ECE 375 LAB 7

Timers / Counters

Lab Time: Thursday 1000-1200

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PRELAB

1. List the correct sequence of AVR assembly instructions needed to store the contents of registers R25:R24 into Timer/Counter1's 16-bit register, TCNT1. (You may assume that registers R25:R24 have already been initialized to contain some 16-bit value.)

```
STS LOW(TCNT1), r24 ; NOT "OUT" ;
STS HIGH(TCNT1), r25
```

2. List the correct sequence of AVR assembly instructions needed to load the contents of Timer/Counter1's 16-bit register, TCNT1, into registers R25:R24.

```
LDS r24, LOW(TCNT1) ; NOT "IN"
LDS r25, HIGH(TCNT1)
```

3. Suppose Timer/Counter0 (an 8-bit timer) has been configured to operate in Normal mode, and with no prescaling (i.e., clkT0 = clkI/O = 16 MHz). The decimal value "128" has just been written into Timer/Counter0's 8-bit register, TCNT0. How long will it take for the TOV0 flag to become set? Give your answer as an amount of time, not as a number of cycles.

Important: Assuming the clock source is the system clock and the counter increments once per cycle, as default.

(255-128) * (1/(16*10^6)) = 8 * 10^-6 seconds = 4 microseconds.

This is from the equation:

((MAX + 1 – value) * prescale)/(clkT/0)