

Calculate % Error induced by increasing PRx by 1

Using FPRB = 10 MHz, having to count 1 more step would add $+10^{-7}$ seconds to the time needed to count?

$$T2-TICK = \left(\frac{FPRB}{Prescale} \right) \times \text{Toggles per sec}$$

$$= \left(\frac{10 \cdot 10^6}{1} \right) / 10^3 = \frac{10^7}{10^3} = 10^4 \text{ iterations for 1 ms}$$

$$\frac{\left[\overbrace{10^4}^{\text{iterations 1ms}} \times \overbrace{(10^{-7})}^{\text{time for 1 iteration}} \right] - [(10^4 + 1) \times 10^{-7}]}{10^4 \times 10^{-7}} = \% \text{ Error}$$

$$\frac{10^{-3} - 1.0001 \cdot 10^{-3}}{10^{-3}} = 10^{-10} \% \text{ Error}$$

Increasing PR1 from 10^4 to $[10^4 + 1]$ gives a $10^{-10} \%$ Error added to the timing of Timer 2 Interrupt Flag