

STM32 COURSE



Activar Windows
Ve a Configuración para activar Windows

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001 First Debug Program STLink HSE HSI Creado por: Ing.
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Initialization

001 First Debug Program STLink HSE HSI



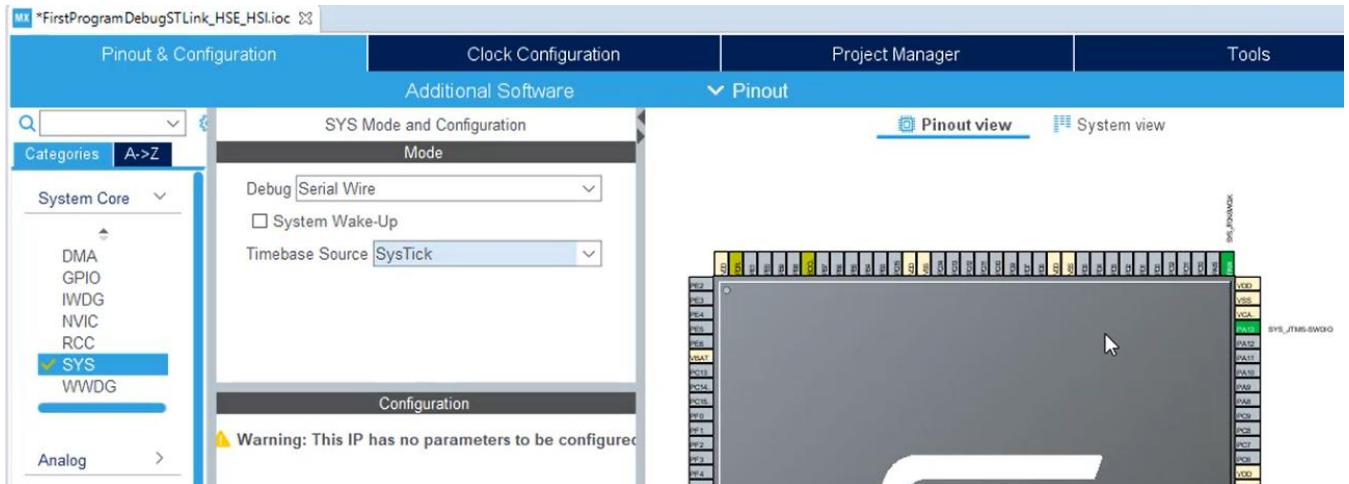
What will we learn?

In this video we will generate the first program that will be loaded to the STM32F429 Discovery card, in general the laboratories are oriented to be able to implement them almost in any microcontroller of any STM32 family, we will configure the Processor Clock to which it will work, we will use the HSI RC (High Speed Internal) which is an internal Resistance-Capacitor type oscillator that works at 16 Mhz, which we will configure to raise the frequency to the processor's main clock, we will also configure the HSE (High Speed External) which is the external oscillator that has the card soldered with their respective capacitors, we will do it in ST Microelectronics' own free STM32CubeIDE IDE (FREE), we will insert variables to visualize their behavior throughout the program debugging with the embedded STLink tool of the STM32F429 Discovery card and the software free STMStudio that uses the STLink SWD protocol to access memory addresses (variables) of the processor and display its content in a table, curve or bars.

“We will use HAL Drivers, which will help us greatly to port and recycle code routines from one processor of one Family to another of another Family”.

