ECGR4101/5101, Fall 2005: Lab 3
Building a Simple M30626 Program and Using a Logic Analyzer

Learning Objectives

This lab will help you demonstrate how to change an executable on the SKP16C62P board and take measurements with the mixed signal scope (logic analyzer).

General Information

The general steps for this lab are:

1. Change the program from Lab 2 to add your names in the boot-up section.
2. Compile the SKP16C62P test program to your board, download and run.
3. Take measurements with a mixed signal scope (logic analyzer).
4. Demonstrate for a TA and turn in a lab report.

Prelab Activity

You may use the PCs in SciTech 203 or your own PC to do this lab experiment. Also read the online information or users guide for the mixed signal scope (logic analyzer).

Prelab Questions

1. How many analog inputs does the Mixed Signal Scope have? How many digital inputs?
2. I call the device a logic analyzer and a mixed signal scope. Why might I do this?

Laboratory Assignments

1. Follow the instructions on the QuickStart Guide, numbers 4 and 5. Note carefully the steps required to build a program, download, and debug a program. Note the change of behavior of the board.
2. You will next build a new project based on the "demo" (on QuickStart Guide step 4e, choose "demo" instead of "test"). Download and run this new code. Note the change of behavior of the board.
3. In the project editor, choose main_skpdemo.c as the file to edit. You will need to change the program in three areas for these new requirements:
   a. Instead of flashing the lights G -> Y -> R -> Y -> G, change it to the sequence
      G -> Y -> R -> off -> G -> Y -> R -> off -> G -> . . . . .
      This will require you to change some code.
   b. Keep all other code the same.
   c. In the file header comments (bottom of comments), add a few lines stating your name, date changed, and values changed.
   d. In the procedure that changed, add a line or two of comments stating the changes.
4. In the project editor. add your names to the boot-up sequence of the board (instead of the Renesas name).
5. Save the file.

6. Now use the rebuild button on the toolbar to rebuild the project. This will pull up the builder and show the status as the project is cleaned and rebuilt using the updated files. The memory should be adjusted for the added lines of code.
7. Reload the software onto the boards and test. Verify that the new functionality works as specified.
8. Take a reading with the mixed signal scope (logic analyzer) with three of the digital inputs for three cycles. Save the reading and include in your lab report.
9. Complete your lab report.
10. Bring the new board to the lab TA and demonstrate the new code (without the HEW application running). When the TA checks your board, he will also take your lab report. You **will not** need to include a printout or soft copy all of the code – just "snippets".

Lab Report

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

1. Names of lab groups in the boot-up of board   _____

2. LEDs flashing as specified   _____

3. Other functionality works as in original code.   _____

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.

In this lab we learned . . . .