TO: Prof. Pierre-Emmanuel Gaillardon, Course Instructor
FROM: David Venegas
DATE: February 20th, 2024
SUBJECT: Post-Lab 03 (Timers)

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

For PSC = 3, and ARR = 33333:

$$\frac{8MHz}{PSC + 1} = 2\ MHz\ or\ 0.5\mu s$$

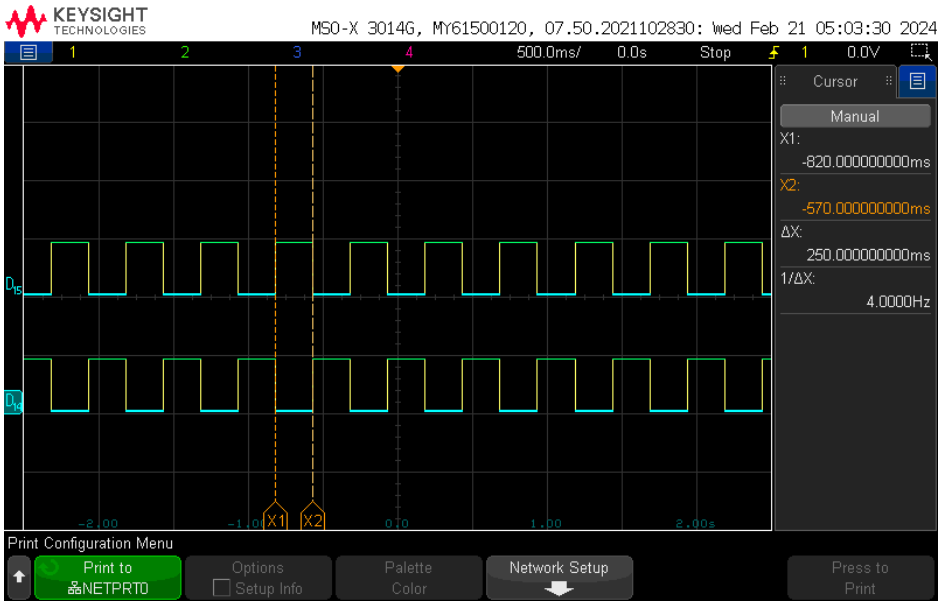
$$ARR = 33333\ (0.5\mu s) = 16666.5\mu s\ or\ 60Hz$$

2. **Look through 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.)**

TIM3_CH1	
Pin Name	**Alternate Function Number**
PE3	AF0
PA6	AF1
PC6	AF0
PB4	AF1

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

f = 4Hz or T = 250ms D_{15} = PC9 (Green LED) D_{14} = PC8 (Orange LED)



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

TIM3_CH2 is set to PWM Mode 1 which is assigned to PC7 (Blue LED): when increasing CCR1 towards ARR, the blue LED light brightens.

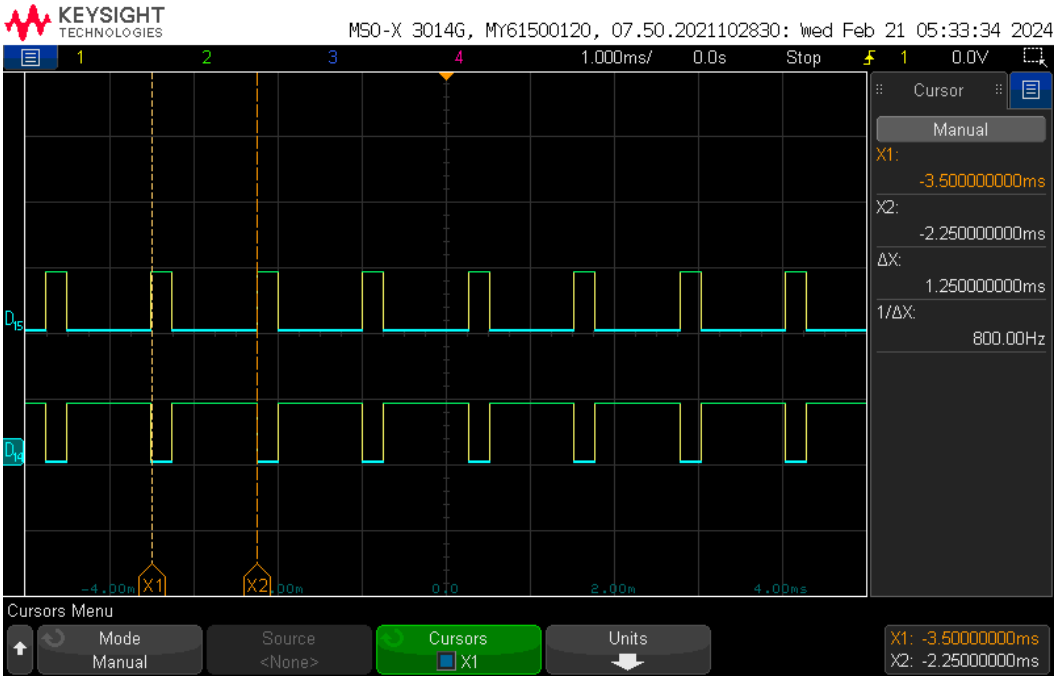
5. **Describe what happened to the measured duty-cycle as the CCRx value increased in PWM mode 2:**

TIM3_CH1 is set to PWM Mode 2 which is assigned to PC6 (Red LED): when increasing CCR2 towards ARR, the red LED light dims.

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

For CCRx at 20% of ARR

f = 800Hz or T = 1.25ms D_{15} = PC7 (Blue LED) D_{14} = PC6 (Red LED)



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

PWM mode 1: where $T_{ON} = 1$ and $T_{OFF} = 0$