

ECGR4101/5101, Spring 2010: Lab 3

Building a Simple M30626 Program and A/D

Learning Objectives

You are to write a program that runs on your QSK62P Plus board that senses light and displays it's intensity (between 0 and 100%).

Laboratory Assignments

1. The QSK62P Plus board has many A/D input ports. Select an unused one for the sensor. Document in your lab report the port/bit connected.
2. Check out a light sensor from Eddie Hill.
3. Write and develop your program to meet the requirements, below.
4. Complete your lab report.
5. Bring the new board to the lab TA and demonstrate the code (without the HEW application running).
6. Finish lab write-up and demonstrate for a TA.
7. Upload your lab report.

Requirements

- Req. 1. The code generated is written in C for the SKP16C62P.
- Req. 2. The code is well commented and easy to follow.
- Req. 3. The system will have a light-sensing device.
- Req. 4. You will calibrate the device from darkness to bright LED light shining on the sensor using a calibration algorithm that shall run anytime switch 3 is pressed.
- Req. 5. The calibration algorithm:
 - a. On the LCD display “Darkness” and “Press S1”. When switch 1 is pressed, record this value as “darkness”. (cover the sensor to make it dark)
 - b. Then, on the LCD display “Bright” and “Press S1”. When switch 1 is pressed, record this value as “Bright”. (Shine a bright LED or other light on the sensor)
- Req. 6. On the first line of the display, write “Light %”.
- Req. 7. In darkness, show “0%” on the second line of the display. In bright light, show “100%” on the display. Average room light should be somewhere in between these two values.
- Req. 8. Continuously show a light value.

Lab Report

Include in the checkout part of your lab report the lines:

1. Calibration procedure works as specified _____
2. Light intensity correct _____
3. Board works without HEW running _____

Include in your lab report observations and procedure like the following:

The general learning objectives of this lab were . . .

The general steps needed to complete this lab were . . .

Some detailed steps to complete this lab were

1. *Step one*

2. *Step two*

3. *. . . .*

Some important observations while completing/testing this lab were . . .

In this lab we learned

Create a single pdf containing:

1. Your lab report
2. Your code (no need to include the sect30.inc, ncr0.a30, LCD, or any .h files). Include all c files that have code that you wrote (but if you are smart, this should be one small file so that the code size is small). Ensure you use an 8 or 9 courier font so that most lines of code take one line of text.
3. The full map file.). Ensure you use an 8 or 9 courier font so that most lines take one line of text.

Upload this pdf to moodle. Name the file xxxxxxxx_lab3.pdf, where xxxxxxxx is your last name.

FAILURE TO FOLLOW THESE SIMPLE INSTRUCTIONS COULD RESULT IN THE LOSS OF POINTS.