RIT

SWEN-340

Software Design for Computing Systems

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Sept 14, 2021

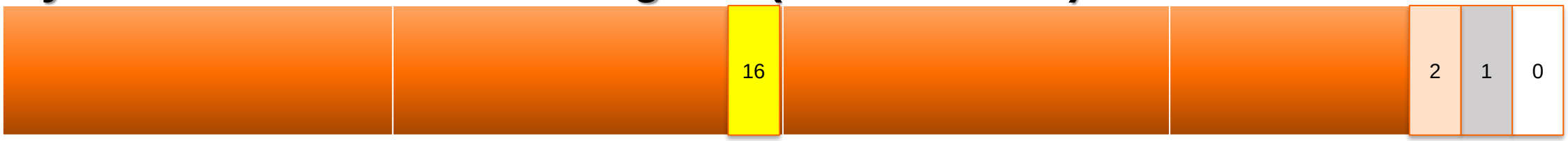
SysTick

- 24-bit System Timer
- Counts down from the reload value to zero
- The maximum value that can be loaded to the load register of system timer is 2^(24-1)
- Generates SysTick interrupts
- System Timer can be used to execute task periodically such as periodic polling and Scheduler

References:
STM32 Cortex®-M4 MCUs and MPUs programming manual
Book: Embedded Systems with ARM CORTEX-M Microcontrollers in Assembly Language and C (Dr. Yifeng Zhu)

SysTick Registers

SysTick control and status register (SYST-> CTRL)



Bit 0 – Enable
Bit 1 – (Tick) Interrupt Enable
Bit 2 – Clock Source
Bit 16 – Count Flag

SysTick current value register (SYST-> VAL)

Bit 0-23 – Current Value

References:
STM32 Cortex®-M4 MCUs and MPUs programming manual

SysTick Registers

SysTick Reload value register (SYST->LOAD)

Bit 0-23 – Reload Value

SysTick calibration value register (SYST-> CALIB)

Bit 0-23 – Calibration Value
Bit 30 – Skew Flag
Bit 31 – No Reference Flag

In STM32L4 Processors, External Clock is System Internal Clock divided by 8

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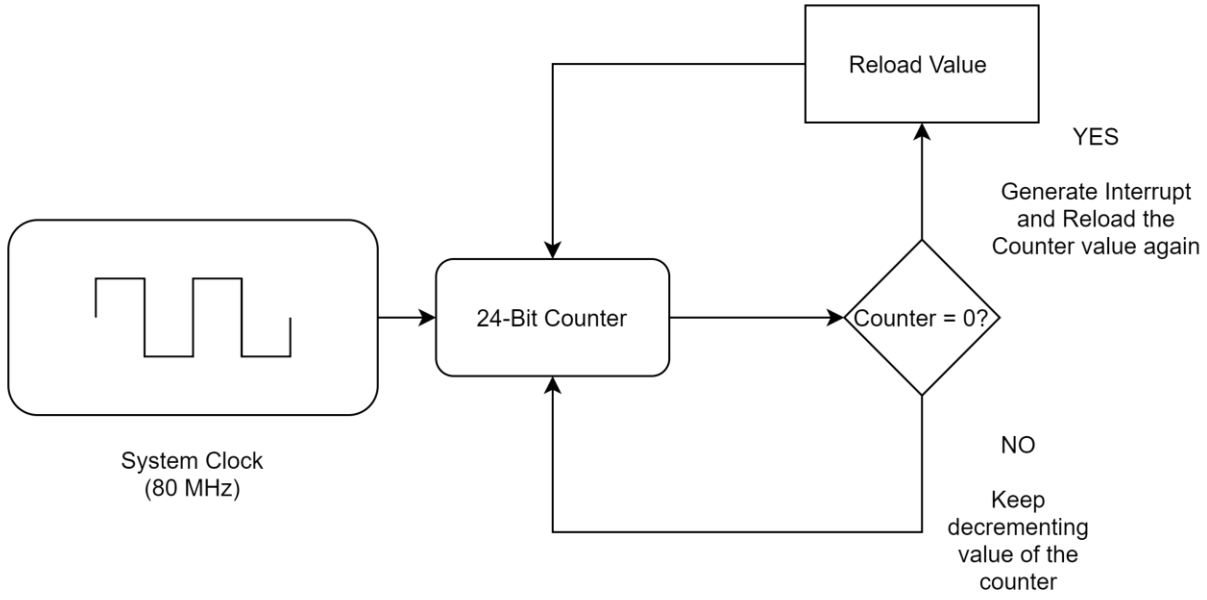
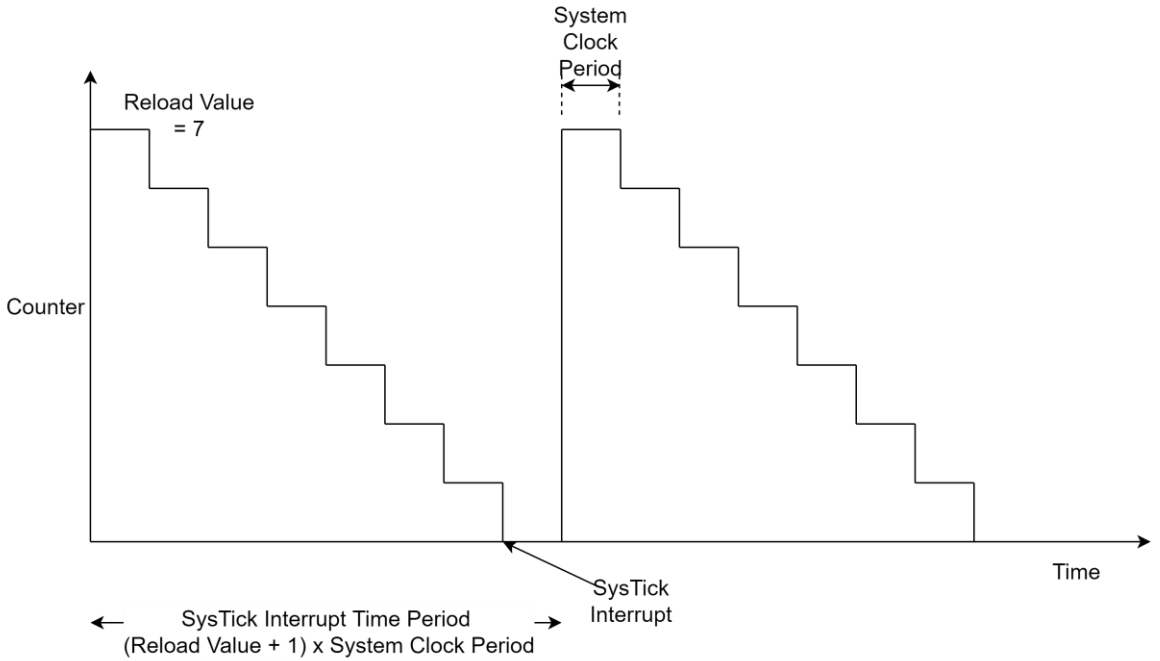
STM32 Cortex®-M4 MCUs and MPUs programming manual

