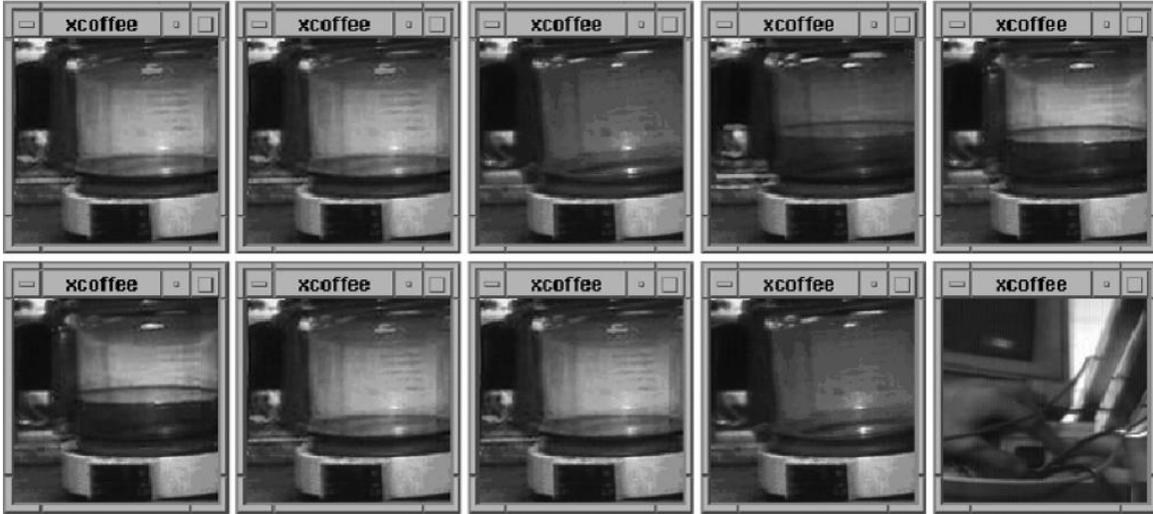


Chapter 1: The World of IoT

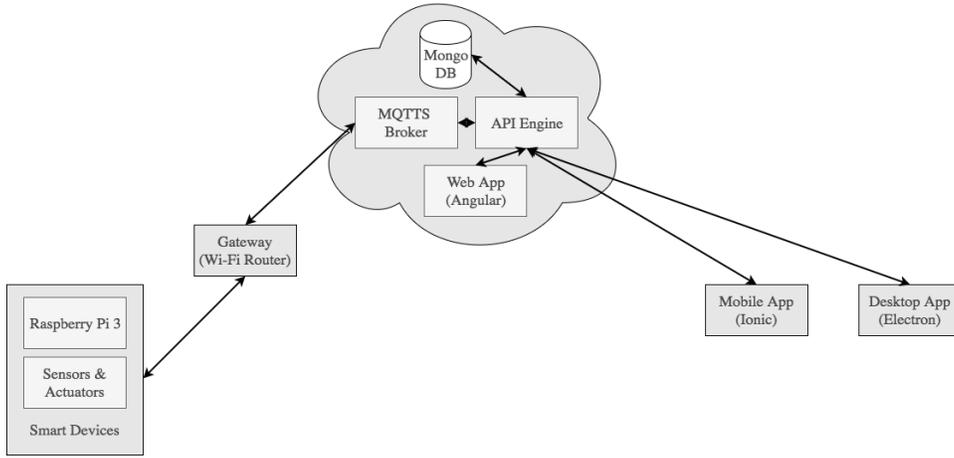




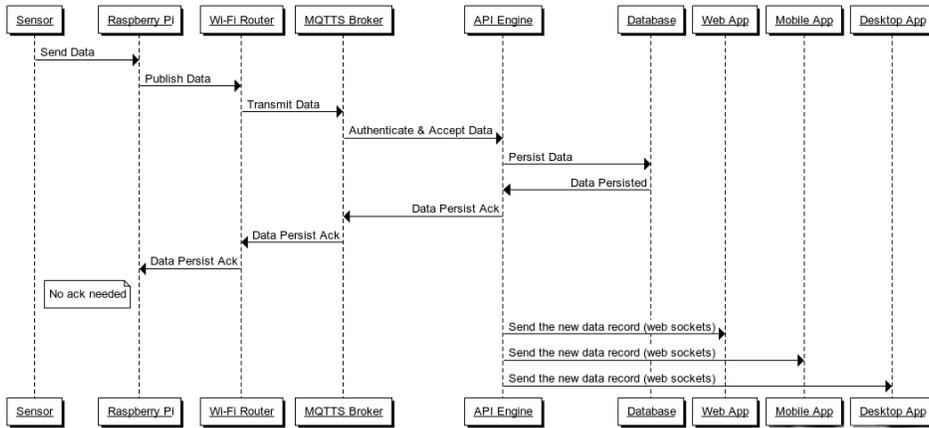


Chapter 2: IoTFW.js – I

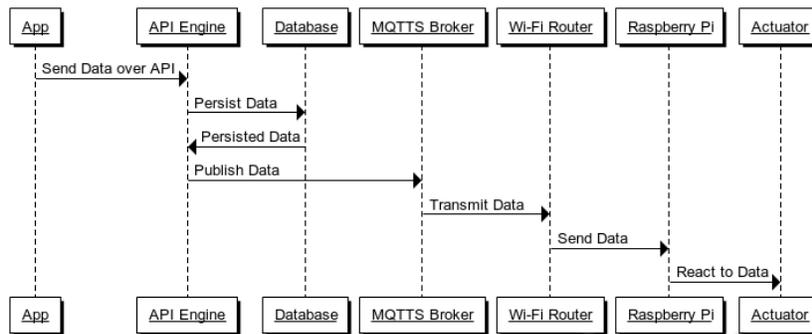
IoTFW.js
Reference Architecture



Data Flow from Sensor to Apps



Data Flow from Apps to Actuators



```

└─ ~ mongod
2017-04-29T17:31:59.986+0530 I CONTROL [initandlisten] MongoDB starting : pid=27884 port=27017 dbpath=/data
/db 64-bit host=Arvind's-MacBook-Pro.local
2017-04-29T17:31:59.987+0530 I CONTROL [initandlisten] db version v3.4.2
2017-04-29T17:31:59.987+0530 I CONTROL [initandlisten] git version: 3f76e40c105fc223b3e5aac3e20dcd026b83b38
b
2017-04-29T17:31:59.987+0530 I CONTROL [initandlisten] OpenSSL version: OpenSSL 1.0.2k 26 Jan 2017
2017-04-29T17:31:59.987+0530 I CONTROL [initandlisten] allocator: system
2017-04-29T17:31:59.987+0530 I CONTROL [initandlisten] modules: none
2017-04-29T17:31:59.987+0530 I CONTROL [initandlisten] build environment:
2017-04-29T17:31:59.987+0530 I CONTROL [initandlisten]   distarch: x86_64
2017-04-29T17:31:59.987+0530 I CONTROL [initandlisten]   target_arch: x86_64
2017-04-29T17:31:59.987+0530 I CONTROL [initandlisten] options: {}
2017-04-29T17:31:59.987+0530 I - [initandlisten] Detected data files in /data/db created by the 'mmap
v1' storage engine, so setting the active storage engine to 'mmapv1'.
2017-04-29T17:31:59.997+0530 I JOURNAL [initandlisten] journal dir=/data/db/journal
2017-04-29T17:31:59.997+0530 I JOURNAL [initandlisten] recover : no journal files present, no recovery need
ed
2017-04-29T17:32:00.013+0530 I JOURNAL [durability] Durability thread started
2017-04-29T17:32:00.013+0530 I JOURNAL [journal writer] Journal writer thread started
2017-04-29T17:32:00.013+0530 I CONTROL [initandlisten]
2017-04-29T17:32:00.013+0530 I CONTROL [initandlisten] ** WARNING: Access control is not enabled for the da
tabase.
2017-04-29T17:32:00.013+0530 I CONTROL [initandlisten] **          Read and write access to data and config
uration is unrestricted.
2017-04-29T17:32:00.013+0530 I CONTROL [initandlisten]
2017-04-29T17:32:00.013+0530 I CONTROL [initandlisten] ** WARNING: soft rlimits too low. Number of files is
256, should be at least 1000
2017-04-29T17:32:00.197+0530 I FTDC [initandlisten] Initializing full-time diagnostic data capture with
directory '/data/db/diagnostic.data'
2017-04-29T17:32:00.205+0530 I NETWORK [thread1] waiting for connections on port 27017

```

Home

Cloud Provider







New Deployment Creator

PLAN TYPE
Sandbox

PROVIDER
Amazon Web Services

Plan Type

SANDBOX FREE

For learning, developing, or prototyping.
Up to 0.5 GB storage.

SHARED \$15 / GB

For small datasets and light production
workloads. Up to 8 GB storage.

DEDICATED \$180 / UP

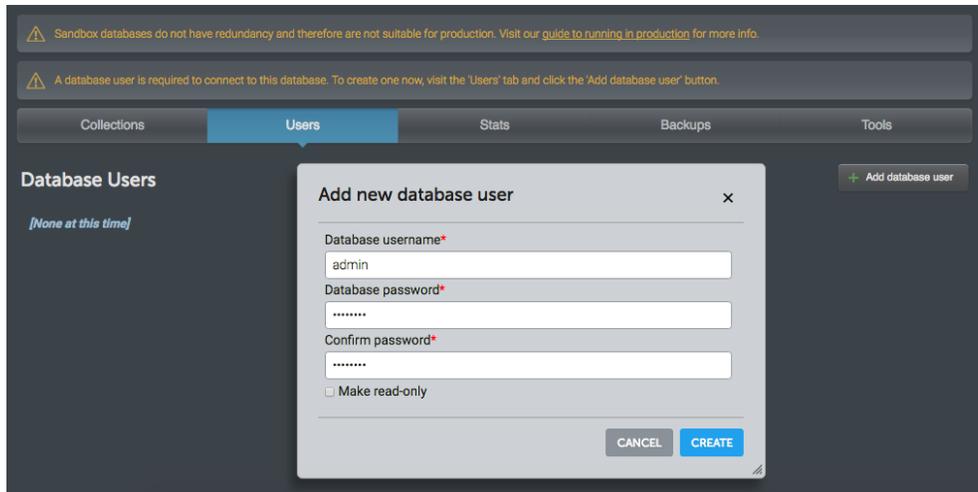
For demanding production workloads.
Supports unlimited vertical and
horizontal scaling (via sharding).

