Procedure

Hardware

1. You will need the following hardware:

   - A 32 or 64-bit Windows XP or Windows7 laptop with 2G or more of free hard drive space. 1G of RAM should be considered a minimum … more is better.
   - A laptop with Wi-Fi is highly desirable
   - If you are working the labs from home, a second monitor will make the process much easier. If you are attending a live workshop, you are welcome to bring one.
   - If you are attending a live workshop, please bring a set of earphones or ear-buds.
   - If you are attending a live workshop, you will receive an evaluation board; otherwise you need to purchase one. (http://www.ti.com/tool/ek-tm4c123gxl)
   - If you are attending a live workshop, a digital multi-meter will be provided; otherwise you need to purchase one like the inexpensive version here: (http://www.harborfreight.com/catalogsearch/result?q=multimeter)
   - If you are attending a live workshop, you will receive a second **A-male to micro-B-male** USB cable. Otherwise, you will need to provide your own to complete Lab 7.
   - If you are attending a live workshop, you will receive a Kentec 3.5" TFT LCD Touch Screen BoosterPack (**Part# EB-LM4F120-L35).** Otherwise, you will need to provide your own to complete Lab 10.

   As you complete each of the following steps, check the box in the title, like the below, to assure that you have done everything in order.

Download and Install Code Composer Studio ☐

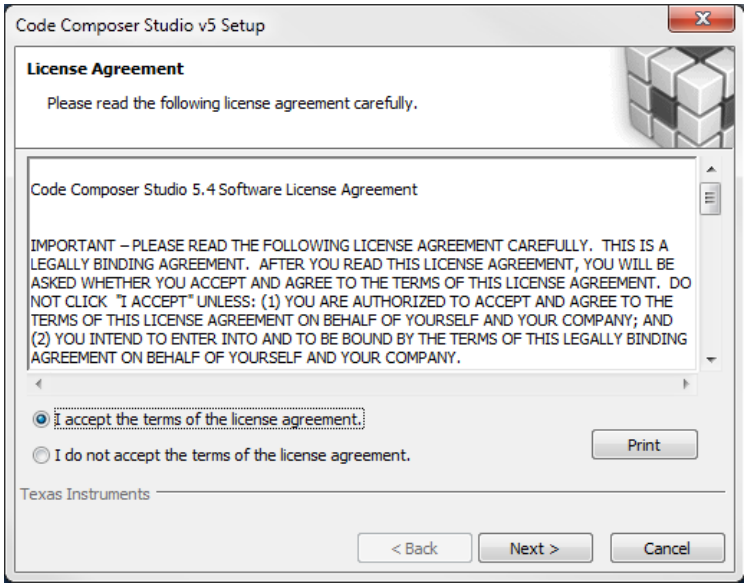
2. ► Download and start the latest version of Code Composer Studio (CCS) 5.x web installer from http://processors.wiki.ti.com/index.php/Download_CCS (do not download any beta versions). Bear in mind that the web installer will require Internet access until it completes. If the web installer version is unavailable or you can't get it to work, download, unzip and run the offline version. The offline download will be much larger than the installed size of CCS since it includes all the possible supported hardware.

   This version of the workshop was constructed using CCS version 5.4. Your version may be later. For this and the next few steps, you will need a my.TI account (you will be prompted to create one or log into your existing account).

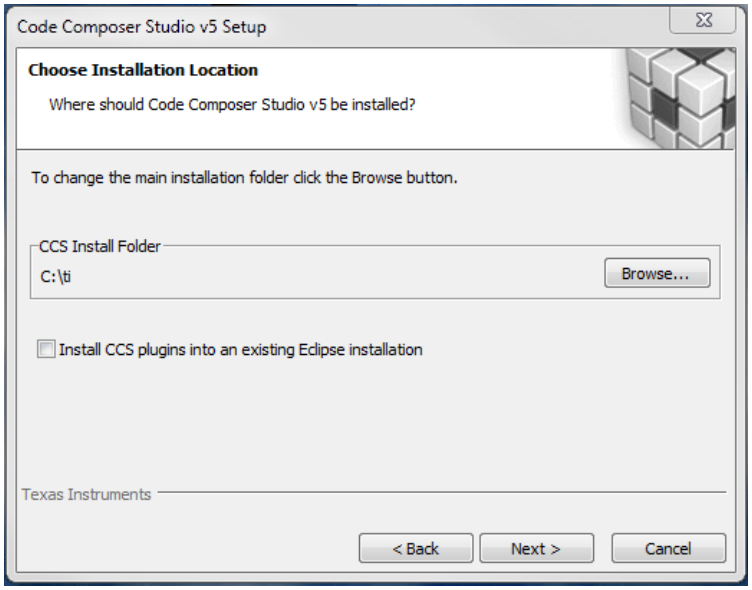
   Note that the evaluation license of CCS will operate with full functionality for free while connected to a Tiva™ C Series evaluation board.

