

Module One Lab Questions

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1) At what frequency can you see the LED start to blink?

The LED starts visibly blinking at around **5 Hz or lower**.

2) At what duty cycle is the intensity of the LED perceptibly diminished from the initial 50% duty cycle?

At around **20–30% duty cycle**, the LED starts looking noticeably dim compared to 50%.

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 transition is **mostly smooth**, but reducing the step size to **1 or 2** and increasing sleep time to **0.05s** can make it even smoother because our eyes perceive smaller brightness changes more naturally.

4) What function sets the PWM frequency for a GPIO line?

```
pwm.ChangeFrequency(frequency)
```

5) What function sets the duty cycle for a GPIO line?

```
pwm.ChangeDutyCycle(dutyCycle)
```