AVAILABLE AWS REGIONS

- US East (Virginia) (us-east-1)
- Europe (Ireland) (eu-west-1)

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cancel CONTINUE



```
To connect using the mongo shell:  
% mongo ds241055.mlab.com:41055/iotfwjs -u <dbuser> -p <dbpassword>  
  
To connect using a driver via the standard MongoDB URI (what's this?):  
mongodb://<dbuser>:<dbpassword>@ds241055.mlab.com:41055/iotfwj  
  
mongod version: 3.4.9 (MMAPv1)
```

```
[+] ~ mongo ds241055.mlab.com:41055/iotfwjs -u admin -p admin123  
MongoDB shell version v3.4.2  
connecting to: mongodb://ds241055.mlab.com:41055/iotfwjs  
MongoDB server version: 3.4.9  
[rs-ds241055:PRIMARY> db  
iotfwjs  
[rs-ds241055:PRIMARY> db.stats();  
{  
  "db" : "iotfwjs",  
  "collections" : 0,  
  "views" : 0,  
  "objects" : 0,  
  "avgObjSize" : 0,  
  "dataSize" : 0,  
  "storageSize" : 0,  
  "numExtents" : 0,  
  "indexes" : 0,  
  "indexSize" : 0,  
  "fileSize" : 0,  
  "ok" : 1  
}  
[rs-ds241055:PRIMARY> █
```

```
[+ certs openssl req -newkey rsa:2048 -nodes -keyout key.pem -x509 -days 365 -out certificate.pem
```

```
Generating a 2048 bit RSA private key
```

```
.....+++
```

```
.....+++
```

```
writing new private key to 'key.pem'
```

```
-----
```

You are about to be asked to enter information that will be incorporated into your certificate request.

What you are about to enter is what is called a Distinguished Name or a DN.

There are quite a few fields but you can leave some blank

For some fields there will be a default value,

If you enter '.', the field will be left blank.

```
-----
```

```
Country Name (2 letter code) [AU]:IN
```

```
State or Province Name (full name) [Some-State]:TG
```

```
Locality Name (eg, city) []:HYD
```

```
Organization Name (eg, company) [Internet Widgits Pty Ltd]:UBICONN
```

```
Organizational Unit Name (eg, section) []:THE IOT SUITCASE
```

```
Common Name (e.g. server FQDN or YOUR name) []:TIS
```

```
Email Address []:arvind.ravulavaru@gmail.com
```

```
[+ broker mosca -c index.js -v | pino
```

```
+++..+++ : ,+++ ++; '+++ ++.
++..+++..++ ++..+++ ++,'+ `+',++ ++,++
+` +, +: .+ .+ +; +; '+ '+ +` +'
+` +. +: ,+ `+ ++ +; '+ ;+ + +.
+` +. +: ,+ `+ +' '+ + +.
+` +. +: ,+ `+ :+. '+ +++++.
+` +. +: ,+ `+ ++ '+ +++++.
+` +. +: ,+ `+ ++ '+ + +.
+` +. +: ,+ `+ +: +: '+ ;+ + +.
+` +. +: .+ .+ +; +; '+ '+ + +.
+` +. +: ++;++ ++'++ ++'+'+ + +.
+` +. +: +++ +++ ,++'+ + +.
```

```
[2017-10-31T11:02:21.546Z] INFO (iotfwjs/12441 on Arvinds-MacBook-Pro.local): server started
mqttps: 8883
```


http://localhost:9000/ x + No Environment

POST http://localhost:9000/auth/local Params Send Save

Authorization Headers (1) Body Pre-request Script Tests Code

form-data x-www-form-urlencoded raw binary JSON (application/json)

```

1 {
2   "email": "arvind@myapp.com",
3   "password": "123456"
4 }

```

Body Cookies Headers (15) Tests Status: 200 OK Time: 320 ms

Pretty Raw Preview JSON

```

1 {
2   "user": {
3     "_id": "5917d42dd01026191960781e",
4     "email": "arvind@myapp.com",
5     "name": "Arvind",
6     "role": "user"
7   },
8   "token": "eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJfcm9udGkiOiI1OTkzZDQyZGQwMTYhbnJlE5MTk2MDc4MMUuLCJpYXQiOiIje00TQ3MzMzYsImV4cCI6IjE0MTQ5NDgyMDZmNn0.wwMsiaUnG00k173QCJ_-7Ka2RjgA3U4T4qt1dWPT00"
9 }

```

```

[+] broker mosca -c index.js -v | pino
+++ .+++; ,+++ ++; '+++ ++.
++ .+++ .++ ++.++ ++; '+ '++ ++.++
+` +. +: .+ .+ +; +; '+ '+ +` +`
+` +. +: ,+ `+ ++ +; '+ ;+ + +.
+` +. +: ,+ `+ +! '+ + +.
+` +. +: ,+ `+ :+. '+ ++++++.
+` +. +: ,+ `+ ++ '+ ++++++.
+` +. +: ,+ `+ ++ '+ + +.
+` +. +: ,+ `+ +: +; '+ ;+ + +.
+` +. +: .+ .+ +; ++ '+ '+ + +.
+` +. +: +++; ++ ++'++ ++'+' + +.
+` +. +: +++ ++. ,++' + +.
[2017-10-31T11:46:11.441Z] INFO (iotfwjs/17167 on Arvinds-MacBook-Pro.local): server started
mqttps: 8883

```

```

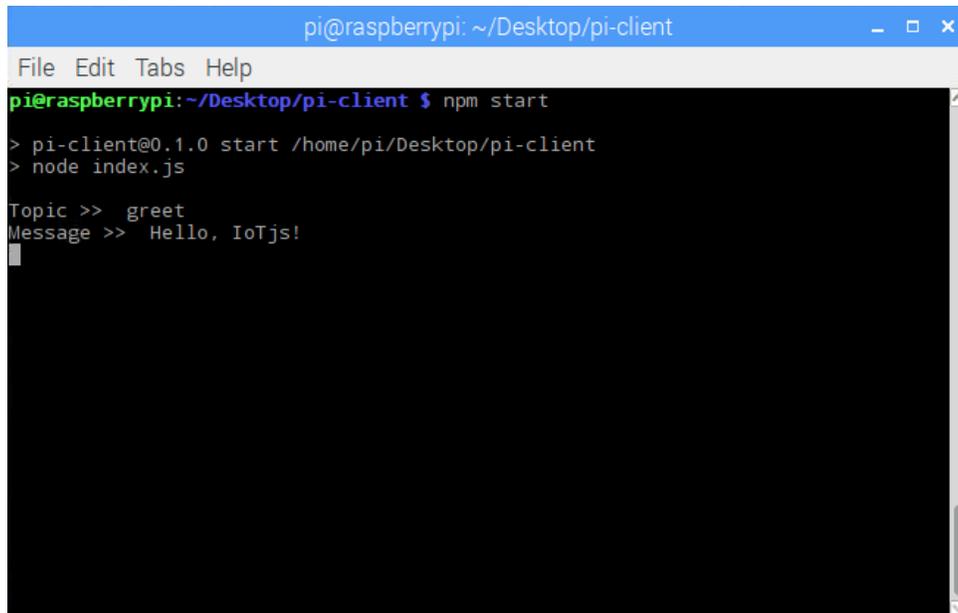
[nodemon] 1.10.0
[nodemon] to restart at any time, enter `rs`
[nodemon] watching: *.*
[nodemon] starting `node server/app.js`
Express server listening on 9000, in development mode
Connected to Mosca at 127.0.0.1 on port 8883
topic >>> greet
message >>> Hello IoTFWjs

```

```

[+] broker mosca -c index.js -v | pino
  ++++.+++; ,+++ ++; '+++ ++.
 ++.+++.+ ++.++ ++,'+ '+',++ ++,++
 +\ +, +: .+ .+ +; +; '+ '+ +\ +\
 +\ +. +: ,+ \+ ++ +; '+ ;+ + +.
 +\ +. +: ,+ \+ +\ '+ '+ + +.
 +\ +. +: ,+ \+ :+. '+ +++++.
 +\ +. +: ,+ \+ ++ '+ +++++.
 +\ +. +: ,+ \+ ++ '+ + +.
 +\ +. +: ,+ \+ +: +; '+ ;+ + +.
 +\ +. +: .+ .+ +; +; '+ '+ + +.
 +\ +. +: +++;+ ++'++ ++'+'+ + +.
 +\ +. +: +++ +++. ,++'+ + +.
[2017-10-31T11:46:11.441Z] INFO (iotfwjs/17167 on Arvinds-MacBook-Pro.local): server started
mqttp: 8883
[2017-10-31T11:46:58.472Z] INFO (iotfwjs/17167 on Arvinds-MacBook-Pro.local): client connected
client: "API_Server_Dev"
[2017-10-31T11:46:58.492Z] INFO (iotfwjs/17167 on Arvinds-MacBook-Pro.local): subscribed to topic
topic: "greet"
qos: 0
client: "API_Server_Dev"

