Arduino Project #1: LED Control
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Required equipment:

1. Arduino Uno
2. USB cable
3. Arduino programming software (download here: http://arduino.cc/en/Main/Software)

Welcome to your first Arduino project! Through a series of three objectives, this project will demonstrate how to use the Arduino Uno to cycle the rate at which its on-board LED blinks. Beginning at a predetermined blink rate, the LED will continue to blink faster and faster until it stays on continuously. At this point, its climax, the blink rate will continuously slow down until it reaches the predetermined blink rate, its trough, and complete one cycle. In completing this project, you will learn how to use programming basics to control your Arduino digitally.

1. Begin by downloading the Arduino programming software linked above.
2. Conduct a YouTube search for “Arduino Tutorial 1” and watch the video entitled “Tutorial 01 for Arduino: Getting Acquainted with Arduino” by Jeremy Blum. This video demonstrates how to install the Arduino programming language and program a basic sketch for blinking the Arduino’s on-board LED at a constant rate.

Objective #1
Using the online tutorial as a guide, create a sketch that switches the Arduino on-board LED on and off with a 500 millisecond delay between each switch.

*Note: To learn more about an Arduino function’s purpose and arguments, visit the Arduino Reference Library online (http://arduino.cc/en/Reference/HomePage) and search for the function’s name.
Objective #2
Modify your sketch so that the on-board LED blinks faster and faster after each loop iteration by shortening the delay period at the end of the loop. Shorten the delay period by 15 milliseconds after each iteration.

You will notice that the LED no longer blinks after a certain period of time. This is due to the fact that the repeatedly shortened delay period has reached zero, effectively causing the Arduino to maintain the LED in the ON position.

Objective #3
Modify your sketch so that if the delay period is equal to zero, 15 milliseconds will be added to the delay period repeatedly until it finally reaches a value of 500 milliseconds. Once the delay period has reached 500 milliseconds, the program should return to the beginning of the loop, thus completing a single blink rate cycle.