Programming the PLM Shahara

Author: Jarvis Hill
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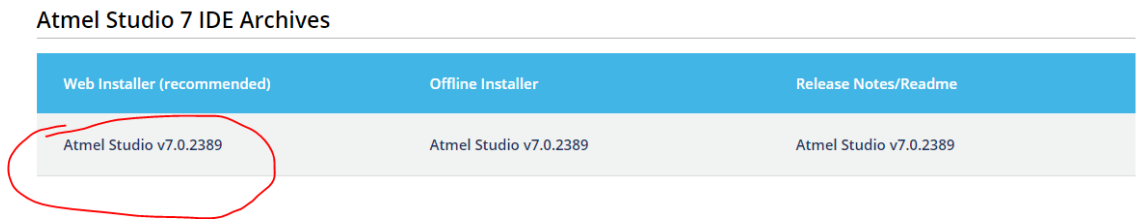
Purpose: Use this document to perform ISP programming on the PLM Shahara

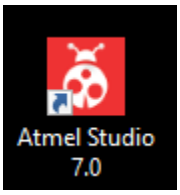
1. Navigate to the following website, https://www.microchip.com/en-us/development-tools-tools-and-software/avr-and-sam-downloads-archive

2. Download and install Atmel Studio 7 on your PC by clicking the link circled below,

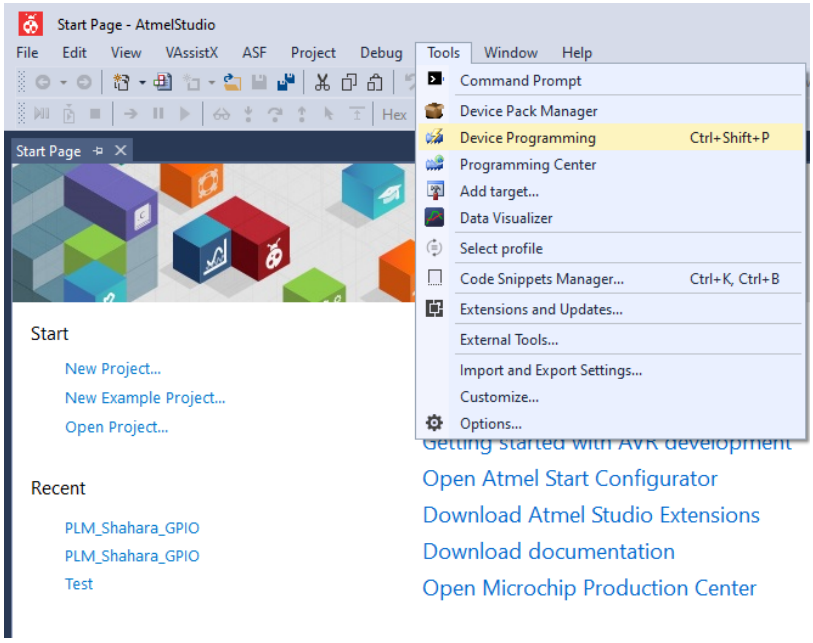


3. Connect the programmer to the PC using the appropriate USB cable.

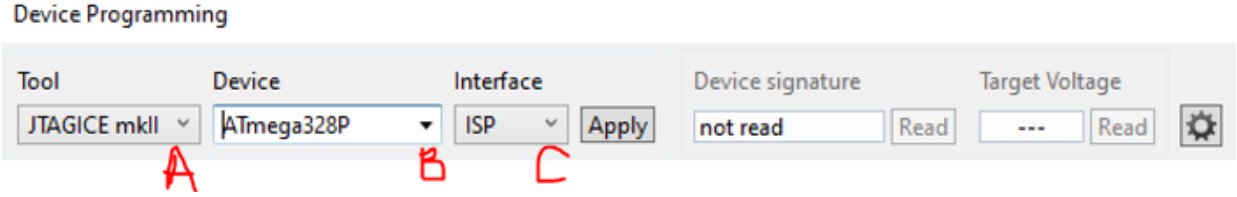
4. Open/launch the Atmel Studio software on the PC,



