

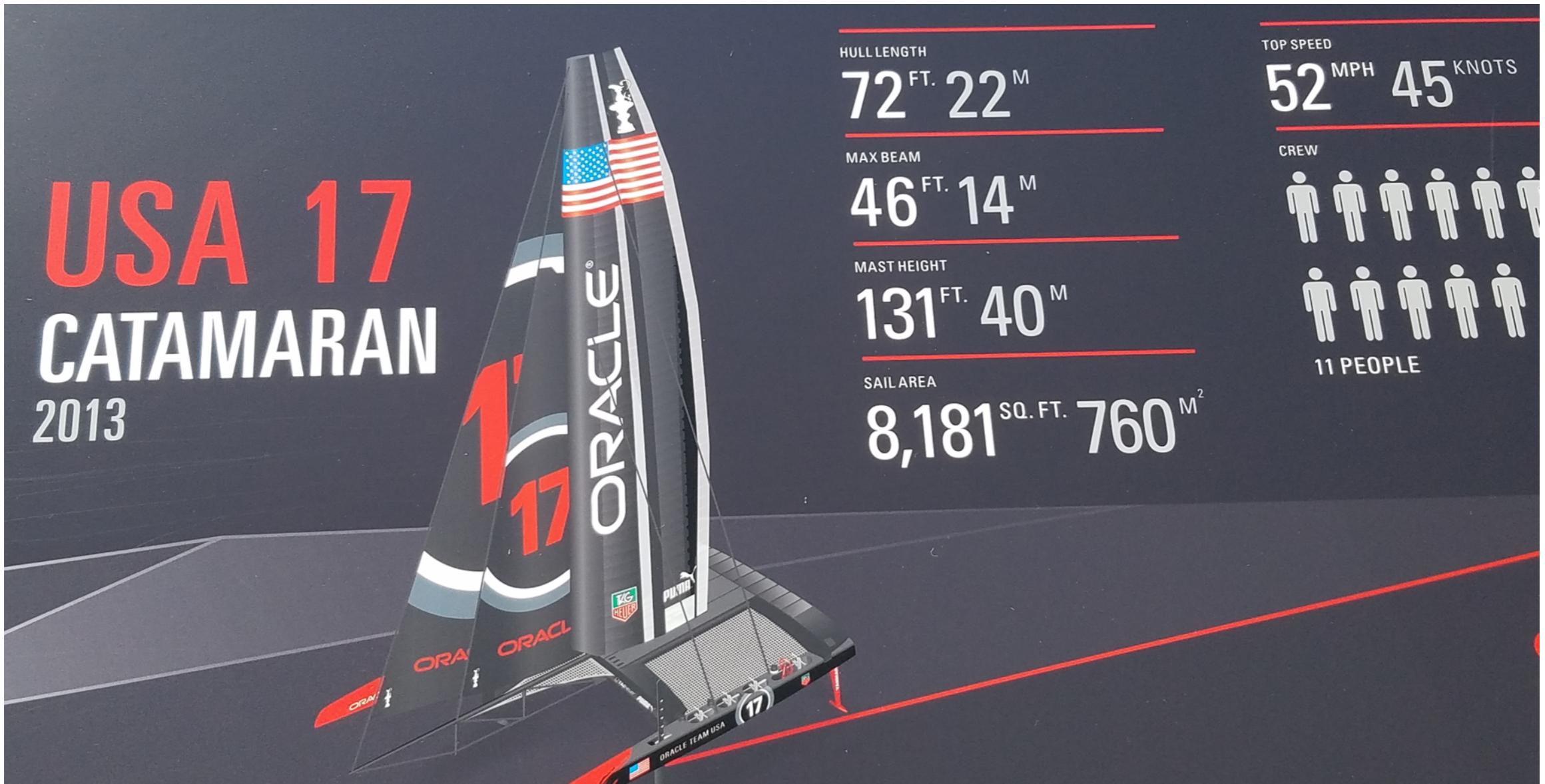
IoT Workshop

A Primer on Internet of Things

AppsLab, the OAUX emerging technologies team
OTN, the Oracle Technology Partner

Oracle OpenWorld / JavaOne - September, 2016





300+ sensors, 3000+ data variables, at 10 times per second
wind, mast/hull strain, load and change effectiveness with real-time feedback

