Workshop: iOS App with ESP8266 and Xcode

http://makerden.io

January 30, 2016

Cisco ‘MakerBro’ Zabala

About Makerden

We’re an Educational Makerspace where we combine the necessary tools, equipment, and instruction for project-based learning.

Members of our group vary both widely and wildly in terms of skill level and age range (10 to 68).

About Makerden

Events organized at our Educational Makerspace:

[DIY] These events include show-and-tells by our members followed by a work-on-your-project(s) and ask-for-help sessions.

[Workshop] An instructor leads a hands-on workshop for learning or polishing a practical skill useful for Makers (including schematic-drawing, PCB design, 3D-Printing, soldering).

[Class] An instructor leads a formal lecture featuring instructor-led activities that allow participants to learn, develop, or refine a technical skill.

About ACROBOTIC

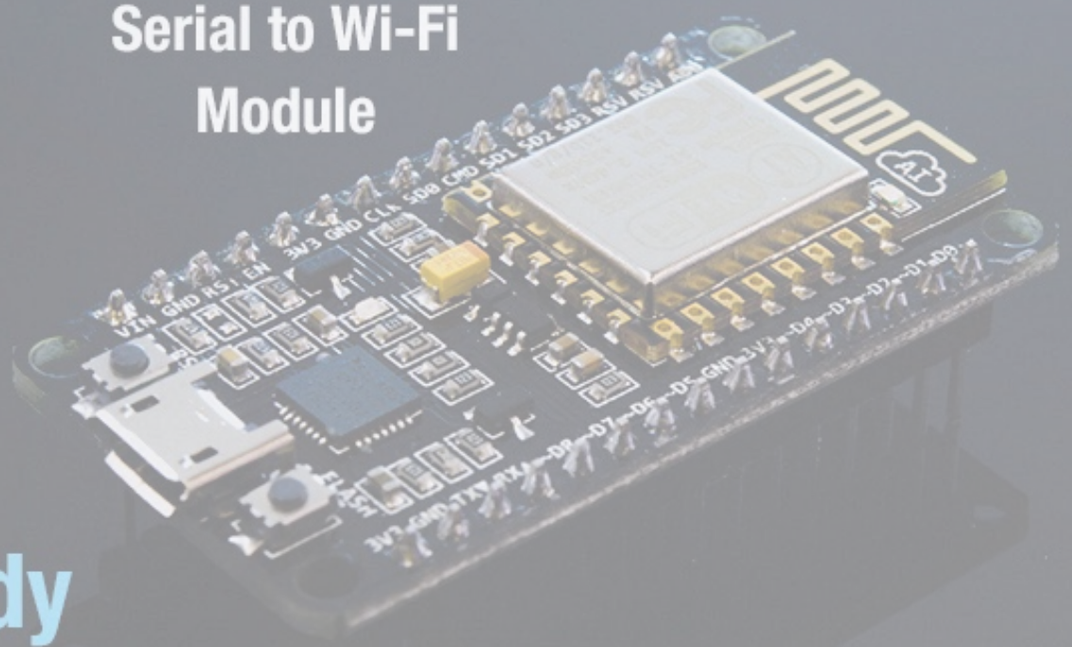
Makerden's Hardware Electronics supplier

Open-Source electronics startup dedicated to the design of hardware and software products for use in education, DIY, hobby, arts, science, and more!

ESP-12E

Budget-friendly

Serial to Wi-Fi Module



IOT Development Board powered by the ESP8266!

USB-ready

Program directly from your Arduino IDE!

Online store: **https://acrobotic.com**

Tutorials, product demos, projects: **http://learn.acrobotic.com**

Downloading this presentation

MakerdenIO/ESP8266_iOS ×

GitHub, Inc. [US] https://github.com/MakerdenIO/ESP8266_iOS_App

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MakerdenIO / **ESP8266_iOS_App** Unwatch 1 Star 0 Fork 0

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[Workshop][L1] Build an iOS App to Control LEDs [illegible] the ESP8266 Development Board! — Edit

Navigate to:

https://github.com/makerdenio/ESP8266_iOS_App

contributor

Branch: **master** New pull request New file Find file HTTPS https://github.com/Makerd **Download ZIP**

themakerbro Update README.md Latest commit `0f3d825` 13 minutes ago

esp8266_ios_app	first commit	5 minutes ago
presentation	first commit	5 minutes ago
LICENSE.txt	first commit	5 minutes ago
README.md	Update README.md	13 minutes ago

README.md

ESP8266_iOS_App

Build an iOS App to Control LEDs from a smartphone using the ESP8266 Development Board!

Intro

System overview

Software tools

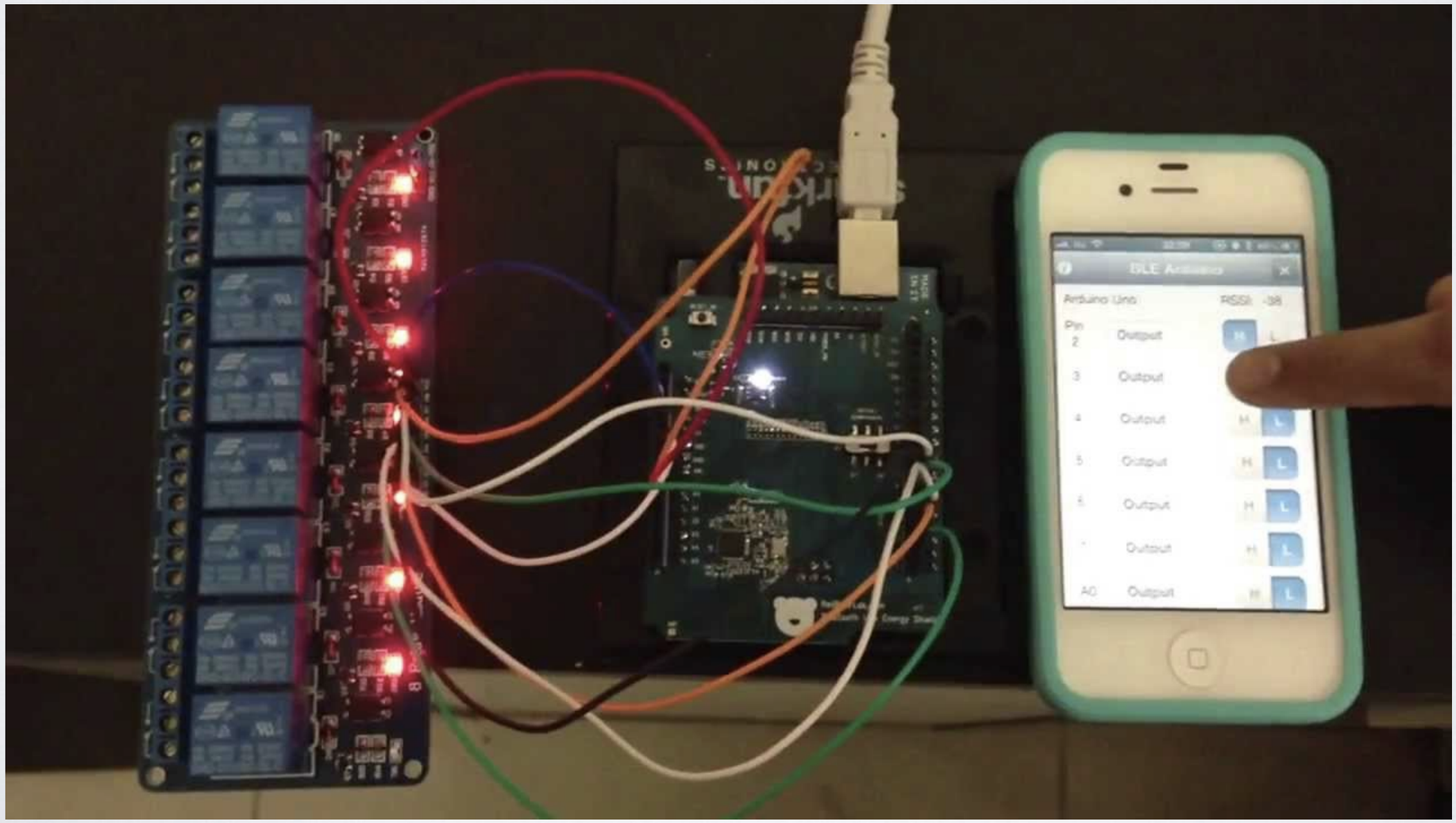
System Overview

Benefits of controlling Electronic Hardware from a smartphone

Offloads GUI to a separate device (< computation onboard)