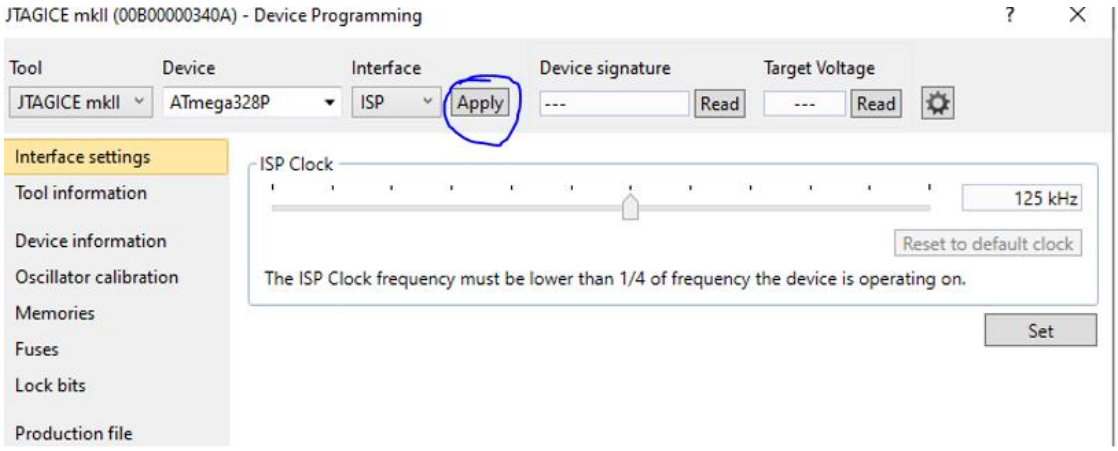
5. Once the application opens, navigate to Tools -> Device Programming



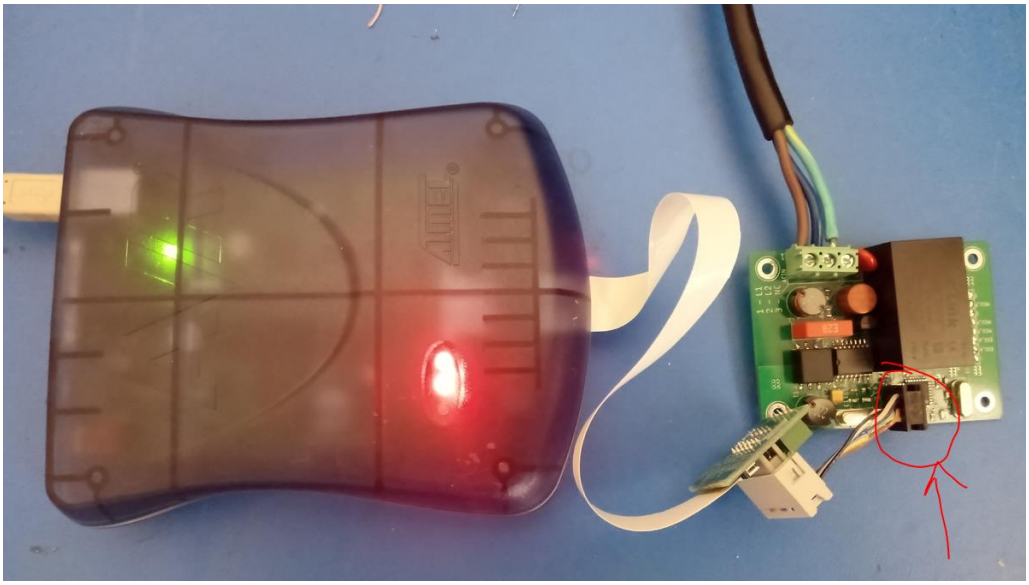
6. The Device Programming pop-up window will open. Select the following,
    a. Use the **Tool** pull-down to select the programmer you plugged into the PC at step 3.
    b. Use the **Device** pull-down to select “ATmea328P” MCU as the target.
    c. Use the ISP pull-down to select “ISP”