Oracle Yacht

a very advanced IoT system connecting system and crew members

Enterprise IoT Use Scenarios

Reduced wait time

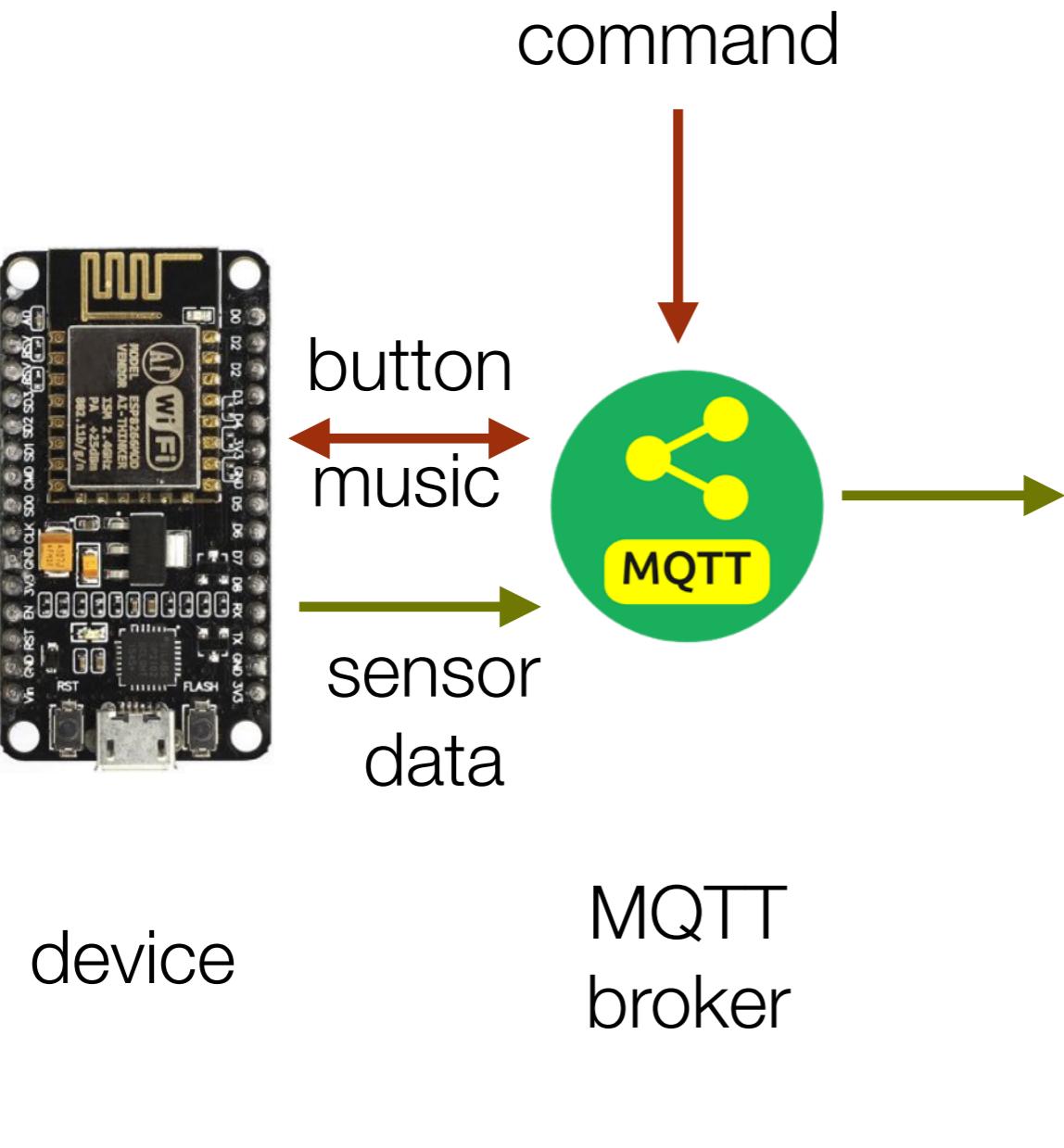
Employees wanted reduced wait times for:

- Bathroom lines
- Printer queues
- Parking
- Car charging
- Lunch lines
- Gym

Easier meeting room schedule

Smart Office example

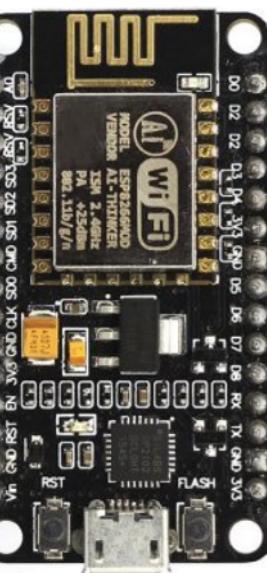
More efficient warehouse



two-way communication:

1. press button and remote control of music on device
2. capture sensor data and feed to IoT CS

command



device

MQTT
broker



Raspberry Pi
as gateway

Oracle IoT CS

IoT Workshop

flow diagram

Workshop Steps

1. Copy Arduino IDE, sample code and documentation from USB stick to your computer
2. Install and configure Arduino IDE to work with NodeMCU
3. Compile and upload code with quick blink test
4. Connect circuit according to wiring diagram
5. Sample code #1: Modify and upload onto board to work with MQTT. Press button, and check LED and buzzer.
6. Sample code #2: Modify to push a message into Oracle IoT Cloud Service

