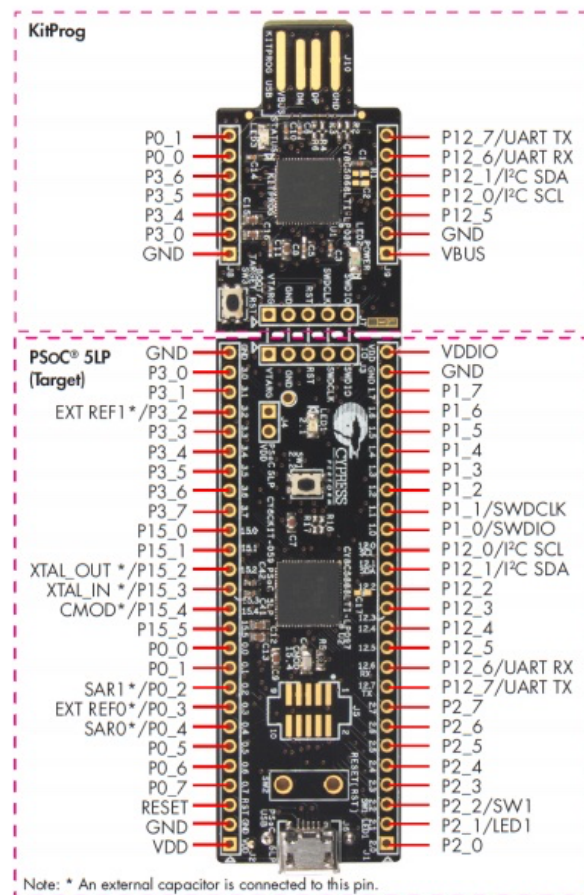


Laboratory 3

COMSYS 301 : Design : Hardware Software Systems

Objectives:

- Use a Timer block and Interrupt to flash a LED at
- To analyze a design



1. Abstract of the tasks

Opening the workspace

Making the correct project current

Viewing and exploring the schematic

Changing the schematic to modify the configuration

Programing the PSoC

Measuring the actual frequency on a scope

2. Tasks

In this lab, instructions will be minimal. Refer to lab1 if you don't remember how to achieve a task.

2.1. Opening the workspace

As in lab 1, begin by opening the psoc_intro.cywrk workspace.

2.2. Making the correct project current

Make the 'lab3' project active.

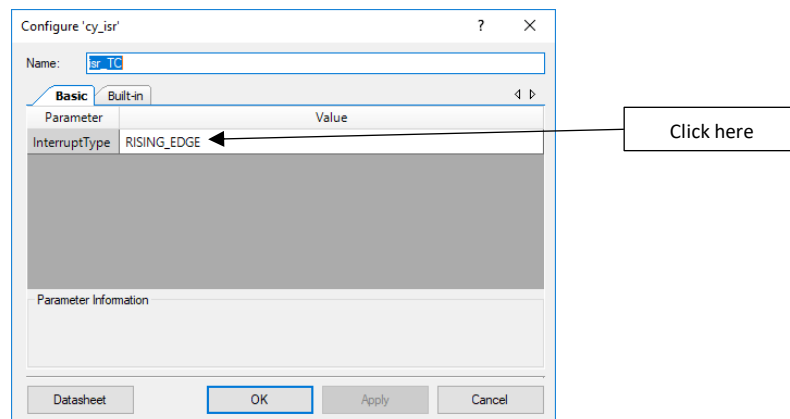
2.3. Viewing and exploring the schematic

Open lab3.cydwr, look at the *Pins* tab. How many in/out puts are there?

Open TopDesign.cysch, look at all the components. Look at their configuration parameters.

Have you notice a new type of bloc: cy_isr. ISR stands for Interrupt Service Routine. This bloc is used to generate an interrupt, it can be fired and cleared in hardware or in software.

Open the ISR bloc parameters. Click on the right of the InterruptType label to list all the possibilities.



Open the bloc parameters. How many InterruptType are there?

Read the Interrupt part of the datasheet of the Timer (p6-8).

Read the datasheet of the cy_isr. Do this component need an initialisation in the .c files? Go to the *Component Parameters* section and chose the right InterruptType according to the Timer bloc.

How does the Interrupt react to the output of the Timer? You can draw a timing diagram to help you.

2.4. Changing the main.c file for the interrupt code

Open the main.c, look at the code. Do you need to add something?

Hint: look at the *API* section of the Interrupt datasheet.

Why did we use an Interrupt? Could we use a polling method? Would it be better?

2.5. Programing the PSoC

As in lab 1, program your PSoC with your own lab3 project.

2.6. Measuring the actual frequency on a scope

Now we would like to measure the frequency of the LED precisely, as in lab2. Use your scope to do that.

Is the frequency really 1Hz?

3. Your notes

You are encouraged to take notes of the quick questions and remarks made in the lab because some of them may be in the quiz.

[illegible]