

EE2905 Lab 3: Input

Objectives

- Develop simple breadboard circuits
- Interface to Buttons and Switches
- Read from the console

Prelab

- Review the [Reading User Input](#)
- Review the [Digital Inputs](#) slides
- Review the [Button Basics](#) and [Switch Basics](#) slides

student
check off

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Assignment

- **Do not start the assignment portion of the lab before the lab class. We will walk through the first part of the lab.**

Part 1: Modify the Button design we created to use two external push buttons and 3 LEDs. Buttons 1 and 2 should turn on LEDs 1 and 2 respectively when pushed. In addition, LED 3 should turn on when both buttons are pushed. Print the status of the buttons to the serial monitor on the same line every 0.25sec.

`Button Status: B1: 0 B2: 1` 1=pushed, 0=not pushed

Part 2: Create a console program that reads input from the user and prints the value of a resistor. Inputs will be read one at a time and assume a 4 band resistor configuration. Only the value (no tolerance) will be calculated (3 bands entered)

You must create a single function to request and retrieve the band value!

Input format:

Please enter a numeric value for band X: 0 for black, 1 for brown, 2 for ... 9 for white

- [See example format, output and required math.h library function below](#)

Check Off

- Demo and document your LED program 50%
- Demo and document your resistor program 50%

Checkoff due beginning of lab 4 class (in-person or via Teams chat)

Informal Lab Report: flow diagram(2), code(2), schematic - due beginning of lab 4.

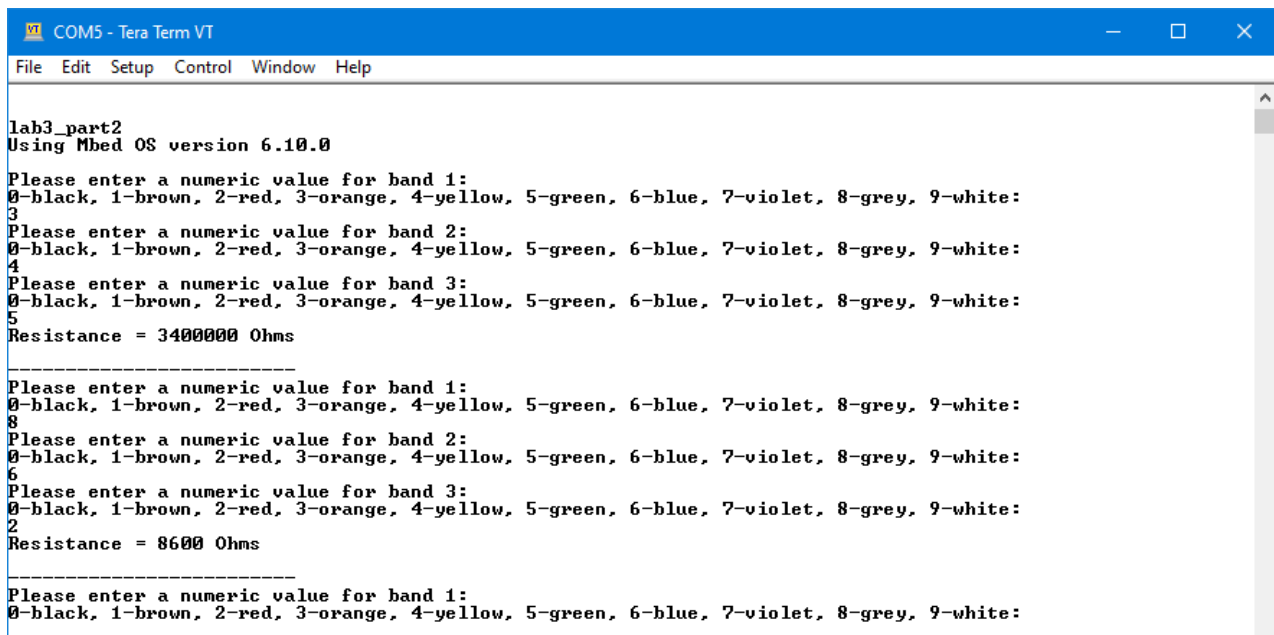
You will need to use the **pow** function from the math.h library

#include <math.h>

pow(base, exponent) evaluates as $\text{base}^{\text{exponent}}$

pow(10,3) evaluates to $10^3 = 1000$

pow(10,foo) evaluates to $10^{\text{foo}} = 10000$ if **foo = 4**



```
COM5 - Tera Term VT
File Edit Setup Control Window Help

lab3_part2
Using Mbed OS version 6.10.0

Please enter a numeric value for band 1:
0-black, 1-brown, 2-red, 3-orange, 4-yellow, 5-green, 6-blue, 7-violet, 8-grey, 9-white:
3
Please enter a numeric value for band 2:
0-black, 1-brown, 2-red, 3-orange, 4-yellow, 5-green, 6-blue, 7-violet, 8-grey, 9-white:
4
Please enter a numeric value for band 3:
0-black, 1-brown, 2-red, 3-orange, 4-yellow, 5-green, 6-blue, 7-violet, 8-grey, 9-white:
5
Resistance = 3400000 Ohms
-----

Please enter a numeric value for band 1:
0-black, 1-brown, 2-red, 3-orange, 4-yellow, 5-green, 6-blue, 7-violet, 8-grey, 9-white:
8
Please enter a numeric value for band 2:
0-black, 1-brown, 2-red, 3-orange, 4-yellow, 5-green, 6-blue, 7-violet, 8-grey, 9-white:
6
Please enter a numeric value for band 3:
0-black, 1-brown, 2-red, 3-orange, 4-yellow, 5-green, 6-blue, 7-violet, 8-grey, 9-white:
2
Resistance = 8600 Ohms
-----

Please enter a numeric value for band 1:
0-black, 1-brown, 2-red, 3-orange, 4-yellow, 5-green, 6-blue, 7-violet, 8-grey, 9-white:
```