Self-Study Laboratory Exercise 1

Laboratory Demo: 204:237 (Bentley), Miri: Consult with your lecturer

Equipment Required:

1 × MSP-EXP430FR5739 Experimenter's Board
1 × PC with latest version of Code Compose Studio (CCS) installed

1. Background

Students will individually on their PC to complete a set of **four** self-study laboratories take home exercises with a purchase of the MSP-EXP430FR5739 experimenter's board. Each student may demo their completed task during a scheduled laboratory session. The demonstration will take only several minutes. Make sure you print out the Self-Study Lab Rubric posted in Blackboard (Bb) for assessment. You may complete the self-study laboratory exercises during your course of study of Micrcomputers CMPE2003 before the end of Teaching Week 12. Consult with your demonstrator(s) anything that you are unsure of. Remember to log any important notes and observations into your logbook which you will have to bring along during a demonstration. You may be asked by a demonstrator to show your logbook for assessment.

2. Exercise

The following piece of code is written using the Wiring language in the Energia environment which is used to generate a pulse width modulation (PWM).

```
#include <msp430fr5739.h>
int dutyC = 90;             // Duty Cycle: Valid Range = 10 to 90

void setup() {
  WDTCTL = WDTPW + WDTHOLD; // Stop WDT
  P1DIR |= BIT2;            // P1.2 to output
  P1SEL0 |= BIT2;           // P1.2 to TA1.1

  TA1CCR0 = 1000-1;         // PWM period
  TA1CCTL1 = OUTMOD_7;      // CCR1 reset/set
  TA1CCR1 = dutyC * 10;     // CCR1 PWM duty cycle
  TA1CTL = TASSEL_2 + MC_1; // SMCLK, up mode

  _BIS_SR(LPM0_bits);       // Enter LPM0
}

void loop() {
}
```

The objectives of this exercise are to

- Write equivalent codes in C using CCS.
- Demonstrate the generated PWM on an oscilloscope provided in the laboratory venue.