

Operation of CPU Timer 0

1. Upon reset of the processor (e.g. after power-up):
 - a. Timer starts running, but does not generate interrupts since they are disabled.
 - b. Value in period register = 0 so timer counter stays at 0.
 - c. Timer Interrupt Flag (TIF) = 1 since timer counter is at 0.
 - d. Pre-scale division factor is 0.
2. The user's code loads the period register (both high and low words)
 - a. Since the timer counter is at 0, it then gets loaded with the period register value.
 - b. Timer counter starts to decrement.
 - i. Timer counter decrements once every SYSCLKOUT¹ since there is no pre-scale division.
3. The user's code polls² for TIF = 1 which indicates the timer counter has reached 0:
 - a. When detected, the user's code clears TIF by writing a 1 to it.
 - i. The user's code does its task.

¹ SYSCLKOUT for Piccolo LaunchPad is 60 MHz which corresponds to a period of $1/60\text{M} = 16.6\text{ nsec}$

² Here we are assuming the user's code polls – an alternative would be to use interrupts.