# ENGI301:  Assignment #4

Due:  09/28/2023   8pm

For Assignment #4, problems 1, 2, and 3 must be checked in to your ENGI301 github repository (i.e. all files should be pushed to the web so that I will be able to see them).  All commits must be before the due date.  Late work will incur a 20 point / day penalty.  All code should be validated on the PocketBeagle.

1) **Python coding:**
   a. In your ENGI301 repository, create a directory "python/simple_calc"
      (i.e. /var/lib/cloud9/ENGI301/python/simple_calc)
   b. Copy the simple calculator done in class into the directory and commit it
   c. Using the simple calculator as a base add the following functionality:
      i. Support for operators (Hint: Google "python operator"):
         1. ">>"      Right shift
         2. "<<"      Left shift
         3. "%"       Modulo
         4. "**"      Exponentiation
      ii. Support for Python 2 (Hint:  Google "use of input raw_input in python 2 and 3")

2) **Python coding:**
   a. In your ENGI31 repository: create "python/blink_led" directory, create a "blink_USR3.py" program
      (i.e. /var/lib/cloud9/ENGI301/python/blink_led/blink_USR3.py)
   b. This program should use the Adafruit BBIO library to blink the USR3 LED at 5 Hz (i.e. 5 full on/off cycles per second).  The program should contain proper header, documentation, and licensing.
   c. Hint:  Take a look at the Adafruit BBIO github:
      https://github.com/adafruit/adafruit-beaglebone-io-python

3) **Python coding:**
   a. Connect a button to P2_02 (i.e. GPIO 59) as shown in the figure below.  Use solderless breadboard rows 54 and 56 for the pins of the button.
      i. See *ENGI301_Breadboard_Wiring.pdf* on Canvas → Files → misc for more information
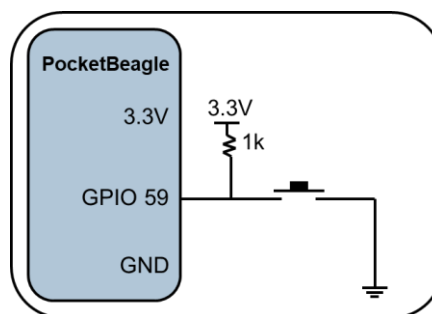


   a. In your ENGI31 repository: create "python/button" directory.  Copy button.py from Canvas → Files → python → button into the directory (i.e. /var/lib/cloud9/ENGI301/python/button/button.py)
   b. Write the code required to implement the functions (search file for comments "HW#4 TODO:"):
      ii. _setup()
      iii. is_pressed()
      iv. wait_for_press(function)
   c. Test the functionality of your code by running the driver directly:  python3 button.py