```



```

[+] broker mosca -c index.js -v | pino
  ++++.+++; ,+++ ++; '+++ ++.
 ++.+++.+ ++.++ ++,'+ '+',++ ++,++
 +\ +, +: .+ .+ +; +; '+ '+ +\ +\
 +\ +. +: ,+ \+ ++ +; '+ ;+ + +.
 +\ +. +: ,+ \+ +\ '+ '+ + +.
 +\ +. +: ,+ \+ :+. '+ +++++.
 +\ +. +: ,+ \+ ++ '+ +++++.
 +\ +. +: ,+ \+ ++ '+ + +.
 +\ +. +: ,+ \+ +: +; '+ ;+ + +.
 +\ +. +: .+ .+ +; +; '+ '+ + +.
 +\ +. +: +++;+ ++'++ ++'+'+ + +.
 +\ +. +: +++ +++. ,++'+ + +.
[2017-05-05T13:36:21.497Z] INFO (iotjs/86004 on Arvinds-MacBook-Pro.local): server started
mqttp: 8883
[2017-05-05T13:37:29.805Z] INFO (iotjs/86004 on Arvinds-MacBook-Pro.local): client connected
client: "rPI_3"
[2017-05-05T13:37:29.851Z] INFO (iotjs/86004 on Arvinds-MacBook-Pro.local): subscribed to topic
topic: "greet"
qos: 0
client: "rPI_3"

```

```

[+] broker mosca -c index.js -v | pino
  ++++.+++; ,+++ ++; '++++ +++
  ++.+++.+ ++.++ ++,'+ '+,++ ++,++
  +' +, +: .+ .+ +; +; '+ '+ +` +`
  +' +. +: ,+ `+ ++ +; '+ ;+ + +.
  +' +. +: ,+ `+ + ' '+ + +.
  +' +. +: ,+ `+ :+. '+ ++++++.
  +' +. +: ,+ `+ ++ '+ ++++++.
  +' +. +: ,+ `+ ++ '+ + +.
  +' +. +: ,+ `+ +: +: '+ ;+ + +.
  +' +. +: .+ .+ +; +; '+ '+ + +.
  +' +. +: +++;+ ++'++ ++'+' + +.
  +' +. +: +++ ++. ,++' + +.
[2017-05-05T14:00:46.253Z] INFO (iotjs/87678 on Arvinds-MacBook-Pro.local): server started
mqttps: 8883
[2017-05-05T14:00:47.496Z] INFO (iotjs/87678 on Arvinds-MacBook-Pro.local): client connected
client: "API_Server_Dev"
[2017-05-05T14:00:47.509Z] INFO (iotjs/87678 on Arvinds-MacBook-Pro.local): subscribed to topic
topic: "api-engine"
qos: 0
client: "API_Server_Dev"
[2017-05-05T14:00:47.610Z] INFO (iotjs/87678 on Arvinds-MacBook-Pro.local): client connected
client: "rPI_3"
[2017-05-05T14:00:47.669Z] INFO (iotjs/87678 on Arvinds-MacBook-Pro.local): subscribed to topic
topic: "rpi"
qos: 0
client: "rPI_3"

```

```

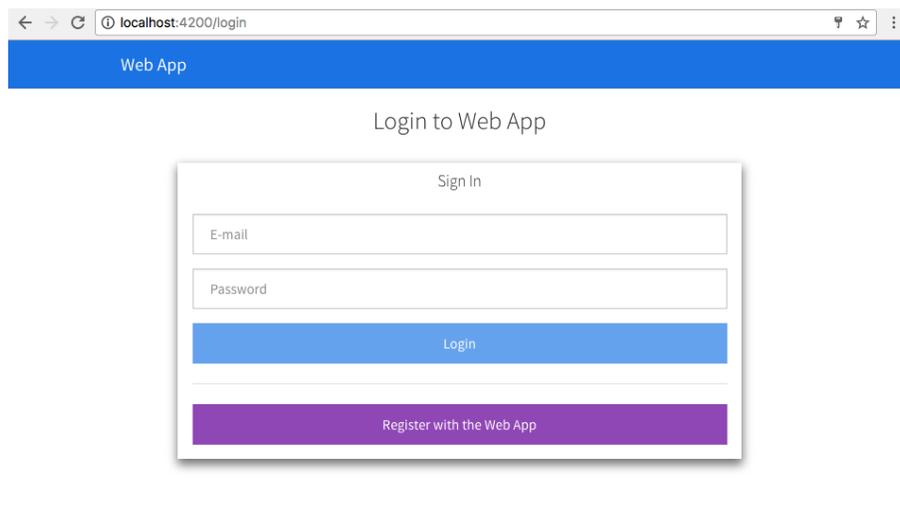
[+] api-engine npm start

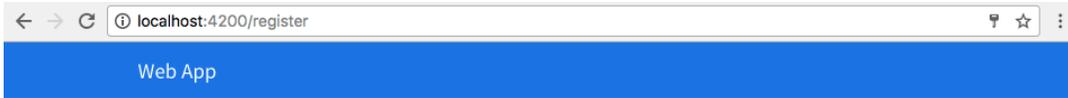
> api-engine@0.1.0 start /Users/arvindravulavaru/Arvind/Books/Advanced IoT with JS/code/chapter2/api-engine
> nodemon server/app.js

[nodemon] 1.11.0
[nodemon] to restart at any time, enter `rs`
[nodemon] watching: *.*
[nodemon] starting `node server/app.js`
Express server listening on 9000, in development mode
Mac Address >> b8:27:eb:f3:2d:4a

```

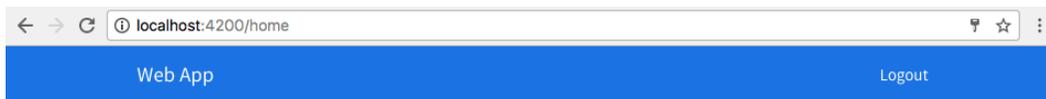
```
pi@raspberrypi: ~/Desktop/pi-client
File Edit Tabs Help
pi@raspberrypi:~/Desktop/pi-client $ npm start
> pi-client@0.1.0 start /home/pi/Desktop/pi-client
> node index.js
API Engine Response >> Got Mac Address: b8:27:eb:f3:2d:4a
█
```





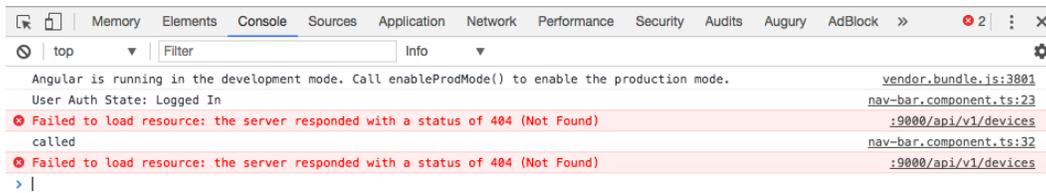
Register with Web App

Register

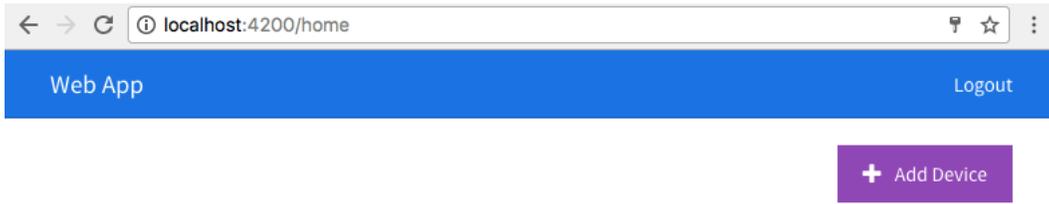


+ Add Device

Loading!



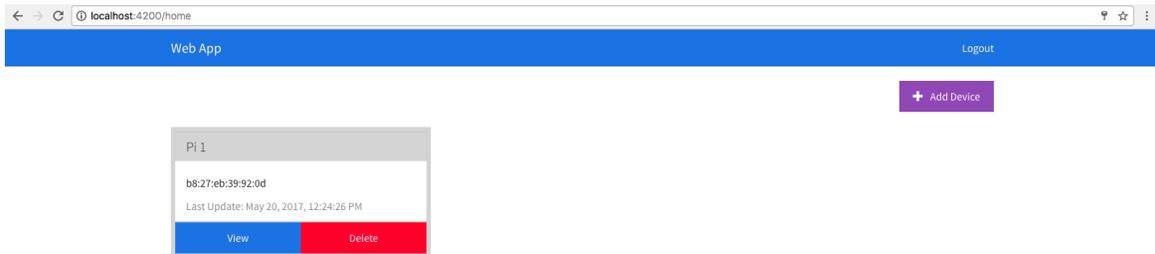
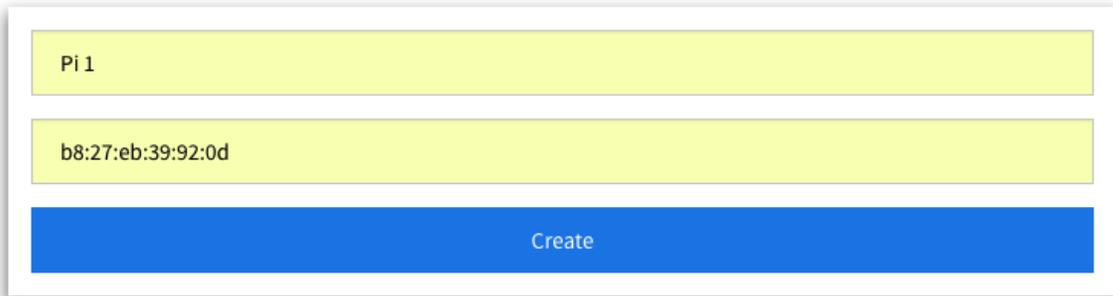
Chapter 3: IoTFW.js – II



