ECGR 4101/5101, Fall 2005: Lab 6
Simple Serial Communications

Learning Objectives

This lab will introduce you to using UARTs and basic digital communications on our Renesas board, and new C programming concepts.

General Information

The general steps for this lab are:

1. Generate a new project. Name your new project Lab6.

2. Modify the main.c file and include the appropriate files. Include commenting along the way.

3. Program the lab. Don't forget the necessary include files to get the correct functionality.

4. Compile the code into an .x30 file, and load onto the board.

5. Test the program and repeat sets 4 and 5 until the program works as required.

6. Write your lab report.

7. Demonstrate for a TA and turn in your report.

Laboratory Assignments

In this lab you will be generating two main.c files from scratch. The program will transmit information to another board and display data on a second board's LCD using UARTs.

Steps

1. Follow the steps given in lab 2 for generating a new project.
2. Create the main.c file and include the appropriate files.
3. Build your program slowly, testing along the way. Perform compiles and solve each requirement one at a time.
4. Continue to build and test the program until all of the requirements have been met.
5. If you run into problems, use the break point functionality of KD30 to step through the code until you find the problem.
6. Once all the requirements have been met, ensure that everything works.
7. Finish lab write-up and demonstrate for a TA.

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 – Board 1: Set the processor to always read the thermistor value with the ADC, 10-bits.
Req. 4 – Board 1: Poll SW1. When it is pressed, light the red light.

Req. 5 – Board 1: Also when SW1 is pressed, read the 10-bit thermistor value from the ADC register and write the lower 10 bits to Board 2 via an unused UART on the SKP (use the hardware schematic to help).
Req. 6 – Communicate at 300 baud, odd parity, one stop bit
Req. 7 – Connect one data line and one ground line between two boards.
Req. 8 – Board 2: Continually poll the connected UART on the board and display the number received on the LCD.
Req. 9 – Only valid buttons are active.

Lab Report

Turn in a hard copy of the code you wrote and a printout of the map file. Also 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 for this lab…

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

In this lab we learned . . . .