Get your IoT kit and get started



Links

Arduino IDE:

<https://www.arduino.cc/en/Main/Software>

<https://www.arduino.cc/en/Guide/HomePage>

<https://www.arduino.cc/en/Guide/ArduinoUno>

NodeMCU:

<https://github.com/esp8266/Arduino>

Workshop source code:

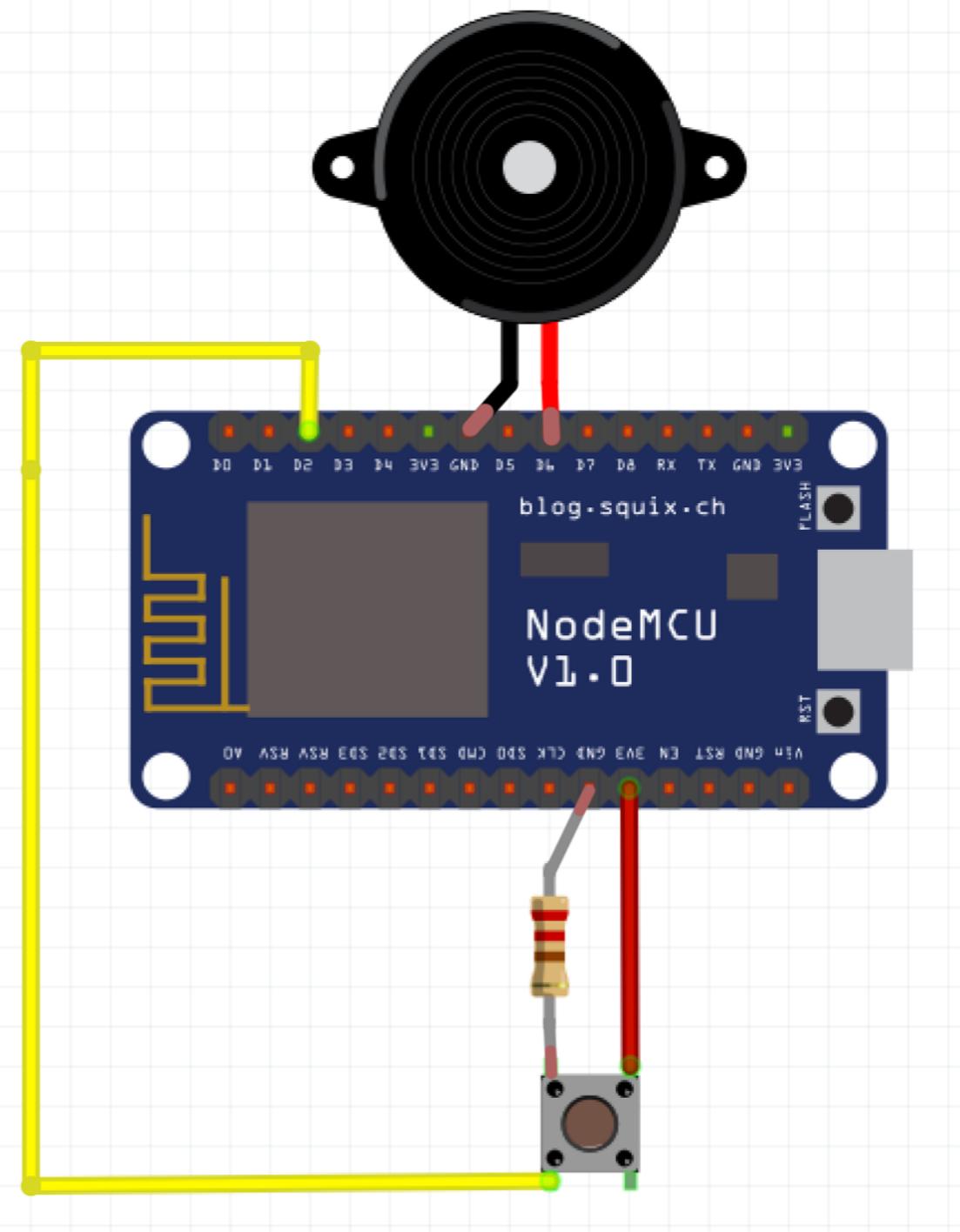
<https://github.com/raymondxie/iotws>

Workshop guide:

<http://theappslab.com/2016/09/14/iot-workshop-guide-part-1/>

Wiring Diagram

D2: button input
D6: buzzer output
D0: built-in LED



Actual Sample Wiring

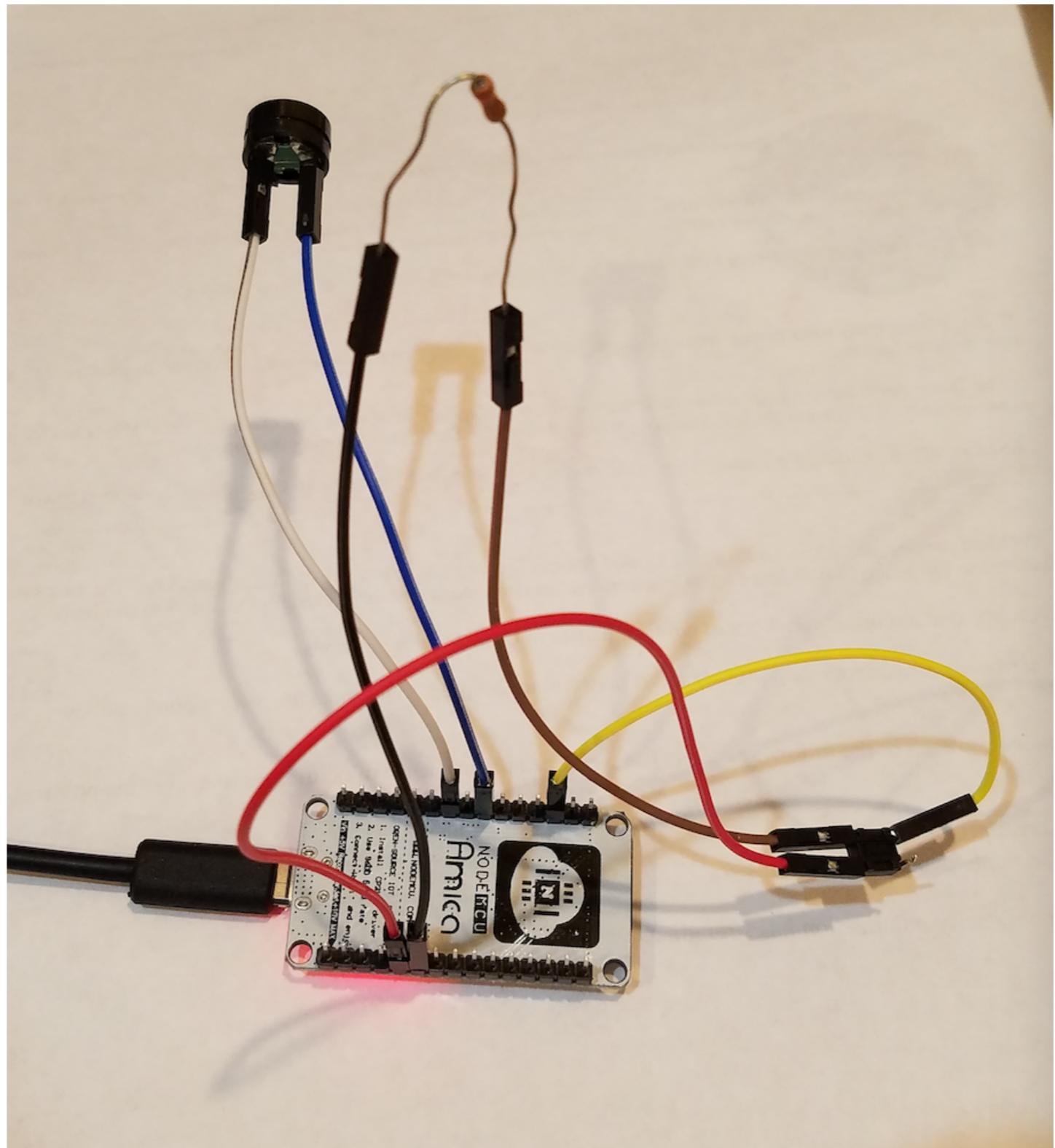
D2: yellow

3.3v: red

GND: black

D6: white

GND: blue



Source code modification

// WiFi connection

```
const char* ssid = "conference_wifi_ssid";
const char* password = "????";
```

// MQTT connection

```
const char* mqtt_server = "m12.cloudmqtt.com";
const int mqtt_port = 11565;
const char *mqtt_user = "bvywboem";
const char *mqtt_pass = "nAxTiX11geNt";
```

// iotws_iotcs.ino

// to be sent over to Oracle IoT CS

```
const char *mqtt_topic = "iotcs-j1";      // either iotcs-oow, or iotcs-j1
// To indicate the message is from "Raymond Xie", replace it with your own name
const char *myname = "Raymond Xie";
```

