Project 1

Flashing LEDs on the MSP430 Launchpad board

Project Overview

Goal: Flash the launchpad board LEDs at ~5 Hz

- Make use of 2 different methods
    - Delay loop subroutines
    - Timer interrupts
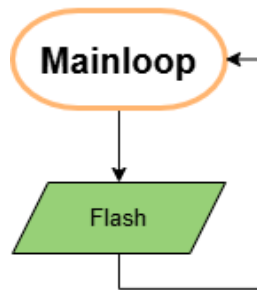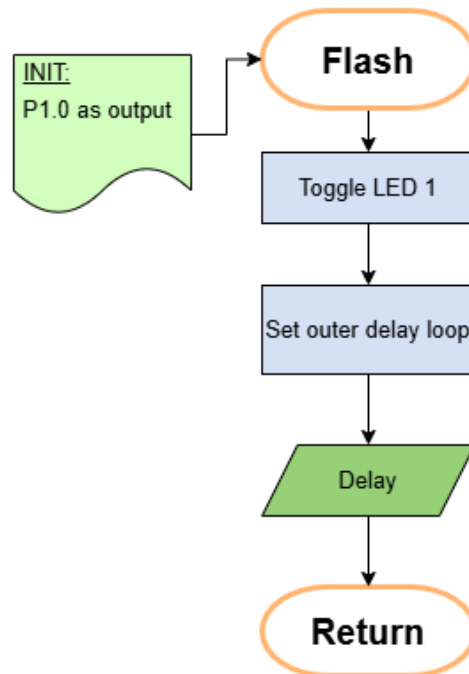- Obtain accuracy with use of AD2

Flowchart

Mainloop

Flash

Figure 1: Main loop

INIT:
P1.0 as output

Flash

Toggle LED 1

Set outer delay loop

Delay

Return

Figure 2: Flash subroutine

Delay

Set inner delay loop

Dec inner delay loop

Inner loop = 0 — No

Yes

Dec outer delay loop

Outer loop = 0 — No

Yes

Return

Figure 3: Delay subroutine

INIT:
P6.6 as output

Timer B0 as:

- ACLK
- Up counter

Set count to 32880

Enable compare interrupt

TimerB0

Toggle LED 2

Clear interrupt flag

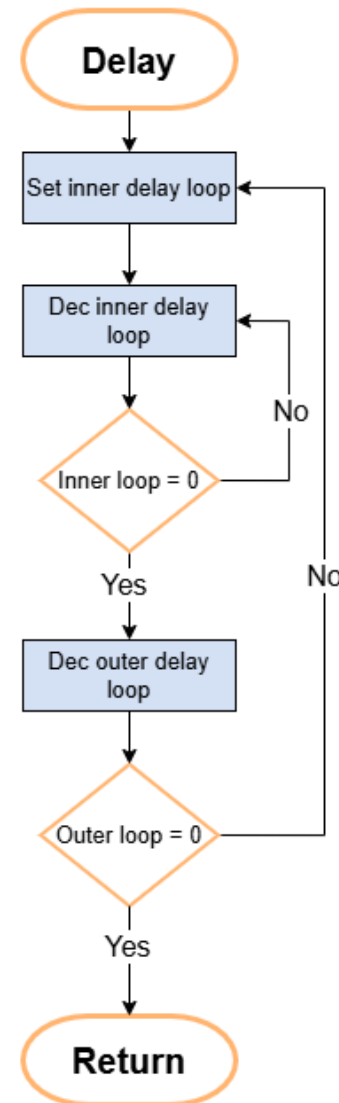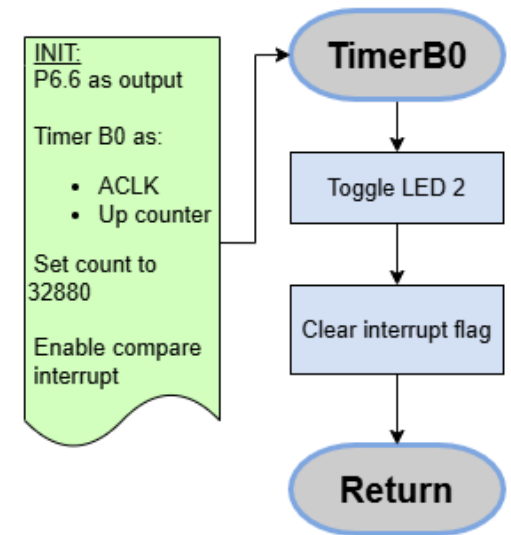**Return**

