prac_3_lphtum003

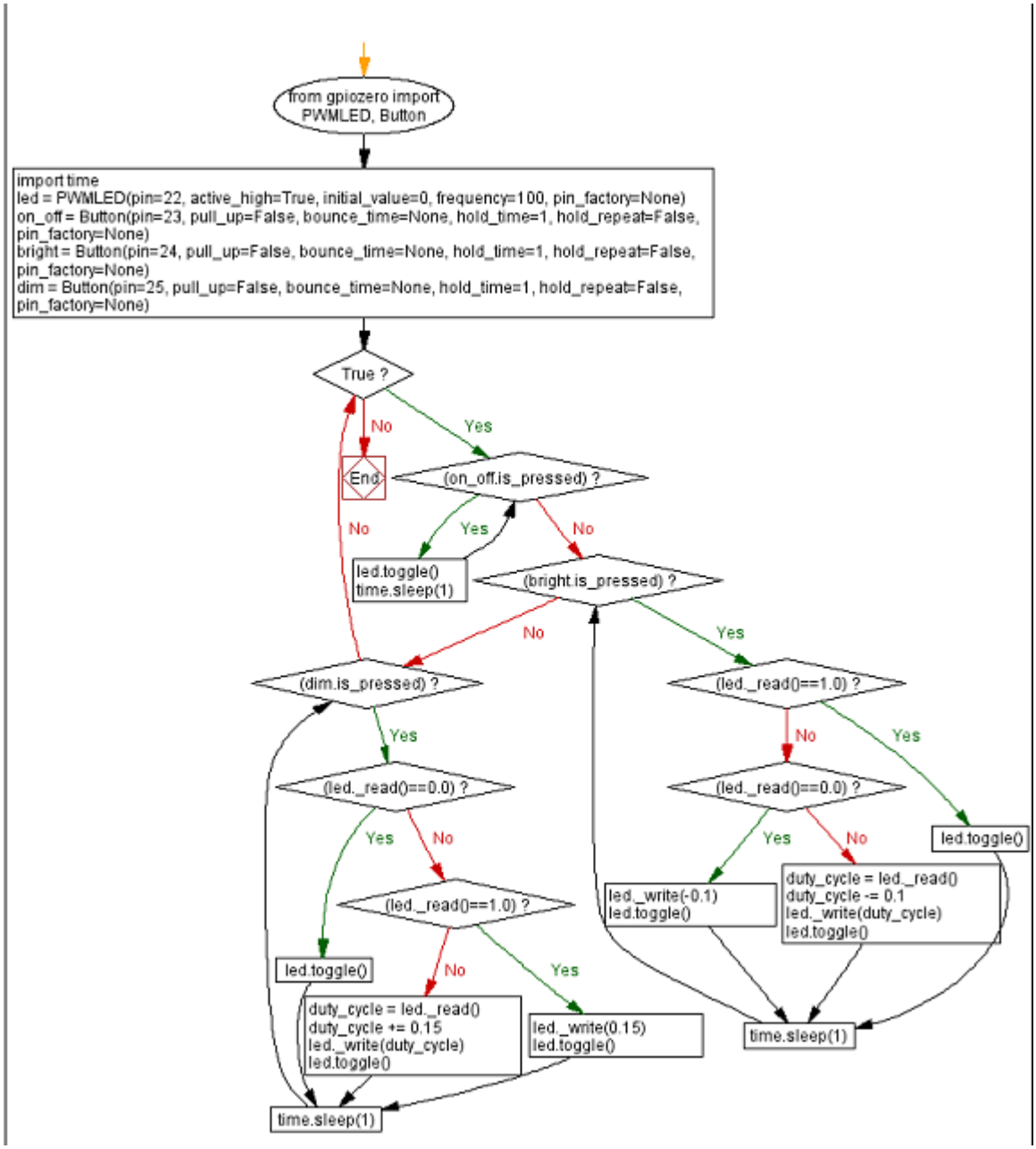
What is the frequency that is appropriate for this system where the light should be visible? Justify your answer.

100Hz. This signal would have a Period of 10 milliseconds. In other words. The signal repeats itself every 10 milliseconds. If the signal had a duty cycle of 100%, it would be “High” 100% of the time, and “Low” 0% of the time. If it had a duty cycle of 50% it would be high 50% of the time (.5X10 milliseconds= 5 milliseconds) and low 50% of the time (.5X10 milliseconds = 5 milliseconds). So, it would be high 5 milliseconds, and low 5 milliseconds for a total period of 10 milliseconds, which as we expect, if a frequency of 100 Hz. (Note that the Period of a signal = 1/frequency, and frequency = 1/Period)

What is the increase/decrease in duty cycle after a brighter/ dimmer switch is pressed? Show your reasoning.

10 and 15 respectively. An increment of 10 in the duty cycle to model the 10 presses required to reach 100% brightness. And a decrement of 15 to model the 7 presses required to dim the light until it is completely off.

Draw a flowchart of above system



Reference

Toptechboy.com. (2018). Raspberry Pi LESSON 27: Analog Voltages Using GPIO PWM in Python | Technology Tutorials. [online] Available at: http://www.toptechboy.com/raspberry-pi/raspberry-pi-lesson-27-analog-voltages-using-gpio-pwm-in-python/ [Accessed 28 Aug. 2018].