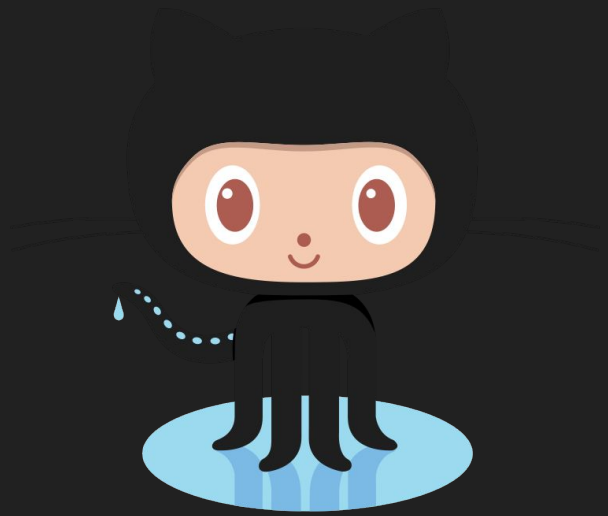
# Prepwork: Setup accounts if needed

## Github.com



## Gitpod.io

# Your Code Brightens the Room

Learning to use
Python + MQTT + IOT
to control lights

# Agenda

- Introduction / Who am I
- Workshop Overview
- IOT Architecture
- Message Queues / Brokers
- IOT Device details (Sonoff Tasmota)
- Hack on stuff

# Dan Rowe

Principle Engineer at Wayfair

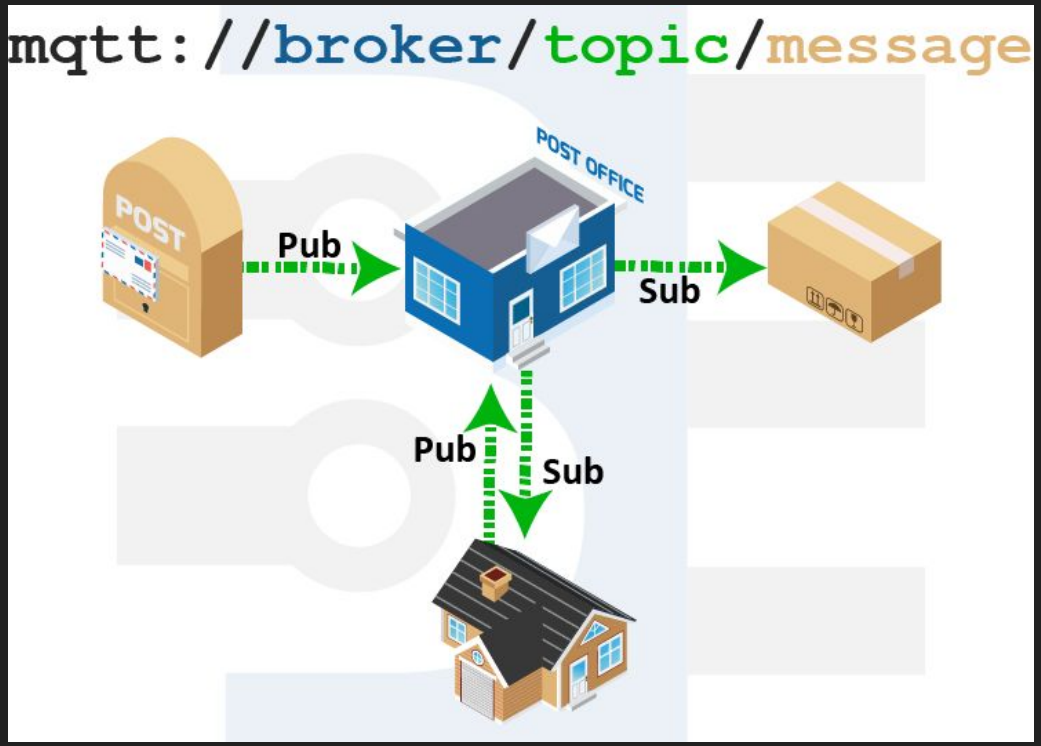
- 2 great kids and superhero wife
- Vice President of the NEHS
- President of Rowe Reptiles
- Have a building full of Reptiles

# Overview of workshop

I’m going to teach you how to turn on/off a light..