Allows hardware to be controlled wirelessly

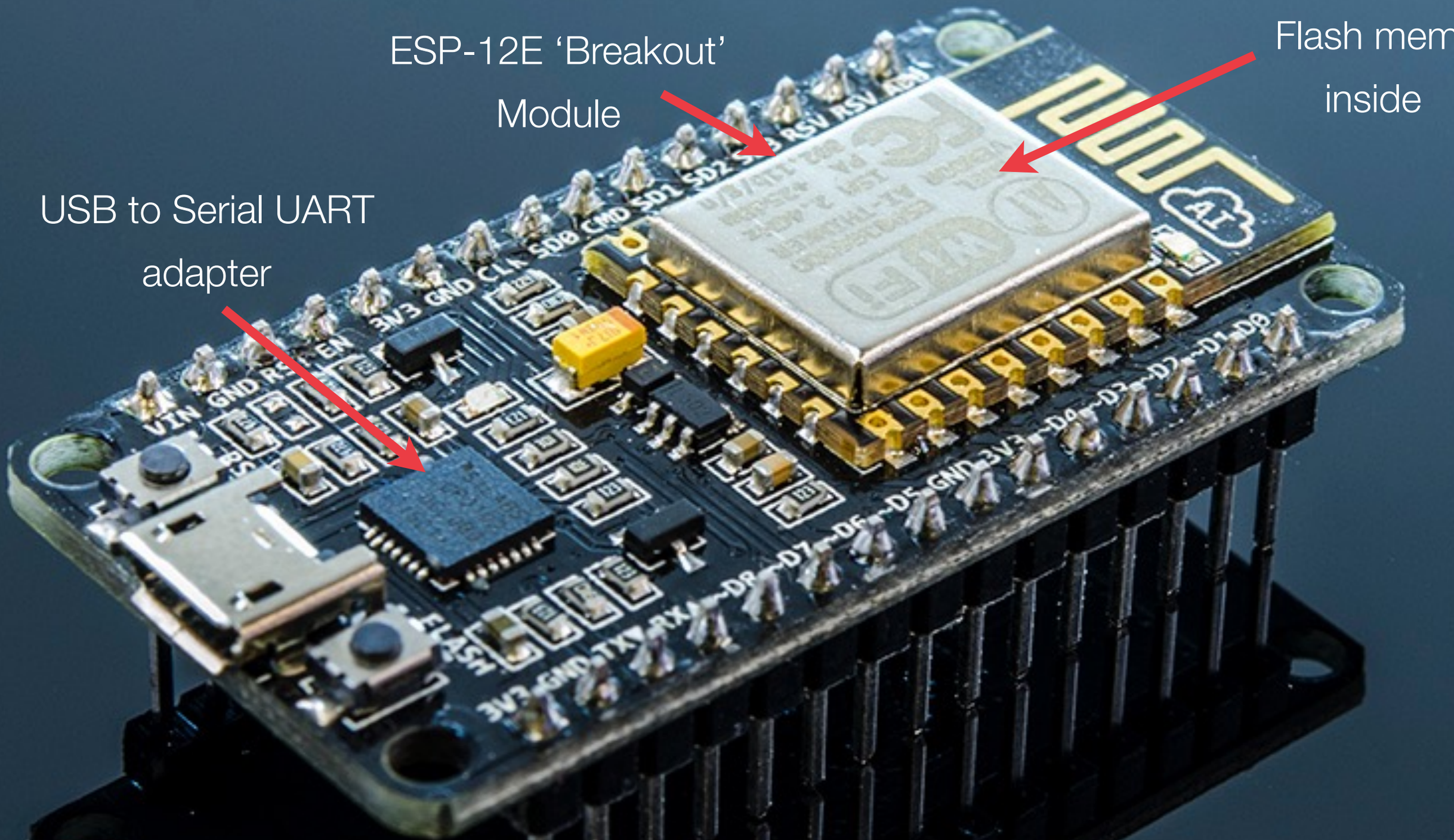
Allows hardware to be controlled remotely*



System Overview

The ESP8266 IC and Development Board

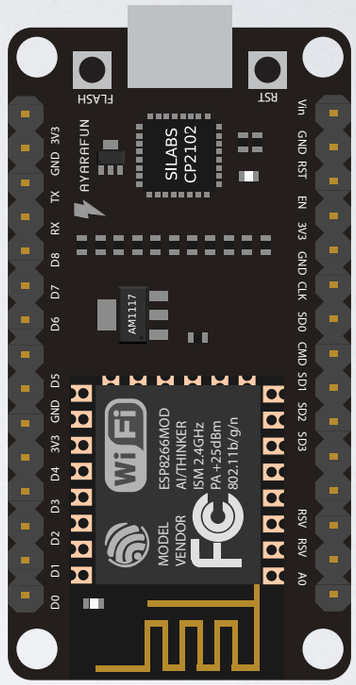
Serial to Wi-Fi adapter by Expressive Systems (mid-2014)