Figure 4: Timer B0 ISR

Delay Loops

- Start inner loop at 50000
- Start outer loop at 10
- Decrease the values
  - Use AD2 logic analyzer to be exact
  - Inner loop: 58500
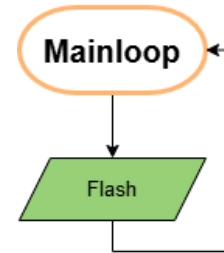 - Outer loop: 6
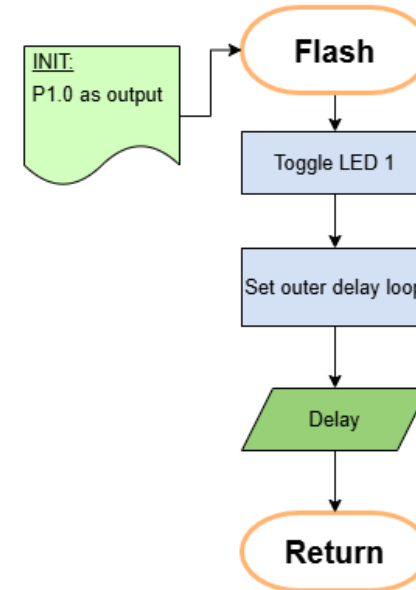 - ~1ms off

Figure 1: Main loop
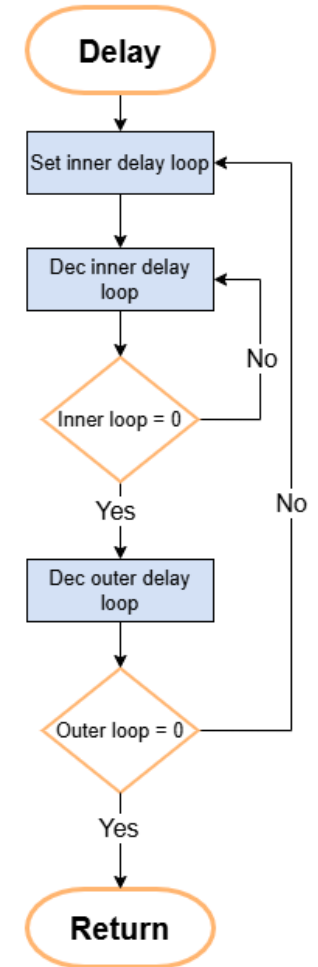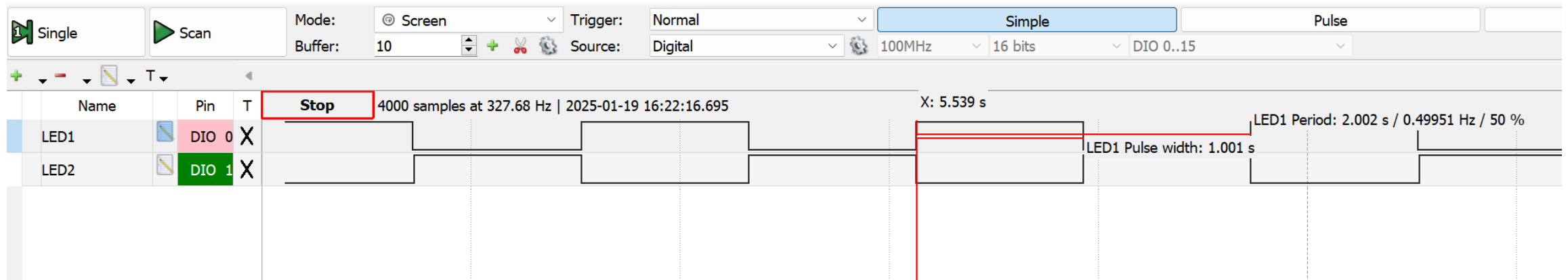
Figure 2: Flash subroutine

Figure 3: Delay subroutine

Logic Level Measurement

Timer Interrupts

- Start count at 32768
- Adjust this value
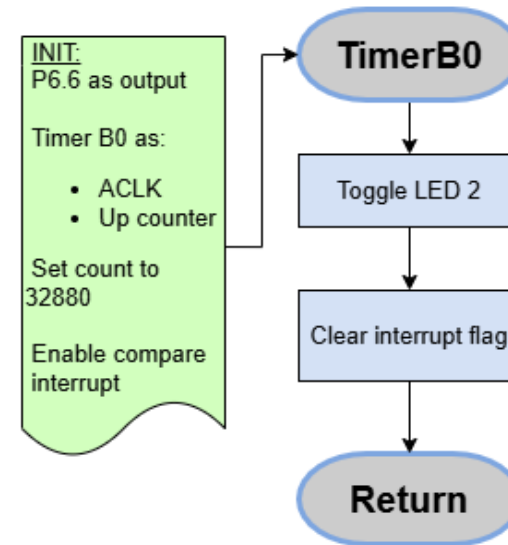 - Use AD2 logic analyzer to be exact
  - End at 32800
  - ~1ms off

INIT:
P6.6 as output

Timer B0 as:
- ACLK
- Up counter

Set count to 32880

Enable compare interrupt

TimerB0

Toggle LED 2

Clear interrupt flag

Return

Figure 4: Timer B0 ISR

Logic Level Measurement