Serial Debugging

**assessment questions**

### Unit 1. The Basics

Lab Exercise 1

1. What is the serial number of the CPU used by the device? If you are unsure which is the main chip, provide a table of what you identified.
2. Who are the chip manufacturers? Again, use a table if you are unsure of which.
3. Which chipset do you think is the CPU, and what are the debug pins used? Provide a link to the datasheet used.
4. Which chipset do you think is the CPU, and what are the debug pins used?
5. Which serial debug interface does this device use? Take a screenshot. There is only one.

Answers:

1. NXP LPC4078FET208
2. NXP – Product page [[link](https://www.nxp.com/part/LPC4078FET208#/)]
3. LPC4078FET208, the pins are as follows for pin configuration LQFP100:
   1. TDO=1, TDI=2, TMS=3, TRST=4, TCK=5, VCC/VREFP=12, GND = any ground trace
   2. Datasheet [[link](https://www.mouser.com/datasheet/2/302/LPC408X_7X-1893409.pdf)]
4. JTAG – should show a screenshot of the JTAG header on the board. Top left.

Lab Exercise 2 (Extra Credit)

1. What is the serial number of the CPU used by the device? If you are unsure which is the main chip, provide a table of what you identified.
2. Who are the chip manufacturers? Again, use a table if you are unsure of which.
3. Which chipset do you think is the CPU, and what are the debug pins used? Provide a link to the datasheet used.
4. Which serial debug interface does this device use? Take a screenshot. There is only one.
5. Show a screenshot of your target device’s board. Label the CPU and the header used for the serial debug interface.
6. Create a wire harness for the interface and attach a serial debugger. Show a screenshot of your harness with labels for each port (e.g. wire 1/yellow = TDI, wire 2/green = TDO, etc…).
7. Take a screenshot showing the device has been recognized. Check device manager or use dmesg for linux systems.
8. Use PuTTY or minicom and connect to the debugger. Do you have any output from the device booting up? Take a screenshot.

Answers:

1. Should show serial number of the device cpu
2. Manufacturer should be provided
3. If not identified before, the main cpu should be listed along with the debug pins and datasheet.
4. Serial interface should be specified (e.g., jtag, uart, swd, etc…). Either main screenshot should be labeled or a zoomed in and cropped version.
5. Main screenshot of the entire device board with labels for the CPU and debug header.
6. Screenshot of debug header harness, complete with labels for interface pins.
7. Screenshot showing the student’s computer has recognized the debugger device.
8. Screenshot showing what input, if any, the student has received via the serial debugger interface.