

List two things you can learn from a peripheral's functional description in the peripheral reference manual?

Explanation of the purpose of each operating mode and relevant registers and configuration options. As an example, the EXTI functional description describes what the EXTI peripheral does. It also states that to generate an interrupt the line should be configured and enabled. It then goes on to say which registers to set for enabling an EXTI line.

What is the title of the first sub-section in the functional description of timers 2 and 3?

Time-base Unit

What is the purpose of the Prescaler (PSC) register?

The PSC register divides the input clock frequency by its value -1. It's basically setting the amount to divide the clock by.

What is the purpose of the Auto-Reload (ARR) register?

The ARR sets the upper bound of the CNT. So when I hit the ARR value in the CNT the timer resets and starts to count a new period.

What is the purpose of the Capture/Compare (CCRx) register while the timer is operating in Output Compare mode?

When the CNT register matches the values of the CCR register the output of its GPIO pin will be modified depending on the mode.

What does the duty-cycle of a PWM signal represent?

The duty cycle is the percentage of time in the period the signal is high.

What is the purpose of the Alternate Function mode for a GPIO pin?

To allow a pin to connect directly to an internal peripheral of the STM32.

In what document can you find the documentation for what GPIO pins have which alternate functions?

You can find the documentation for the GPIO alternate functions in the device datasheet.