Activity 2: Making an LED Blink Worksheet

Overview
In this activity, we will connect an (external) LED to an Arduino using jumper wires and a breadboard, and then program the Arduino to cause the LED to blink.

Construct the Hardware
1. Gather the following materials:
   • 1 Arduino and USB cable
   • 1 breadboard and 2 jumper wires
   • 1 LED and 1 220Ω resistor

2. Construct the following setup:

   A. Connect 1 jumper wire from GND (“ground”) to one of the (-) columns.
   B. Place 1 leg of the resistor in the same column as the GND wire. Place the other leg of the resistor in a new row.
   C. Place the short leg of the LED to the same row as the resistor leg. Place the long leg in a new row.
   D. Connect 1 jumper wire from the previous row to digital pin 10.
   E. Check that your setup matches the setup in the diagram above or the one at the front of the room.

Create the Program
3. Type up the associated program for Activity 2 (see the next page).
   Tip: Capitalization and spelling matter. Note: most lines of the code end in a semi-colon.

4. Save the file as LED_Blink.

5. To check that the Arduino can compile your code, “Verify” it. Do this by either pressing Command + R or by clicking on the Verify button (it looks like a check mark).
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Reflection Questions
1. What do you think the function `digitalWrite( )` does? What information must go in its parentheses for it to work?

2. What do you think the function `delay( )` does? What does the number inside its parentheses represent?

Alternatives
1. Figure out how to change the blink-rate of the LED. For example, try to get the LED to blink twice as fast, twice as slow, or with a completely new pattern. Describe what you changed in the program to do this.

2. Figure out how to add a second LED and get it to blink opposite the first LED (when the first one is on, the second one should be off). Sketch the new setup below and describe the changes you made to the program to accomplish this.