

WHEN KEVIN'S FAMILY LEFT FOR VACATION, THEY FORGOT ONE MINOR DETAIL: KEVIN.



Smart Home Alone!

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Hacksburg

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BUT DON'T WORRY...
HE LOOKS HE CLEANS.
HE KICKS SOME BUTT.

SMART

FROM JOHN HUGHES
HOME ALONE

A FAMILY COMEDY WITHOUT THE FAMILY.

TWENTIETH CENTURY FOX PRESENTS A JOHN HUGHES PRODUCTION A CHRIS COLUMBUS FILM
HOME ALONE MACAULAY CULKIN JOE PESCI DANIEL STERN JOHN HEARD AND CATHERINE O'HARA MUSIC BY JOHN WILLIAMS
EDITED BY RAJA GOSNELL PRODUCTION DESIGNER JOHN MUTO DIRECTOR OF PHOTOGRAPHY JULIO MACAT EXECUTIVE PRODUCERS MARK LEVINSON & SCOTT ROSENFELD PRODUCED BY TARQUIN GOTCH



PG PARENTAL GUIDANCE SUGGESTED
SOME MATERIAL MAY BE INAPPROPRIATE FOR CHILDREN

WRITTEN AND PRODUCED BY JOHN HUGHES DIRECTED BY CHRIS COLUMBUS COLOR BY DELUXE

DOLBY DIGITAL



Outline

- Home Automation
- Currently Available Devices
- Home Assistant vs. OpenHAB
- Home Assistant Setup
- Custom Devices

Home Automation

- Software systems to control your home
- Add switchable lights wherever you want!
- Add switches wherever you want!
- Remote control!
- Simple scripts
- Sensors
- Voice control

Currently Available “Things”

- Outlets / Relays
- Bulbs
- Dimmer bulbs / Dimmer outlets
- RGB LED Controllers
- Wall switches
- Power meters
- Home security cameras
- PIR presence detection
- Router Integration
- Traditional HA bridges
- Bluetooth bridges
- Air quality sensors
- Zoom/Teams “on-air”
- Curtains/Shades
- Window/Door switches
- CO2/CO/CH4/Smoke detectors
- Light level sensors
- Indoor/Outdoor temperature
- Indoor/Outdoor humidity
- Rain gauges
- Water level sensors
- Aroma diffusers
- De/humidifiers
- Portable fans
- Portable electric heaters
- IR remotes/receivers
- Water kettles
- Pet feeders/fountains
- Irrigation controllers
- Thermostats
- Water valves
- Voice Assistants
- Chromecasts
- Home solar
- Stock/crypto tickers
- 2D Printers
- 3D Printers
- Internet weather
- Space weather
- Bus data (GTFS)
- Fitness trackers
- IPMI systems
- Cell phone sensors (orientation, battery, etc.)
- Home theater systems/TVs
- Cars
- Backup generators
- Pool water quality sensors
- SMS/Chat
- Internet earthquake data
- RSSI Sensors
- Custom MQTT devices
- Custom HTTP devices
- Custom ESP devices

ESPHome and Tasmota

- Firmware for ESP32/ESP8266 devices
- Connects the world to Wi-Fi
- Setup is easy
- ESP32-based devices can have screens

ESPHome and Tasmota

ESPHome

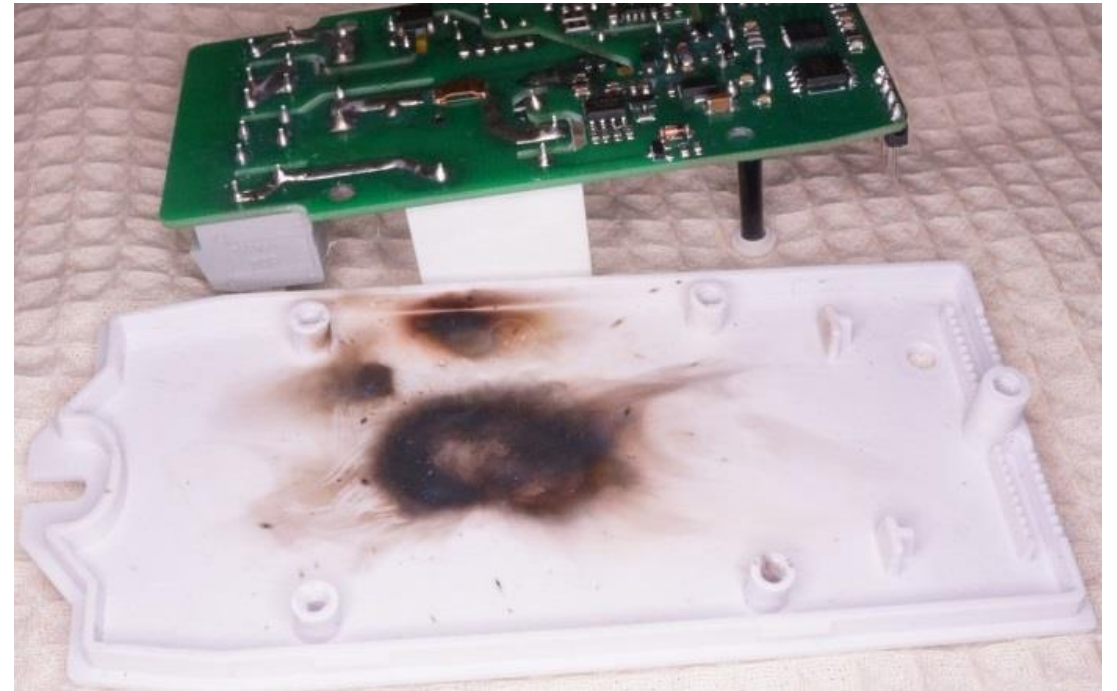
- Web-based
- All configuration done after installation

