BLG 351E – Microcomputer Laboratory

Experiment 5

Introduction

This lab aims to help students to gain more experience in the MSP430 Education Board, MSP430G2553 microcontroller and its assembly language. Students are recommended both to read the supplementary material **General Purpose Input Output - Chapter 6.pdf** on Ninova and to bring their own computers to the laboratory on which Texas Instruments Code Composer Studio IDE is installed (For installation instructions, review **CCS_Installation.pdf**).

Background Information

The general purpose input and output (GPIO) using the ports of MSP430G2553 (i.e., Port 1 and 2) can be performed by configuring and reading/setting the corresponding registers of the selected port.

The following two instructions read P1.2 and conditionally branch depending on the state of the button.

```
bit.b  #00000100b,&P1IN ;read the switch at P1.2 and set flags
jnz ON ;if P1.2, branch to the label OFF
```

The following two instructions clear and set LED 5 respectively.

```
bic.b  #00010000b,&P1OUT ; clear P1.4
bis.b #00010000b,&P1OUT ; set P1.4
```

Part 1 – Controlling LEDs via Push Buttons

Write an assembly program which controls LED 2 on Port 1 using the push button 1 on Port 2. Your program should toggle LED2 whenever P2.0 is pressed in an endless loop.

Part 2 – Controlling LEDs via Push Buttons

Write an assembly program that counts down how many times the push button 1 on Port 2 is pressed. Your program should display the result using the LEDs on Port 1.

Report

Your report should contain your program code (with explanations) for Part 1 and Part 2.