

CST8227 Lab 4: Serial Monitor and Pull-Up Circuits

Lab Objectives:

1. Prototype a simple series circuit, sending digital and analog outputs to a tri-color LED.
2. Use a polling loop to read a momentary contact switch.
3. Use the serial monitor to see more information about what your program is doing.
4. Use a pull-up resistor in a circuit.

Required Equipment:

- Computer with Arduino IDE & Teensy extensions installed and working
- Teensy board and USB cable
- Tri-colour LED
- Push-button switch
- Resistors

Supplemental Reading:

- *Pull-Down Resistors* in the eBook *Beginning Arduino*. Last week's lab, Lab #3, featured a pull-down resistor.
- *Pull-Up Resistor* in the eBook *Beginning Arduino*. This week's lab (i.e. Tutorial #3 on PJRC.com) features a pull-up resistor.

Task 1: Demo Tutorial 3 from PJRC.com

- Complete *Tutorial 3: Serial Monitor & Input* from the PJRC website:
<https://www.pjrc.com/teensy/tutorial3.html>

Notes: the (small) pushbutton switches supplied in your "Tutorial Kit" have "nibs" on the end of the leads, which may prevent you from inserting the PB on a breadboard. Options: i) remove the nibs (I can provide wire-cutters), ii) use the 'bigger' pushbutton switches.

- Demonstration: demo the circuit and Teensyduino sketch from the section *Pushbuttons To Control Colors*
 - open the Serial Monitor window and show the `Serial.println()` messages.

Task 2: Make a Fritzing Diagram

1. Use the fritzing application to create the circuit layout from the section *Pushbuttons To Control Colors*

2. Add a Note to your diagram. Display the following information:

CST8227 – Interfacing

Lab 04 – Pushbuttons to Control LED Colors

Control a tri-color RGB with two switches and a pull-up resistor.

@author Your Firstname and Lastname (your userID)

3. Save your fritzing circuit layout.

Task 3: Visit AC's DARE MakerSpace

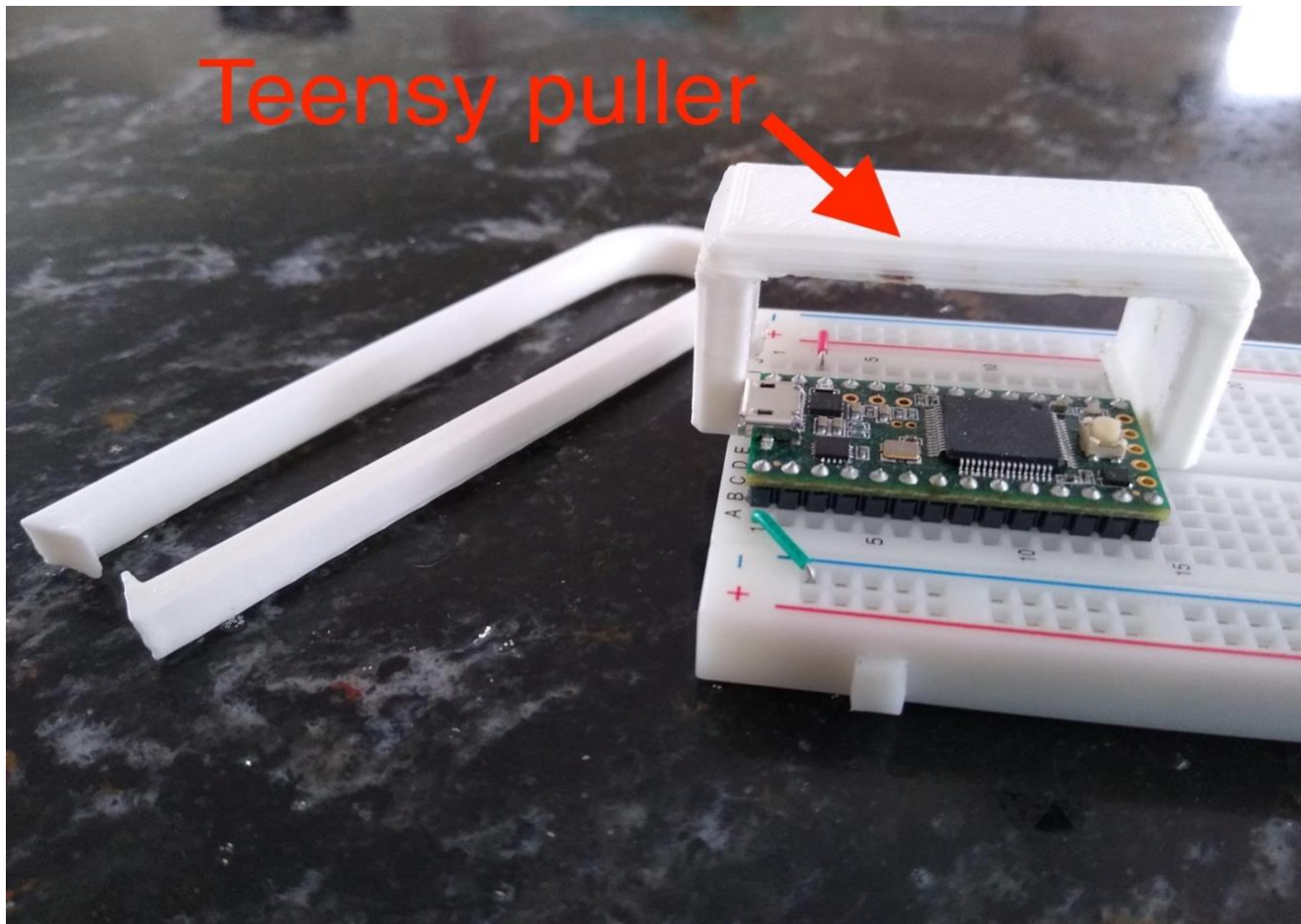
Important Note: this task has been dropped due to Covid-19

- ~~1. On your own time (i.e. outside of lab/lecture), take 10 minutes or so and visit Algonquin College's MakerSpace, located in the DARE District.~~
- ~~2. Do you see an interesting object? Use your smartphone to take a photo of it 😊~~
- ~~3. Upload your photo to Brightspace.~~

~~The DARE MakerSpace Homepage: <https://www.algonquincollege.com/arie/dare-makerspace/>~~

Task 3: Reference Screenshot

~~I visited AC's MakerSpace in the Fall of 2018, and used one of their 3-D printers to make a Teensy-puller and IC forceps:~~



Notes:

- I found this design for my Teensy puller on Thingiverse:
<https://www.thingiverse.com/thing:2938393>
- You're welcome to use a 3-D printer, however, there is a modest fee to cover the plastic filament
- Want to pull your Teensy from the breadboard? I would encourage you to borrow my Teensy puller 😊

Demo :

During your scheduled lab period of Week 4, demo the following to your lab prof:

1. Task 1 → successful demonstration of Tutorial 3 [6 marks]

Deliverables:

1. Task 2 → upload your fritzing file (i.e. .FZZ) to Brightspace [4 marks]
2. Upload your photo from the MakerSpace [2 marks]

Upload and submit your deliverables to Brightspace before the due date.