DUCSTeach Workshop 01 - Traffic Light
Written by: Matthew Horger
mh3294@drexel.edu
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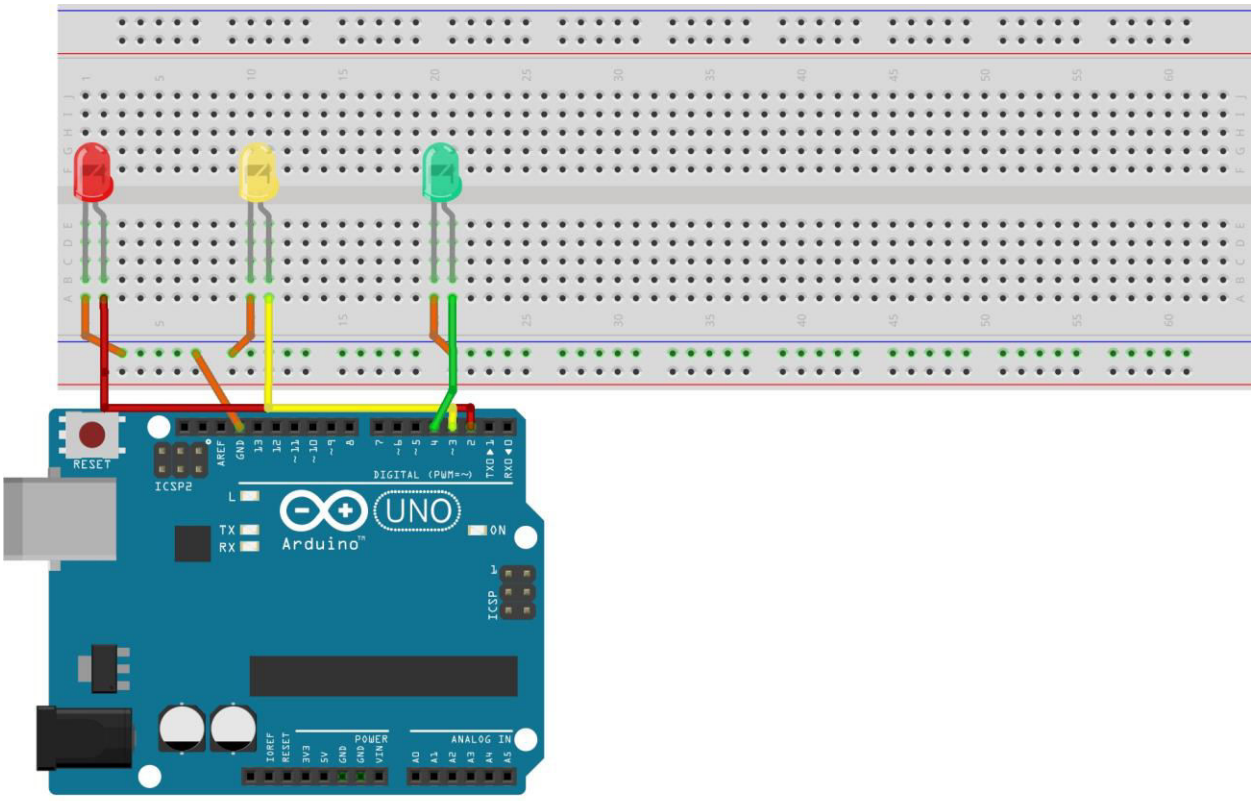
Time: 30 Minutes
People: 10 - 15 People
Materials:

- 5 Arduino Unos with 170 pin breadboard
- 3 LEDs (One red, one yellow, one green)
- Jumper Wires (5 red, 5 yellow, 5 green, 5 orange, 15 miscellaneous colors)
- (Optional) 220 Ω Resistor (to demonstrate voltage resistance for higher advanced groups)
- USB Type B Cable
- Laptop with Arduino IDE installed
- TrafficLight.ino file

Steps:

1. Insert a green wire into Arduino port labeled 4.
2. Insert a yellow wire into Arduino port labeled 3.
3. Insert a red wire into Arduino port labeled 2. (explain here that these are our signals)
4. Insert an orange wire into Arduino port labeled GND (doesn't matter which one, there are three). (Explain here why voltage needs somewhere to go)
5. Insert other end of orange wire into breadboard labeled **- (minus)**.
6. Insert a misc wire from minus to a1.
7. Insert a misc wire from minus to a10 .
8. Insert a misc wire from minus to a20.
9. Insert a red led with the long stick in b2 and the short stick in b1.
10. Insert a yellow led with the long stick in b11 and the short stick in b10.
11. Insert a green led with the long stick in b21 and the short stick in b20. (explain here that electricity will travel across the numbered row).
12. Insert other end of red wire into a2.
13. Insert other end of yellow wire into a11.
14. Insert other end of green wire into a21.
15. When finished, connect Arduino via USB cable to IDE and load TrafficLight file.
16. Lesson Completed (optional: connect resistor to long stick to show diminished brightness).

Circuit:


RESET
ICSP2
AREF
GND
13
12
~11
~10
~9
8
7
~6
~5
4
~3
2
TX→1
RX←0
DIGITAL (PWM=~)
L
TX
RX
Arduino
UNO
ON
ICSP
POWER
ANALOG IN
IOREF
RESET
3V3
5V
GND
GND
VIN
A0
A1
A2
A3
A4
A5

fritzing