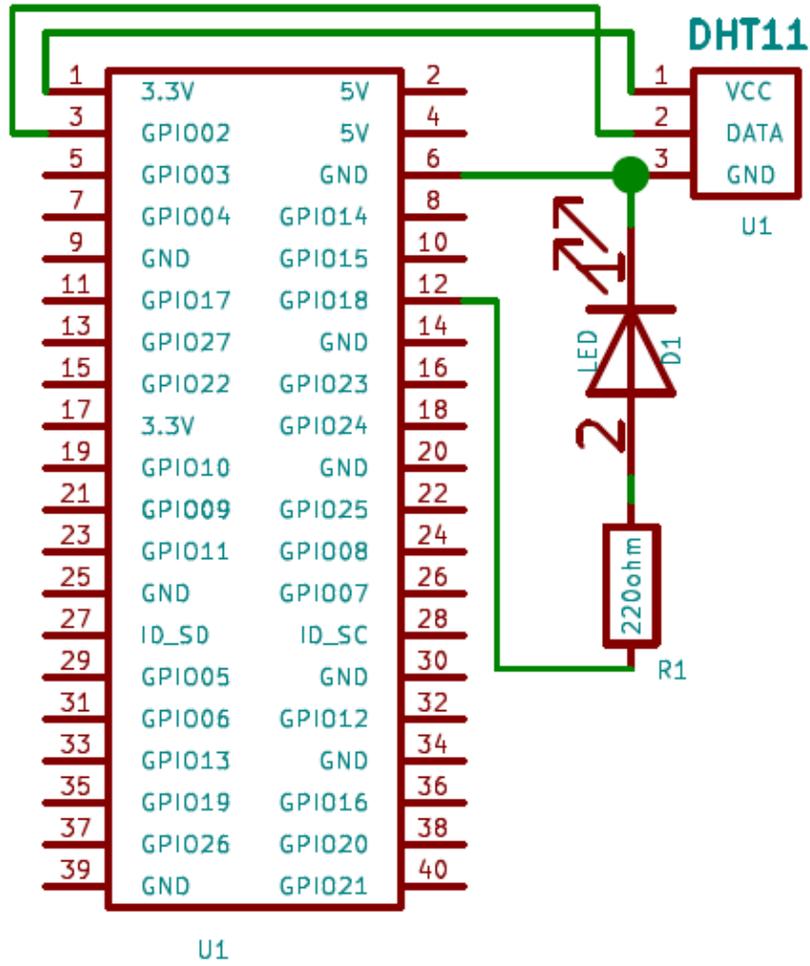
No Devices



Add New Device



RASPBERRY PI 3




```

➔ api-engine npm start

> api-engine@0.1.0 start /Users/arvindravulavaru/Arvind/Books/Advanced IoT with JS/code/chapter2/api-engine
> nodemon server/app.js

[nodemon] 1.11.0
[nodemon] to restart at any time, enter `rs`
[nodemon] watching: *.*
[nodemon] starting `node server/app.js`
Express server listening on 9000, in development mode
Connected to Mosca at 127.0.0.1 on port 8883
Mac Address >> b8:27:eb:39:92:0d
[iMjmlGqKGLvr0dVsAAAA] Connected on 127.0.0.1
Data Saved : { t: '25.00', h: '31.00', l: 0 }
Data Saved : { t: '26.00', h: '31.00', l: 0 }

```

The screenshot shows the MongoDB Compass interface. At the top, there are tabs for 'Documents', 'Indexes', 'Stats', and 'Tools'. Below the tabs, there are buttons for 'Delete all documents in collection' and 'Add document'. A search bar is labeled 'Start new search'. The main section is titled 'All Documents' and shows the display mode set to 'list'. The document list has 6 records per page and shows 1 of 6 records. Each record is a JSON object with the following structure:

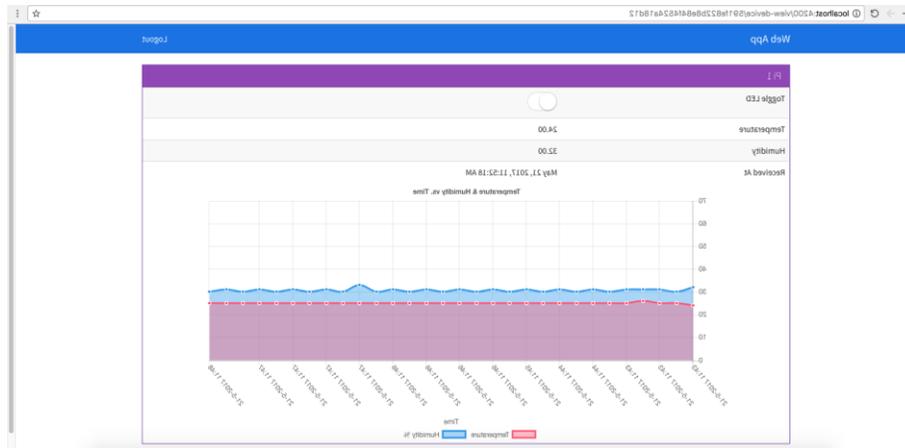
```

{
  "$date": "2017-05-20T09:36:44.322Z",
  "data": {
    "h": "34.00",
    "t": "20.00"
  },
  "macAddress": "b8:27:eb:39:92:0d",
}

```

The records shown are:

- Record 1: \$date: "2017-05-20T09:36:44.322Z", data: {h: "34.00", t: "20.00"}, macAddress: "b8:27:eb:39:92:0d"
- Record 2: \$date: "2017-05-20T09:36:47.762Z", data: {h: "33.00", t: "21.00"}, macAddress: "b8:27:eb:39:92:0d"
- Record 3: \$date: "2017-05-20T09:37:08.908Z", data: {h: "34.00", t: "21.00"}, macAddress: "b8:27:eb:39:92:0d"
- Record 4: \$date: "2017-05-20T09:37:12.644Z", data: {h: "33.00", t: "21.00"}, macAddress: "b8:27:eb:39:92:0d"
- Record 5: \$date: "2017-05-20T09:37:23.016Z", data: {h: "34.00", t: "21.00"}, macAddress: "b8:27:eb:39:92:0d"
- Record 6: \$date: "2017-05-20T09:37:23.016Z", data: {h: "33.00", t: "21.00"}, macAddress: "b8:27:eb:39:92:0d", createdBy: "raspberrypi3", version: 0

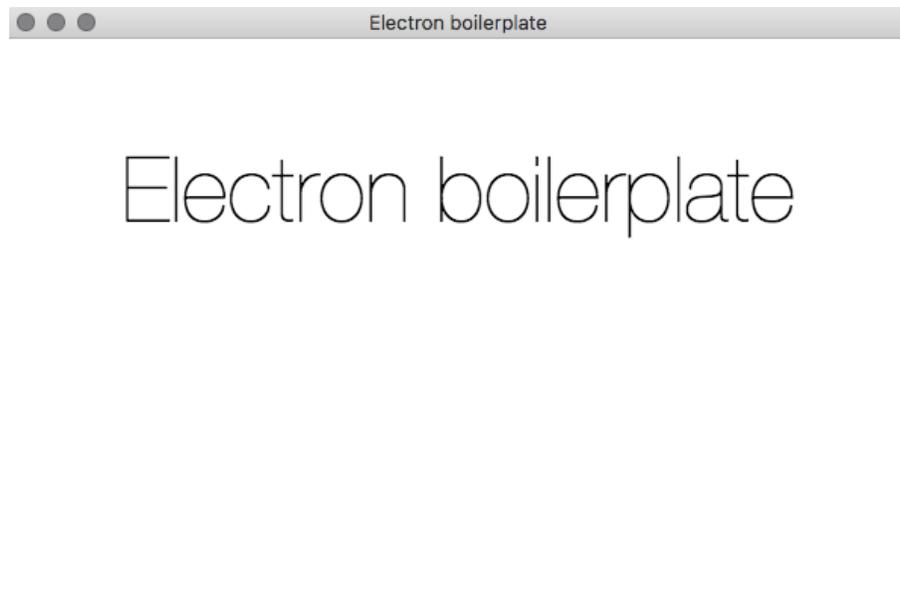


```

[?] What do you want to name your app? desktop-app
[?] What is your GitHub username? arvindr21
[?] What is the URL of your website? https://github.com/arvindr21
create package.json
create index.css
create index.html
create index.js
create license
create readme.md
create .editorconfig
create .gitattributes
create .gitignore

```

I'm all done. Running `npm install` for you to install the required dependencies. If this fails, try running the command yourself.



Login to Web App

Do you want the application "Electron.app" to accept incoming network connections?

Clicking Deny may limit the application's behavior. This setting can be changed in the Firewall pane of Security & Privacy preferences.