… from the couch or the other side of the world

# IOT Architecture : PubSub Layout




Term definitions from: https://www.baldengineer.com/mqtt-introduction.html

# IOT Architecture : MQTT Terms

- **MQTT:** Message Queuing Telemetry Transport
- **IOT**: Internet of Things, typically internet connected “Smart” devices
- **Broker**: The broker accepts messages from clients and then delivers them to any interested clients. Messages belong to a topic. (Sometimes brokers are called “servers.”)
- **Client**: A “device” that either publishes a message to a topic, subscribes to a topic, or both.
- **Topic**: A namespace (or place) for messages on the broker. Clients subscribe and publish to a topic.
- **Publish**: A client sending a message to the broker, using a topic name.
- **Subscribe**: A client tells the broker which topics interest it. Once subscribed, the broker sends messages published to that topic. (In some configurations the broker sends “missed” messages.) A client can subscribe to multiple topics.
- **Relay:** An electronic component that opens and closes an electrical circuit.

Term definitions from: https://www.baldengineer.com/mqtt-introduction.html

# MQTT Topic Subscription Syntax

Wildcards:
# is multi level
+ is single level

Topic example:
chats/room1
chats/hotel/room2
stats/light1/power
stats/light2/power

Subscribe to all chat rooms:
chats/#

Subscribe to the power status of all lights:
stats/+/power

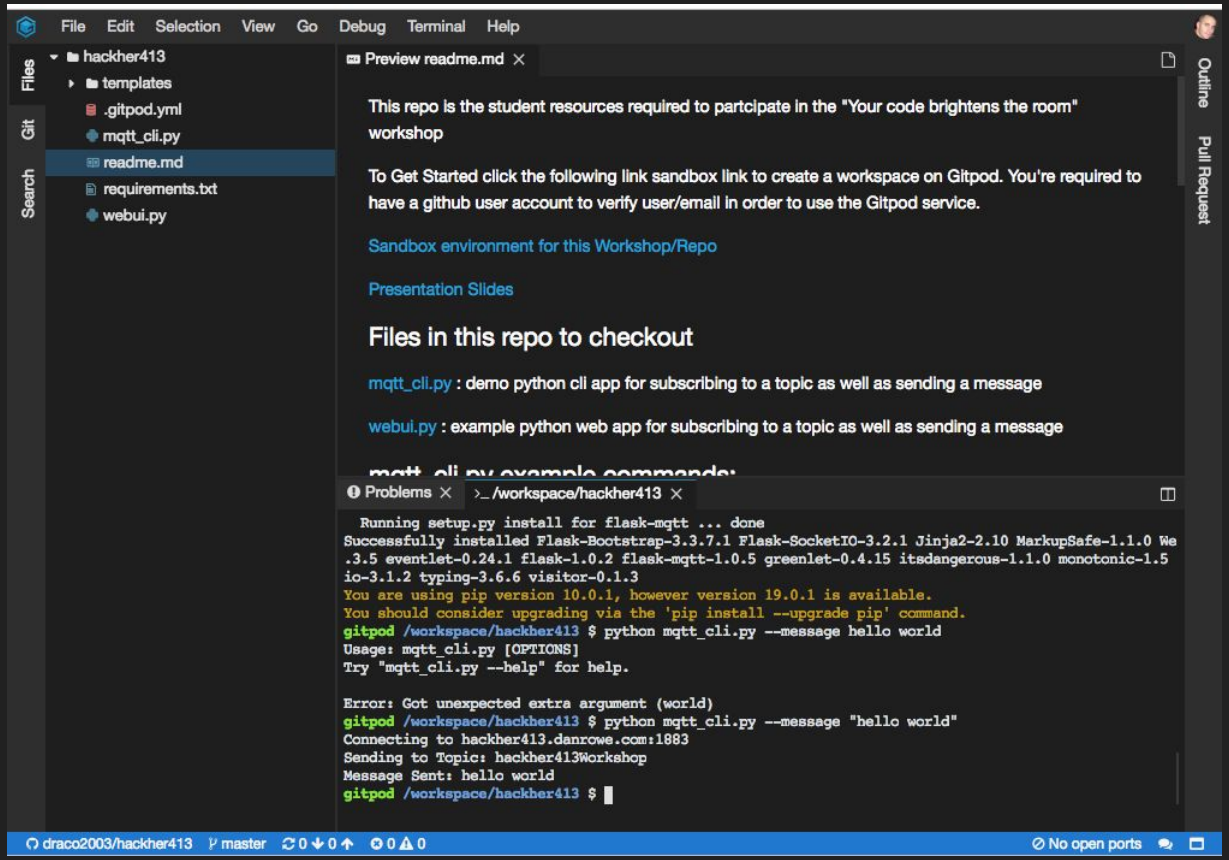
# MQTT With Python

Workshop Repo
https://github.com/draco2003/iotworkshop

Has links to the slides, sandbox environment and sample code

Let’s get started!

