

Derivation of initial value for 50ms using TIMERO

$$\text{XTAL} = 16\text{MHz} \rightarrow T_{\text{xtal_clock}} = 1/16 \text{ us}$$

$$\begin{aligned} \text{Prescaler} = 1:256 \rightarrow T_{\text{counter_clock}} &= 256 \times (1/16) \text{ us} \\ &= 16\text{us} \end{aligned}$$

$$\begin{aligned} \text{Increment count} &= 100000\text{us} / 16\text{us} \\ &= 6250 \end{aligned}$$

Take 250 as the count

$$\begin{aligned} \text{Number of iterations} &= 6250/250 \\ &= 25 \end{aligned}$$

$$\begin{aligned} \text{Initial counter value} &= 256 - 250 \\ &= 6 \end{aligned}$$