

Lab Week 4

Intro to Micro-controllers: Arduino Outputs

Preparation:

1. Visit the Arduino website and familiarize yourself with the Arduino Microcontroller's functionality and hardware specs.
2. Download and install the Arduino software on your laptop:
<http://www.arduino.cc/en/Main/Software>

Installation Instructions:

Windows: Follow the instructions here: <http://www.arduino.cc/en/Guide/Windows>
**Please note that you will not be installing the default Windows driver.*

Macintosh: Follow the instructions here: <http://arduino.cc/en/Guide/MacOSX>

Linux: <http://www.arduino.cc/playground/Learning/Linux>

Required Reading:

In *Programming Interactivity*: [Chapter 4](#) (p. 91-128)

**For this week focus on pages 91-100, 102-107, 115-122, 126-128.*

In Physical Computing read:

[Digital Output](#): p.87 - 89

[Analog Output](#): p.102 - 104

Suggested reading and resources:

Arduino software download page: (<http://www.arduino.cc/en/Main/Software>)

Arduino programming language reference: <http://www.arduino.cc/en/Reference/HomePage>

Arduino Hardware: <http://www.arduino.cc/en/Guide/Board>

Intro to Arduino Course from TodBots:

http://todbot.com/blog/wp-content/uploads/2006/10/arduino_spooky_projects_class1.pdf

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In Class Exercise

For this workshop you will be developing small projects using the Arduino microcontroller and the accompanying programming environment.

Materials:

- Arduino Board
- USB Cable
- Breadboard
- 2 x LEDs
- Wire
- 2 x 1k Ohm Resistors (Brown, Black and Red striped)



Tasks:

1. Digital Out: Make 2 LEDs blink so that when one is on the other is off.
2. PWM Out: Make 2 LEDs fluctuate in brightness. The two LEDs should be in sync so that when one LED is lit, the other is completely dark.
3. Optional Challenge: Use keystrokes to dim/brighten an LED (Uses Serial Communication).