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**EEEE420: Embedded Systems Design**

**Lab 6**

At the time the lab was performed, a Launchpad board was not available to test code or measure pin outputs. The following are the expected results of such testing.

**Part 1**

With the original values of PWMPeriod, PWMDC1, and PWMDC2, the low frequency of the pulse controlling the LED should cause it to blink visibly. Reducing PWMPeriod and changing PWMDC1 and PWMDC2 to the same relative values increases the frequency of the LED pulses. As these exceed the frequency at which the human eye can perceive distinct images, the individual pulses blend together into a constant light. This is further aided by any low-pass effects in the LED circuit, which carry some power from an “on” cycle to an “off” cycle. The duty cycle, controlled by PWMDC1/PWMDC2, initially controlled how long the LED appeared to be on during each pulse. When operating at a higher frequency, the duty cycle instead controls the apparent brightness of the LED. The apparent brightness is dependent on the average power in the circuit, which is proportionate to the duty cycle.

**Part 2**

When the circuit is implemented in C, the process is similar. First, timer A is configured. The code then enters a while(1) structure to constantly loop through the PWM code. The code sets timer A to use PWMDC1, runs a delay subroutine, sets timer A to use PWMDC2, then delays again. The code then hits the end of the while(1) structure and begins again.