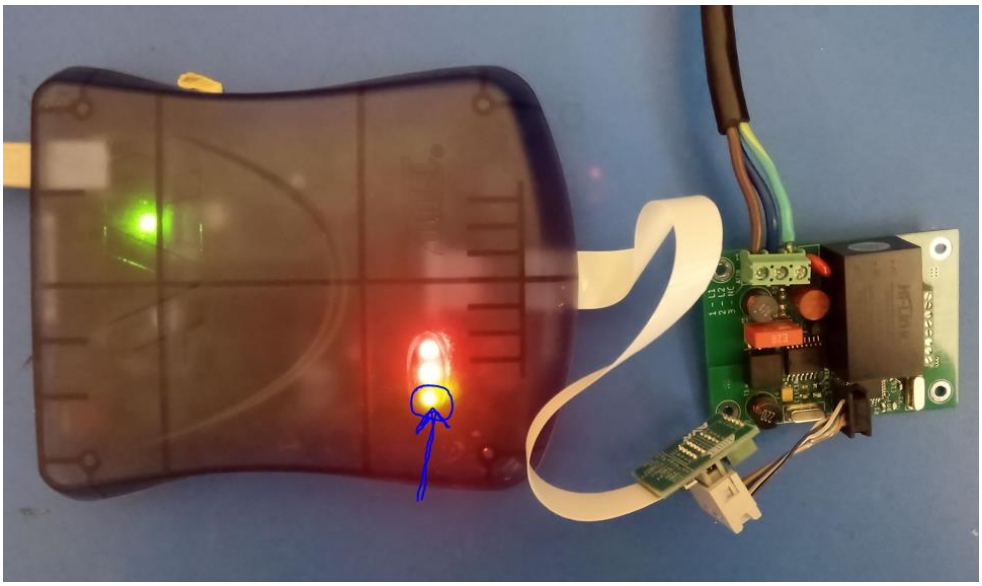
7. Click the **Apply** button.



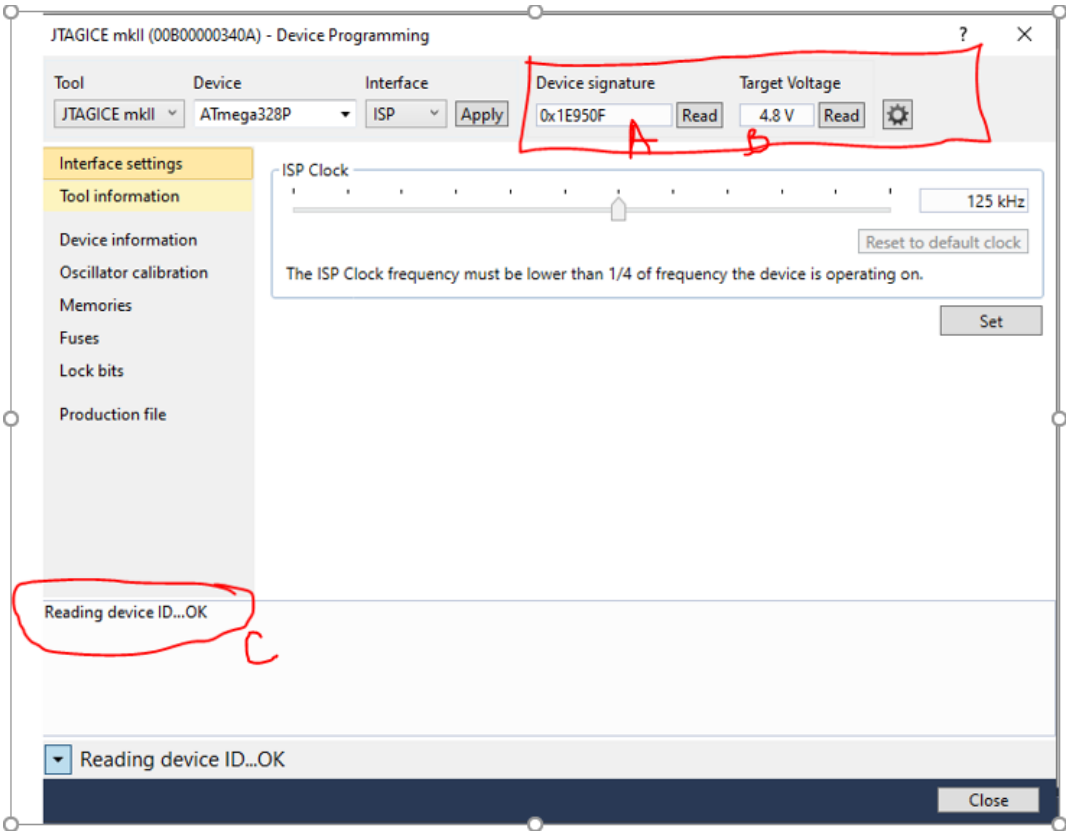
8. Connect the programmer’s 6-pin connector to J2 on the PLM Shahara board **exactly** as shown below. Don’t worry, if you connect the programmer backwards, it won’t damage anything.