System Overview

The ESP8266 IC as a Soft Access Point

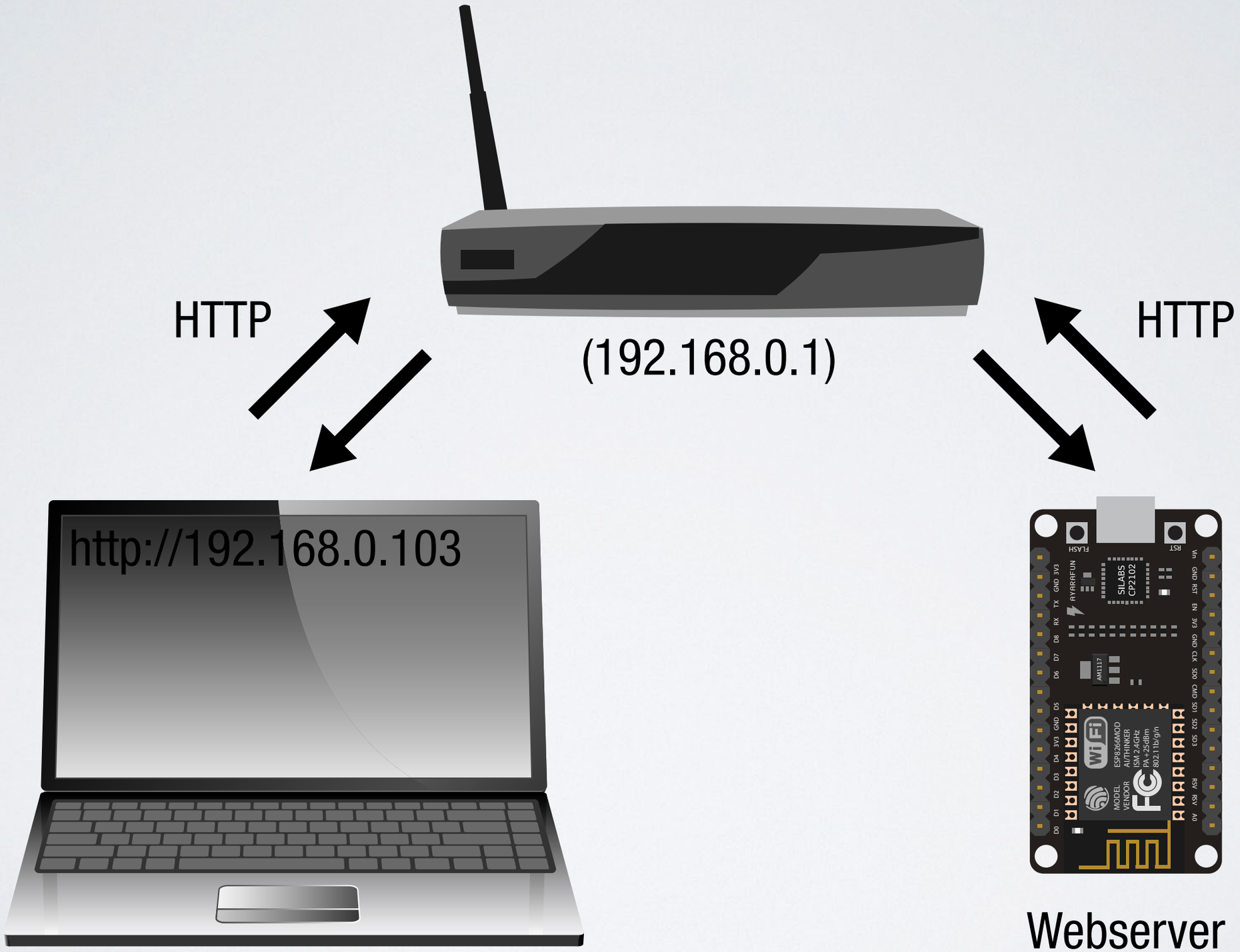
HTTP



Webserver
(192.168.4.1)

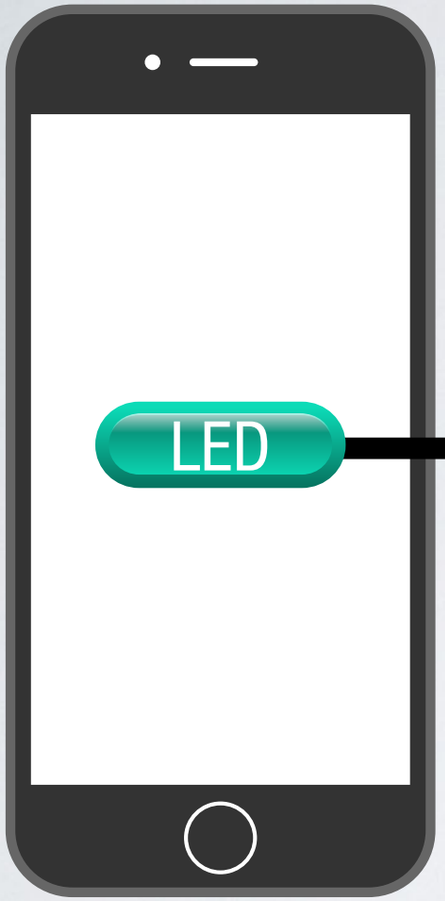
System Overview

The ESP8266 IC as a Station



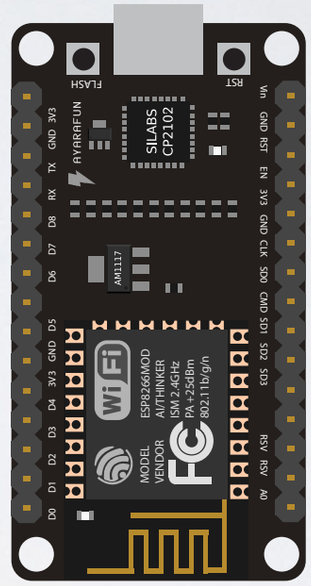
System Overview

iOS App functional diagram



(192.168.0.111)

http://192.168.0.103/setleds?led1=ON



Webserver
(192.168.0.103)

Fundamental Concepts

Hardware prototyping

Electronic Fundamentals

How the solderless breadboard works:

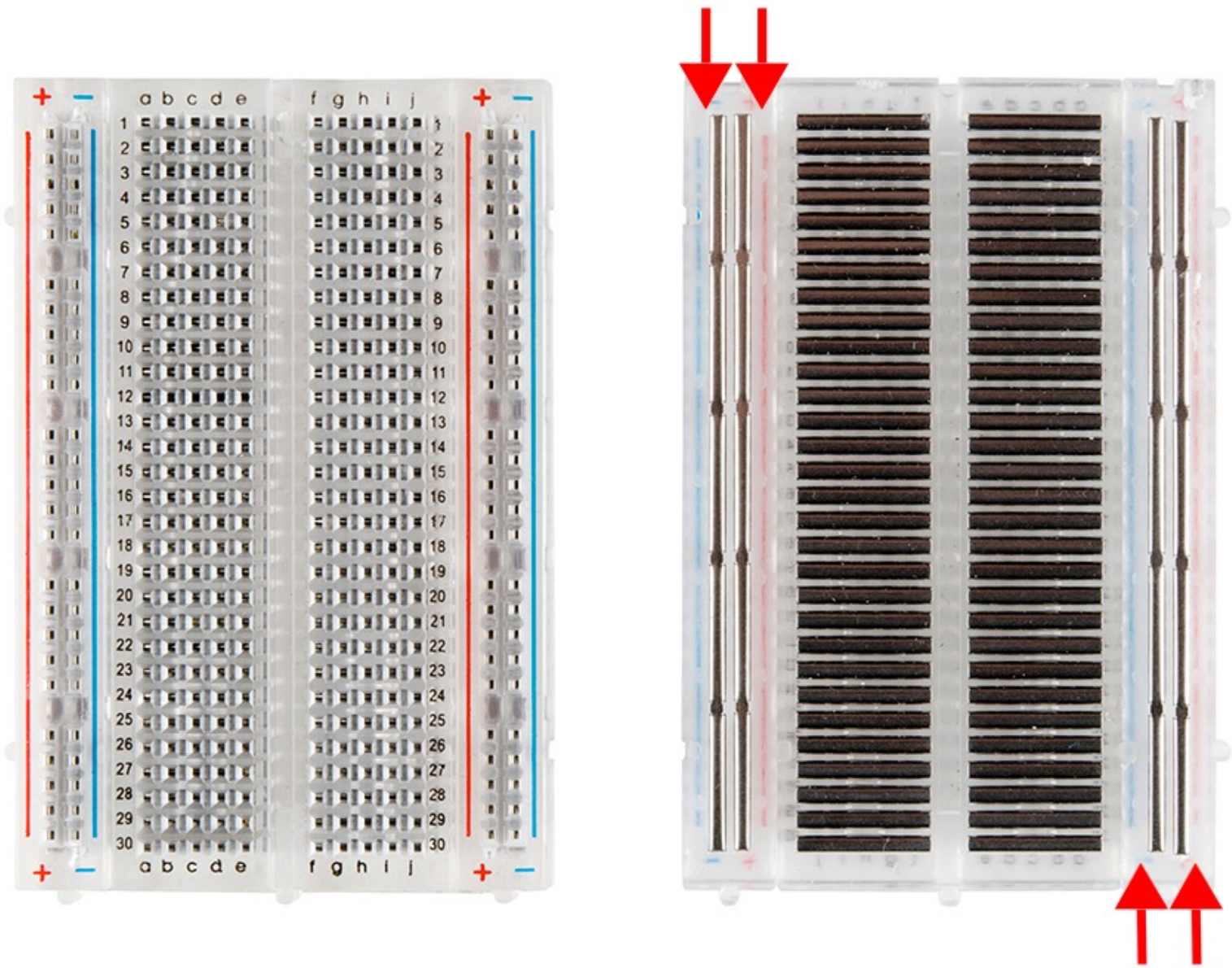


Photo credit: Sparkfun Electronics, Inc.

