Requirements Specification for EE465 Lab Project 0: Heartbeat LED

Lab project goal: Basic circuit with heartbeat LED.

The Light Emitting Diode (LED) will indicate that the MC9S08QG8 is running properly. 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 easy to incorporate into your code. We will explore three different approaches to generating the heartbeat indicator.

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 and current limiting resistor on your breadboard.

2. Add a reset switch and connect it to the MC9S08 at pin 1, $\overline{\textbf{RST}}$. Note: This could be a jumper wire that you move to ground for reset or a switch.

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). **Get signed off.**

4. Rewrite this code to using 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 memo report that you hand in during this or subsequent lab sessions and your demonstration of your code written for this lab.

Your **Memo Report** must include:

a. A memo report summarizing the methods you used to solve the problem. Your memo report should include a flow chart for your program. See the "Example Lab Report" folder for an example.

b. Each student should upload their commented code to the appropriate "Dropbox" for this lab on D2L.

Memo Report Date: Thursday, January 26, 2017 (by 6 PM)

Code Demonstration:

c. 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 and demo a hardware circuit to receive a sign off for their own circuit**. A sign-off sheet will be kept by the instructor and TA indicating completion of the lab.

1. Sign off for fast-loop modified

2. Sign off for prescaled timer overflow

3. Sign off for non-prescaled timer overflow

Demo Due Date: Tuesday, Jan 24, 2017 (by end of your lab time)