Working with Beaglebones

Guidelines for Project 4 - CS 111

1) Shut down your Beaglebone before disconnecting it - **always.**

- This can be done by holding the POWER button, or entering the shutdown command in a terminal window.
- Your Beaglebone is shut down when all LEDs are off. It is then safe to disconnect.
- Not doing so will very likely incur some corruption, which needs flashing (see point 4) to be solved. This is easy to avoid.

2) Do I need to flash my board?

- You need to flash your board in 2 scenarios: if you cannot connect to it, or if you can connect to it but don't have the required firmware version (version 8.7 - see point 3).
- First, try connecting it to your computer, following the guide given to you in the spec for project 4A. If you cannot complete the ssh command, you need to flash your board.
- If you can connect to your board, run 'cat /etc/debian_version'. This will print the current firmware version on your device. If the version on your device doesn't match that of point 3, you need to flash your board.

3) I want to flash my board, which image should I use?

- The image we use for grading is version 8.7 Debian IoT.
- You can find the image here.
- **It is your responsibility to verify that your submissions for project 4B and 4C compile and run on the firmware version 8.7, which will be used for grading. Not doing so will result in an extremely low score.**

4) What are the steps to flash a board?

- Go to 3), and burn the image on an SD card. (There are many ways to do this, one of them being balenaEtcher, which is free and cross-platform).
- With your Beaglebone currently disconnected, insert the SD card.
- Hold down the USER button on the board.
- Plug in the board, with the USER button still held down.
- Wait for LEDs to turn on. When they do, release the USER button.

- Wait for ~10 minutes (can be up to 45 according to official documentation). You should notice a pattern of LEDs lighting up and down, one at a time (1 lit, then 2, 3, 4, 5, 4, 3, 2, 1, 2…) for most of the process (starting about 1 minute after having plugged the board in, to 1 minute before shutdown).

- The process is complete when all the LEDs turn off. The board is now off, you can unplug it (no need to press POWER in this instance alone). Take the SD card out.

- You are all set! **Note that the password for 'root' is now ‘root’.**

5) Should I use debian or root?

- Please use root. Sensor initialization often fails on ‘Debian’, but works on ‘root’. This will cause a segfault.

6) Which network should I connect to?

- **Do not connect** to UCLA_WIFI, UCLA_WEB, and the dorms' network.

- You can use a mobile hotspot, a home router if you do not live in the dorms, or eduroam. For eduroam, there are a few extra steps that you need to take to be able to connect. These steps are detailed here (page 4): BeagleBone_Troubleshooting_Guide.pdf

7) Do I need to test my code on lnxsrv09?

- No. P4B and P4C will not be able to run on the server since you will be using sensors and libraries that aren't available there.

- We will grade your code using a Beaglebone that is running Debian IoT 8.7, so this is the platform you should write your code for, and the platform you should test on.