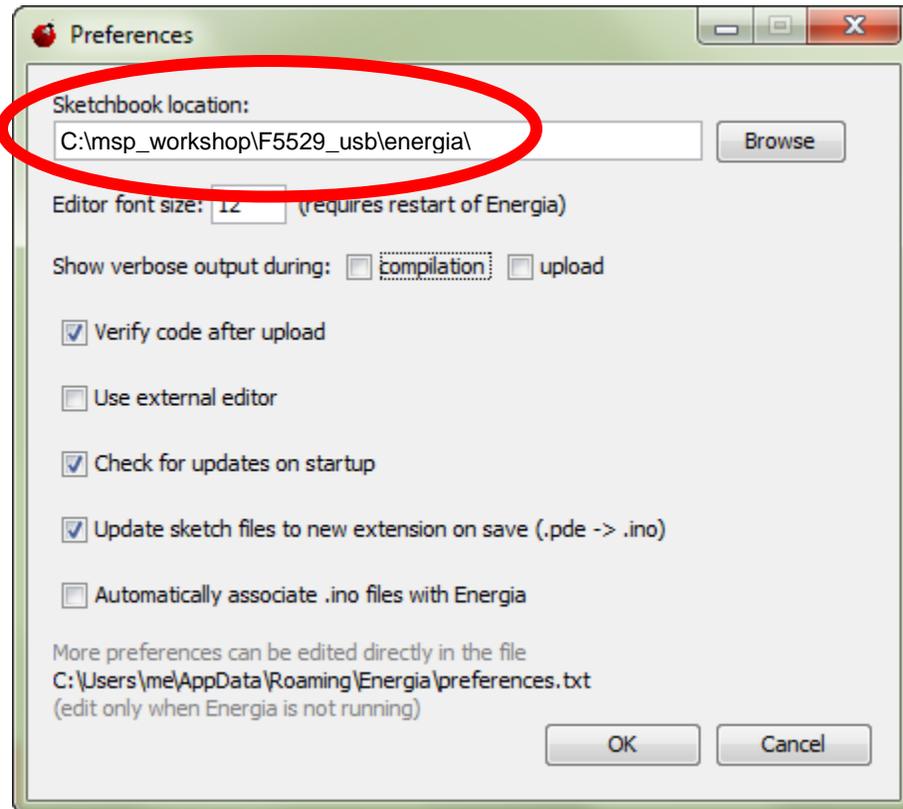
19. Set your working folder in Energia.

It makes it easier to save and open files if Energia defaults to the folder where you want to put your sketches.

The easiest way to set this locations is via Energia's preferences dialog:

File → Preferences

Which opens:



Use one of the following, depending upon which LaunchPad you are using:

```
C:\msp_workshop\F5529_usb\energia\  
C:\msp_workshop\FR4133_fram\energia\  
C:\msp_workshop\FR5969_fram\energia\  
C:\msp_workshop\FR5994_fram\energia\  
C:\msp_workshop\FR6989_fram\energia\  
C:\msp_workshop\msp432p401r\energia\
```

Install the following additional MSP Tools & Files

This file should have already been downloaded (see links on the Download Checklist.)

20. Install the “MSPFlasher” Tool to its default location.

Install this tool in the default location:

C:\ti

Install the Workshop Lab and Solution Files

21. Run the workshop files installation: MSP_Design_Workshop_Lab_Files.exe (v4.60)

Non-Windows users should download and use the .zip version of the lab files.

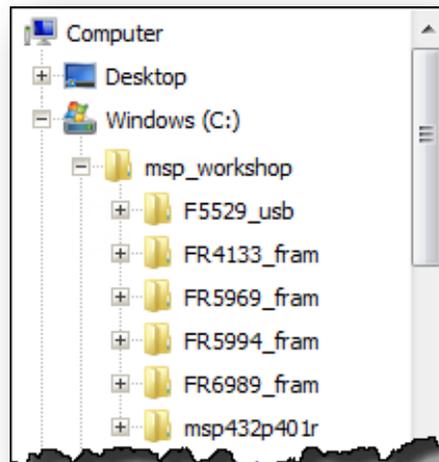
(See download link on page 3, if you haven't already downloaded this installer.)

Double-click the executable installation (.exe) file to install the labs and solutions for this workshop. The workshop files will be installed (by default) into the following location:

C:\msp_workshop\

Hint: The installer lets you override the default install location; although, we recommend that you avoid this since the lab instructions reference this location.