Tasmota

- MQTT based
- All configuration done after installation (recent change)

Installing Tasmota/ESPHome

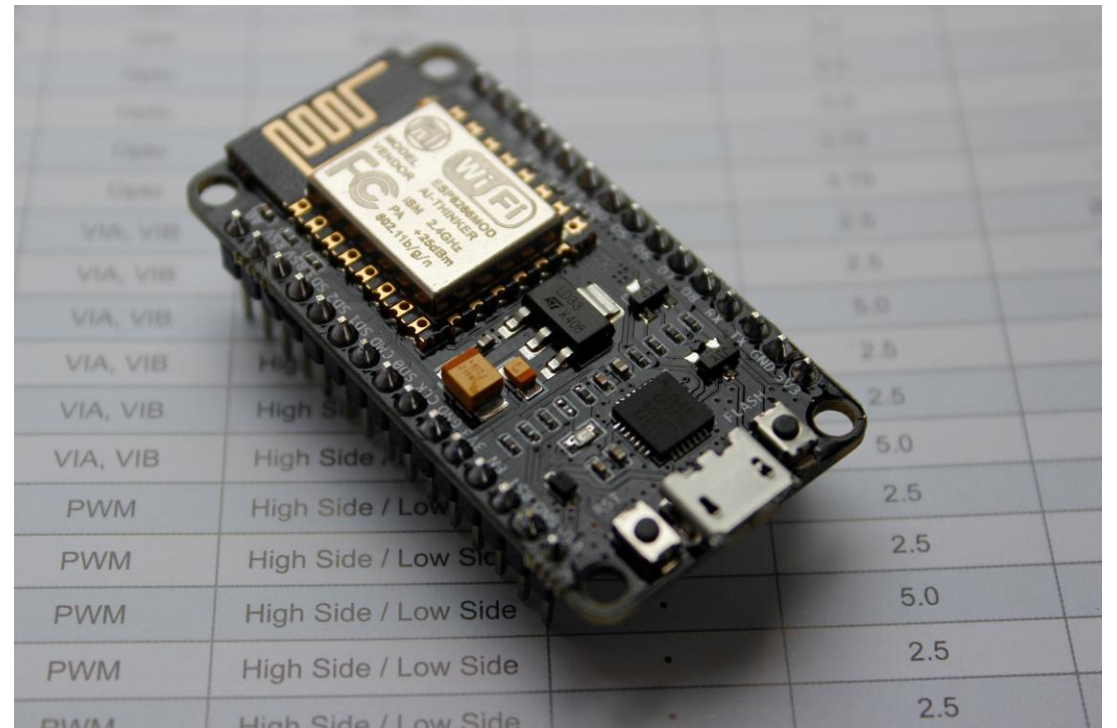
- No mains power while you do this
- Serial flashing
- Sonoff devices are best
 - S31 shown during class



<https://tasmota.github.io/docs/Getting-Started/#hardware-preparation>

Custom devices

- NodeMCU recommended
- 3.3V I/O
- USB firmware upload, then no code!



Vowstar on Wikipedia

Home Assistant vs. OpenHAB

Home Assistant

- Python
- Leans on HTTP
- ESPHome integration is better

OpenHAB

- Java
- Leans on MQTT

Communication Backbones

HTTP

- Common web protocol
- Newer in HA space
- Simpler for users
- Everyone is a server
- More complex protocol
- Very nice if everything is HA/ESPHome

MQTT

- Invented for smart meters
- Traditional option in HA space
- Easy bridges to older networks
- Must run a MQTT server (broker)
- Simpler implementation
- Easier to migrate from old custom stuff
- Birth and last will messages

Install Docker

- <https://docs.docker.com/engine/install/ubuntu/>
- Also install docker-compose
 - `sudo apt install docker-compose`

Install HA

- <https://www.home-assistant.io/installation/>
- Note: Docker image name is different on x86 and RPi ARM

```
version: '3'
services:
  homeassistant:
    container_name: homeassistant
    image: "ghcr.io/home-assistant/home-assistant:stable"
    volumes:
      - /PATH_TO_YOUR_CONFIG:/config
      - /etc/localtime:/etc/localtime:ro
    restart: unless-stopped
    privileged: true
    network_mode: host
```

Firewall

- `sudo ufw allow ssh`
- `sudo ufw allow 8123`
- `sudo ufw enable`

Adding Data

```
curl -X POST -H "Authorization: Bearer ABCDEFGH" \  
  -H "Content-Type: application/json" \  
  -d '{"state": "25", "attributes": {"unit_of_measurement": "°C"}}' \  
  http://localhost:8123/api/states/sensor.kitchen_temperature
```

<https://developers.home-assistant.io/docs/api/rest/>

Requesting Data

```
curl -X GET -H "Authorization: Bearer ABCDEFGH" \  
  -H "Content-Type: application/json" \  
  http://localhost:8123/api/states/sensor.kitchen_temperature
```