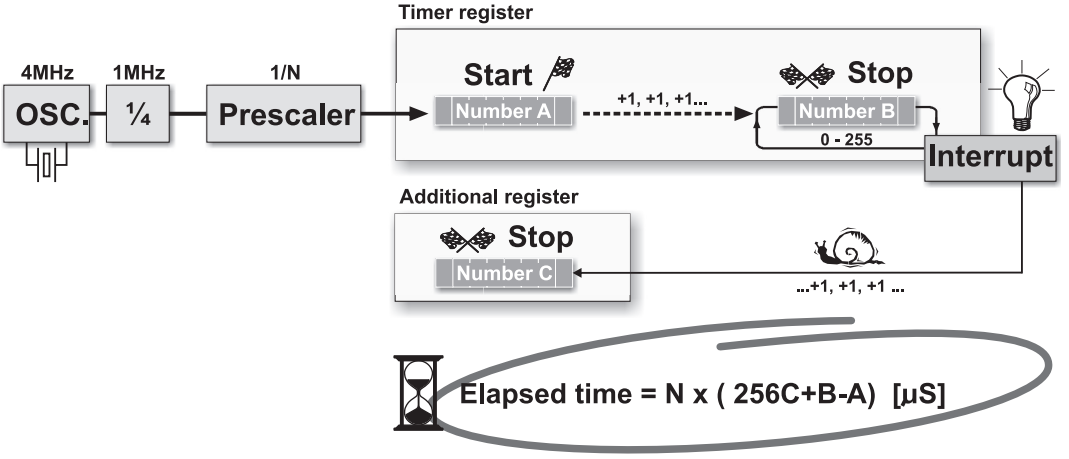
Interrupt in Timer Operating

If the timer register consists of 8 bits, the largest number that can be written to it is 255 (for 16-bit registers it is the number 65.535). If this number is exceeded, the timer will be automatically reset and counting will start from zero. This event is called *overflow.* If enabled from within the program, the overflow can cause an interrupt, which gives completely new possibilities. For example, the state of registers used for counting seconds, minutes or days can be changed in an interrupt routine. The whole this process (except interrupt routine) is automatically performed behind the scenes, which enables main circuits of the microcontroller to perform regular operations normally.



The picture above illustrates the use of interrupt in timer operating. Delays of arbitrary duration with minimal interference in the main program execution can be easily obtained by assigning a prescaler to the timer.

Counters

If a timer is supplied with pulses over the microcontroller input pin, then it turns into a counter. Clearly, it is about the same electronic circuit. The only difference is that in this case pulses to be counted come over the microcontroller input pin and their duration (width) is mostly undefined. That is why they cannot be used for time measurement, but can be used for counting: products on an assembly line, number of axis rotation, passengers etc. (depending on sensor in use).