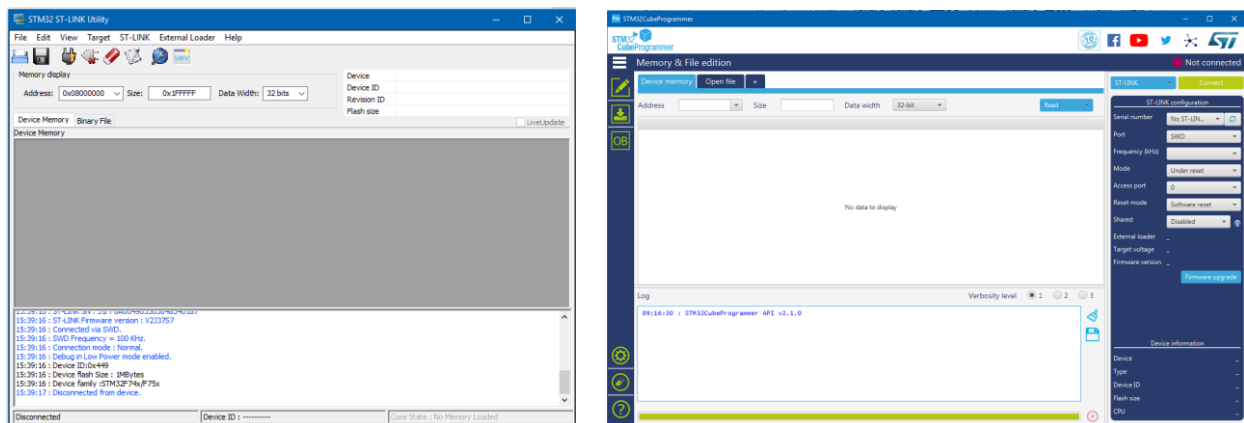
Key points

SWD



It is necessary to enable Debugging of our processor with Serial Wire, this enables debugging with SWD that uses 2 GPIOs (PA13 SWDDIO and PA14SWDCLK), this protocol can work up to 4 Mhz between processors.

