

Learning Goals:

- Be able to have two Arduinos communicate with each other.

Lab: Due Monday 3/11/2024. Any lab demonstrated after 4:50pm is considered late.

For this lab, you will need 2 Arduino devices. Thus, you may work with a partner for this lab. If you have two Arduino devices, you can work alone on this lab. If you work with a partner, there is to be only 1 submission of code to Gradescope and only 1 demonstration.

For this lab:

- connect two Arduino's via a hardwired serial connection (no usb cable) (digital pins 0 and 1)
- connect a button and an external LED to each device
- pressing the button on one Arduino should cause the other Arduino's LED to change state (on to off, or off to on)
- Button press on one Arduino should toggle the state of the LED on the other (on/off) and not keep the LED lit while being pressed
- utilize the 16x2 display for debugging
- refer to lab 6 for all the info about serial communication and lab2 for maintaining led states with button presses
- The same code MUST run on both Arduino!

Hints:

- Both boards must share the same ground in order for the serial communication to work properly

If you work with a partner, you and your partner are to submit the code as group. Thus you do this via a single group submission in Gradescope which includes both people's names. Both of you are to demonstrate the lab together.

Online Examples (plenty more exist – some might be better than those below)

<https://robotic-controls.com/learn/arduino/arduino-arduino-serial-communication>

<https://www.instructables.com/Arduino-Serial-Communication/>

<https://www.electronicclinic.com/serial-communication-between-two-arduino-boards/>

Your code must be submitted to Gradescope BEFORE you demo your lab!

Late Policy

- Lateness is determined by the time the lab is demonstrated, not when the .ino file is submitted.
- Labs that are not demonstrated get a score of 0.
 - -50% for no demonstration
 - -50% for being late
- Late Submission 1

- Demonstrated before 11:59pm Thursday after Lab Due Date
 - 25% Penalty
- Late submission 2
 - Demonstrated between Friday and Monday after Lab Due Date
 - 50% Penalty
 - Note with Spring Break, this ends on Monday, March 25, 2024

What should I include with my .ino Code File?

As with any code file, it should be written in Good Coding Style: in a manner that will help other people read and understand the intent, purpose, operation of the code. So your code must include:

- Name the .ino file with your NetId and Lab Number (of both persons if working with a partner).
 - I.E. something like: ptroy4Lab2.ino
- Header Comments (including the following)
 - // FirstName LastName, UIN and NetID
 - // Lab x - Title
 - // Description - what is this code supposed to do?
 - // Include any assumptions you may have made, what do you expect from the hardware, pinouts, particular arduino versions, etc.
 - // References - where did you find code snippets, ideas, inspirations? if no references used say: "no references used"
- Code is well documented/formatted with comments, indentations, and descriptive variable names
- Actual code - the functions in the cpp/ino file

Academic Integrity Guidelines:

You may use any resources linked from this lab, or posted by the professor or TAs on piazza/class web page/etc. You should not look at any other internet resources for this. This is a team assignment, and should be completed by your own group. You should not show anyone outside of your group your code, or look at any other group's code.