After installation, you should see the workshop folder with sub-directories that correlate with each of the supported Launchpad development boards.



22. Make sure you have downloaded the latest Workshop PDF file, as you will be referring to this throughout the workshop.

MSP_Design_Workshop.pdf (v4.60)

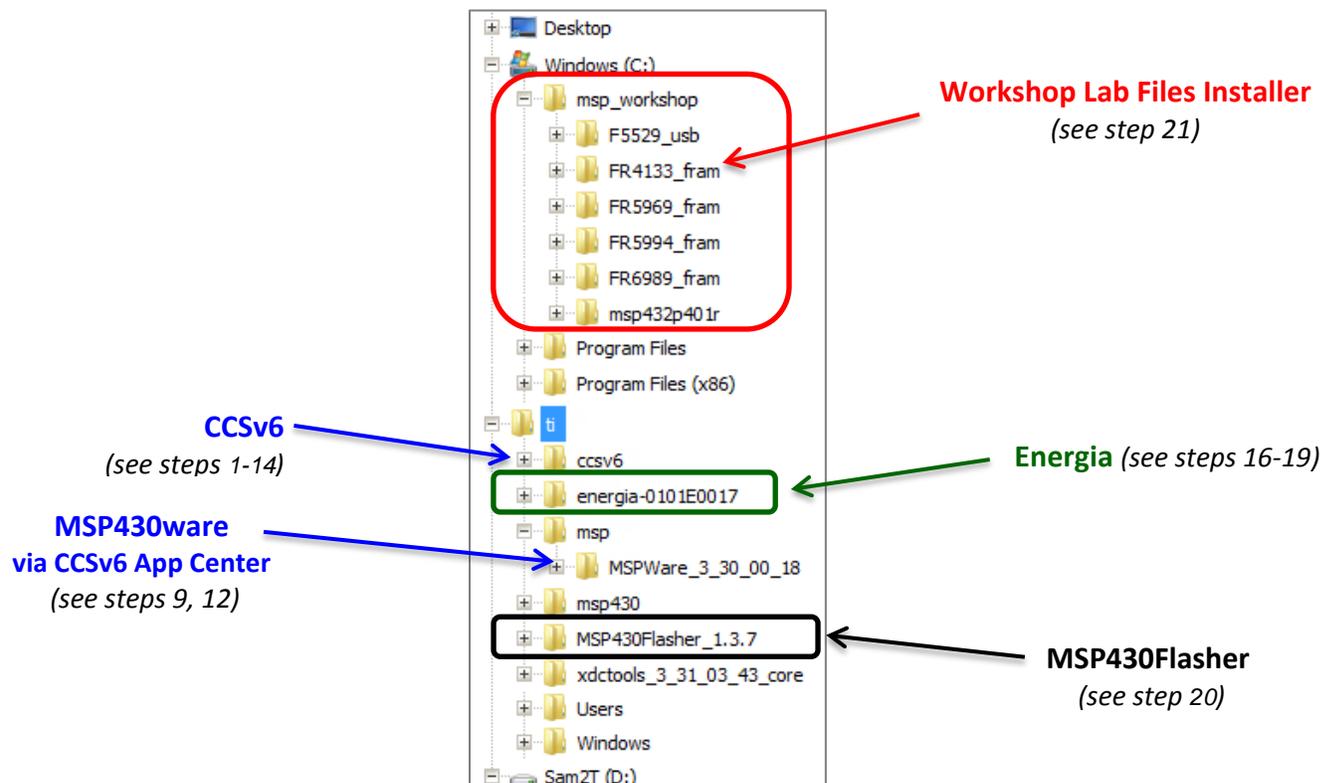
(See download link on page 3, if you haven't already downloaded this installer.)

Double-Check Your Installation

23. Verify that the required files have been installed.

Using Windows Explorer, look at your file-system and verify that each of these has been installed. We recommend that you check-off each one as you verify it.

- MSP Workshop Lab Files** (step 21)
- CCSv6** (steps 1-13)
- CCSv6 App Center** → **MSPWare** (steps 9, 12)
- MSPFlasher** (step 20)
- Energia** (steps 16-19)



24. If you have not so already, please download the other documents and User Guides listed in the **Download Checklist** (on pages 3-4).

- MSP Workshop Manual (PDF)
- LaunchPad User's Guide
- MSP Device User's Guide
- Device Datasheet
- MSP430 or MSP432 C Compiler User's Guide



That's it ... You're Done