Electronic Fundamentals

Reading Resistor Codes:

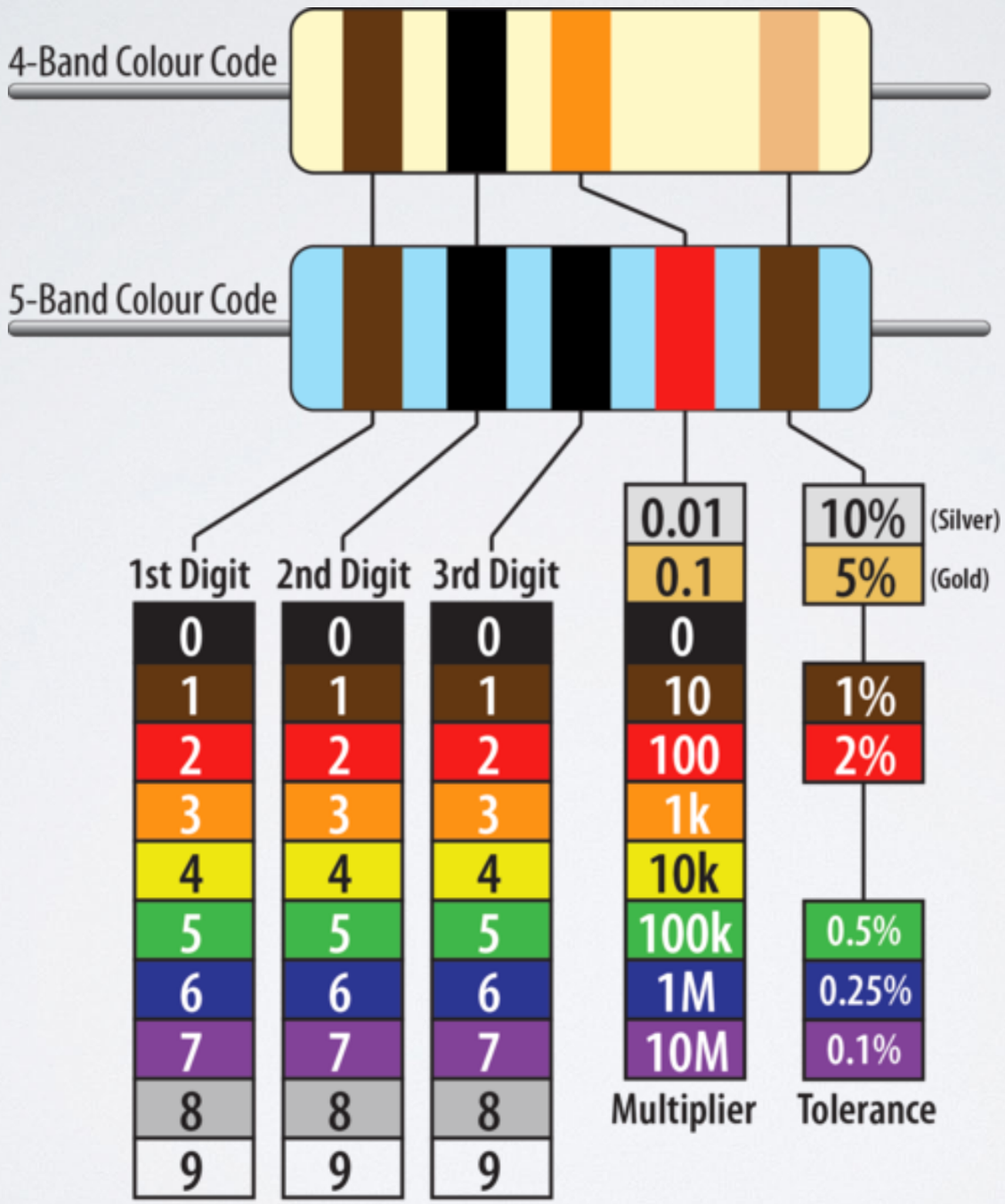
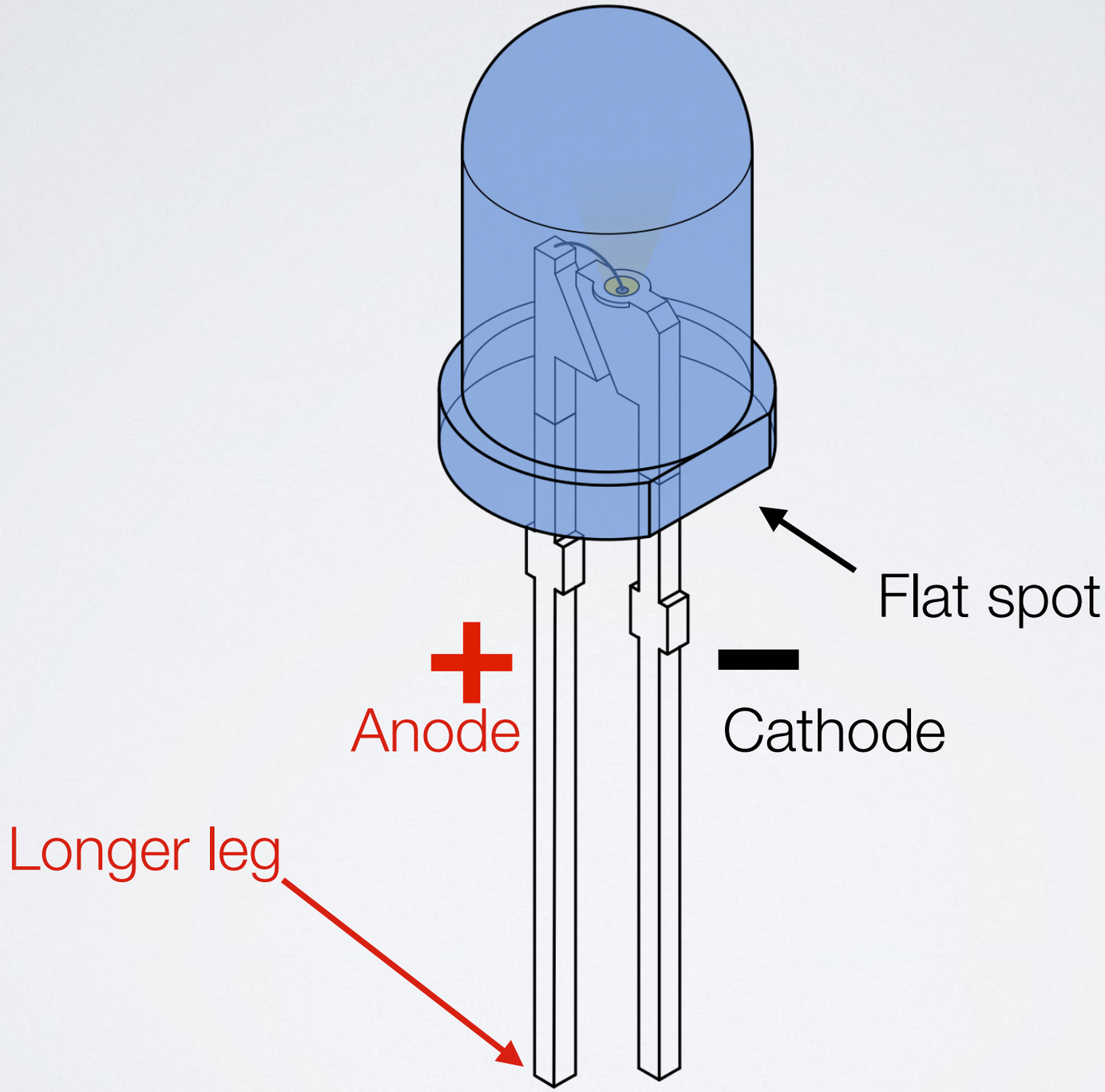


