

Name:
Red ID:

COMPE 375
LAB 4

Date:
Section:

Embedded Systems Programming Lab

Timers/Counters

1. What is Pulse Width Modulation and Duty Cycle (DC)? Explain DC with a diagram.

2. Can you increase the duty cycle without changing the frequency? How?

3.

```
#define LEDON PORTB |= (1<<5)
#define LEDOFF PORTB &= ~(1<<5)
int main( ) {
while(1) {
    LEDON;
    _delay_ms(500);
    LEDOFF;
    _delay_ms(500);
}}
```

 - i. Draw the generated waveform along with the time.

 - ii. What is the duty cycle of the waveform?

 - iii. What is the frequency of the waveform?

4. Write a program which generates a PWM waveform of 70% duty cycle and 100Hz frequency.

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5. `_delay_ms()` function accepts only a constant as parameter, write a function `void delay(int a)` that produces a delay where “*a*” is a variable.