

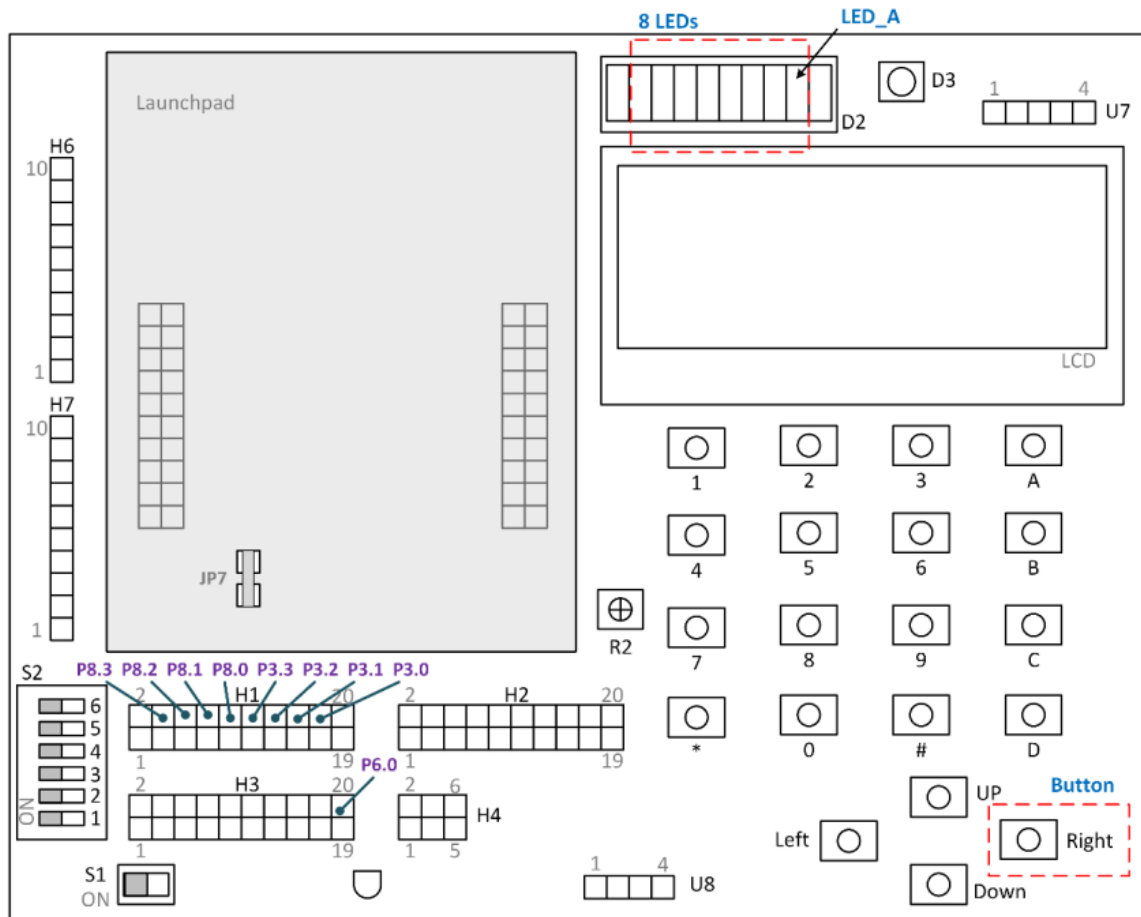
# Lab1 description



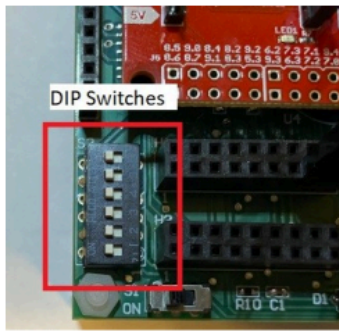
## Description

### System A

- For safety, please remember and make sure to unplug your Launchpad from the USB port before making any hardware changes.
- The connection diagram is shown below. Connect your breadboard jumper wires. Students need to bring their own breadboard jumper wires to perform the laboratory tasks.
- For reference, 9 male-to-female breadboard jumper wires was used.



- For the lab kits, the launchpad boards are already mounted properly on the BH boards. But, for your reference, if you need to mount your own Launchpad board. Make sure to unplug the USB cable from the Launchpad board first. Then, mount your launchpad board on the BH EDU board. After mounting it, check whether all 40 pins are connected properly. If the launchpad is already mounted properly, you still need to check whether the board is mounted properly before using it.
- (Note) There is no need to change the default DIP settings. Do not change the DIP setting. For your reference, the correct DIP switch settings are shown in the following figure.

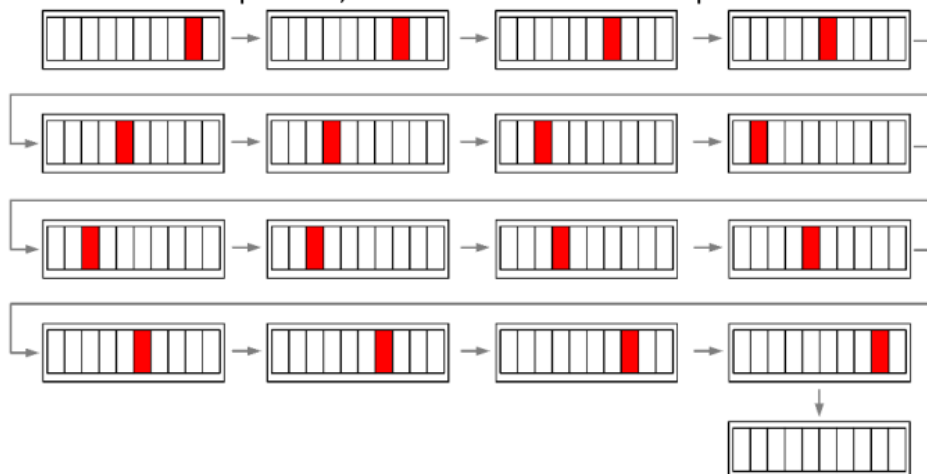


- For System A, students must write a **C/C++ program** for the following functions.
  - Blink the LED\_A on the BH board.
  - The blink function should keep repeating indefinitely.
  - The blinking duration must be between 0.5 seconds to 1 second.
- Fill out the following table. Make sure to include this table in your lab report. You can measure the time it took for blinking 10 times. The measurement does not need to be exact.

	Time (s)
10 blinks	

### System B

- For System B, students must write a **C/C++ program** for the following functions.
  - When a button (shown in the connection diagram figure) is not pressed, all 8 LEDs (shown in the connection diagram figure) should be turned off.
  - When a button is pressed, turn on the LEDs in the sequence below.



- The duration for the single LED sequence must be around 2 seconds. In other words, the transition to the next LED pattern should be reasonably fast between 0.2 seconds and 0.3 seconds.
- For reference, if you keep pressing the button, you can see a Kight Rider LED effect.
- Make sure to complete the lab check-off assignment (Lab1-XXX) posted on CANVAS before the given deadline. The code files should be submitted as a part of the lab check-off assignment. Laboratory assignment deadlines are 15 minutes before the end of your registered laboratory session.

### Reference

- B. Hur, "Learning Embedded Systems with MSP430 FRAM microcontrollers", 2nd ed. 2023.