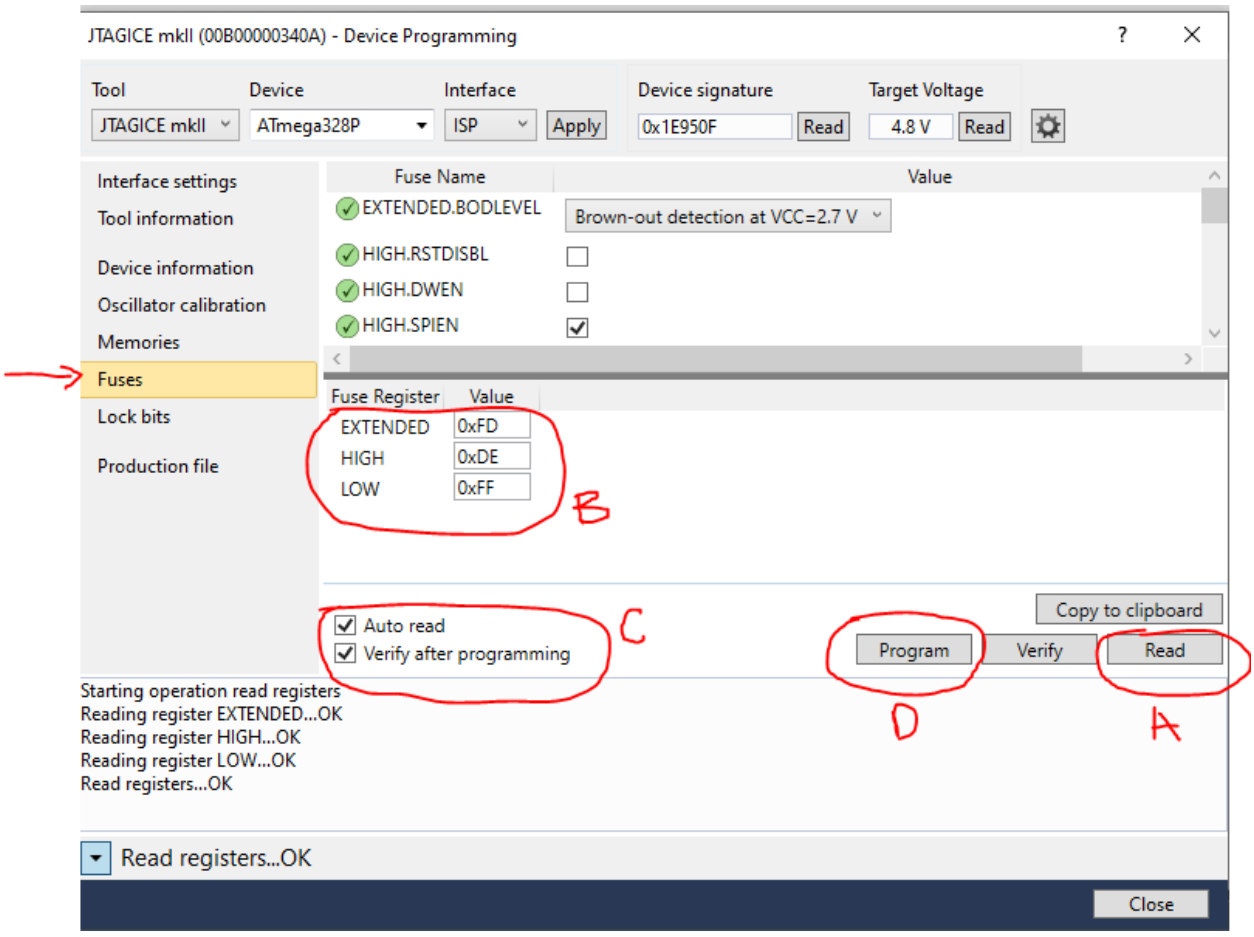
9. Power the PLM Shahara board by supplying 120 or 240VAC to the ACIN L1 and L2 screw terminals. The green light on the programmer should turn-on. If the LED does not come on, remove, rotate the programmer's header by 180 degrees and plug it back into the 6-pin header on the Shahara board.