[+ Add Device](#)

Pi 1

b8:27:eb:39:92:0d

Last Update: May 20, 2017, 12:24:26 PM

Pi 1

Toggle LED

Temperature 24.00

Humidity 31.00

Received At May 21, 2017, 12:50:14 PM

Temperature & Humidity vs. Time

Time	Temperature	Humidity %
21-5-2017 10:29	24.00	31.00
21-5-2017 10:30	24.00	31.00
21-5-2017 10:31	24.00	31.00
21-5-2017 10:32	24.00	31.00
21-5-2017 10:33	24.00	31.00
21-5-2017 10:34	24.00	31.00
21-5-2017 10:35	24.00	31.00
21-5-2017 10:36	24.00	31.00
21-5-2017 10:37	24.00	31.00
21-5-2017 10:38	24.00	31.00
21-5-2017 10:39	24.00	31.00
21-5-2017 10:40	24.00	31.00
21-5-2017 10:41	24.00	31.00
21-5-2017 10:42	24.00	31.00
21-5-2017 10:43	24.00	31.00
21-5-2017 10:44	24.00	31.00
21-5-2017 10:45	24.00	31.00
21-5-2017 10:46	24.00	31.00
21-5-2017 10:47	24.00	31.00
21-5-2017 10:48	24.00	31.00
21-5-2017 10:49	24.00	31.00
21-5-2017 10:50	24.00	31.00
21-5-2017 10:51	24.00	31.00
21-5-2017 10:52	24.00	31.00
21-5-2017 10:53	24.00	31.00
21-5-2017 10:54	24.00	31.00
21-5-2017 10:55	24.00	31.00
21-5-2017 10:56	24.00	31.00
21-5-2017 10:57	24.00	31.00
21-5-2017 10:58	24.00	31.00
21-5-2017 10:59	24.00	31.00
21-5-2017 11:00	24.00	31.00
21-5-2017 11:01	24.00	31.00
21-5-2017 11:02	24.00	31.00
21-5-2017 11:03	24.00	31.00
21-5-2017 11:04	24.00	31.00
21-5-2017 11:05	24.00	31.00
21-5-2017 11:06	24.00	31.00
21-5-2017 11:07	24.00	31.00
21-5-2017 11:08	24.00	31.00
21-5-2017 11:09	24.00	31.00
21-5-2017 11:10	24.00	31.00
21-5-2017 11:11	24.00	31.00
21-5-2017 11:12	24.00	31.00
21-5-2017 11:13	24.00	31.00
21-5-2017 11:14	24.00	31.00
21-5-2017 11:15	24.00	31.00
21-5-2017 11:16	24.00	31.00
21-5-2017 11:17	24.00	31.00
21-5-2017 11:18	24.00	31.00
21-5-2017 11:19	24.00	31.00
21-5-2017 11:20	24.00	31.00
21-5-2017 11:21	24.00	31.00
21-5-2017 11:22	24.00	31.00
21-5-2017 11:23	24.00	31.00
21-5-2017 11:24	24.00	31.00
21-5-2017 11:25	24.00	31.00
21-5-2017 11:26	24.00	31.00
21-5-2017 11:27	24.00	31.00
21-5-2017 11:28	24.00	31.00
21-5-2017 11:29	24.00	31.00
21-5-2017 11:30	24.00	31.00
21-5-2017 11:31	24.00	31.00
21-5-2017 11:32	24.00	31.00
21-5-2017 11:33	24.00	31.00
21-5-2017 11:34	24.00	31.00
21-5-2017 11:35	24.00	31.00
21-5-2017 11:36	24.00	31.00
21-5-2017 11:37	24.00	31.00
21-5-2017 11:38	24.00	31.00
21-5-2017 11:39	24.00	31.00
21-5-2017 11:40	24.00	31.00
21-5-2017 11:41	24.00	31.00
21-5-2017 11:42	24.00	31.00
21-5-2017 11:43	24.00	31.00
21-5-2017 11:44	24.00	31.00
21-5-2017 11:45	24.00	31.00
21-5-2017 11:46	24.00	31.00
21-5-2017 11:47	24.00	31.00
21-5-2017 11:48	24.00	31.00
21-5-2017 11:49	24.00	31.00
21-5-2017 11:50	24.00	31.00
21-5-2017 11:51	24.00	31.00
21-5-2017 11:52	24.00	31.00
21-5-2017 11:53	24.00	31.00
21-5-2017 11:54	24.00	31.00
21-5-2017 11:55	24.00	31.00
21-5-2017 11:56	24.00	31.00
21-5-2017 11:57	24.00	31.00
21-5-2017 11:58	24.00	31.00
21-5-2017 11:59	24.00	31.00
21-5-2017 12:00	24.00	31.00
21-5-2017 12:01	24.00	31.00
21-5-2017 12:02	24.00	31.00
21-5-2017 12:03	24.00	31.00
21-5-2017 12:04	24.00	31.00
21-5-2017 12:05	24.00	31.00
21-5-2017 12:06	24.00	31.00
21-5-2017 12:07	24.00	31.00
21-5-2017 12:08	24.00	31.00
21-5-2017 12:09	24.00	31.00
21-5-2017 12:10	24.00	31.00
21-5-2017 12:11	24.00	31.00
21-5-2017 12:12	24.00	31.00
21-5-2017 12:13	24.00	31.00
21-5-2017 12:14	24.00	31.00
21-5-2017 12:15	24.00	31.00
21-5-2017 12:16	24.00	31.00
21-5-2017 12:17	24.00	31.00
21-5-2017 12:18	24.00	31.00
21-5-2017 12:19	24.00	31.00
21-5-2017 12:20	24.00	31.00
21-5-2017 12:21	24.00	31.00
21-5-2017 12:22	24.00	31.00
21-5-2017 12:23	24.00	31.00
21-5-2017 12:24	24.00	31.00
21-5-2017 12:25	24.00	31.00
21-5-2017 12:26	24.00	31.00
21-5-2017 12:27	24.00	31.00
21-5-2017 12:28	24.00	31.00
21-5-2017 12:29	24.00	31.00
21-5-2017 12:30	24.00	31.00
21-5-2017 12:31	24.00	31.00
21-5-2017 12:32	24.00	31.00
21-5-2017 12:33	24.00	31.00
21-5-2017 12:34	24.00	31.00
21-5-2017 12:35	24.00	31.00
21-5-2017 12:36	24.00	31.00
21-5-2017 12:37	24.00	31.00
21-5-2017 12:38	24.00	31.00
21-5-2017 12:39	24.00	31.00
21-5-2017 12:40	24.00	31.00
21-5-2017 12:41	24.00	31.00

Mobile App

Email arvind2@myapp.com

Password

LOGIN

Mobile App →

Name Pi 2 Test

Mac Address 12:45:ac:27:ba

CREATE

Mobile App



Device Name : Pi 1
Mac Address : b8:27:eb:39:92:0d
Created At : May 20, 2017, 12:24:26 PM

[VIEW DEVICE](#)

[DELETE DEVICE](#)

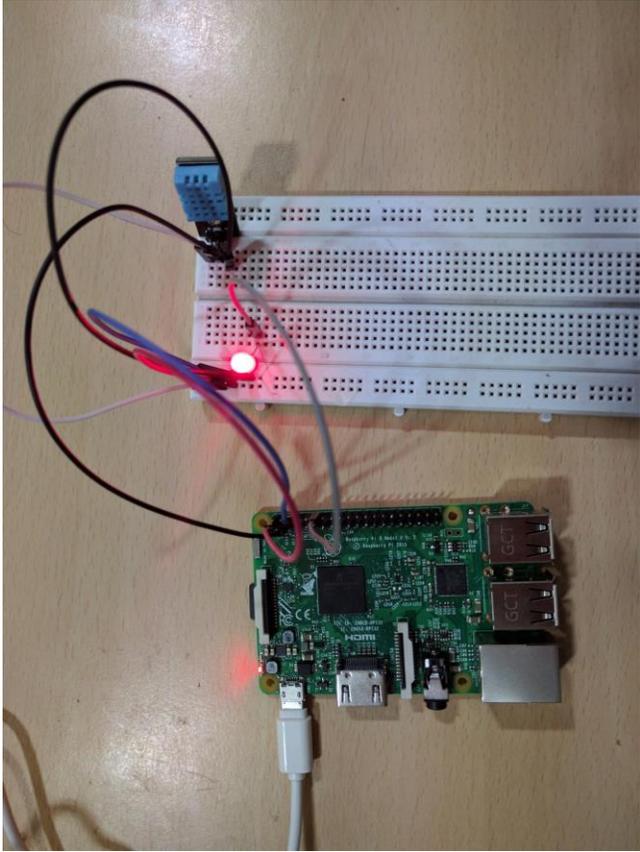
Device Name : Pi 2 Test
Mac Address : 12:45:ac:57:da
Created At : May 24, 2017, 8:17:11 AM

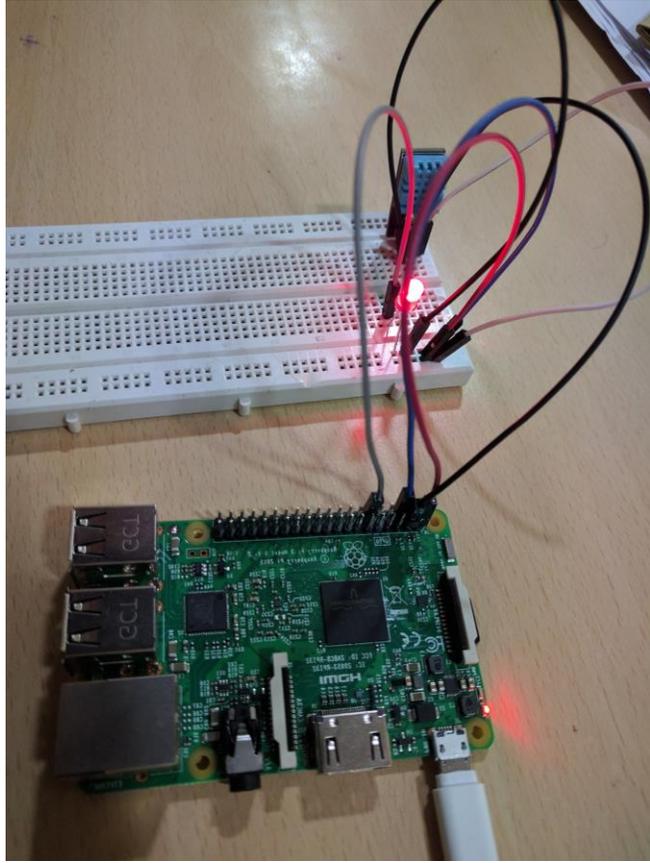
[VIEW DEVICE](#)

[DELETE DEVICE](#)