Photo credit: www.freetronics.com

Electronic Fundamentals

Reading LED polarity:

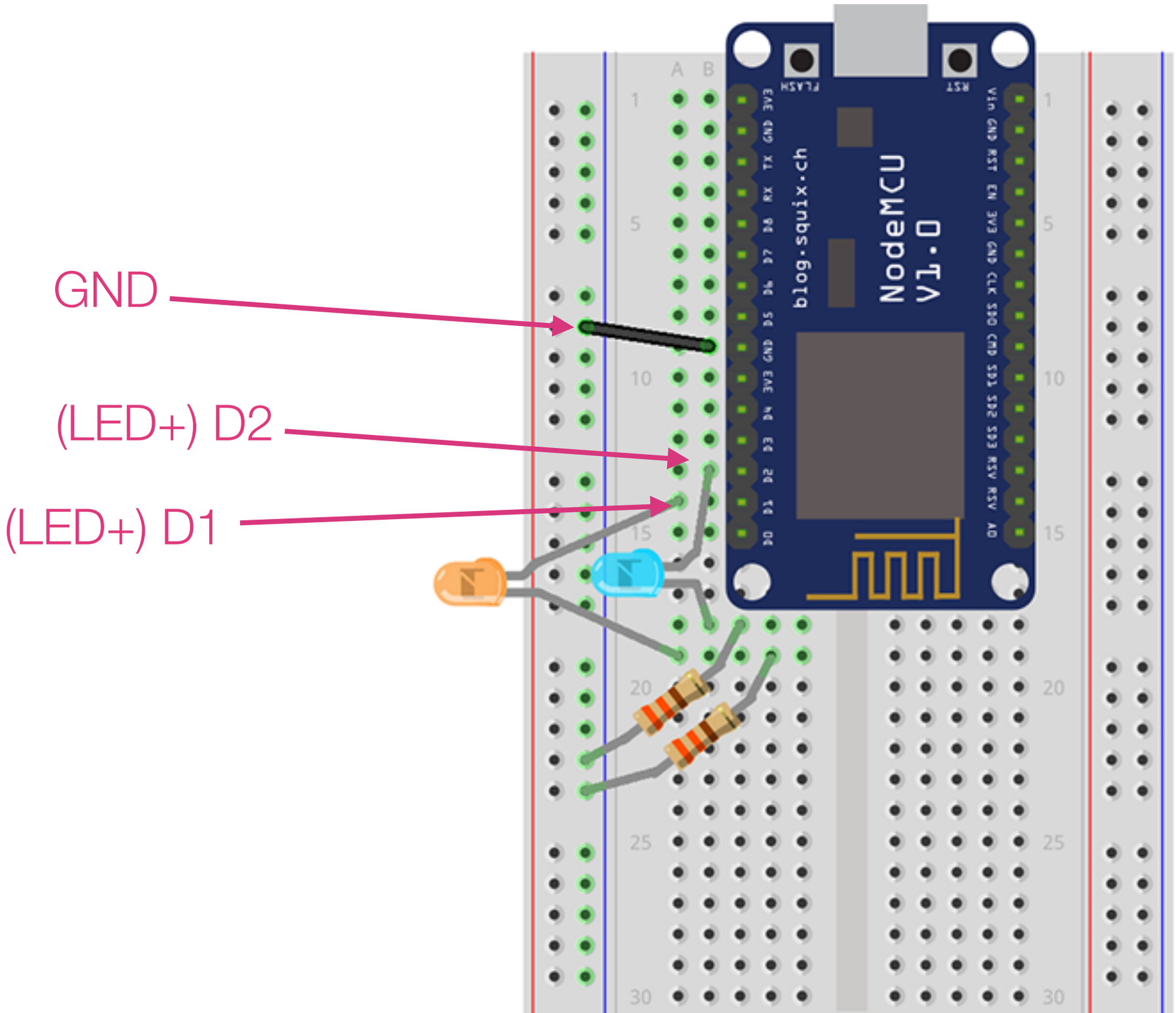


Setting Up the Hardware

Wiring two LEDs to GPIO on the ESP8266

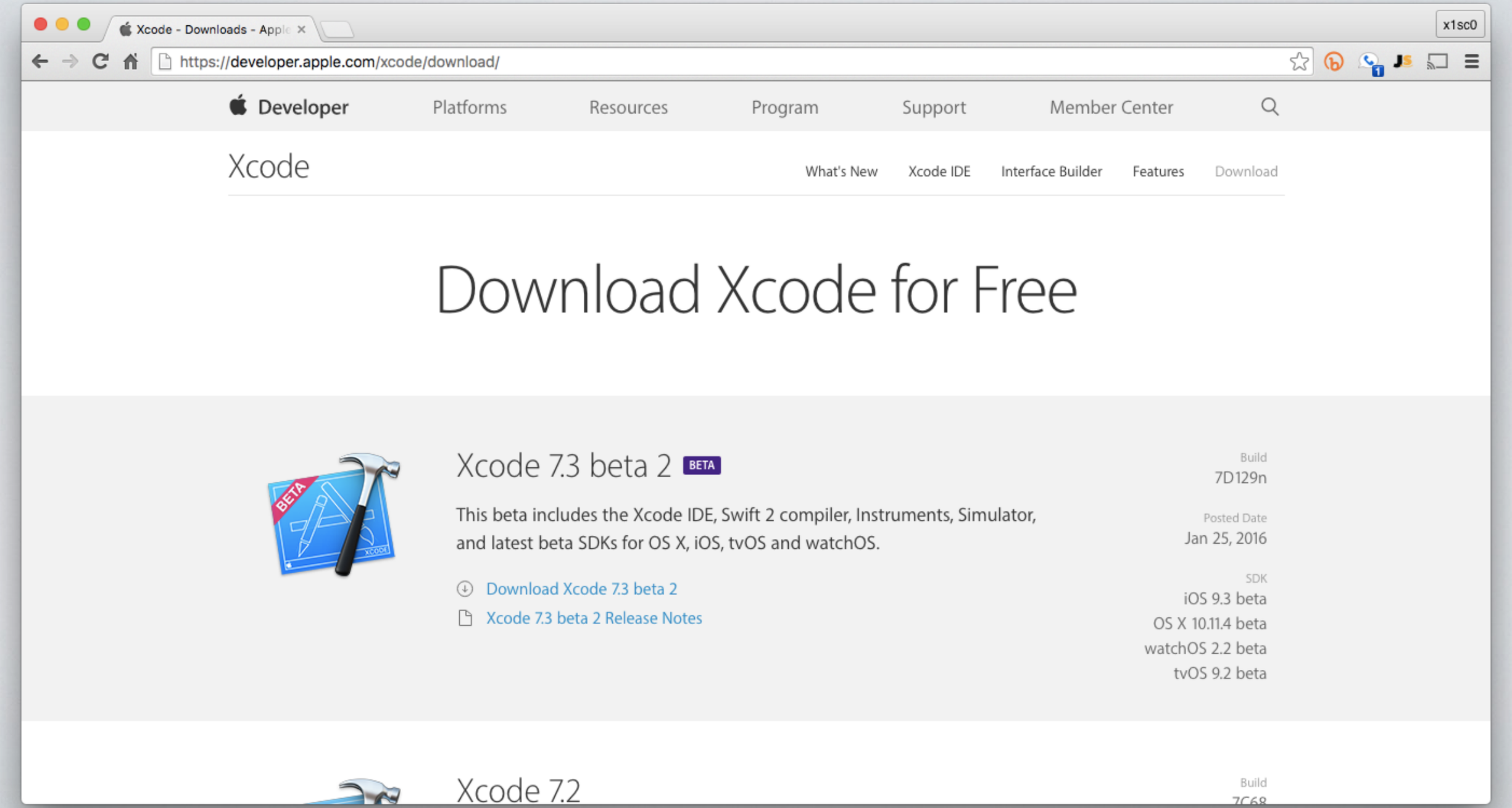
Setting Up the Hardware

Wiring up the circuit



Getting Started with Xcode 7

Installing Xcode 7——a computer application to develop apps for Apple devices.



