

# Introduction to PSoC

## Purpose

This lab will introduce you to the PSoC board and tools. You will use the PSoC 4 Pioneer Board to experiment with a blinking LED.

## Setup

Download the blue LED project files from element14.com:

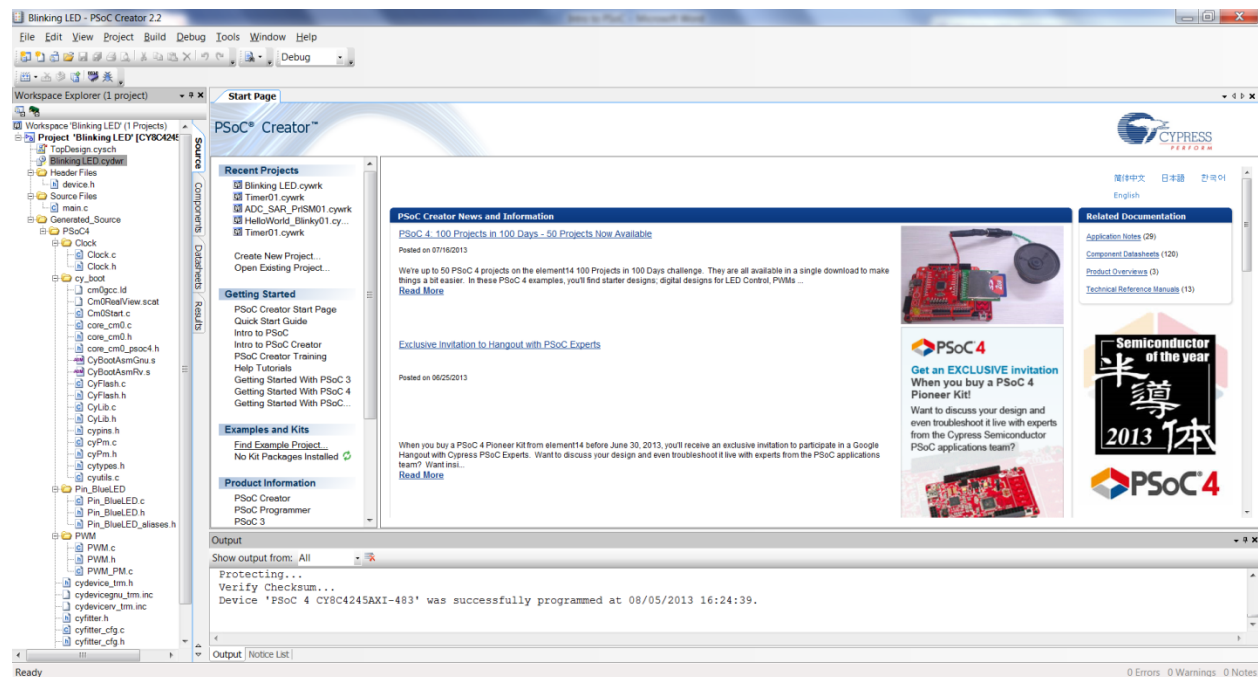
<http://www.element14.com/community/message/75399#75399/1/psoc-4-pioneer-kit-community-project01--blinking-led>

Unzip the files into a directory.