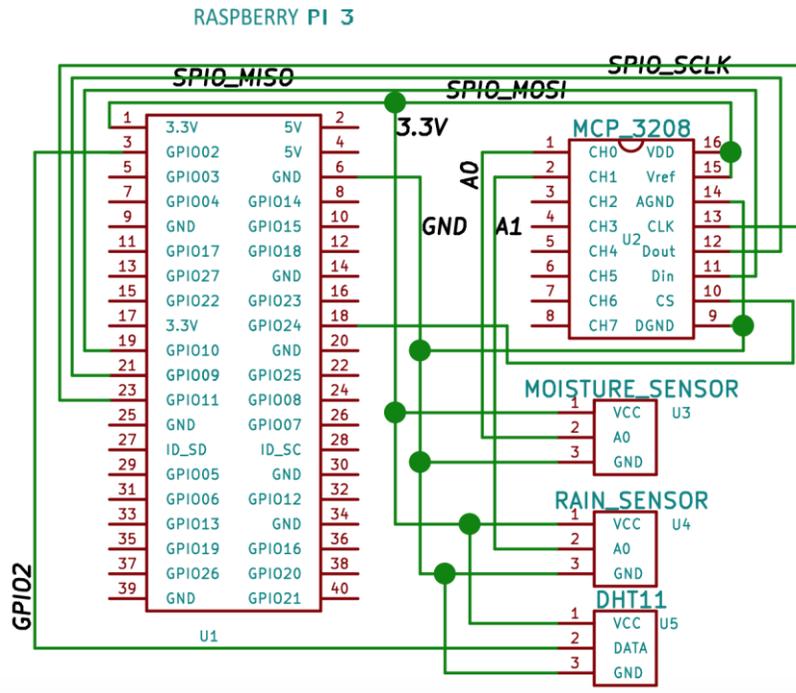
← Mobile App

Name	Pi 1
Toggle LED	<input checked="" type="checkbox"/>
Temperature	23.00
Humidity	32.00
Received At	May 24, 2017, 8:16:11 ...





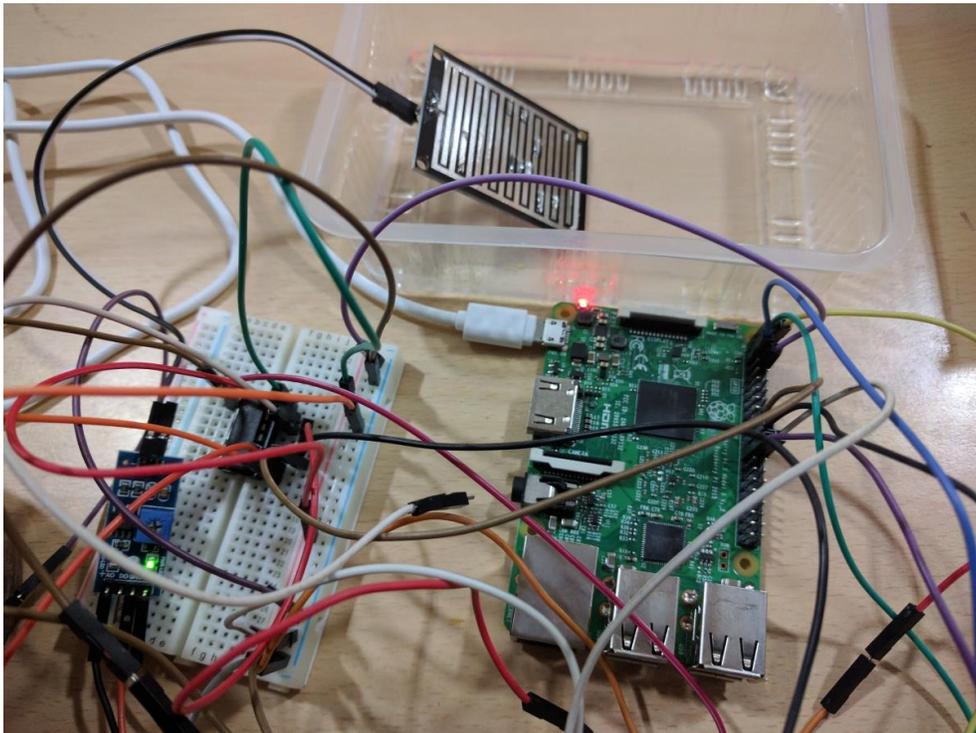
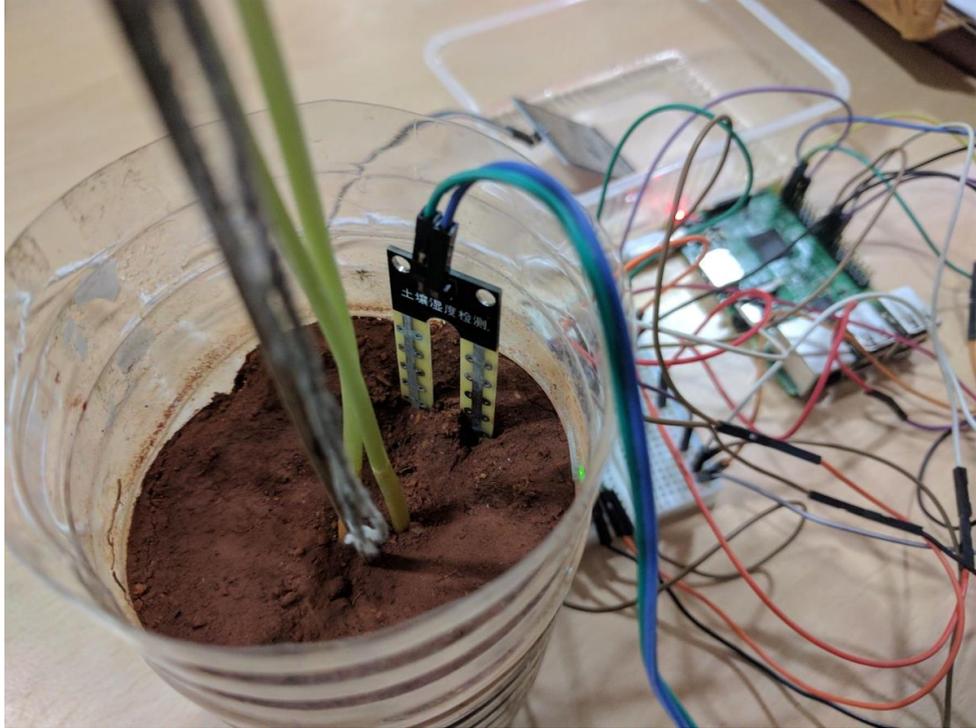
Chapter 4: Smart Agriculture

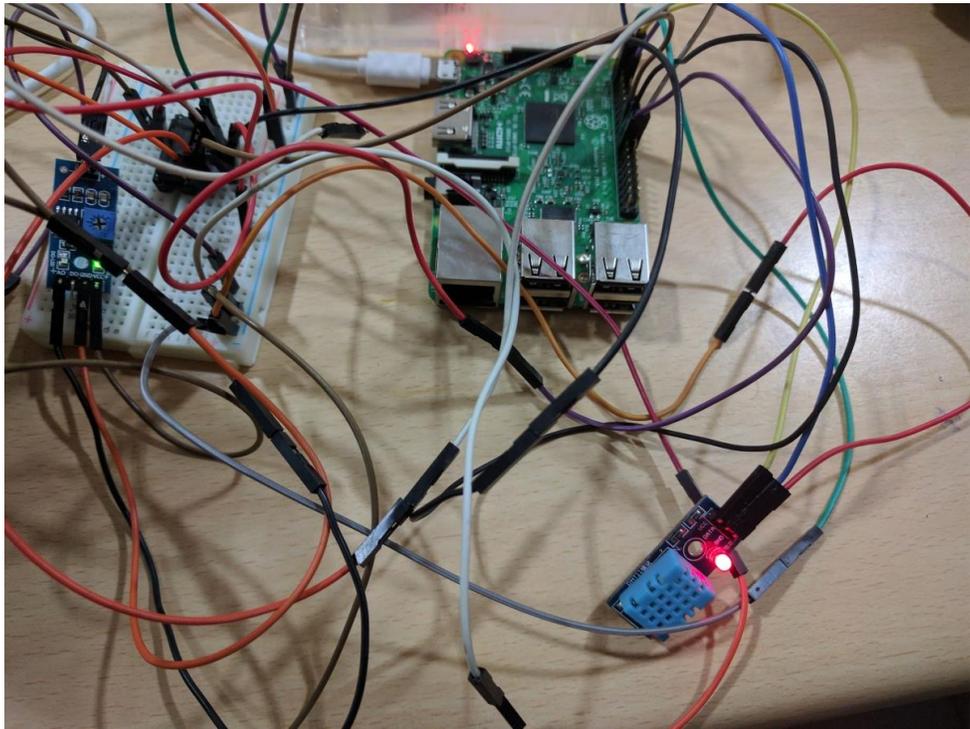
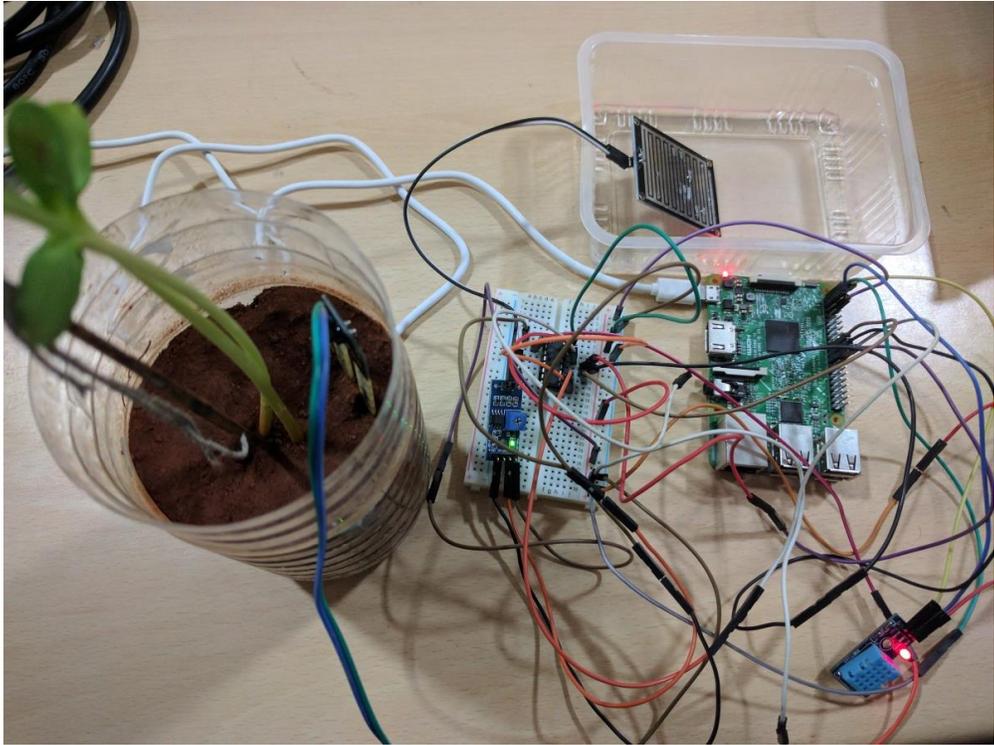


```

pi@raspberrypi: ~/Desktop/pi-client
File Edit Tabs Help
pi@raspberrypi:~/Desktop/pi-client $ sudo node index.js
{ MODE: { MODE_0: 0, MODE_1: 1, MODE_2: 2, MODE_3: 3 },
  CS: { none: 64, high: 4, low: 0 },
  ORDER: { msb: false, lsb: true },
  Spi: [Function: Spi] }
Spi { _spi: _spi {}, device: '/dev/spidev0.0' }
API Engine Response >> Got Mac Address: b8:27:eb:39:92:0d
Temperature: 21.00C, humidity: 19.00%, Rain level (%):1.86, moistureVal (%): 4.57
Temperature: 21.00C, humidity: 19.00%, Rain level (%):1.78, moistureVal (%): 4.59
Temperature: 21.00C, humidity: 19.00%, Rain level (%):99.83, moistureVal (%): 8.25
Temperature: 21.00C, humidity: 19.00%, Rain level (%):99.80, moistureVal (%): 72.73
Temperature: 21.00C, humidity: 19.00%, Rain level (%):99.73, moistureVal (%): 89.14
Temperature: 21.00C, humidity: 19.00%, Rain level (%):99.83, moistureVal (%): 89.18
Temperature: 21.00C, humidity: 19.00%, Rain level (%):98.07, moistureVal (%): 89.18
Temperature: 21.00C, humidity: 19.00%, Rain level (%):96.46, moistureVal (%): 89.21
Temperature: 21.00C, humidity: 19.00%, Rain level (%):96.95, moistureVal (%): 89.26
Temperature: 21.00C, humidity: 19.00%, Rain level (%):97.29, moistureVal (%): 89.28
Temperature: 21.00C, humidity: 19.00%, Rain level (%):97.53, moistureVal (%): 89.28
Temperature: 21.00C, humidity: 19.00%, Rain level (%):97.75, moistureVal (%): 89.33
Temperature: 21.00C, humidity: 19.00%, Rain level (%):97.92, moistureVal (%): 89.36
Temperature: 21.00C, humidity: 19.00%, Rain level (%):98.07, moistureVal (%): 89.38
Temperature: 21.00C, humidity: 19.00%, Rain level (%):98.22, moistureVal (%): 89.43
Temperature: 21.00C, humidity: 19.00%, Rain level (%):98.34, moistureVal (%): 89.48

```





```

[+] broker mosca -c index.js -v | pino
  +++:+++ ,+++ ++; '+' ++
  ++,+++ ++,++ ++,'+ '+' ++,++
  +` ,+ :+ .+ +; +; '+ '+ +` +`
  +` .+ +; ,+ `+ ++ +; '+ ;+ + +.
  +` .+ +; ,+ `+ +' '+ + + +.
  +` .+ +; ,+ `+ :+. '+ ++++++.
  +` .+ +; ,+ `+ ++ '+ ++++++.
  +` .+ +; ,+ `+ ++ '+ + + +.
  +` .+ +; ,+ `+ +: +; '+ ;+ + +.
  +` .+ +; .+ .+ +; +; '+ '+ + +.
  +` .+ +; ++;++ ++'+ ++'+ + +.
  +` .+ +; +++ ++. ,++' + +.
[2017-06-10T07:59:02.128Z] INFO (iotjs/21105 on Arvind-MacBook-Pro.local): server started
mqttps: 8883
[2017-06-10T08:00:04.988Z] INFO (iotjs/21105 on Arvind-MacBook-Pro.local): client connected
client: "API_Server_Dev"
[2017-06-10T08:00:05.001Z] INFO (iotjs/21105 on Arvind-MacBook-Pro.local): subscribed to topic
topic: "api-engine"
qos: 0
client: "API_Server_Dev"
[2017-06-10T08:00:05.004Z] INFO (iotjs/21105 on Arvind-MacBook-Pro.local): subscribed to topic
topic: "weather-status"
qos: 0
client: "API_Server_Dev"
[2017-06-10T08:00:12.499Z] INFO (iotjs/21105 on Arvind-MacBook-Pro.local): client connected
client: "rPI_3"
[2017-06-10T08:00:12.747Z] INFO (iotjs/21105 on Arvind-MacBook-Pro.local): subscribed to topic
topic: "rpi"
qos: 0
client: "rPI_3"

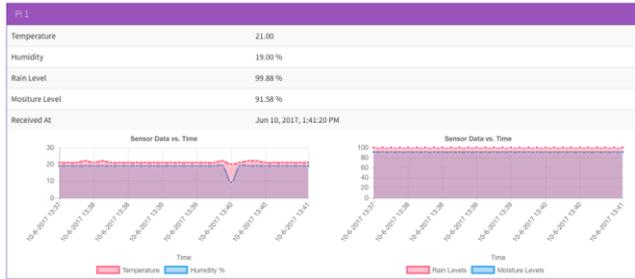
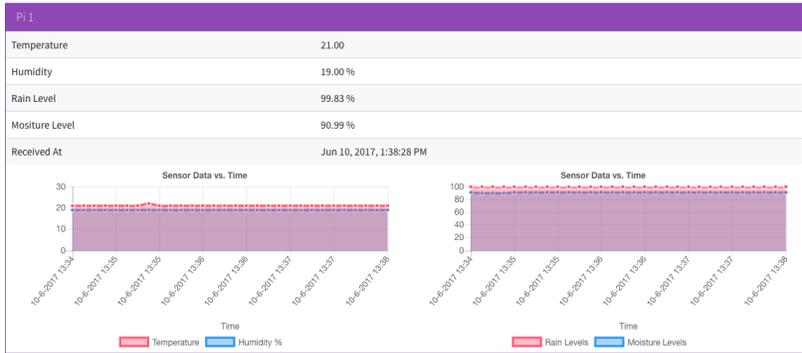
```

```

[+] api-engine npm start
> api-engine@0.1.0 start /Users/arvindravulavaru/Arvind/Books/Advanced IoT with JS/code/chapter4/api-engine
> nodemon server/app.js

[nodemon] 1.10.0
[nodemon] to restart at any time, enter `rs`
[nodemon] watching: *.*
[nodemon] starting `node server/app.js`
Express server listening on 9000, in development mode
Connected to Mosca at 127.0.0.1 on port 8883
[hatcFRcIgP8ZkIvrAAAA] Connected on 192.168.10.11
Mac Address >> b8:27:eb:39:92:0d
Data Saved : { t: '21.00', h: '19.00', r: '1.86', m: '4.57' }
Data Saved : { t: '21.00', h: '19.00', r: '1.78', m: '4.59' }
Data Saved : { t: '21.00', h: '19.00', r: '99.83', m: '8.25' }
Data Saved : { t: '21.00', h: '19.00', r: '99.80', m: '72.73' }
Data Saved : { t: '21.00', h: '19.00', r: '99.73', m: '89.14' }
Data Saved : { t: '21.00', h: '19.00', r: '99.83', m: '89.18' }
Data Saved : { t: '21.00', h: '19.00', r: '98.07', m: '89.18' }
Data Saved : { t: '21.00', h: '19.00', r: '96.46', m: '89.21' }
Data Saved : { t: '21.00', h: '19.00', r: '96.95', m: '89.26' }
Data Saved : { t: '21.00', h: '19.00', r: '97.29', m: '89.28' }
Data Saved : { t: '21.00', h: '19.00', r: '97.53', m: '89.28' }
Data Saved : { t: '21.00', h: '19.00', r: '97.75', m: '89.33' }
Data Saved : { t: '21.00', h: '19.00', r: '97.92', m: '89.36' }
Data Saved : { t: '21.00', h: '19.00', r: '98.07', m: '89.38' }
Data Saved : { t: '21.00', h: '19.00', r: '98.22', m: '89.43' }
Data Saved : { t: '21.00', h: '19.00', r: '98.34', m: '89.48' }
Data Saved : { t: '21.00', h: '19.00', r: '98.44', m: '89.55' }
Data Saved : { t: '21.00', h: '19.00', r: '98.51', m: '89.53' }
Data Saved : { t: '21.00', h: '19.00', r: '98.58', m: '89.55' }
Data Saved : { t: '21.00', h: '19.00', r: '98.66', m: '89.55' }
Data Saved : { t: '21.00', h: '19.00', r: '98.73', m: '89.58' }
Data Saved : { t: '21.00', h: '19.00', r: '98.78', m: '89.60' }

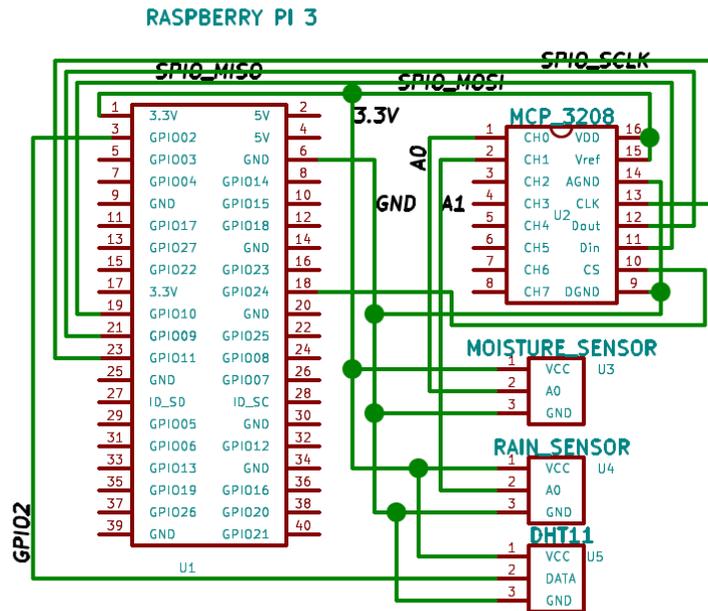
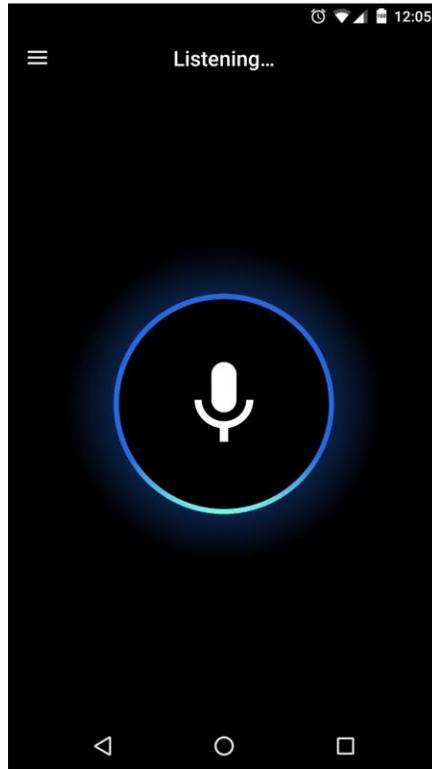
```



