

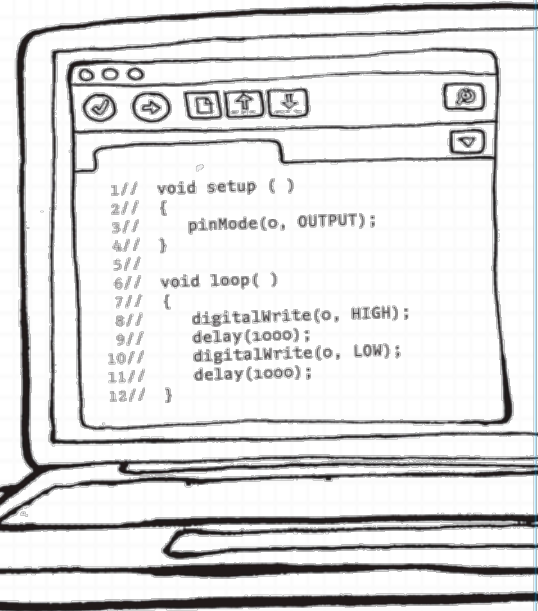
## CODING IN THE ARDUINO IDE

Time to code! Type the code on the facing page into the Arduino code window, or “sketch.” Capitalization and bracket type matters! Click the verify button (V) to check the code, and then the upload button (->) to copy it to the ATtiny85. The LED built into the Tiny AVR Programmer stick should now blink on and off in 1 second increments.

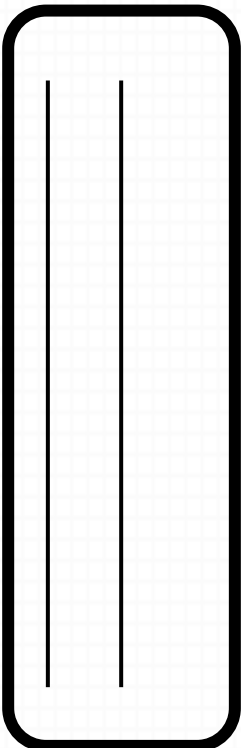
Look back at the pattern you planned on page 11. Modify the code above by changing the delay values. Use the Tiny USB Programmer’s LED as a visual guide of what code is on the microcontroller. Edit the code until you’re happy with the pattern. Don’t forget to do a final upload!

### WHAT THE LINES OF CODE DO:

- 1// instructions in the setup block, between { and }, run only once, when the program starts
- 3// set pin 0 to voltage output mode (as opposed to voltage sensing, i.e., being an “input”)
- 6// instructions inside the loop block repeat over and over
- 8// set voltage level on pin 0 to high, which, turns on LED
- 9// do nothing for 1000 milliseconds, or 1 second
- 10// set voltage level on pin 0 to low, which, turns off LED
- 11// do nothing for 1000 milliseconds, or 1 second

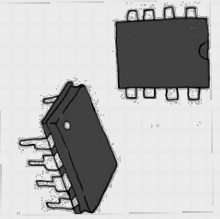



For additional information on program sketches and working with multiple pins on the ATtiny85, see the NEXMAP website, [www.nexmap.org/attiny-programming](http://www.nexmap.org/attiny-programming) and Jeannine Huffman’s Weebly site: <http://jeanninehuffman.weebly.com/paper-circuit-resources.html>

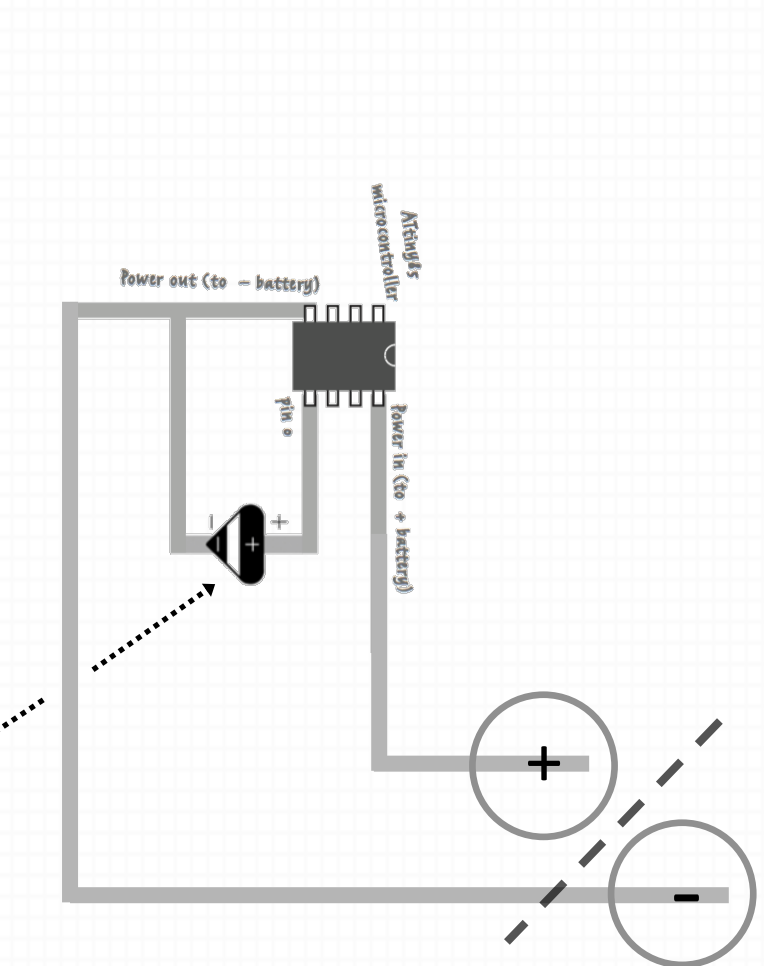
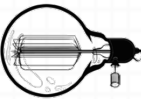


# Meet the ATtiny85 Microcontroller

- **A microcontroller contains a processor, memory, and input / output pins.** This means it can perform calculations, store results, sense voltage levels and turn electronic components on and off.
- **It can be programmed.** In other words, you can give it a sequence of instructions to follow and it will follow them every time it is powered on.
- **Using a few simple materials, we can use the Arduino programming environment to program a microcontroller that will make a light blink in a pattern we choose.**

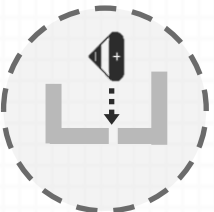


nexmap and LECTRAkit™ thank Natalie Freed for her work on the ATtiny85 activity and Jie Qi and  for use of the circuit sticker image and illustration.



## Build Your Circuit

- 1 **Place the copper tape.** Turn corners cleanly. (You can solder the corners when you attach the ATtiny85 for more durability.)
- 2 **Place the LED sticker- MIND THE GAP** - .....>
- position the circuit sticker over the gap in the copper tape.
- 3 **Bend the legs on the microcontroller so they lie flat and flush with the template,** ready for soldering.
- 4 **Fold the corner and add your battery + side down.**



- **The ATtiny85 has 8 pins.** There is a + pin and a - pin, which allow the microcontroller to be powered by a battery or other source of electrical current.
- **Others allow for the microcontroller to send and receive information;** these are input/output pins.
- **After programming the ATtiny85, we'll connect the pins as shown in the circuit diagram above.**

