Homework #1

Objective: Set up your laptop for the Silicon Labs IDE and SDCC and run the hw1.c program.

Due date: Check the LMS LITEC_Calendar (Semester Schedule) to see when this is due for your section.

Team Assignment

1) By the 2nd week of class, after picking 2 lab partners, get a Lab Notebook.
   -- 9.25 inches X 11.75 inches or larger, Quad rule recommended.
   -- One lab notebook per team; put all 3 names on the cover with section # and side (A or B).

Individual Assignment

1) Reading Assignment:

   a) Read the Lab Manual: Chapter 1 – Introduction, and read the LMS file - Installing_SiLabs-SDCC-Drivers

   b) SiLabs 8051 Manual: browse through Chapter 1 - System Overview (The manual is available on the LMS website, under Course Resources→SiLabs Manuals→C8051F02x Users Guide)

2) Class preparation assignment: follow instructions in "Installing SiLabs-SDCC-Drivers" on RPILMS.

If you have not done so, install Silabs IDE, the course header file (c8051_SDCC.h), SDCC and SecureCRT as detailed in Lecture 1 and in the file "Installing_SiLabs-SDCC-Drivers_Win.docx" on RPILMS. **The studio will be open Wednesday of the 1st week of class especially to make sure every student has all the software tools installed on their laptop. Attendance is mandatory if you haven't compiled, linked, and executed the program *hw1.c* by Wednesday morning!**

Also, make sure drivers are installed for the USB-to-serial connector. (If not found automatically, go to the LMS website, under Course Resources→Software & Drivers→PL2303 Prolific Drivers→ **PL2303_Prolific_DriverInstaller_v1.10.0.exe**)

a) In class – plug in the USB-to-serial adapter and let New Hardware search the web. This might take 10 seconds or 5 minutes.

b) If drivers fail to install automatically use the LMS link above or go to http://www.prolific.com.tw/eng/downloads.asp?ID=31, download the PL2303 driver zip file (PL-2303 USB to Serial Bridge), unzip and run the installer. After unzipping you may need to right click on the file to execute it.

Every student needs to have a laptop with the above material installed. Completion of HW #1 requires verification from a TA for each student that all the software has been installed correctly and a project has been created for "hw1.c" that correctly compiles, links, downloads to the C8051F020, and executes.

3) Download the hw1.c file from LMS and place it in a folder where you will be saving your C code files during the semester. Alternatively, copy the program from this document directly into the SiLabs editor. You will need to save the file using an appropriate name (avoid punctuation and spaces other than '-' & '_' in the name). You do not need to upload an edited softcopy to Homework 1 under the Assignments tab on LMS but you do need to demonstrate to an instructor or TA that everything works.

Unless you have experience with text editors for programming, DO NOT use a word processor such as *Microsoft Word* to edit the program! A word processor will embed special formatting characters into the file that will be unrecognizable by the C compiler. Please use the SiLabs software development tool.

In general, softcopies of all **lab** programs should include all partners' names. **Homework** programs are submitted individually on LMS. Although only required **starting** with HW #2, to submit a softcopy for **Homework 1**, following these directions:

To submit individually through RPILMS:

1: Go to the RPILMS website for *Embedded Control*.

2: Click on Assignments.

3: Click on HW 1.

4: Click on Browse My Computer (under **Assignment Submissions**) to upload your file.

5: The next steps changes depending on browser & Java version…

6: Navigate to the folder where you saved the C code.

7: Highlight the C file.

8: Click on Submit to submit the file. (Multiple "Submits" my be required.)

```
/* Put your name(s), section #, and side (A or B) here
Name this program - homework1.c */
#include <c8051_SDCC.h>/* include files. This file is available online*/
#include <stdio.h>

void main(void)     /* start main function */
{
    int imax, i;    /* declare variables before first executable code */
    unsigned char count;
    unsigned char input;

// The following 2 lines MUST be the 1st executable statements in every program
    Sys_Init();     /* Initialize UART, System clock and crossbar*/
    putchar(' ');   /* do this because we tell you to */
    while(1)        /* begin infinite loop */
    {
        printf("\r\n enter 1 to count to 18 or 2 to count to 270 \r\n");
        input=getchar();        /* get count value */
        if (input=='1')         /* if input is 1, count to 18 */
        {
            count=18;
            imax=18;
        }
        else if (input=='2')    /* if input is 2, count to 270 */
        {
            count=270;
            imax=270;
        }
        else imax=0;            /* for other inputs, skip counting */
        printf("\n count value is %u  ",imax);
        printf("\n\n Decimal   hex \n\r");
        for(i=0;i<=imax;i++)
        {
            count=i;
            printf("%u    %x \n\r", count, count);
            /* print number as both decimal and hex decimal and hex */
            /* NOTE: %x prints hexadecimal numbers WITHOUT the 0x prefix */
        }   /* end for loop */
    }       /* end while loop */
}           /* end main function */
```