CMPE 443 PRINCIPLES OF EMBEDDED SYSTEMS DESIGN

LAB #005 "Timer"

1) Preparation for Using Keil and QEMU *(10 minutes)*

This part will not be graded. It will enable you to get ready for the prelab.

You have already generated the **.axf** file from the Keil in SELF STUDY #7 and #8. You can directly use this file on the QEMU environment.

- Open the Keil.
- Open the project you did on the SELF STUDY #7 and #8.
- Open Qemu Environment.

Observe that everything works as it did in the SELF STUDY #7 and #8.

2) Select your implementation: Polling or Interrupt? *(3 minutes) - 1pt*

This part will be graded. Your experiment will be evaluated according to your selection.

In Moodle there is a quiz for this lab. You should select your implementation.

3) Timer *(40 minutes) - 6 pts*

This part will be graded.

The Timer pin for the lab is randomly generated on the quiz. You will use that pin for Timer. Also, Toggle, Low or High options for External Match output is random.

We will add an additional 1 LED to the system. So there will be four LEDS and the sequence will be LED1 - LED2 - LED3 - LED4 - LED1 …. LED pins. Push button pin and LED pin are also written on the Moodle. (They are random so if you get the same port and pin number, use the next pin number) You will start and stop the sequence with a push button. The LED state change interval is 1 second and you will use Timer for making 1 second delay. You can use

Timer Polling or Interrupt options as you wish. Update the code you wrote on SELF STUDY #7 and #8.

You will submit two files: 6 *pts*

LAB<exp num>_<StudentID1>.axf (This will be generated **.axf** file)

LAB<exp num>_<StudentID1>.zip (This will be **source files of project**, **not the whole project**)