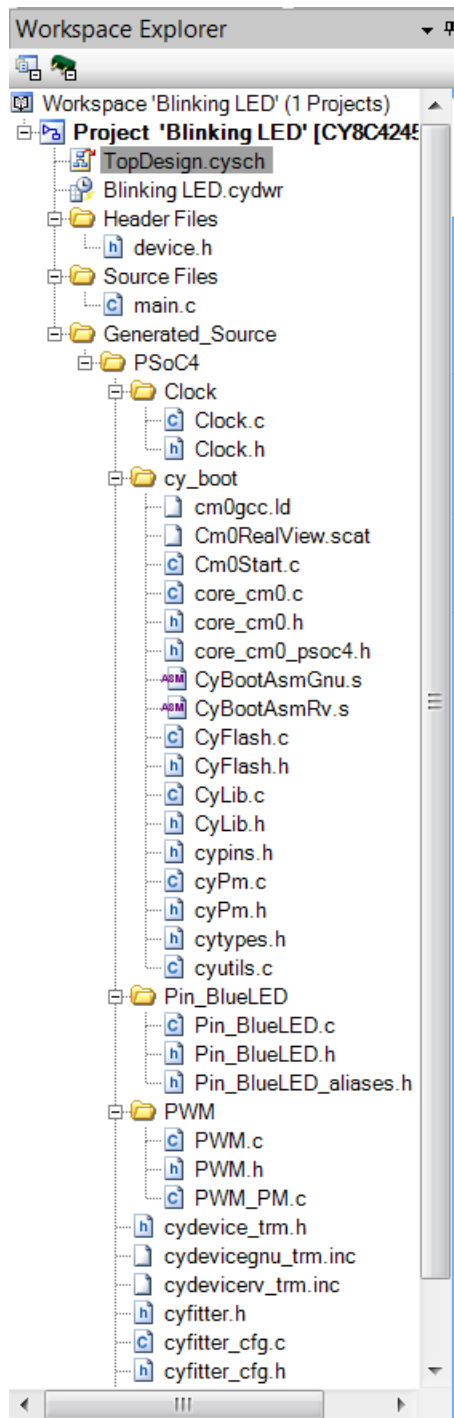
Start PSoC Creator and use File->Open->Project/Workspace to open the project. You can also go into the unzipped directory and double-click on the PSoC creator file to open the project.

## Experiments

Your initial PSoC Creator screen should look something like this:



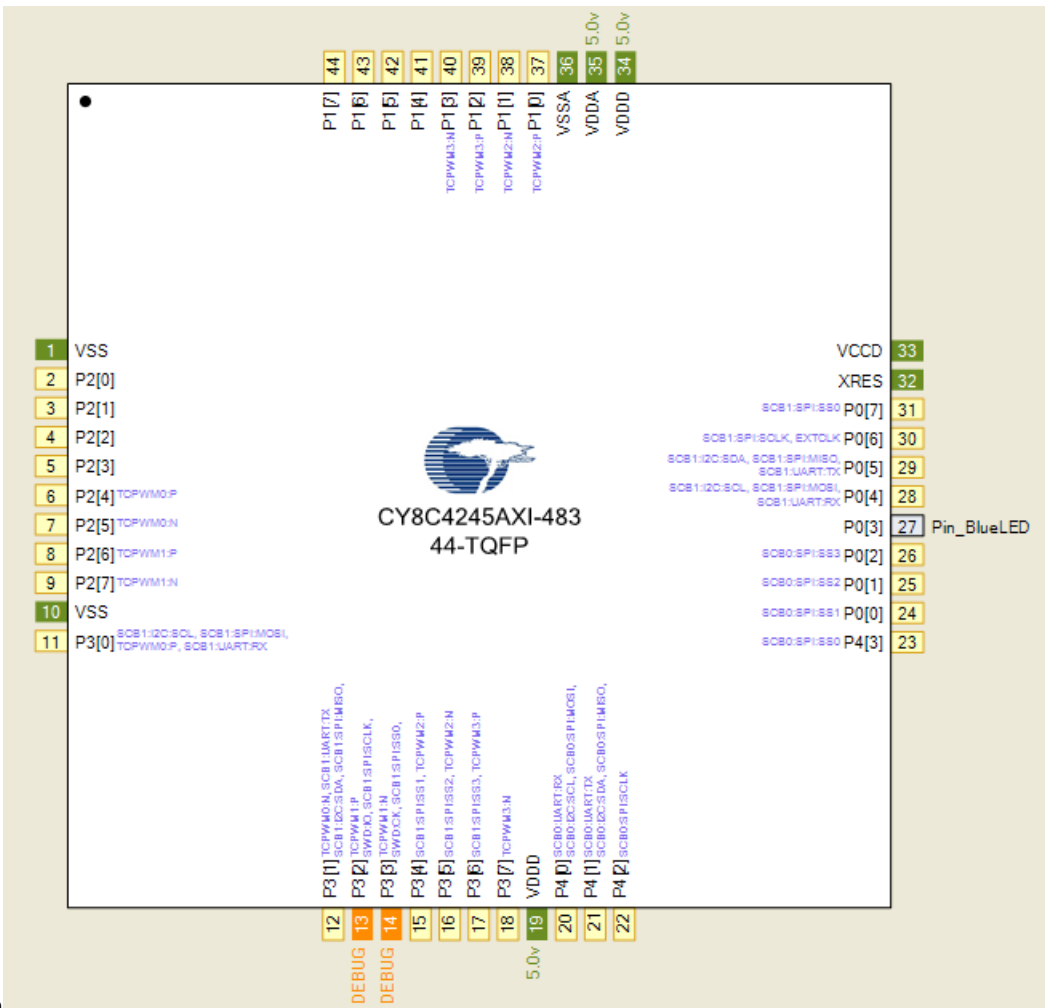
The Workspace Explorer tile on the left-hand side of the screen gives all the source files. Other tabs give you access to the components and datasheets:



Use the Workspace Explorer pane to open the main.c file.

Q1: What routines does main() call?

Double-click on BlinkingLED.cydwr in the Workspace Explorer to open the pinout diagram:

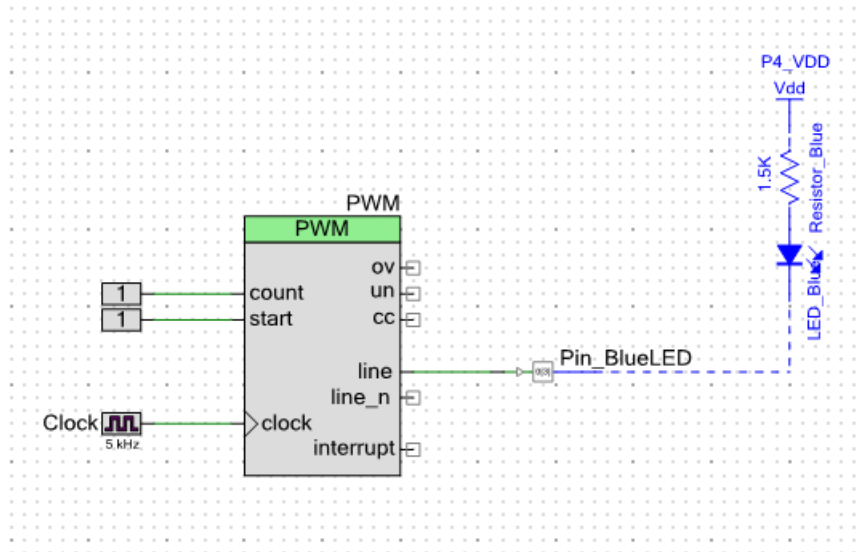


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This diagram shows how the chip's internal signals are assigned to its pins. Note that tabs at the top of the main window can be used to switch between the different open files in the project.

Q2: To what pin is the Pin\_BlueLED signal assigned?

Go back to the Workspace Explorer tile and open the TopDesign.cysch file. It will appear in the main tile:



This is the hardware schematic for the design. The schematic includes components both inside and outside the PSoC 4 chip. In this case, the LED is off-chip but is pre-wired on the board, so it doesn't need any additional work to operate.

The LED is driven by a pulse-width modulator whose frequency is determined by a clock. Double-click on the clock symbol to examine its properties.

Q3: What is the initial setting for the clock frequency?

You can compile, link, and load the design onto the board using Debug->Program.

Q4: What is the length of the on period of the LED?

Go back to the schematic and set the clock frequency to 1/10 of its initial value. Recompile and reload the design.

Q5: What is the new on period of the LED?

## You Should Turn In

1. Your main.c code.
2. Answers to Q1, Q2, Q3.

As always, output snapshots are cool.

Super-duper bonus points: use the potentiometer to change the value of NDELAY on-the-fly.