Requirements Specification for EE465 Lab Project 0: Heartbeat LED

Lab project goal: Basic circuit with heartbeat LED.

Light emitting diode will indicate that the MC9S08QG8 is running. The heartbeat indicator provides a quick visual check of microcontroller operation. This is an important debugging feature that will let you know if your processor is doing "something". It will be continued for all subsequent labs, so make it MODULAR.

Requirements for lab project completion:

0. Set up breadboard for programming via the BDM, make sure to have VDD and GND connected to MCU.

1. Install jumper wire from output pin of MCU to desired LED on SLK board.

2. Add a reset switch and connect it to the MC9S08 at pin 1, $\overline{\textbf{RST}}$.

3. Program the microcontroller using the "fastloop" example program. Modify that program so that the LED on PTA[0] is flashing at 0.5 Hz (1 sec on, 1 off), without using processor "initialization". **Get signed off.**

4. Rewrite this code to using the "initialization" and the timer module by modifiying the prescaler for the same flash rate. **Get signed off.**

5. Set the prescaler back to "1" and modify the timer interrupt to have the required flash rate. **Get signed off .**

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6. Your project grade will be based on the report that you hand in during this or subsequent lab sessions. Your report must include:

a. A cover memo summarizing the methods you used to solve the problem. Follow the informative memo guidelines on the ECE web site.

b. A listing of your file containing a header section with a clear description of the program purpose, key variables, and other information that would be useful to another programmer reading your listing at a later date. Your header should also include your name and your partners name, the date, and your EE465 lab session.

c. A flow chart for this program.

d. A sign-off from the instructor or a TA indicating that your program performed as required and the required circuit modifications were completed. **Each lab team member must build a hardware circuit and receive a sign off for their own circuit**. Please attach this requirements specification with signoff and partner names together with your listing and flowchart.

Due Date: Thursday, Jan 23 2014, (in lab)

Sign off for fast-loop modified
Name(s) Instructor/TA Date

Sign off for prescaled timer overflow
Name(s) Instructor/TA Date

Sign off for non-prescaled timer overflow
Name(s) Instructor/TA Date

January 13, 2014, Randy M. Larimer