Timers and their modes

Embedded devices perform some activities on a time basis. Timers are hardware modules that assist CPU to not only generate periodically events, but also do several features in which some are very important to work with external peripheral like Pulse...

Updated: 2021-06-14 14:07:22 #arm #stm32 #timer #pwm #capture

Redirect the Standard IO to an UART

Standard C has built-in functions to communicate on the standard IO, such as printf(), gets(). As UART is available in almost MCUs, it is a good idea to use an UART port as the standard IO interface. Redirection technique is implemented by re-writing...

Updated: 2021-06-13 16:49:06 #arm #stm32 #uart #redirect

Universal Asynchronous Receiver-Transmitter

Almost every microcontroller provides at least one UART peripheral, and this protocol seems to be a must-have supported feature for any project as UART is widely used for debugging, logging, data exchange, and for firmware update. Serialization also...

Updated: 2021-06-12 23:16:18 #arm #stm32 #usart #uart #interrupt #dma

Serial Wire Viewer (SWD + SWO)

Compared to other "debugging-alike" peripherals like UART/VCOM redirection or to other technologies like the ARM semihosting, SWV is really fast. This method also allows to trace the system activity and memory without having big impaction to the performance.

Updated: 2021-06-10 18:51:11 #stm32 #debug #swv

Add the SWO pin on a ST-LINK/V2 clone

Almost cloned ST-LINK/V2 debuggers do not have SWO pin exposed. To add this feature, it's needed to wire the PA10 on the microprocessor to a pin on the header. This pin will then connect to the SWO pin (PB3) of the target MCU.

Updated: 2021-06-10 13:07:51 #stm32 #debug

Direct Memory Access Management

DMA is used as an independent memory transferring module between memory and peripherals that frees CPU from handling data exchange, therefore it speeds up the system performance. DMA is used in many cases to handling data stream and continuous transferring.

Updated: 2021-06-10 12:31:17 #arm #stm32 #dma

Notes for STM32 MCUs

Tips, hints, and tricks when working on STM32 ARM Cortex-M MCUs

Updated: 2021-06-12 23:16:18 #notes #pi

General Purpose Input/Output pins

Input/Output pins are the gates to help microprocessor communicate with the outside world. There are some GPIO ports on a MCU, each pin can be configured to work in different modes, or to work together in a specific protocol. By using GPIO with...

Updated: 2021-06-09 22:48:22 #arm #stm32 #gpio

Debug with ARM Semihosting

ARM semihosting is a distinctive feature of the ARM platform, that allows to use input and output functions on a host computer that get forwarded to the microcontrollers over a hardware debugger. It is helpful when there is no input/output interface...

Updated: 2021-06-13 16:49:06 #arm #stm32 #debug #semihosting

Interrupt management in STM32

All microcontrollers provide a feature called interrupts. An interrupt is an asynchronous event that causes stopping the execution of the current code on a priority basis. Interrupts originate by the hardware and the software itself, and can be...

Updated: 2021-06-07 13:23:39 #arm #stm32 #interrupt

Configure the Clock Tree in STM32

Almost every digital circuit needs clocks - the periodic signals that make circuits alive. Inside an MCU, there is a complex clock distribution network that drive every component and peripheral. When a device start, it should firstly setup its clock tree.

Updated: 2021-06-09 21:46:02

#arm #stm32 #clock

Documents for work with STM32

In embedded programming, documents have a very important role as they are the main reference sources for developers to know how the processor works and how to configure it. Those documents mainly come from the processor manufacture, including example...

Updated: 2021-06-03 17:15:59

#arm #stm32 #docs

« 1 2 3 »