Prep for Lab 1

DNR 27Sep2017

This lab is a continuation of the "Introduction to CCS and Piccolo" begun in Lab 0. Here are some items you can start to look at before coming to the lab.

1. One thing you will do in this lab is to measure how long it takes the Piccolo processor to do the computations for an FIR filter. To approximate this, you will write C code to perform an N-point dot product on two arrays (representing the data and the filter coefficients) for three cases: N=10, 50, and 100. Each array will have N integer elements containing dummy data - you will need to initialize the array values with data that is non-zero so the compiler doesn't optimize out the code. First write the code using:

   a. array-subscript notation to access the array elements (use "**`int16[]`**" syntax)

   and then measure the computation time by setting a digital output (GPIO) pin high at the beginning of the computation and then low at the end and observing with a scope.

   Then comment out the array-subscript code and change to:

   b. pointer notation to access the array elements

   and then re-measure the computation time and compare to previous.

2. Review how peripheral registers, e.g. those of CpuTimer0, are represented in TI's C code hierarchy of **`struct`**s and **`union`**s.

3. Read up on the processor's CPU Timers to understand how they work.

The total amount of code you will need to write or modify for this lab is not much, maybe 20-40 statements, excluding comments.

Info for Lab 1

- See what to submit in the Lab Handout. Check D2L for the Due Date.
- If Code Composer Studio every seems "weird" or hangs, try a hard reboot of PC.
- Put the dot product in the "else" branch of main
- From today onwards:
    - Comment all changes you make to existing files by adding your initials to each change:
        - e.g. if your name is John Smith

```
. . .
x = 0; //reset x //JS
} //JS
. . .
```

    - Put a header of comments at the top of any file you modify or create:

```
//Author: David Romalo
//Modified by: John Smith
//Added GPIO line to . . .
//Search for "JS" for changes
. . .
```

or

```
. . .
//Author: John Smith
//This file contains a function that . . .
. . .
```