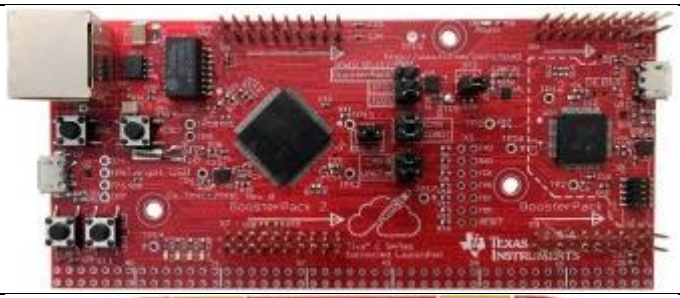
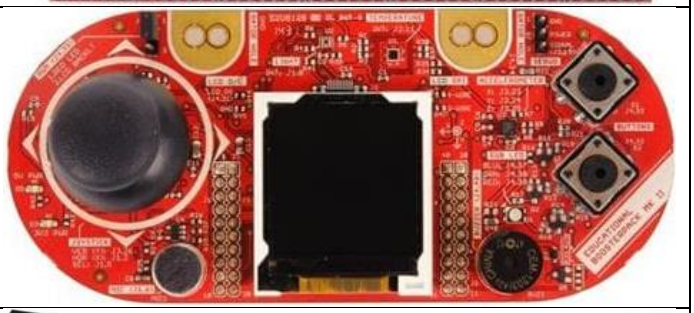
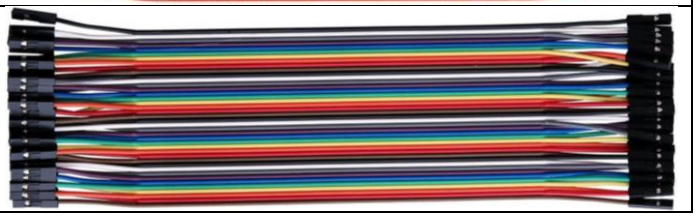
Objectives

- Purchase a lab kit
- Install software: Code Composer Studio and TI-RTOS
- Set up a Code Composer Studio project
- Output to the 128×128 LCD display
- Configure general purpose timers
- Configure the interrupt controller
- Read and debounce user buttons

Part 1: Lab kit

This term you are asked to **purchase your own lab kit**. There are only 3 components:

Component	Photo
TI EK-TM4C1294XL	
TI BOOSTXL-EDUMKII (Educational BoosterPack MKII)	
Jumper Wires 6" Female/Female (at least 10X)	

The least expensive option may be to purchase the boards directly from TI:
http://www.ti.com/tool/EK-TM4C1294XL
http://www.ti.com/tool/BOOSTXL-EDUMKII
And the jumper wires from Amazon:
https://www.amazon.com/dp/B077N58HFK

Alternatively, you may purchase all of these from Digi-Key using this shopping cart:
https://www.digikey.com/short/z828p2

Part 2: Development tools

This term we will be developing our embedded software using Texas Instruments Code Composer Studio (CCS). While there are robust, commercial embedded development tools like IAR and Keil, they are expensive or come with code size restrictions. TI's CCS, on the other hand, is free for use with TI microcontrollers, reasonably user-friendly and integrates well with TI's real-time operating system, TI-RTOS. CCS is based on the open-source tools Eclipse and GCC.

Before you install the TI software, make sure you have at least 6 GB of free space. A word of caution: Some TI software, specifically parts of TI-RTOS, cannot handle spaces anywhere in a file path. The issue manifests itself as a compilation failure, with an obscure error message. Make sure CCS and your CCS workspace are in locations without spaces in folder names. Default installation folders are recommended.

Download **Code Composer Studio v9.3.0** (latest version tested) for your OS:
http://processors.wiki.ti.com/index.php/Download_CCS

When installing, check the box for **TM4C12x** processor support and keep only the default debug probes.

Also download **TI-RTOS for TivaC v2.16.01.14** (newest) for your OS. Look in the **"Tiva C (TM4C)" column** and select version 2.16.01.14:
http://downloads.ti.com/dsps/dsps_public_sw/sdo_sb/targetcontent/tirtos/index.html

Install TI-RTOS with CCS closed. Then run CCS. It should inform you that it discovered new installable products (TI-RTOS v2.16.01.14 and XDCtools v3.32.00.06). Click Install.

Sometimes the previous step fails to install XDCtools v3.32.00.06, required for TI-RTOS. If you did not see XDCtools v3.32.00.06 as one of the installable products, navigate the CCS menu to Window → Preferences. Under Preferences, open "Code Composer Studio" → Products and click the Refresh button. This time you should see XDCtools v3.32.00.06 as a new installable product. Click Install. You should then see two versions of XDCtools installed: