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CSC615

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HW1 – Traffic Lights

This lab uses wiringPi library and sysfs to control LED lights to mimic traffic lights. Using both methods, the lights should cycle twice, starting at green light for 6 seconds, yellow at 1.5 seconds, and red for 5 seconds.

WiringPi Implementation

Using wiringPi was easier to implement because it has built-in functions that allow easy setup and use (wiringPiSetup(), pin_mode(), digitalWrite(), etc.). I decided to implement my own function: $set\_xxxxx(int\ delay)$ where is either red, yellow, or green. The delay, if set to -1 will turn the corresponding light to on indefinitely. Otherwise, it will remain on for $delay$ milliseconds. I use wiringPi's built-in delay function to achieve time until light switches off.

Sysfs Implementation

This implementation was more hands-on because there are no built-in functions. With heavy inspiration from elinux.org, I implemented necessary functions to allow the GPIO pin access and modification of its value. Then, an unexport function was used at the end when the GPIO pin is no longer used.

Difficulties

While I've handled circuits in the past, I was never able to mess around with the software. A bit overwhelming at first but then after using wiringPi for a while, I realized it was way easier than Sysfs, which was way more difficult.

Hardware

The high resistors were chosen just to be on the safe side.