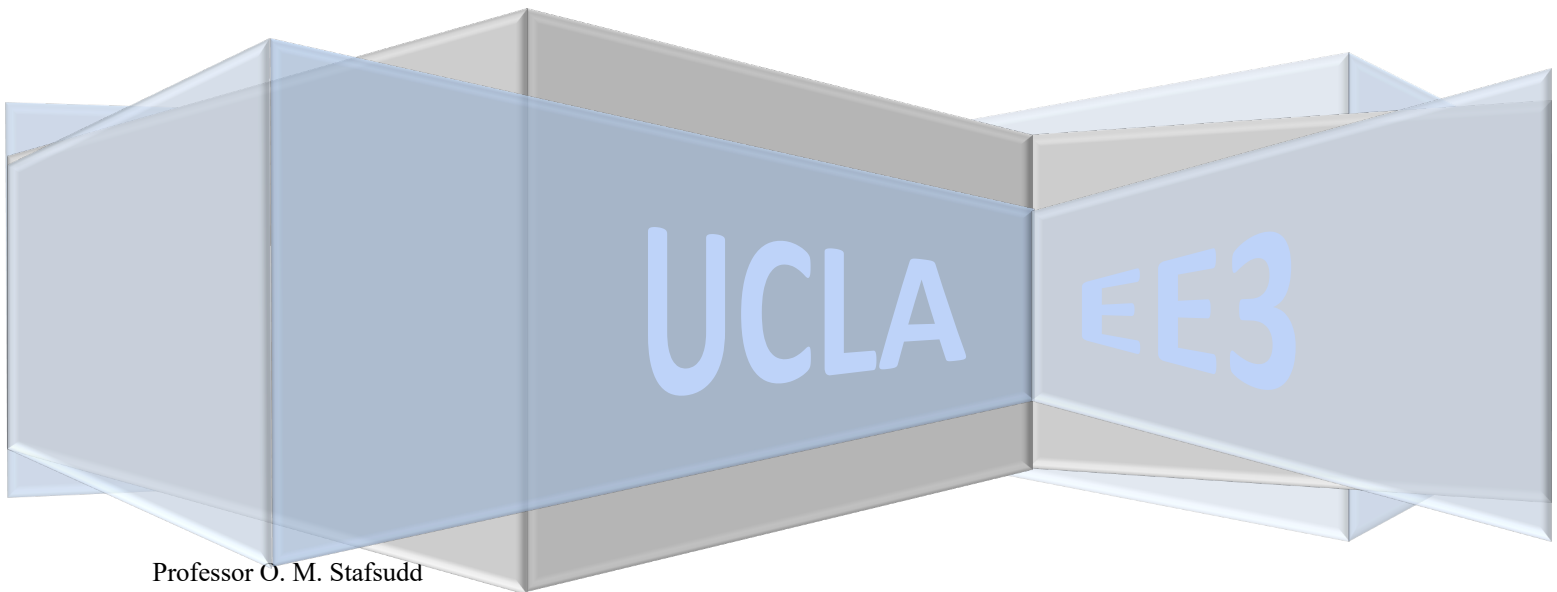


EE3 INTRODUCTION TO ELECTRICAL ENGINEERING

LABORATORY #4



Professor O. M. Stafsudd
Department of Electrical Engineering
October 2013
Rev. September 2016 (version 1.9.3)

Week 4: RSLK Week

Week 4 Prelab

1. **Introduction:** This lab introduces you to the RSLK, the Texas Instruments Robot System Learning Kit. You will be looking it over and performing some simple but revealing tasks to familiarize you to the system and give you a head start on the project.
2. **Energia Installation:** You will use a software product by Texas Instruments called Energia. Energia is an Arduino-like development environment that works with the TI MSP432 microcontroller. The MSP432 LaunchPad is a development kit including the MSP432. It is mounted to the RSLK that you will be using for the project. Download and install the required Energia software before the lab. You will be submitting to CCLE the proof of your installation. The latest software version of Energia can be found online at:

<https://energia.nu/download/>

You will also need to update the drivers to include the MSP432. This update will take about 15 minutes. Here is how to do that: after you have installed Energia, go to Tools | Board | Boards Manager and select “RED LaunchPad w/ msp432 EMT (48 MHz)”.
NOTE: if you are installing Energia on a Mac, you may not need to update the driver.

Do ***NOT*** download the ECE3 zip file until you have completed the next step.

3. “Hello World” for LaunchPad.

Energia is an Arduino-like development environment that enables one to create control and monitoring programs and download them to the LaunchPad. You will first execute the “Hello World” for a real time embedded microcontroller: blinking an LED.

Blinky

In this step, you will implement a frequently-used “Hello World” code for microcontrollers. It consists of opening an example program, then compiling and downloading it to the LaunchPad. (NOTE: the Energia / Arduino system calls downloading to the LaunchPad an “upload”, but that flies in the face of conventional usage. “Download” usually means transferring data from a larger computer to a smaller computer, or from a server to a client.)

Launch Energia on your laptop.

Power up the RSLK mainboard. You will see a blue power light on the mainboard and a (probably) green power light on the LaunchPad.

Connect the LaunchPad to your laptop.

In Energia, go to File | Examples | 01.Basics | Blink. This opens the Blink example; you can now see code. This code causes an LED on the LaunchPad to blink on and off, probably in one-second intervals.

Click the right-pointing arrow to compile the code to compile and download the code to the LaunchPad. (NOTE: clicking the check mark only compiles the code.) You will be able to observe the download by watching the rapidly flashing LED next to the power LED.

Immediately upon the download finishing, another LED on the LaunchPad will start blinking. You have just executed your first program on the RSLK.

Retuning to Blinky's code, note that the `void loop()` section has four statements. See if you can discern the meaning of those four statements.

Change the blink rate to some other value, either half or twice the current rate. Recompile and download. If the blink rate changes, then you have successfully written your first program for the RSLK.

Make a *short* video of the blinking LED and post it on CCLE in the Week 4 Pre-Lab slot.

Week 4 Prelab End