3. If you have downloaded the offline file, ► launch the `ccs_setup_5.xxxxx.exe` file in the folder created when you unzipped the download.

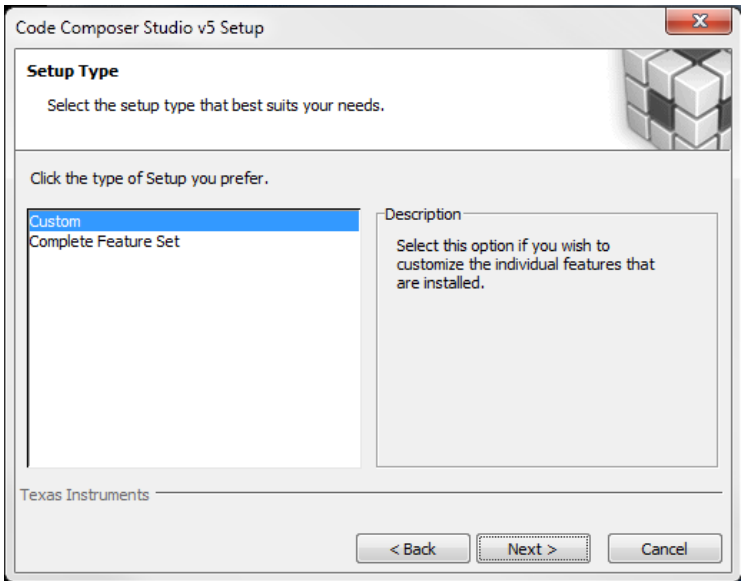
4. ► Accept the Software License Agreement and click Next.



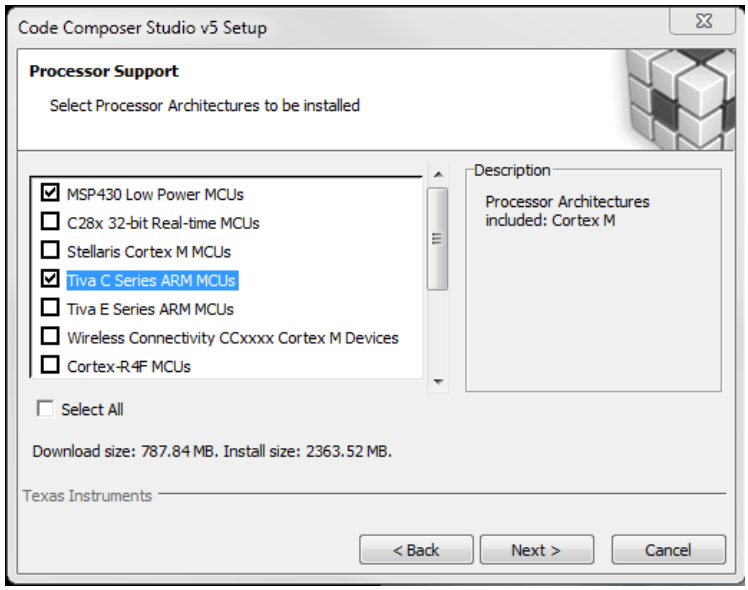
5. Unless you have a specific reason to install CCS in another location, ► accept the default installation folder and ► click Next. If you have another version of CCS and you want to keep it, we recommend that you install this version into a different folder.



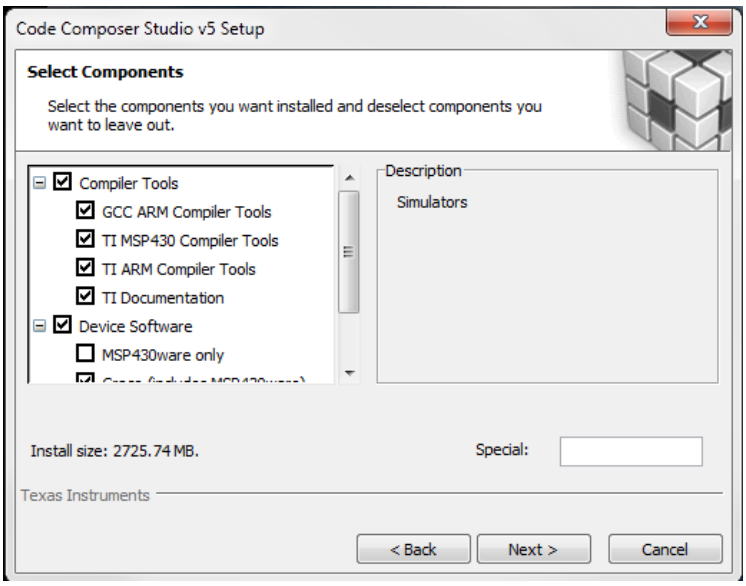
6. ► Select “Custom” for the Setup type and click Next.



