Embedded Software

CS 145/145L

Caio Batista de Melo

avrdude

If you're not using Microchip Studio or MPLAB X (and you don't know anyone that is, and can set fuse bits for you), you'll need to use a program called avrdude to do that.

Warnings

If you set the wrong fuse bits in your microcontroller, you might get locked out!
(i.e., it won't work or connect to your computer)
So double/triple check everything before running any commands!

If you *do* get locked out, **DO NOT** try doing the same thing with your 2nd chip!!
Instead, use that one to fix your locked chip:

- https://www.avrfreaks.net/forum/help-need-help-resetting-clock-fuse-atmega32a
- https://www.avrfreaks.net/forum/tutsoft-recovering-locked-out-avr

Install avrdude

- https://github.com/avrdudes/avrdude
- https://formulae.brew.sh/formula/avrdude

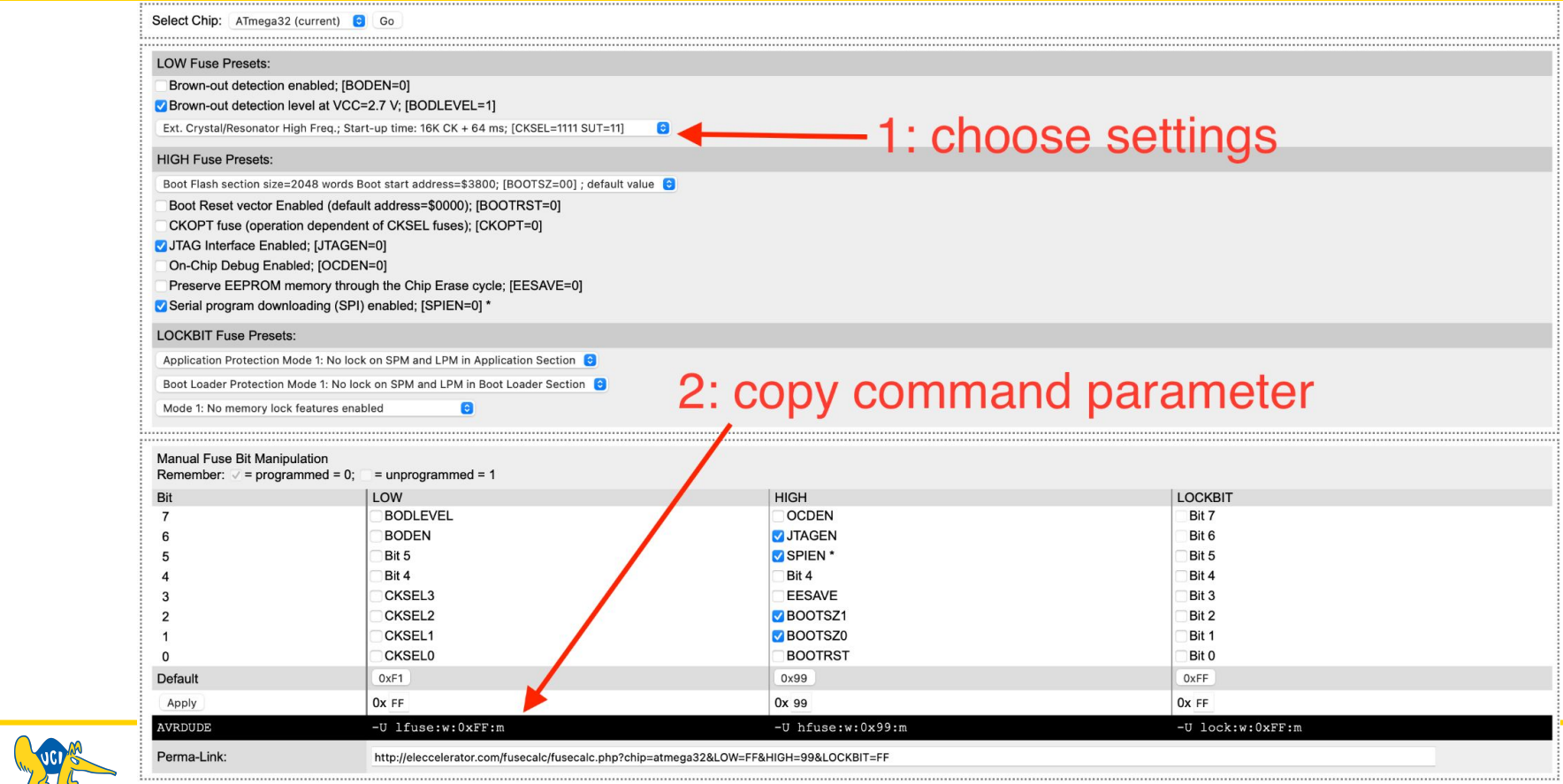
avrdude Command Template

avrdude
- -p (platform):
  - m32 (ATmega32)
- -c (programmer):
  - atmelice_isp (ATATMEL-ICE-BASIC)
- -P (port):
  - usb

Fuse Bits Calculators

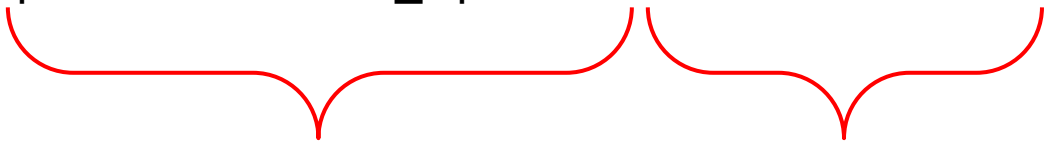
- http://eleccelerator.com/fusecalc/fusecalc.php?chip=atmega32
- https://www.engbedded.com/fusecalc/

