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Lab 2

1. Given that the clock divider is 1 and DTRR0[REF] is 0x6A3 or 1699, timeouts for the following two values of DTMR[PS] can be calculated as follow:

$$79: \text{timeout} = \frac{1(79+1)1700}{80 \times 10^6} = 1.7\text{ms}$$

$$80: \text{timeout} = \frac{1(80+1)1700}{80 \times 10^6} = 1.721\text{ms}$$

$$\% \text{ difference} = \frac{|1.7 - 1.721|}{1.7} \times 100 = 1.24\%$$

2.

- a. The name coming out of SW4 is MCU\_RSTIN\_b.
- b. The \_b means that the default signal coming into the pin or coming out of it is a high instead of a low. This is the same as active low signal.
- c. The signal is connected to pin 141 and its name is  $\overline{\text{RSTIN}}_b$ .
- d. According to the MCF manual, “asserting RSTI immediately resets the CPU and peripherals.”

3.

- a. The name coming out of SW4 is PB1\_SW.
- b. The signal is connected to pin 93 and its name is IC0/OCO0/PWM1.
- c. Primary function: The pin functions as a general purpose timer or GPT.  
Tertiary function: The pin functions to output PWM or pulse width modulation.  
Quaternary function: The pin functions as a GPIO pin.
- d. The GPIO pin is connected to port TA.
- e. SW1 is connected to pin 0 of port TA.
- f. We have to program register PTAPAR to 00 in order for us to choose the quaternary function.
- g. `MCF_GPIO_PTAPAR &= ~(3<<(0))`
- h. The name of the register that will configure the direction of the GPIO pin is DDRTA.
- i. `MCF_GPIO_DDRTA &= ~(1<<0)`
- j. We detect the input of the push button by accessing the bit in register SETTA.  
`Int sw1 = !((MCF_GPIO_SETTA & (1<<0))>>0)`