California State University, Channel Islands (CSUCI)
Department of Computer Science

COMP-462: Embedded Systems
Lab Report
Fall 2019

Lab Number:	Lab 0
Lab Topic:	Basic Electronics and Running a Keil Program

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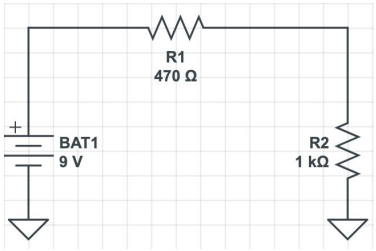
Objective: The objectives of this lab were to familiarize ourselves with the Keil µVision IDE and Compiler for the TM4C123 microcontroller, learn about the TM4C123 board and its I/O, and refresh ourselves with resistor circuits.

Introduction: The lab was an introductory lab to get used to the environment available to us in the future.

Procedure:

I. In the first circuit, we were tasked to connect a voltage generator to a breadboard; 2 resistors to that breadboard in series; and record the theoretical and actual voltages and amperages. The figure below shows the circuit.



Theoretical Calculations:

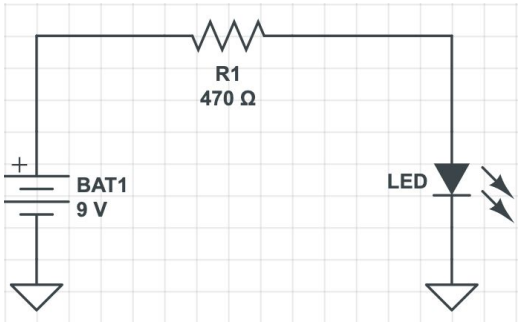
- R_{Total} = 1470 Ohm
- V = 5v
- I = 5v / 1470 Ohm = 3.4 mA
- V_{R2} = 470 Ohm * 3.4 mA = 1.6 v
- V_{R1} = 1000 Ohm *3.4 mA = 3.4 v

Actual Readings:

- V = 5v
- I = 3.4 mA
- V_{R2} = 1.59v
- V_{R1} = 3.4v

There was very little error most likely due to the simplicity of the circuit and the reliability of the compients. We experienced no difficulties in completing the circuit and testing for readings.

II. The second circuit was asked to contain a resistor and an LED in series. We were asked to do much of the same procedure as the previous circuit.



We could not calculate the value of R_{Total} without knowing the amount of current in the circuit and needed to hook in the multimeter to Ammeter mode and put it in series to find the current.

Theoretical Calculations:

- V = 5v
- I = 5v / R_{Total}
- R_{Total} = (R1 + $LED_{Resistance}$)

Actual Readings:

- V_{Total} = 5v
- I = 6.43 mA

Continued Theoretical Calculations:

- V_{Total} = 5v = 470*6.43mA + V_{LED} → V_{LED} = 1.978v
- R_{LED} = 1.978v / 6.43 mA = 307.6 Ohms

We also had no trouble getting this sub-lab to work either. Mark and I showed our capability.

III. Finally we turned on µVision and plugged the board into the USB on the desktop. We opened an example code that caused a USB to blink and moored over it understanding what was going on.

This section of the lab included compiling, uploading, running and verifying the lab. It did not have any personal setup or discovery.