# Gitpod.io IDE




Editor

Terminal

# Commands to run demo

## WebUI demo code:

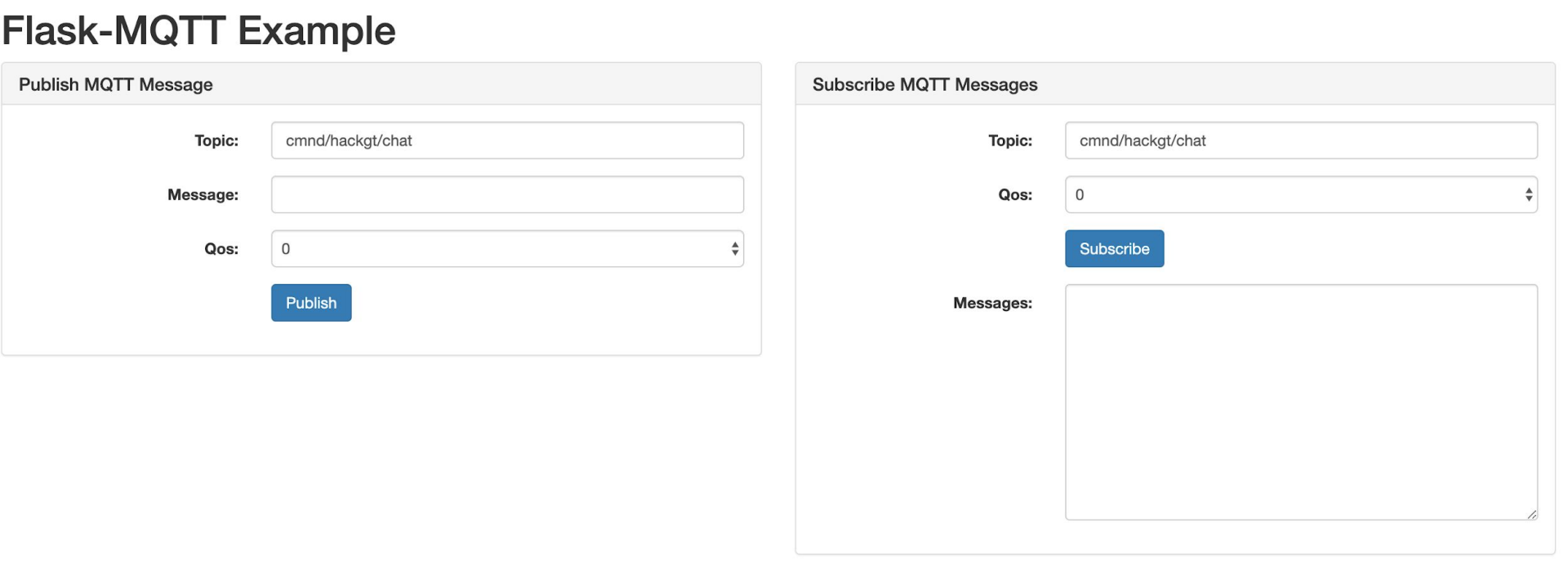
python webui.py

## Cli demo code:

Subscribe - python mqtt_cli.py

Send message - python mqtt_cli.py --message “hello world”

# Webui interface example



# IOT Device overview

We’re going to be playing with Sonoff devices today


Arduino based Wifi enabled Relays with alternative firmware

# Sonoff MQTT details

The devices are named hackgt001 - hackgt006
If you subscribe to the following topic you'll get status updates for device 1:
**stat/hackgt/hackgt001/#**

To send the device commands to device 1:
You use the topic: **cmnd/hackgt/hackgt001/power**
Available messages for that topic are in the chart below

| Message | Function |
|---|---|
| 0 / off | Turn power off |
| 1 / on | Turn power on |
| 2 / toggle | Toggle power of relay |