timers

counter = counts input pulses from an external signal (generally asynchronous) → not always periodic

timer = counts pulses of a fixed, known frequency (usually system clock for the processor) → periodic

↳ pic timer is a register whose value is increasing to 255, then starts again (clock input from oscillator)

* timers and counters operate independently from the µC's program execution, no CPU efford is needed → they implemented in hardware

counter device that stores the number of times a particular event occurred with respect to a clock signal

↳ a register, can be decremented or incremented ↳ event counter

timer is a counter with count=1 and time-periodic input fed to the clock input → counts the number of cycles

pre-scaler = used to reduce a high frequency electrical signal (like a clock) to a lower frequency by int division

↳ highest divisor value=256 → only at every 256th clock, timer value would increase by one (only with powers of 2)

post-scaler = slows the rate of the interrupt generation from a counter/timer by dividing it down

instead of t0 ← 0x15, because before setting there can be time passed

timer overflows in every $(256 - 0x15) \times T$ seconds (T: clock period)