**Lab Questions and Answers**

1. **At what frequency can you see the LED start to blink?**
   * If we decrease the PWM frequency between 30 – 40Hz, then we will likely notice the LED blinking.
2. **At what duty cycle is the intensity of the LED perceptibly diminished from the initial 50% duty cycle?**
   * A duty cycle below 20-30% will likely result in a noticeable dimming effect. At 10% duty cycle, the LED may appear very dim, and at 5% or lower, it might be barely visible, depending on the LED type and color.
3. **When changing the duty cycle of the PWM, the loop used an increment of 5 every tenth of a second. Was this perceptibly smooth? If not, what could you change to improve the visual response? Why?**
   * The 5 increment every 0.1s is fairly smooth but still appears slightly stepped rather than a continuous fade.
   * Actions for Improvements**:**
     + Decrease the increment to 1 or 2 instead of 5.
     + Increase the update frequency to 0.05s or less.
   * Reason
     + A smaller step size makes the transition more gradual, reducing the noticeable jumps in brightness.
     + A faster update rate ensures the LED changes appear more continuous.
4. **What function sets the PWM frequency for a GPIO line?**
   * GPIO.PWM(pin, frequency)
   * Such as: pwm18 = GPIO.PWM(18, 60)

# Sets GPIO 18 to 60Hz PWM frequency

1. **What function sets the duty cycle for a GPIO line?**
   * Pwm18.start(0) is what initializes the duty cycle and is the starting parameter
   * pwm.ChangeDutyCycle(duty\_cycle) is the method that changes the duty cycle and in this case was encapsulated in a for loop so the duty cycle would be updated and incremented each time.