\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Motivation \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

I want to learn techniques to debug my embedded hardware

So right now I just know that these are the techniques

1. Print debug msg in code and log it [SD card data logger would be great]
2. Hardware Debug: with JTAG like interface.
3. Unit testing with test framework

Well I currently know about 1 and I have a code snippet which prints out the ram usage. Also I have made a singleton pattern type debug class for AVR microcontroller series. ARM chips have a CMSIS debug print like function by default at its SWD pin I guess [TODO: verify the assumption]

But 1 is not enough for testing so looking forward to learn about 2 so let’s start

2. Hardware Debug: for this we need a hardware debugger Right now I have Atmel-ICE and for first time I will debug a m328p chip residing at an arduino .

You need to use Atmel studio for this. I will use atmel studio 7

Atmel –ICE can debug using :

* debugWIRE
* aWire
* JTAG
* SWD

now what is the purpose actually you can debug each variable set breakpoint make jumps and see how the actual mcu is behaving.

<http://www.crash-bang.com/debug-atmel-ice/> see this post to learn more but to do it on exact arduino uno board you will need some tweak <http://blog.solutions-cubed.com/debugging-arduino-sketches-with-atmel-studio-7/>

I am denoting some important points

* Mcu Connection with atmel ICE help doc is at bootloader folder [TODO: add wiring and pic here]
* Make sure your mcu dwen fuse is set
* Select Debug mode
* Set a breakpoint after which you want to see the variable values or other things. In real time hardware :D

“Quickwatch” feature

Always end your Debug mode else your mcu will lock up and then you will need a high voltage programmer to unlock to do it Click on the Debug menu, then Disable debugWIRE Mode and Close

Code Level Debugging

I want to check code of my project commModule in visual studio

The downloaded cppcheck plugin does not work so I downloaded cppcheck software <https://sourceforge.net/projects/cppcheck/?source=typ_redirect> and installed it then opened the GUI and opened

Winmerge Code comparison trick

Install VS comp tools in visual studio then it will link installed winmerge tool automatically

Then right click a file