

ECGR4101/5101, Fall 2008: Lab 4

Building a Simple M30626 Program and A/D

Learning Objectives

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

Laboratory Assignments

1. The QSK62P board has many A/D input ports. Select an unused one for the sensor. Document in your lab report the port/bit connected.
2. Write and develop your program to meet the requirements, below.
3. Complete your lab report.
4. Bring the new board to the lab TA and demonstrate the code (without the HEW application running). When the TA checks your board, she will also take your lab report. You **will** need to include a printout or soft copy all of the code – there should not be much.
5. Include the printout of the .map file.

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 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”.
 - b. Then, on the LCD display “Bright” and “Press S1”. When switch 1 is pressed, record this value as “Bright”.
- 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.
- Req. 9. The code should be as compact as possible. Lab scores will be based on the size of the compiled object file. Smaller compiled code will result in a better score.

Lab Report

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

1. The calibration works as specified in requirements _____
2. The calibration works any time switch 3 is pressed _____
3. Darkness is identified as specified in requirements _____
4. Bright light is identified specified in requirements _____
5. Structure defined in code as specified in requirements _____

6. Comments written as specified in requirements
7. Size of code (rank)

_____ / _____

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. *. . . .*

Code generated or modified to complete this lab...

No need to include all the files for the lab. Just include the modified code.

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

Here include the memory report given at the end of the compile process (map file).

*We are **especially** interested in seeing the map file.*

In this lab we learned