Example (Ext. Crystal) - Calculator



Example (Ext. Crystal) - Resulting Command

avrdude -p m32 -c atmelice_isp -P usb -U lfuse:w:0xFF:m

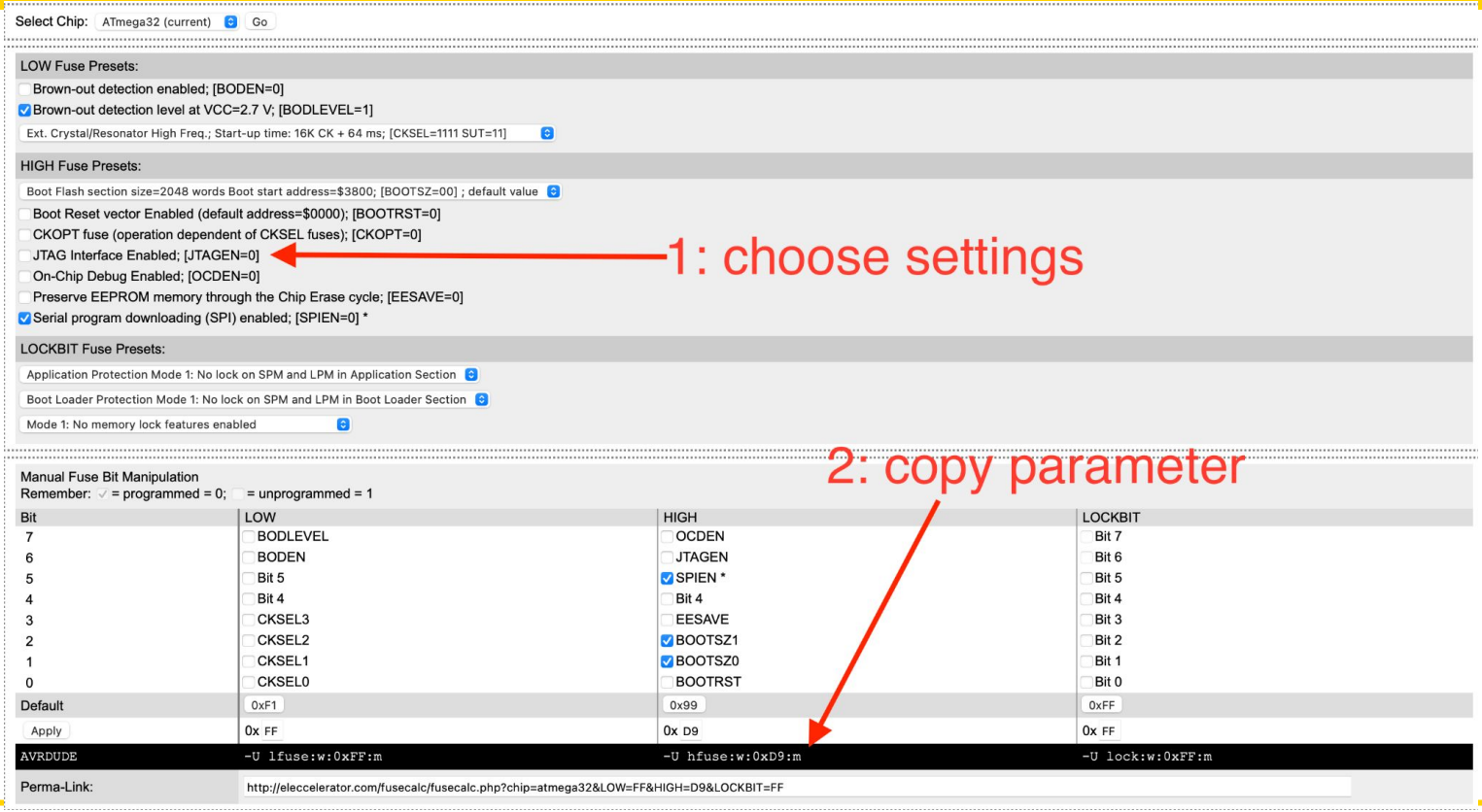


from template

from calculator

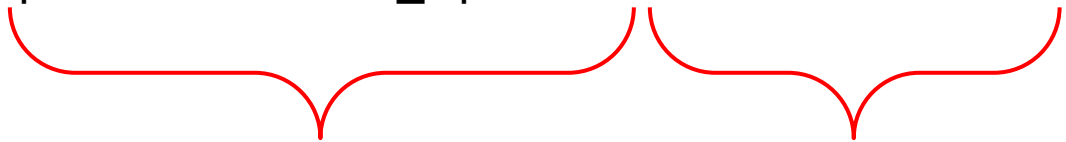
Note that since we only modified the Low Bits in the calculator, we only set those!

