**Lab Report #1:** Introduction to PSoC Creator

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**Introduction**

In this lab the student had to read and watch videos related to the PSoC Creator and its design environment to learn how to use it effectively. They also learned about the functionality of the Cypress family of PSoC’s. The goals were for the students to gain a better understanding of Cypress PSoC’s and how to use PSoC Creator.

**Procedure**

The student first read the PSoC Creator Quick Start Guide. The student then watched the video tutorials relating to both the PSoC’s themselves and the PSoC Creator program. After this the student answered the questions in the lab handout.

**Report Questions**

1. What are the key features of the PSoC chip architecture?

The key features of the PSoC chip are the CPU, the digital subsystems, the analog subsystems, and the routing. The CPU contains the main chip, the memory, IC’s, a DMA, and is responsible for memory and processing. The digital subsystems contain digital components used for various designs . The analog subsystems contain components such as op amps if the user wants to use analog components for certain operations. The routing contains programmable IO ports that can be used for multiple different inputs/outputs.

1. How is PSoC Creator used in embedded system design?

The PSoC Creator is used in embedded system design for the creation and modification of designs, configuring of components, programming of the device, and eventual exportation of the code and design to the physical PSoC so it can be tested and eventually run.

1. What information can be obtained about a system design by opening the project in PSoC Creator?

When you open a project in PSoC Creator you can learn about the IO ports of the system design and where things go. You can also learn exactly what components are used in the design and how they are connected to one another. In addition, you can learn what code is used in the design and view the documentation of the code.

1. How can a suitable PSoC based board be used to process analog electrical signals? Describe your scheme, and describe an example application- e.g. a home thermostat.

Using the ADC’s in the PSoC it would be very easy to convert analog electrical signals into digital signals that could then be processed and used by the main system for several different purposes. A possible application could be something like a water sensor connected to a rainwater container with a lid on the top that was controlled by a servo. When the water sensor would detect rain it could send a signal to the PSoC such that depending on the amount of rain falling, it could then open the lid to varying degrees depending on the amount of rain falling. This would enable the bucket to most efficiently collect the rainwater without letting things like animals or things that could pollute the water to enter the container.