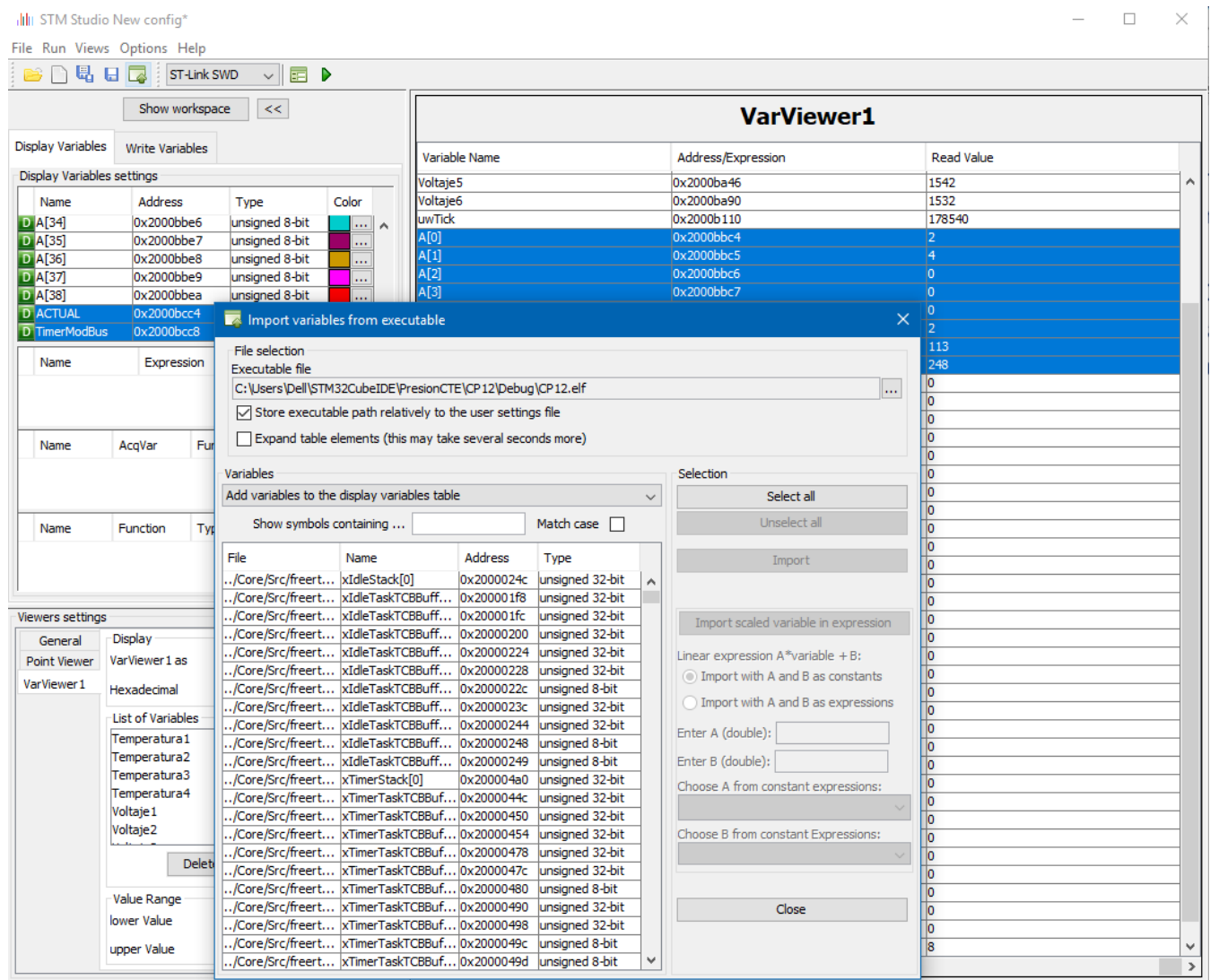
STLINK



STLink (Card) is a Processor (Normally a STM32F1) that interacts between the Software or variable server (STMStudio) via USB and the processor with the SWD pins, now STLink V3 (it has a STM32H7), this tool helps us to load and delete programs to the processor, also access Flash memory, give and remove read and write permissions and new features improved with the new tools, in the previous

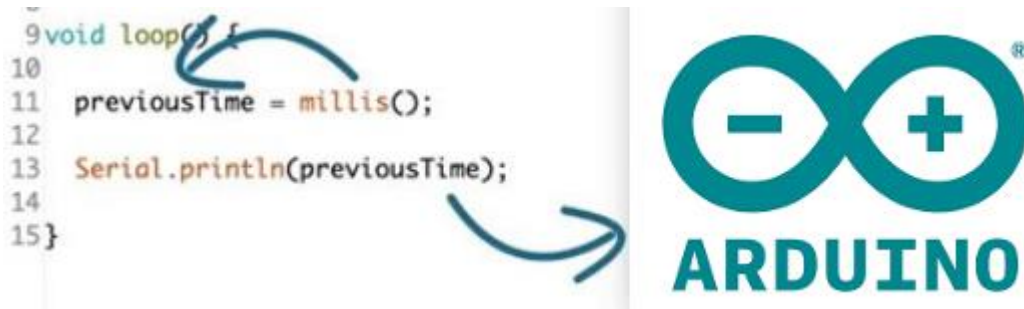
images we see the appearance of the STLink V2 (Software left) and in the following image (right) we will see the new JAVA based tool called STM32CubeProgrammer just like STMStudio, STM32CubeIDE, STM32CubeMx.

STMSTUDIO



The STMStudio debugging program needs a file that normally generates the IDE used when compiling a program correctly, these files are extension (.elf) with STM32CubeIDE and Arduino (Tested with the Rogger Clark version) (The Arduino version Official STM32 Core not tested) and (.axf) with MDK Keil uVision from ARM.

TICKS DEL SISTEMA (CMSIS):



The system ticks are nothing more than an increment of a variable (uwTick) every millisecond, this variable is of type `uint32_t` that is to say that it can count up to `0xFFFF FFFF` or 4294967295, after which it will overflow and fly to zero (0.0) again, In the video we will observe that to obtain the value of that variable at a given moment, it is done with the `HAL_GetTick ()` function; which is the equivalent of the Arduino `millis ()` function.