Example (JTAG) - Calculator



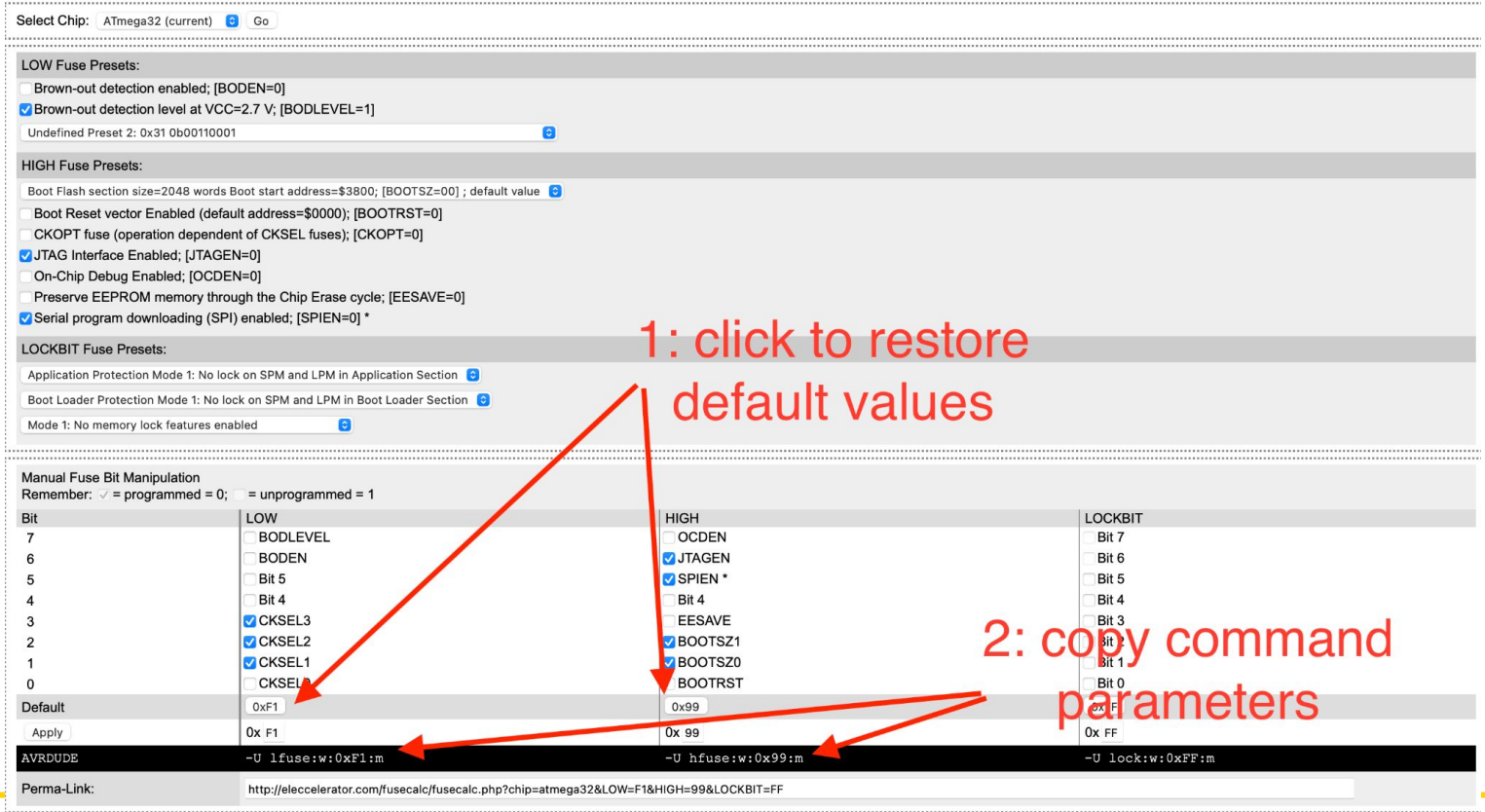
Example (JTAG) - Resulting Command

avrdude -p m32 -c atmelice_isp -P usb -U hfuse:w:0xD9:m



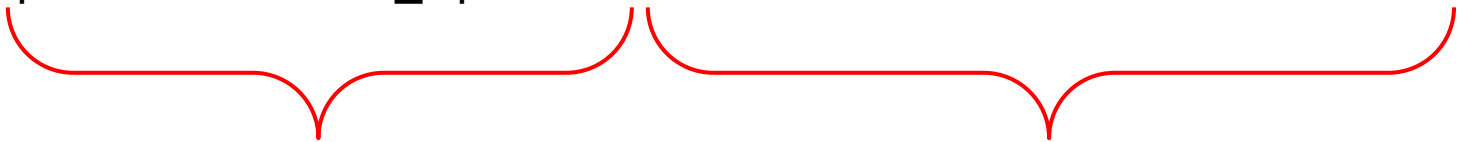
Note that since we only modified the High Bits in the calculator, we only set those!

Example (Defaults) - Calculator



Example (Defaults) - Resulting Command

avrdude -p m32 -c atmelice_isp -P usb -U lfuse:w:0xF1:m -U hfuse:w:0x99:m



Note that in this case we can set both high and low fuse bits with a single command.

See you next time :)

Q & A