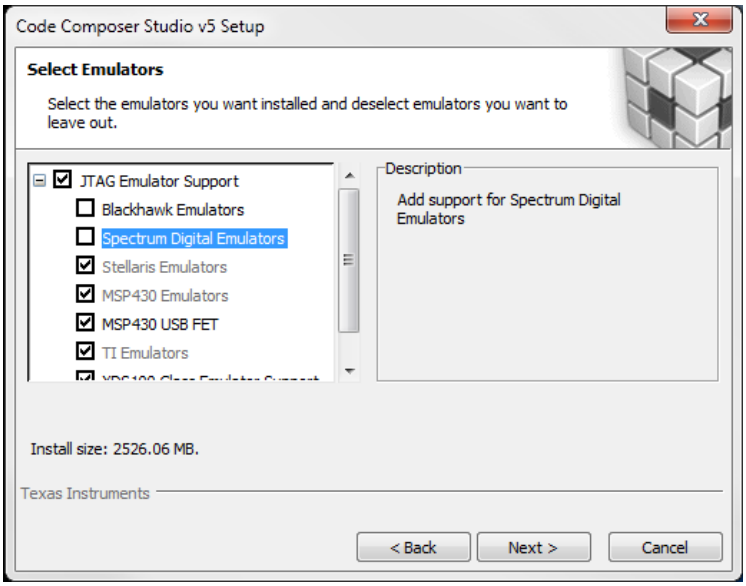
7. In the next dialog, ► select the processors that your CCS installation will support. You should select “Tiva C Series ARM MCUs” in order to run the labs in this workshop. If you are also attending the MSP430 workshop you should also select “MSP430 Low Power MCUs”. You can select other architectures, but the installation time and size will increase. ► Click Next.



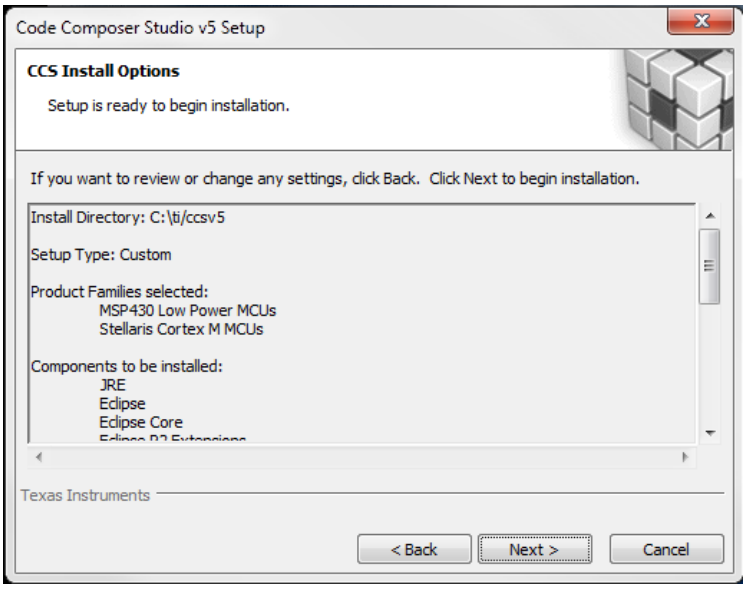
8. In the Component dialog, keep the default selections and ► click Next.

