

ECE 3270 Microcontroller Interfacing Lab  
Lab 1: Introduction to the PIC32MX150F128D

**Abstract**

This experiment was performed exclusively to familiarize our selves with the PIC32MX150F128D microcontroller and its corresponding MPLAB IDE. Using a program function that was downloaded from Canvas, the microcontroller was programmed to count from 0 to 15 in binary using 4 LEDs. The microcontroller was wired to the NI-ELVIS II development board and its corresponding LEDs for the visual output. Lastly the code was modified to count down from 15 to 0 in binary at a different pace than the previous version of the program. This was demonstrated and that concluded the lab.

**Introduction**

This experiment helped to familiarize our selves with the PIC32MX150F128D microcontroller development board and its corresponding MPLAB IDE as well as specifically learning where some of the basic/most important pins are located on the development board. The MPLAB IDE was utilized to write and modify a C program that counts up or down between 0 to 15, in binary, with its visual output shown using LEDs.

**Experimental Procedures**

- First the pre-written C code was downloaded and unzipped from Canvas
- MPLAB IDE opened the C code file and we analyzed what the code was written to achieve or perform
- The microcontroller was then connected to the computer via the debugger tool and a USB cord and the NI-ELVIS II was turned on
- The C code was compiled on the IDE and then was programmed to the microcontroller
- The program was then run and once it successfully ran, the C code was modified to count down from 15 to 0 at a different rate than it previously had
- Once this was successfully demonstrated to the TA, that concluded the lab

**Results**

No calculations or tables are included as none were used or recorded for this lab. Although, it was observed that, as expected, the LEDs counted at a slower rate with higher delay increments, and vice versa. As well as that if the loop was switched to go from  $i = 15$  to  $i \geq 0$  that it counted down instead of up.

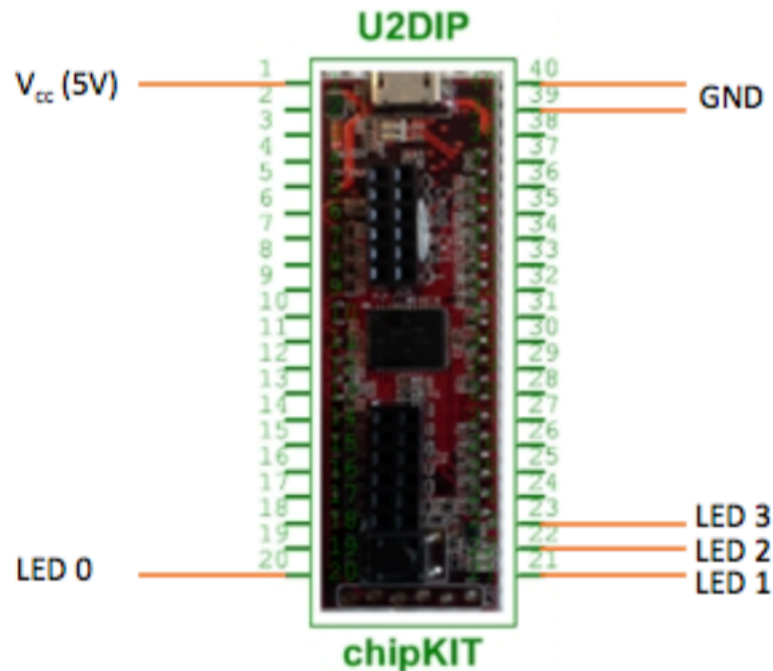
**Discussion**

In conclusion, it was observed that using the given code that with the correct wiring shown in Figure 1 that the microcontroller would count up from 0 to 15 in binary on the connected LEDs, as well as correctly count down from 15 to 0 when modified to have a higher delay by raising the delay loop variables and switching the direction of the loop to start at 15 and run until the variable is greater than or equal

to 0. I see no real way to improve this lab, as it is already concise and simple as well as it does a good job of introducing the concepts necessary for this course.

### Conclusions

It was concluded from this experiment that given the correct wiring and using the given program, that the PIC32MX150F128D microcontroller can be used to count up or down in binary between 0 and 15 using 4 LEDs. It was also concluded that our microcontroller of choice has many uses and that it can be adaptable to many situations based on the code written for it.



**Figure 1: Pin/Wiring Guide for Lab 1 Using chipKIT CMOD Development Board**