Getting Started with Arduino

Installing the Arduino IDE—a computer application to edit, compile, and upload our programs, as well as communicate via USB with the ESP8266 development board (and others)

Windows

Mac (OSX 10.5+)

Linux (32-bit, 64-bit)

Getting Started with the Arduino IDE

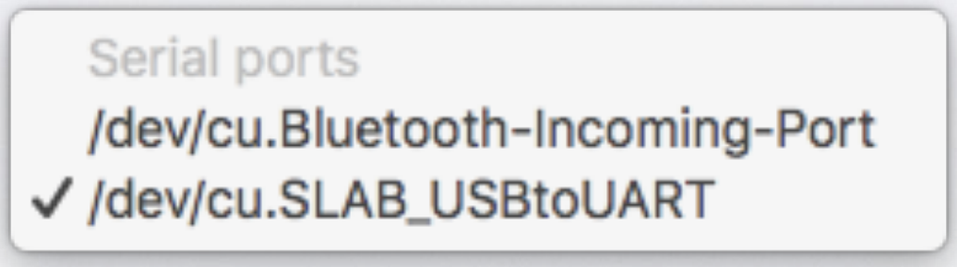
Configuring the Arduino IDE to support the ESP8266

Download and install the USB drivers:

http://j.mp/ESP8266-driver

In the Arduino IDE check under:

Tools > Port

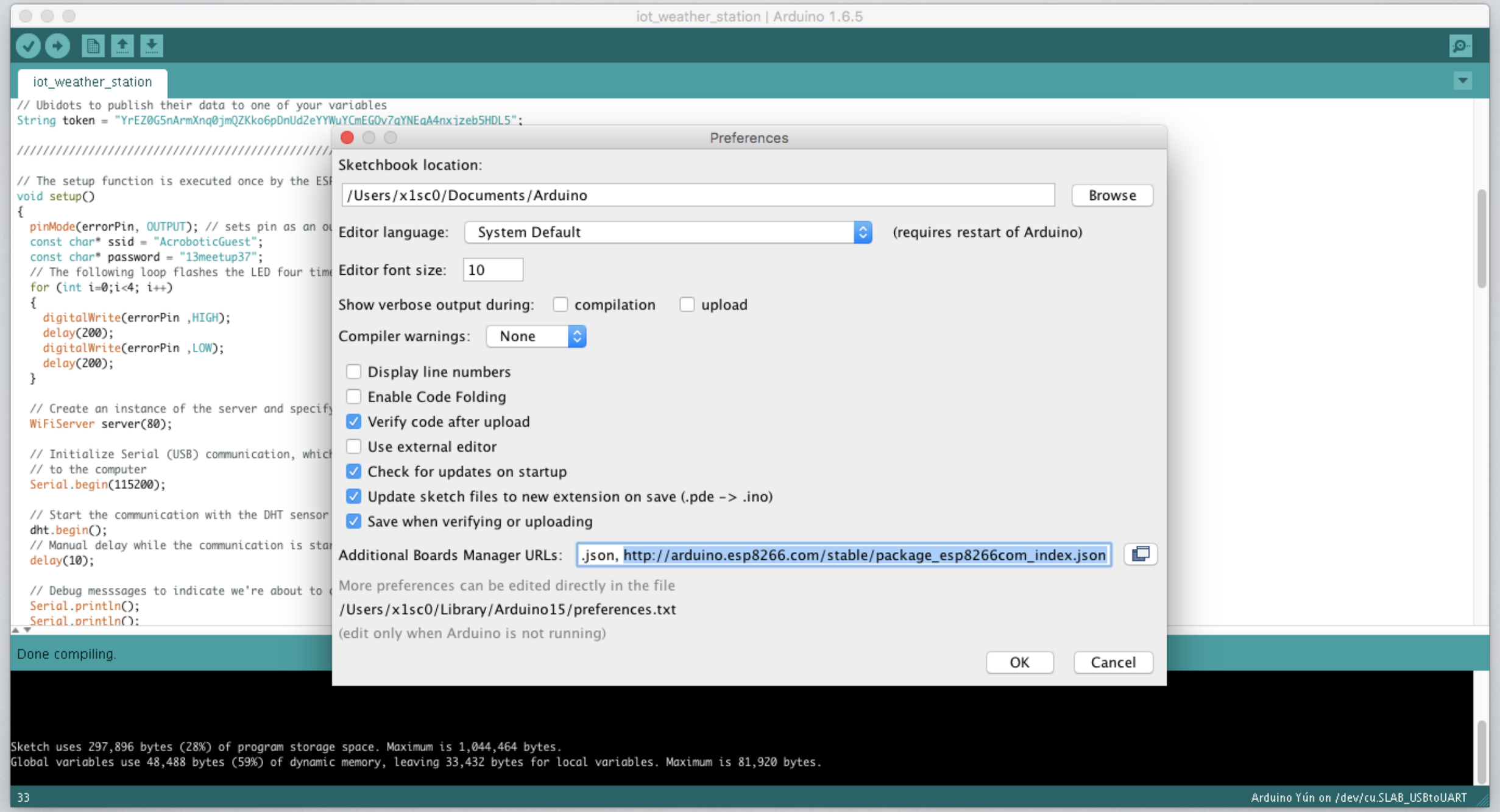


Getting Started with the Arduino IDE

Configuring the Arduino IDE to support the ESP8266

Navigate to “Preferences” and under Additional Board Manager URLS enter:

http://arduino.esp8266.com/stable/package_esp8266com_index.json



Getting Started with the Arduino IDE

Configuring the Arduino IDE to support the ESP8266

Install the ESP8266 boards under:

Tools > Board > Boards Manager

In the Arduino IDE select:

Tools > Board > NodeMCU 1.0 (ESP-12E)

