School of Advanced Technology

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
- Tricolour LED
- Push-button switch
- Resistors.

Supplemental Reading:

- "Pull-Down Resistors" in the eBook "Beginning Arduino." Last week's lab, Lab #2, 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

1. 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.

2. 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 tricolor RGB with two switches and a pull-up resistor.

   @author *Your Firstname and Lastname* (*your userID*)

3. Export your diagram as a PNG image.

Task 3: Tour Algonquin's MakerSpace

1. Attend the tour of Algonquin College's MakerSpace, located in the DARE District.

Deliverables:

1. Successful demonstration of Tutorial 3 [4 marks]
2. Upload your fritzing diagram to Brightspace [4 marks]
3. Attend the MS Tour [2 marks]