How does SysTick work?





With 80 MHz System clock, if 1 Interrupt is desired at 1 second time interval then reload value must be

Reload Value = (Time Period / System Clock Period) – 1
Reload Value =(1 Second / (1 / 80 MHz)) – 1
Reload Value = 80,000,000 – 1 = 79,999,999

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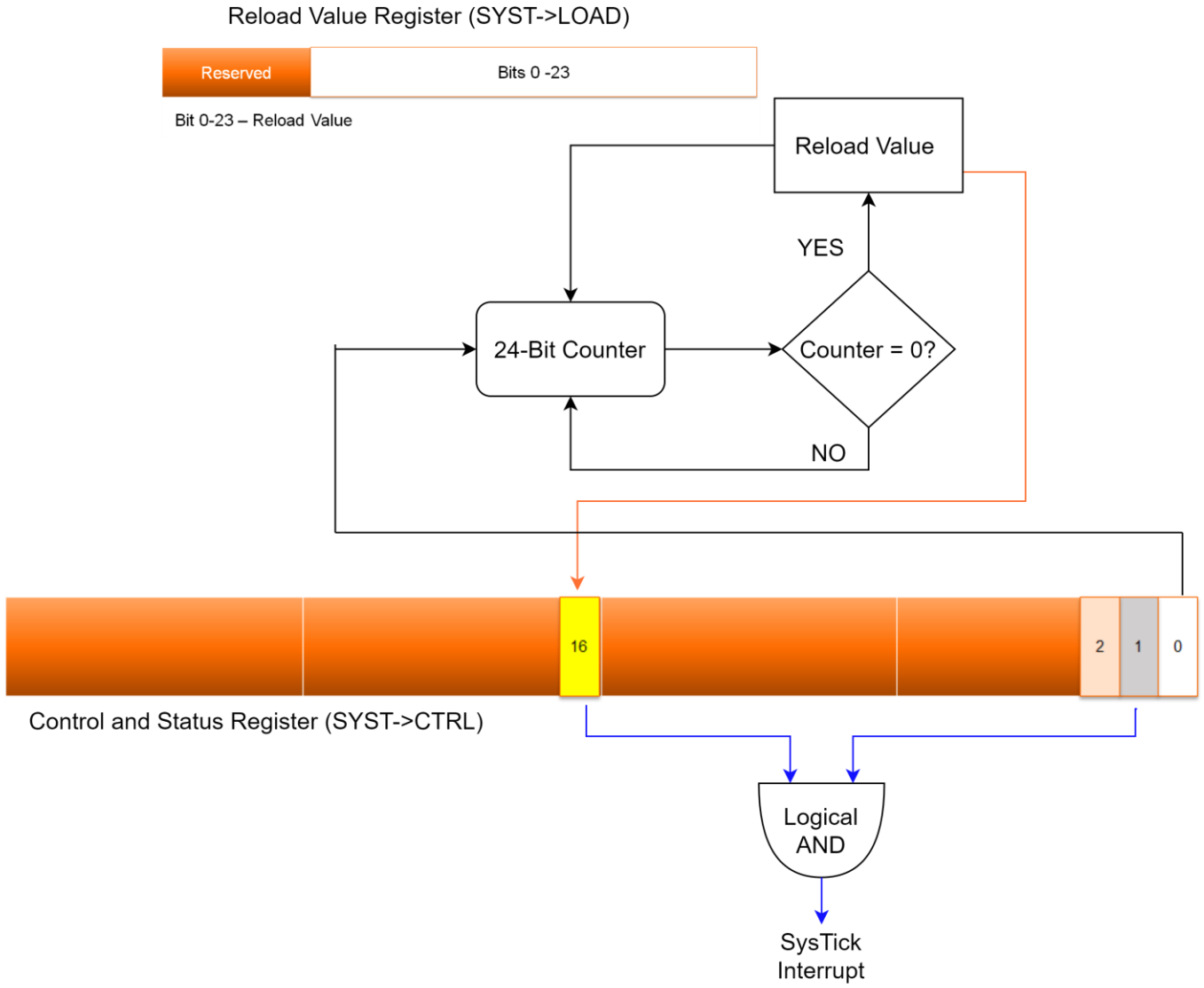
How does SysTick work?



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