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Day: 07 _16_08_2023

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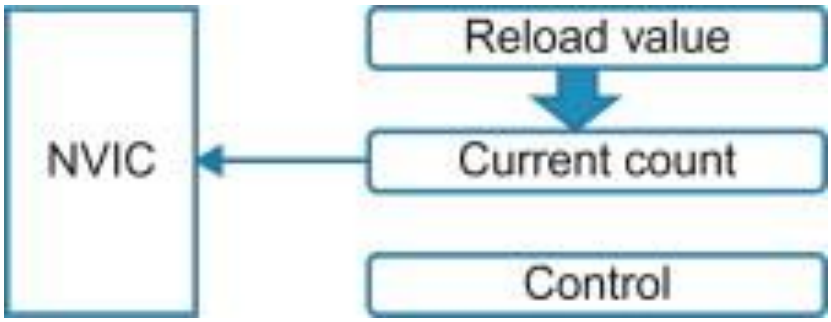
Task : 6

Systick Timer features:

Systick Timer

All of the Cortex-M processors also contain a standard timer. This is called the systick timer and is a 24-bit countdown timer with auto reload. Once started the systick timer will count down from its initial value. Once it reaches zero it will raise an interrupt and a new count value will be loaded from the reload register. The main purpose of this timer is to generate a periodic interrupt for an RTOS or other event-driven software. If you are not running an OS, you can also use it as a simple timer peripheral.



The STM32F401CC is an ARM Cortex-M4-based microcontroller from STMicroelectronics. It includes the SysTick timer peripheral, which provides several features. Here are the SysTick timer features specific to the STM32F401CC:

1. Programmable Reload Value: The SysTick timer in the STM32F401CC has a 24-bit reload value register (STK_LOAD) that determines the interval between interrupts. You can program this register to set the desired timer period.

1. Current Value Register: The STM32F401CC SysTick timer has a 24-bit current value register (STK_VAL) that holds the current value of the timer. It counts down from the reload value to zero, and this register reflects the remaining time until the next interrupt.

1. Clock Source: The SysTick timer in the STM32F401CC can be clocked from the processor core clock (HCLK) or an external reference clock. The clock source is configurable through the Control and Status Register (STK_CTRL).

1. System Tick Control and Status: The SysTick control and status register (STK_CTRL) in the STM32F401CC provides various control and status bits. These

include the enable/disable bit (ENABLE), interrupt enable/disable bit (INTEN), and the count flag (COUNTFLAG) that indicates whether the timer has reached zero since the last read of the current value register.

1. Interrupt Generation: The STM32F401CC SysTick timer can be configured to generate an interrupt when the timer reaches zero (end of the countdown) or when it wraps around from the maximum value to zero. This behavior is determined by the TICKINT bit in the STK_CTRL register.

1. SysTick Handler: The STM32F401CC microcontroller includes a default SysTick interrupt handler. You can define your own implementation of the SysTick_Handler function to handle the SysTick interrupts and perform specific tasks.