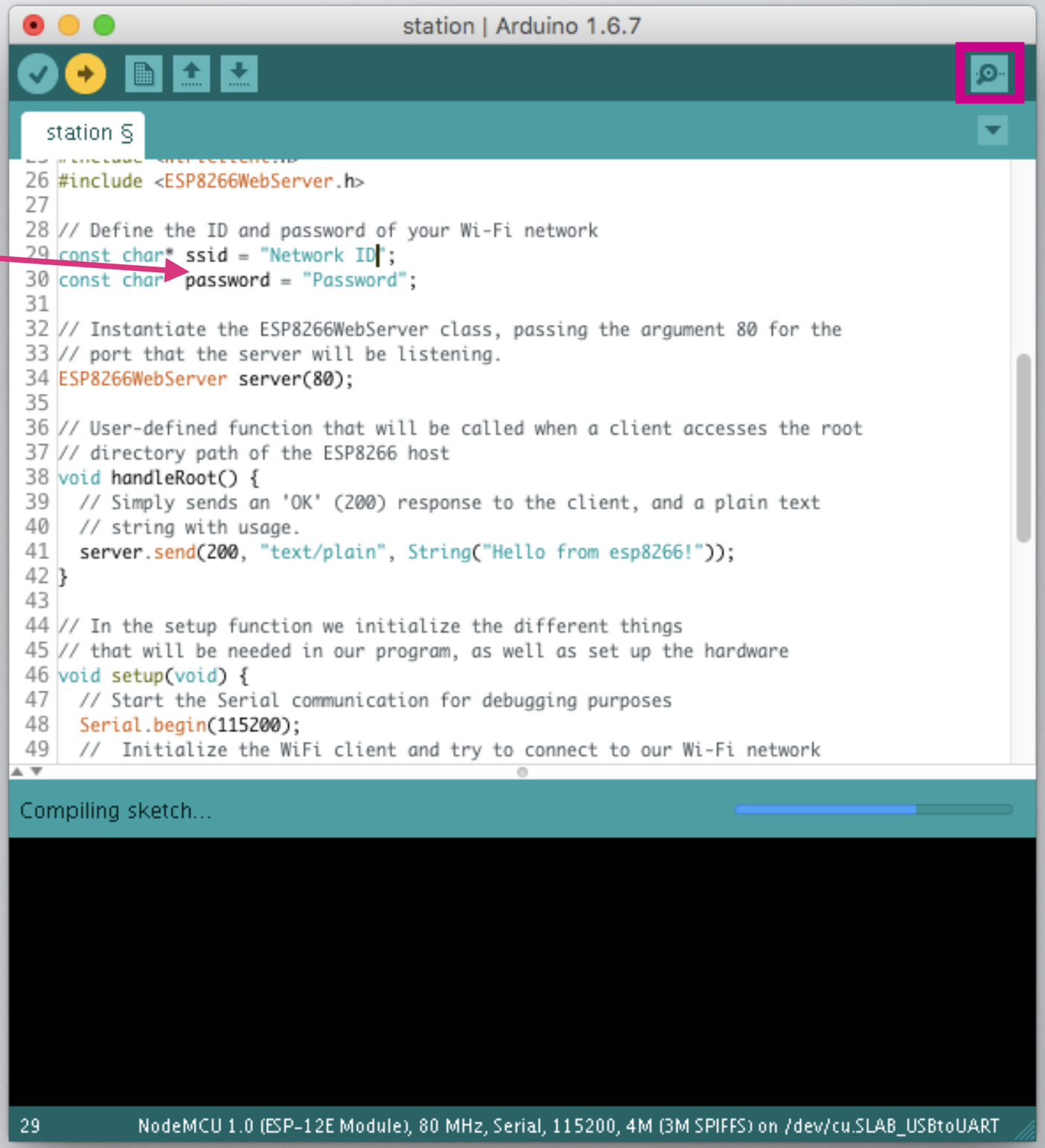
Testing the Hardware

Upload **softap.ino** to the board and check for the Wireless Network “ACROBOTIC ESP8266 XXXX”

Testing the Hardware

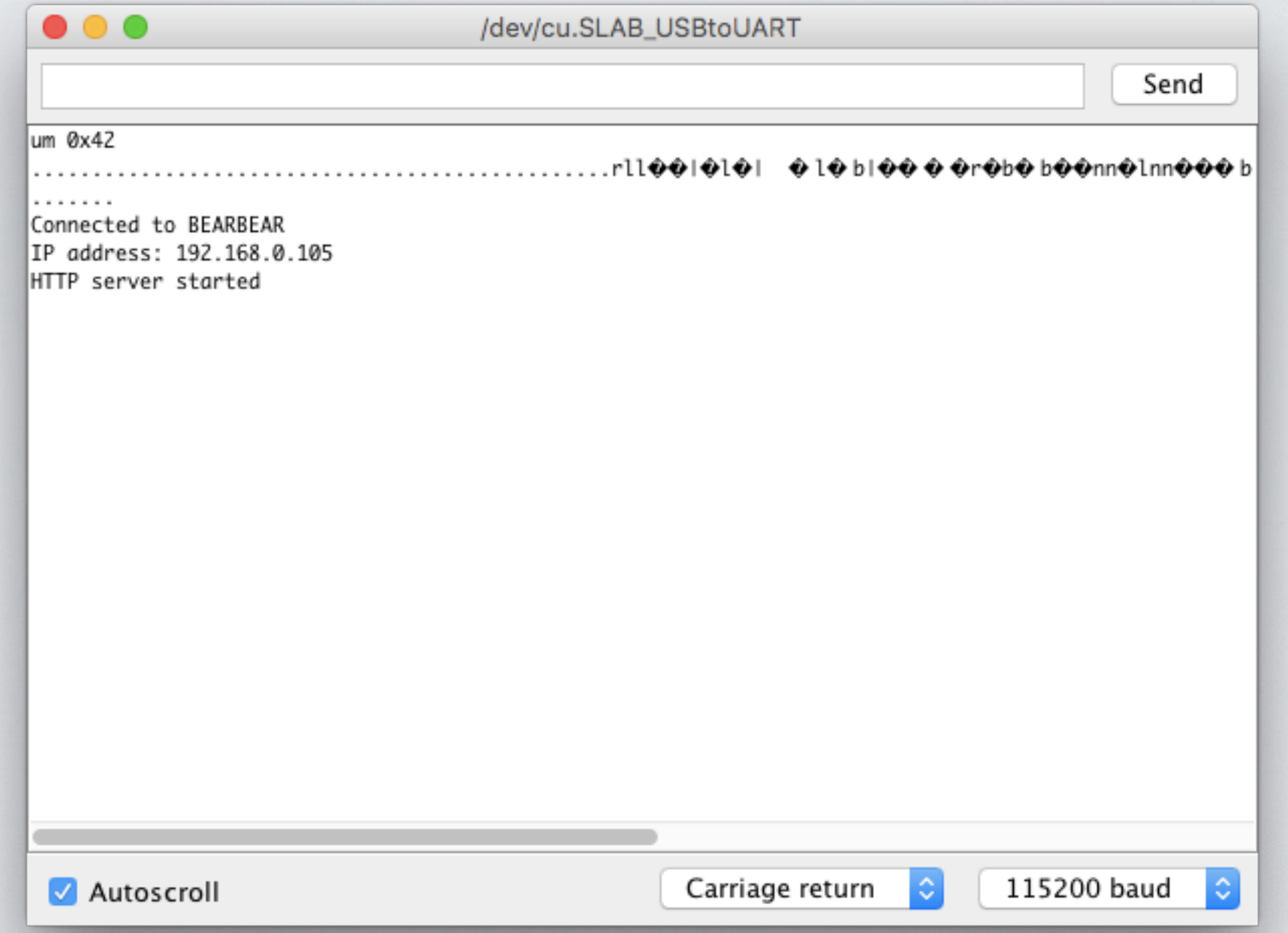
Change the SSID and password to match your setup!

Upload **station.no** to the board and open the Serial Monitor!