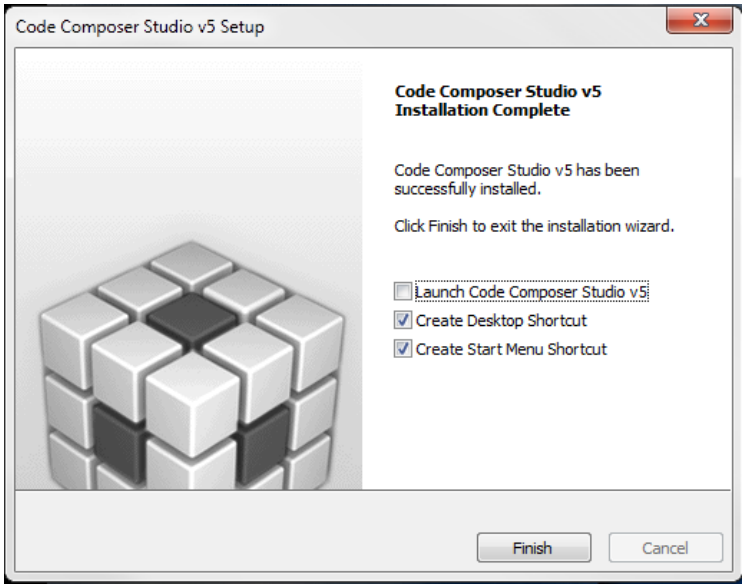


9. In the Emulators dialog, ► uncheck the Blackhawk and Spectrum Digital emulators, unless you plan on using either of these. ► Click Next.



10. When you reach the final installation dialog, ► click Next. The web installer process should take 15 - 30 minutes, depending on the speed of your connection. The offline installation should take 10 to 15 minutes. When the installation is complete, uncheck the "Launch Code Composer Studio v5" checkbox and then ► click Finish.





Install TivaWare™ for C Series (Complete) ☐

11. ► Download and install the latest full version of TivaWare from: http://www.ti.com/tool/sw-tm4c . The filename is `SW-TM4C-x.x.exe` . This workshop was built using version 1.0. Your version may be a later one. If at all possible, please install TivaWare into the default `C:\TI\TivaWare_C_Series-x.x` folder.

Install LM Flash Programmer ☐

12. ► Download, unzip and install the latest LM Flash Programmer (LMFLASHPROGRAMMER) from http://www.ti.com/tool/lmflashprogrammer .

Download and Install Workshop Lab Files ☐

13. ► Download and install the lab installation file from the workshop materials section of the Wiki site below. The file will install your lab files in: `C:\Tiva_TM4C123G_LaunchPad`.

    http://www.ti.com/TM4C123G-Launchpad-Workshop

Download Workshop Workbook ☐

14. ► Download a copy of the workbook pdf file from the workshop materials section of the Wiki site below to your desktop. It will be handy for copying and pasting code.

    http://www.ti.com/TM4C123G-Launchpad-Workshop

Terminal Program ☐

15. If you are running WindowsXP, you can use HyperTerminal as your terminal program. Windows7 does not have a terminal program built-in, but there are many third-party alternatives. The instructions in the labs utilize HyperTerminal and PuTTY. You can download PuTTY from the address below.

    http://the.earth.li/~sgtatham/putty/latest/x86/putty.exe

Windows-side USB Examples ☐

16. ► Download and install the Windows-side USB examples from this site:

    www.ti.com/sw-usb-win

Download and Install GIMP ☐

17. We will need a graphics manipulation tool capable of handling PNM formatted images. GIMP can do that. ► Download and install GIMP from here: www.gimp.org

LaunchPad Board Schematic

18. For your reference, the schematic is included at the end of this workbook.

Helpful Documents and Sites ☐

19. There are many helpful documents that you should have, but at a minimum you should have the following documents at your fingertips.

    With TivaWare™ installed, look in `C:\TI\TivaWare_C_Series-1.0\docs` and you'll find:

    Peripheral Driver User's Guide (SW-DRL-UG-x.x.pdf)

    USB Library User's Guide (SW-USBL-UG-x.x.pdf)

    Graphics Library User's Guide (SW-GRL-UG-x.x.pdf)

    LaunchPad Firmware User's Guide (SW-EK-TM4C123GXL-UG-x.x.pdf)

20. Go to: http://www.ti.com/lit/gpn/tm4c123gh6pm and download the TM4C123GH6PM Microcontroller Data Sheet. Tiva™ C Series data sheets are actually the complete user's guide to the device. So expect a large document.

21. If you are migrating from an earlier Stellaris design, you will find this document ful: http://www.ti.com/litv/pdf/spma050a

22. Download the ARM Optimizing C/C++ Compilers User Guide from http://www.ti.com/lit/pdf/spnu151 (SPNU151). Of particular interest are the sizes for all the different data types in table 6-2. You may see the use of "TMS470" here … that is the TI product number for its ARM devices.

23. You will find a "Hints" section at the end of chapter 2. This information will be handy if you run into problems during the labs.

You can find additional information at these websites:

Main page: www.ti.com/launchpad

Tiva C Series TM4C123G LaunchPad: http://www.ti.com/tool/ek-tm4c123gxl

TM4C123GH6PM folder: http://www.ti.com/product/tm4c123gh6pm

BoosterPack webpage: www.ti.com/boosterpack

LaunchPad Wiki: www.ti.com/launchpadwiki