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Lab2 Report

**How many cycles does your hard-coded program take to write 24-bits?**

Target halted. Stopwatch cycle count = 480 (30  $\mu$ s)

Target halted. Stopwatch cycle count = 16000 (1 ms)

Our hard-coded program uses a 1ms latch for safe measure so this is 16,000 cycles. Our write using this method takes 480 cycles. Giving us a total of 16480 cycles.

**How many cycles does your new function take to write 24-bits?**

Target halted. Stopwatch cycle count = 1001 (62.5625  $\mu$ s)

Target halted. Stopwatch cycle count = 16000 (1 ms)

Our function included a 1ms hold at the end of it, so it takes 1001 to write the color and 16,000 to latch giving a total of 17,001 cycles.

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**In the color cycling function, the color is jumping from blue 0x0000ff to red 0xff0000 at the end or beginning of the cycle. Please write a psuedo-code for a smooth transition.**

```
count = 255;
```

```
while(count > 0) //0 blue 255 red to 254 blue 1 red
```

```
    drawFrame(count)
```

```
    delay(10)
```

```
    count -= 1 //count will end at 0, but will only show 1 red, 254 blue
```

```
while(count < 255)
```

```
    drawFrame(count) //255 blue 0 red, to 254 red 1 blue
```

```
    delay(10)
```

```
    count += 1 //count will end at 255, showing only 254 red 1 blue
```

```
drawFrame(count) //will give 255red 0 blue
```

We could just remove the last line of drawFrame and call it day since on the next main cycle it will be set at the last drawFrame color anyways. If we weren't going to loop it, it would need to be done this way.

Our write\_0 and write\_1 function both run for a period of 1.25 $\mu$ s. The write\_0 functions sends a high pulse for 6 cycles and a low one for 14. The write\_1 function sends a high pulse for 12 cycles and a low for 8. Thus both functions meet the parameters of the data sheet for the iLED. I was doing a little experimenting and found that the write\_0 could write the bit at 1 cycle high and 19 low. We also used a delay latch of 1ms to set our color once we were both done writing. This was 16000 cycles.