Testing the Hardware

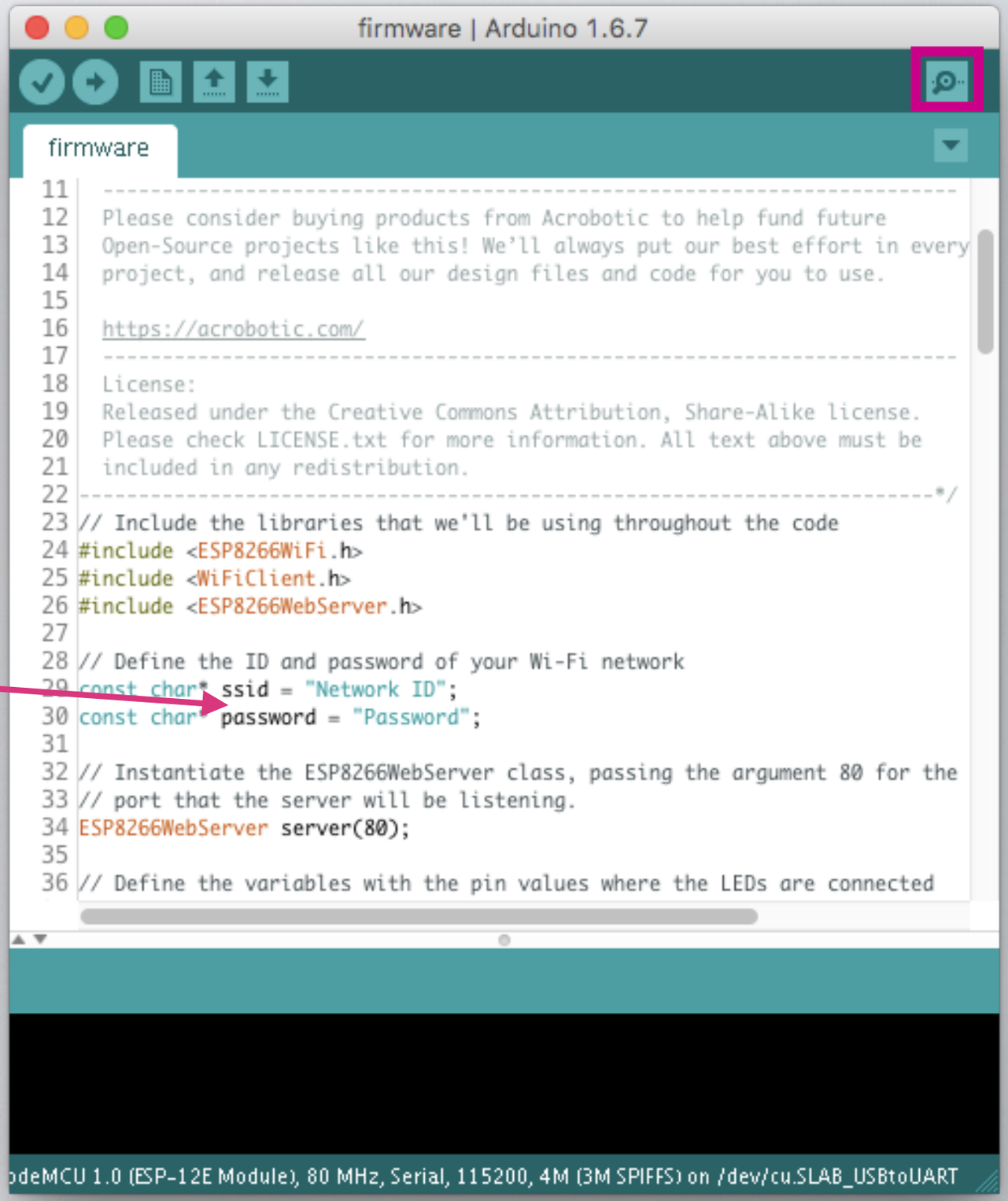
Upon a success fun connection,
you should see:



Loading the Project Firmware

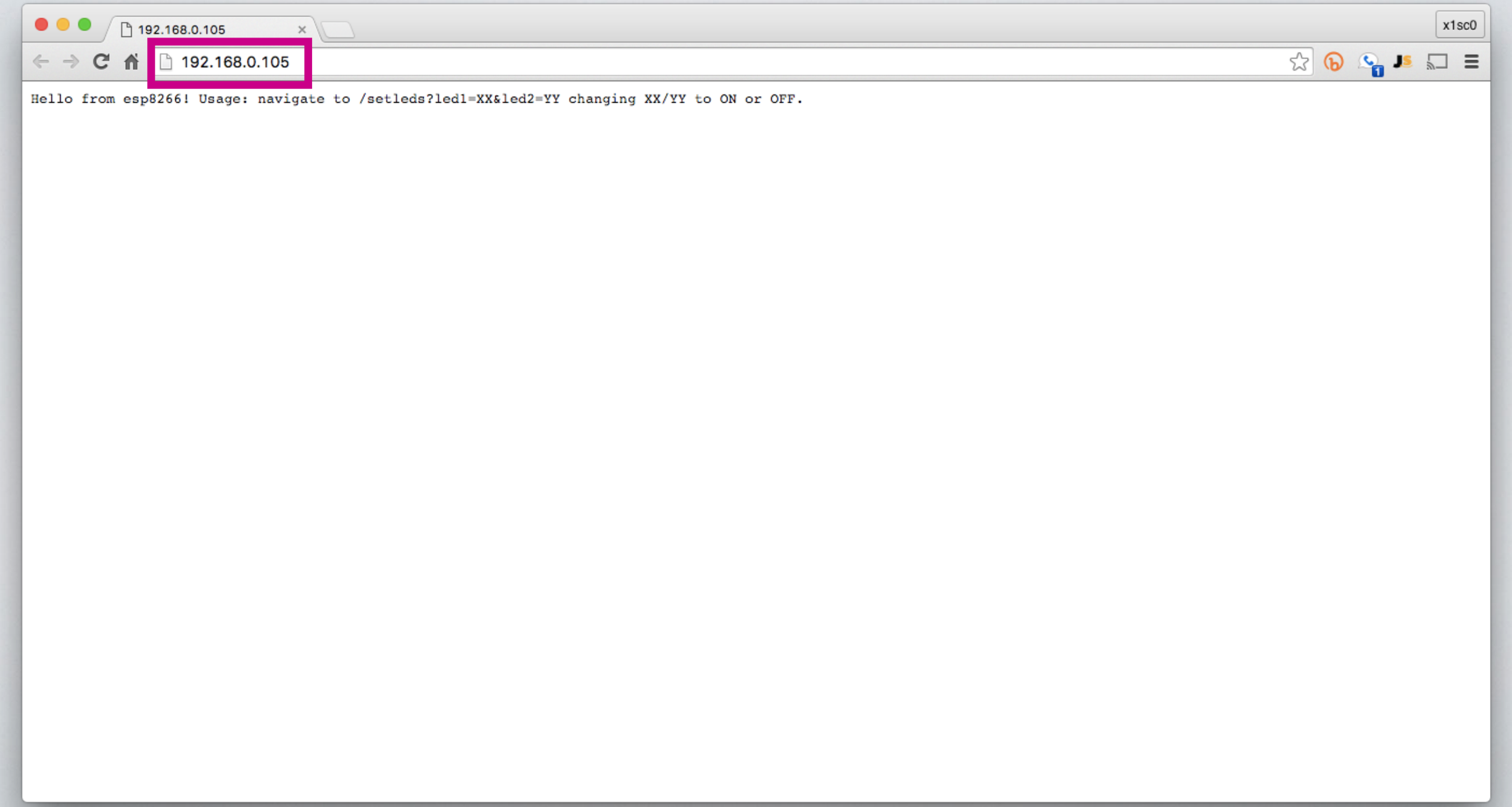
Upload **firmware.ino** to the board and open the Serial Monitor!

Change the SSID and password to match your setup!



Testing the Project Firmware

Use your browser (laptop or mobile) and navigate to the IP address of the ESP8266!



Setting Up the App

Using Xcode 7 to develop a Control App