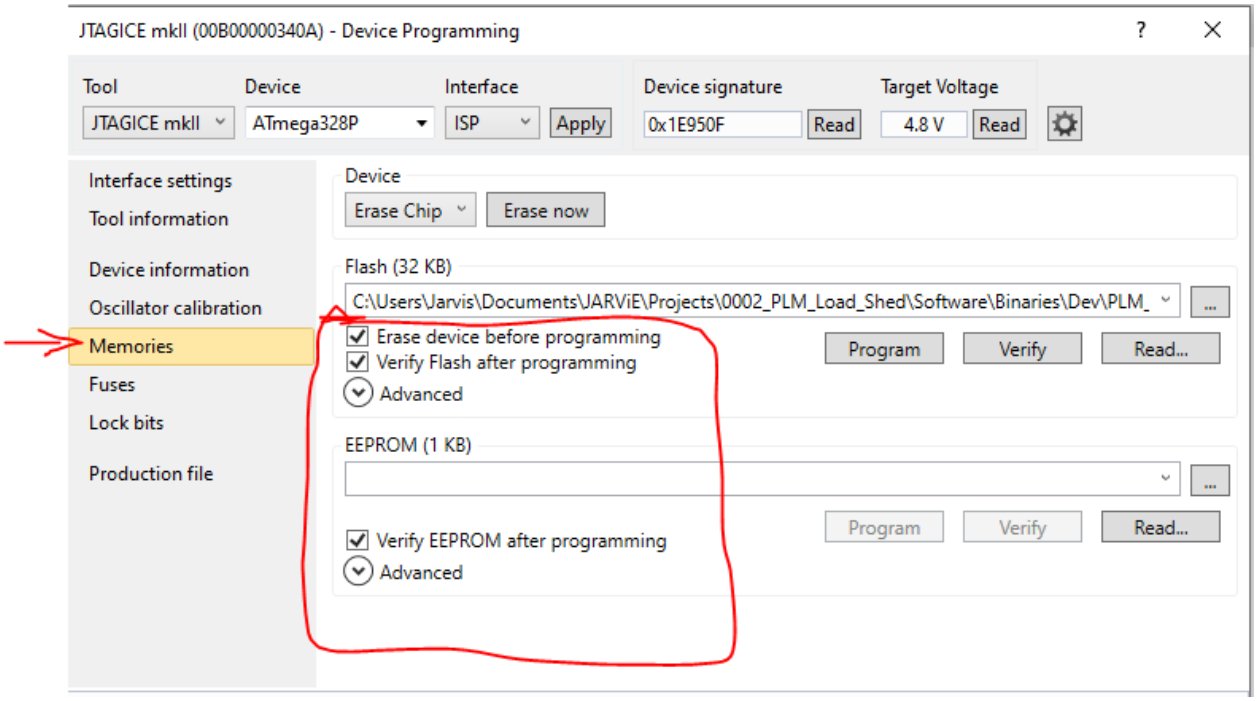
10. Click the **Read** button in the *Device Signature* Field. Verify the following,
    a. A 4-digit HEX number populates in the *Device Signature* field
    b. The *Target Voltage* is between 4.5V to 5V.
    c. Device ID is read OK.



