Arduino stoplight
Due Wednesday 4/13/22 (7th period) Thursday 4/14/22 (6th period)

Simulate a stop light with three LEDs (red, yellow, and green). Let me know if you don't have one of each color LED. Arrange the lights like a stoplight (red on top, yellow in the middle, etc.). Each light must be connected to a different Arduino pin and each LED must be in a separate circuit with its own resistor, plus a wire to ground. I would run one LED using pin 8, one using 9, and one using 10. Each LED needs an appropriate resistor. See the book if you can't remember how to wire LEDs up.
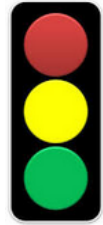
Run a single long jumper from your Arduino board's GND pin to a minus (-) column on the breadboard. This gives you access to GND (ground) whenever you need it without having to run as many wires back to the Arduino. Then for all of your LED circuits, just connect to the - column to get to ground. (You can't do the same for the 5V pin going to + for today's assignment as each LED is powered by a separate pin.) The resistor key is to the right.

Do not do a Google search for "Arduino stoplight", that isn't the circuit or design we are doing. Instead, open the Getting Started with Arduino book and look at the diagram on p. 56: repeat this circuit three times, one using 8, one using 9, and one using 10 for the + side of the circuit. Use the (-) rail for all the GNDs to keep things simple. *If you need help, ask for help, don't just copy something you find on the Internet.*

Above setup() create an int variable named "red" which you set to the pin that is powering the red LED. For example, if pin 8 is powering the red light, set your red variable to 8. Then when you want to turn on or off the red light, use a command like this:

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digitalWrite(red,HIGH);
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Do this for the other two lights, too (that is, yellow and green). This will help you keep track of what you're doing. Name your sketch "day9_stoplight ", and work on it with your partner. Make one circuit, and create one program; work together. Get me to check it off in person when you are done.

For 12 out of 15 points: Write a sketch that simulates a stoplight as follows:

- Three LEDs are arranged in order the way they are in the real world on a stoplight (Red on top, yellow in the middle, green on the bottom.)
- You are using variables red, green, and yellow to control the LEDs.
- Only the green light is on 4 seconds,
- then only the yellow light is on for 1 seconds,
- then only the red light is on for 4 seconds,
- and the cycle repeats.
- Add Serial print calls to help you with your debugging.
- Use the correct resistors with your LED lights. We have LEDs of different specifications, so if the light isn't clearly visible with the resistor, you may need to try a different resistor or use the LED without a resistor. But please start by using the correct resistor.

For 15 out of 15 points: Do all of the above, then add the LDR (light dependent resistor) to your circuit. Make the stoplight wait for the LDR to be covered before the green light turns on. In other words, in this model, the light is red forever, until you cover the LDR with your finger, simulating a car arriving at the stop light and triggering a sensor, at which point you turn on the green light for 4 seconds, then do the yellow for 1, then the red until another LDR event occurs.