Lab 3 Postlab

https://github.com/cabobalot/ECE5780Labs/tree/master/ECE5780Lab3

1. Using a timer clock source of 8 MHz, calculate PSC and ARR values to get a 60 Hz interrupt.

• This is tricky because precisely 60 Hz is impossible with our system; instead, think about the process and minimize the error. Many combinations of PSC and ARR values work—not just one!

The closest to 60 Hz is PSC= 150 and ARR= 883

2. Look through the Table 13 "STM32F072x8/xB pin definitions" in the chip datasheet and list all pins that can have the timer 3 capture/compare channel 1 alternate function.

• If the pin is included on the LQFP64 package that we are using, list the alternate function number that you would use to select it.

PE3
PA6 : AF1
PC6 : AF0
PB4 : AF1

3. List your measured value of the timer UEV interrupt period from first experiment.

The period of each led is 0.5002 seconds (about 2hz), That means the interrupt triggers an edge is every 0.25 seconds (4hz), because the code switches the LEDs

See tim2intperiod.png in the git repository

4. Describe what happened to the measured duty-cycle as the CCRx value increased in PWM mode 1.

Mode 1 means the CCR value is the ON duty cycle. As it goes up the LED stays on for longer.

5. Describe what happened to the measured duty-cycle as the CCRx value increased in PWM mode 2.

Mode 2 means the CCR value is the OFF duty cycle. As it goes up the LED stays off for longer.

6. Include at least one logic analyzer screenshot of a PWM capture.

See 20Duty.png in the repo for a view at 20% duty cycle

7. What PWM mode is shown in figure 3.6 of the lab manual (PWM mode 1 or 2)?

It shows mode 2, since a higher CCR value means the output stays on for less time.