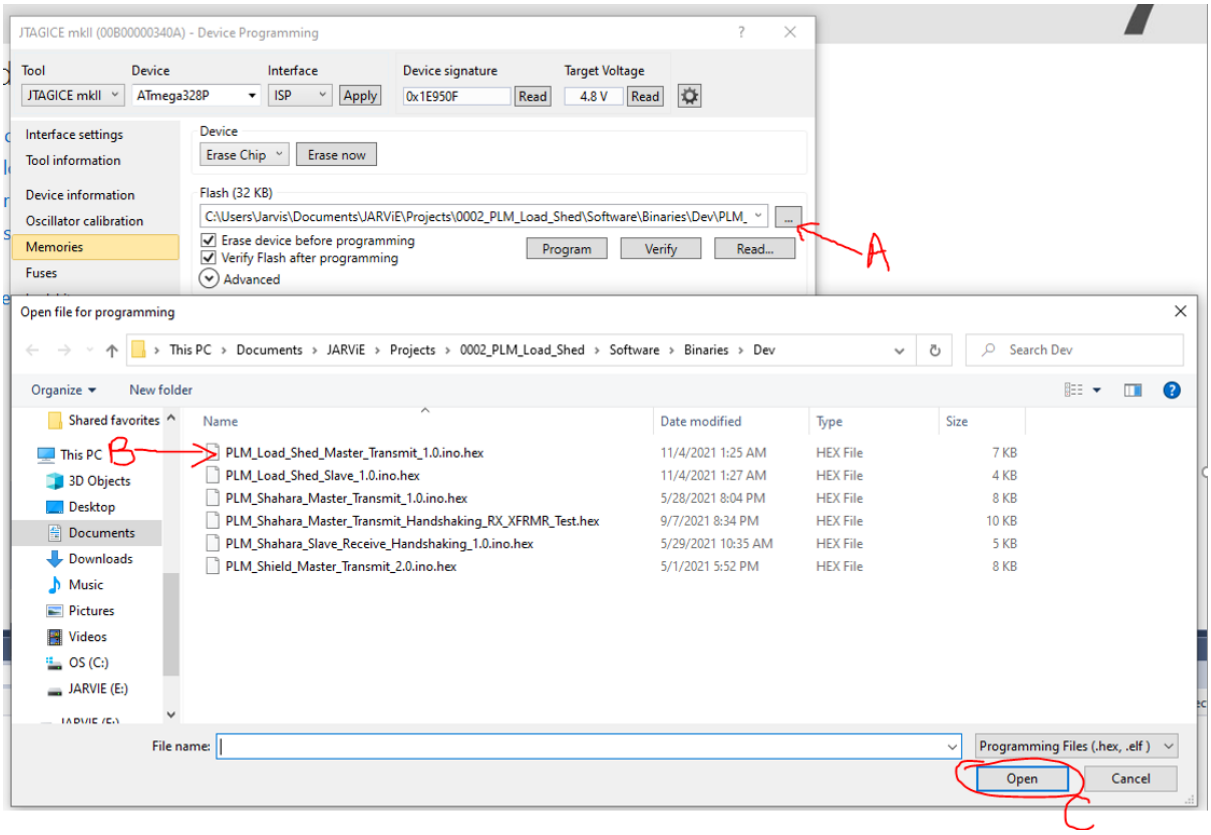
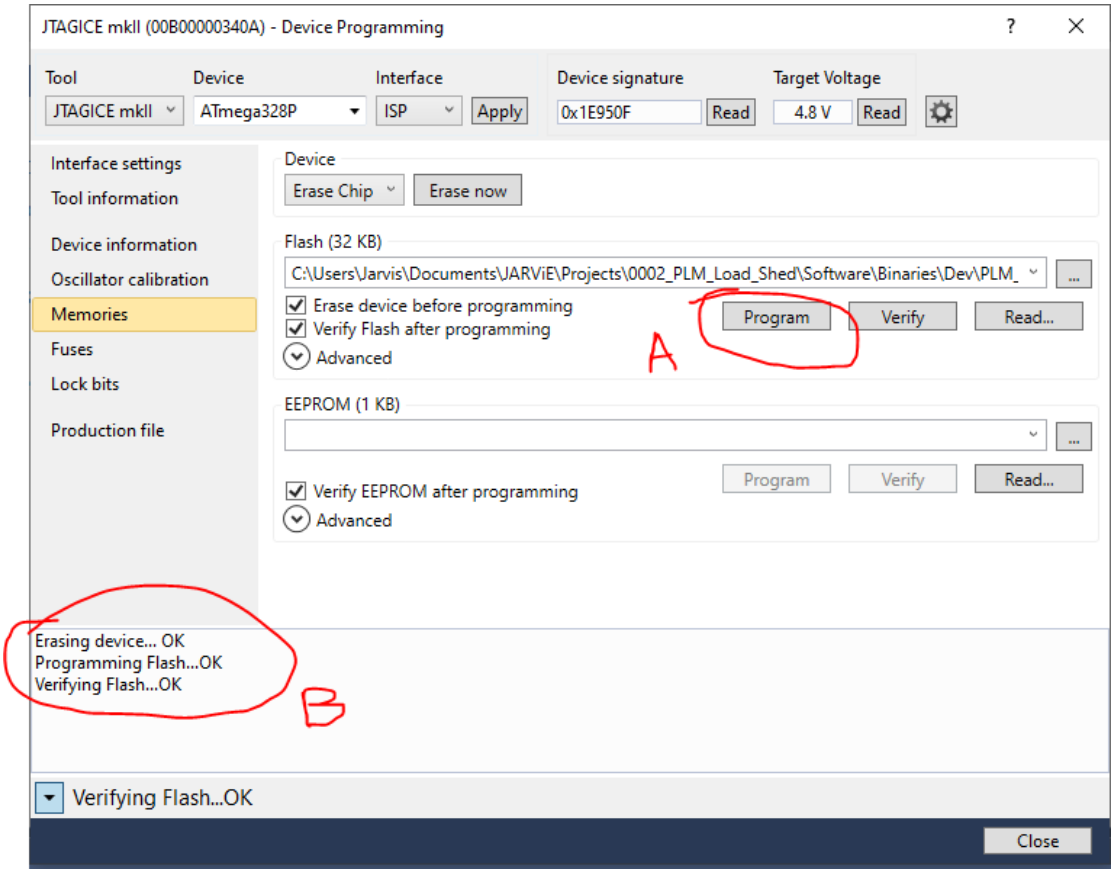
11. Navigate to the **Fuses** page. Ensure the CCA fuses are set correctly,
    a. Click the **Read** button.
    b. Verify that the **EXTENDED**, **HIGH** and **LOW** fuse registers read as shown. If not, update the registers with the values below.
    c. Ensure the boxes are checked as shown.
    d. IF the fuses registers were update, click the **Program** button


