

EECS 2032Z - Introduction to Embedded Systems

Winter 2025

Lab 7

Lab Objectives

- To write a basic program for the KL43Z microcontroller to control specific functionalities of reading input from switches and controlling LEDs.
- Use the Integrated Development Environment (IDE), MCUXpresso, to compile the program into machine code that the microcontroller can execute.
- Download the Program to the Board.
- Observe the expected behavior.

Note: Demonstrate your lab7 work to the TA.

Pre-Lab

Review the General Purpose I/O for KL43Z from the textbook and Lecture 8 (Part II) slides.

Problem

Write a small program to control the LED's on the board.

Specifications

The board has two switches, **SW1** and **SW3** and the two LED's, the green and the red. Based on the states of two switches, **SW1** and **SW3**, the behaviour of the LEDs should change according to the following conditions:

1. If both **SW1** and **SW3** are not pressed:
 - Red LED should be **ON**
 - Green LED should be **OFF**

2. If SW1 is pressed and SW3 is not pressed:

- Red LED should blink
- Green LED should be ON

3. If SW1 is not pressed and SW3 is pressed:

- Red LED should blink
- Green LED should be OFF

4. If both SW1 and SW3 are pressed:

- Both Red LED and Green LED should blink alternately. When Red LED is ON, Green LED should be OFF, and when Red LED is OFF, Green LED should be ON