JTAGICE mkII (00B00000340A) - Device Programming
Tool
JTAGICE mkII
Device
ATmega328P
Interface
ISP
Apply
Device signature
0x1E950F
Read
Target Voltage
4.8 V
Read
Interface settings
Tool information
Device information
Oscillator calibration
Memories
Fuses
Lock bits
Production file
Fuse Name
Value
EXTENDED.BODLEVEL
Brown-out detection at VCC=2.7 V
HIGH.RSTDISBL
HIGH.DWEN
HIGH.SPIEN
Fuse Register
Value
EXTENDED
0xFD
HIGH
0xDE
LOW
0xFF
B
Auto read
Verify after programming
C
Copy to clipboard
Program
Verify
Read
D
A
Starting operation read registers
Reading register EXTENDED...OK
Reading register HIGH...OK
Reading register LOW...OK
Read registers...OK
Read registers...OK
Close

12. Navigate to the **Memories** page. Verify that the following boxes are checked.



13. Load the program to be placed on the PLM Shahara CCA,
    a. Click the button with the **"…"** in the *Flash (32 kB)* section
    b. Select the .hex file to program onto the CCA
    c. Double click the file to select it or click the file once to highlight it and then click the **Open** button in the file explorer window.



14. Upload the program to the PLM Shahara,
    a. Click the **Program** button to load the CCA with the selected firmware (.hex file)
    b. Verify that the programming went OK.