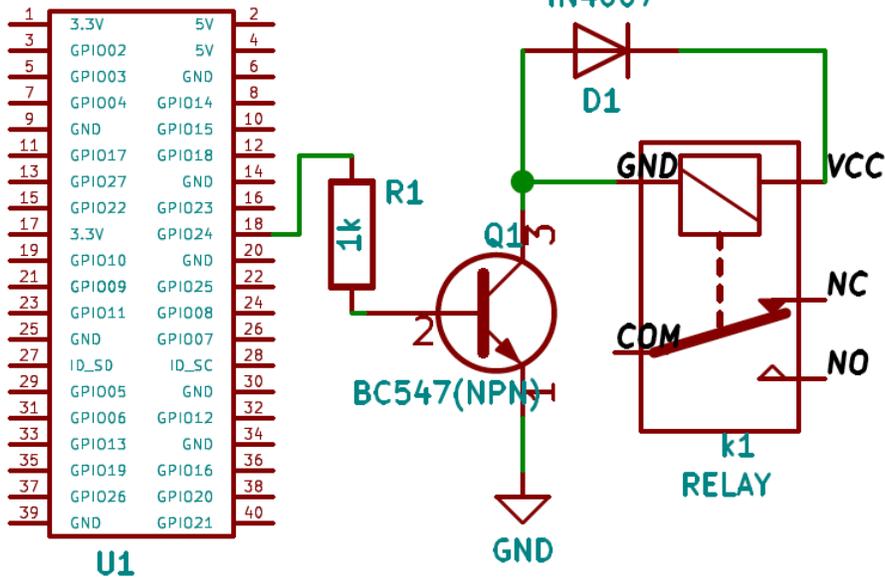
← Mobile App

Name	Pi 1
Temperature	21.00
Humidity	19.00 %
Rain Level	99.90 %
Moisture Level	91.46 %
Received At	Jun 10, 2017, 1:43:17 ...

Chapter 5: Smart Agriculture and Voice AI



RASPBERRY PI 3



```
[+ api-engine npm start
```

```
> api-engine@0.1.0 start /Users/arvindravulavaru/Arvind/Books/Advanced IoT with JS/code/chapter5/api-engine
> nodemon server/app.js
```

```
[nodemon] 1.10.0
[nodemon] to restart at any time, enter `rs`
[nodemon] watching: *.*
[nodemon] starting `node server/app.js`
Express server listening on 9000, in development mode
Connected to Mosca at 127.0.0.1 on port 8883
[Wv09_Q5Ij-KqL0-6AAAA] Connected on 127.0.0.1
[X3T9wA0vwXe7aNsYAAAB] Connected on 192.168.10.11
Mac Address >> b8:27:eb:39:92:0d
Data Saved : { t: '0.00', h: '0.00', r: '48.36', m: '69.65', s: 0 }
Data Saved : { t: '26.00', h: '26.00', r: '48.29', m: '69.63', s: 0 }
Data Saved : { t: '26.00', h: '27.00', r: '48.49', m: '69.65', s: 0 }
Data Saved : { t: '26.00', h: '26.00', r: '48.27', m: '69.63', s: 0 }
Data Saved : { t: '26.00', h: '26.00', r: '48.07', m: '69.60', s: 0 }
Data Saved : { t: '23.00', h: '18.00', r: '47.95', m: '69.60', s: 0 }
Data Saved : { t: '26.00', h: '26.00', r: '48.05', m: '69.65', s: 0 }
Data Saved : { t: '26.00', h: '26.00', r: '47.92', m: '69.60', s: 0 }
Data Saved : { t: '26.00', h: '26.00', r: '47.71', m: '69.60', s: 0 }
Data Saved : { t: '26.00', h: '26.00', r: '47.92', m: '69.58', s: 0 }
Data Saved : { t: '26.00', h: '27.00', r: '47.90', m: '69.58', s: 0 }
Data Saved : { t: '26.00', h: '26.00', r: '47.90', m: '69.58', s: 0 }
Data Saved : { t: '26.00', h: '26.00', r: '47.85', m: '69.58', s: 0 }
Data Saved : { t: '26.00', h: '27.00', r: '47.75', m: '69.58', s: 0 }
Data Saved : { t: '26.00', h: '26.00', r: '47.66', m: '69.56', s: 0 }
Data Saved : { t: '26.00', h: '26.00', r: '47.68', m: '69.36', s: 0 }
Data Saved : { t: '26.00', h: '26.00', r: '47.63', m: '69.53', s: 0 }
```

Pi 1

Toggle Socket

Temperature	26.00
Humidity	26.00 %
Rain Level	47.19 %
Moisture Level	69.36 %

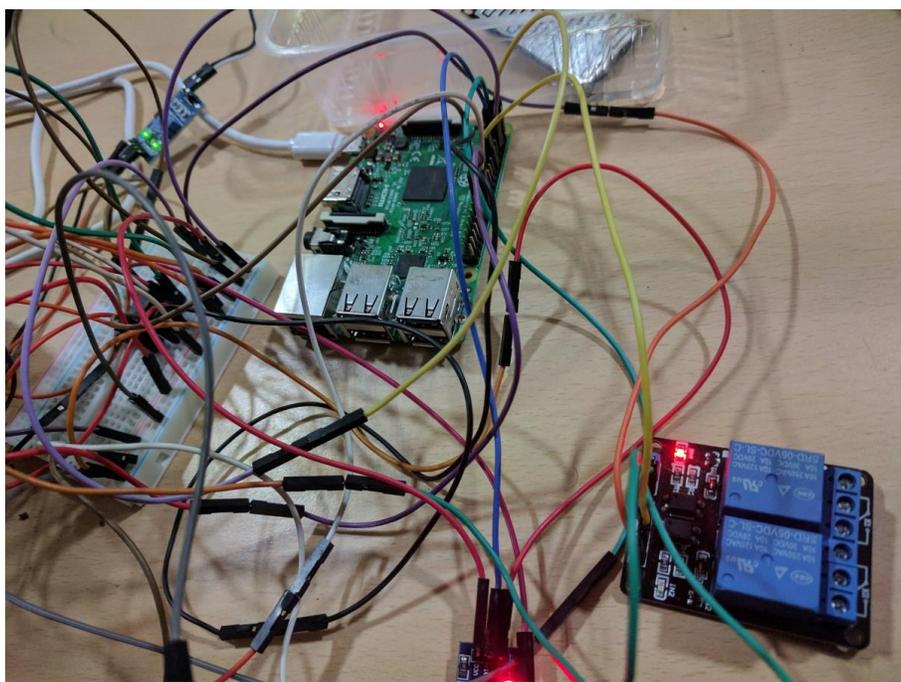
Received At Jun 10, 2017, 2:53:59 PM

Sensor Data vs. Time

Time	Temperature	Humidity %
10-6-2017 14:51	26.00	26.00
10-6-2017 14:51	26.00	26.00
10-6-2017 14:51	26.00	26.00
10-6-2017 14:52	26.00	26.00
10-6-2017 14:52	26.00	26.00
10-6-2017 14:52	26.00	26.00
10-6-2017 14:52	26.00	26.00
10-6-2017 14:53	26.00	26.00

Sensor Data vs. Time

Time	Rain Levels	Moisture Levels
10-6-2017 14:51	47.19	69.36
10-6-2017 14:51	47.19	69.36
10-6-2017 14:51	47.19	69.36
10-6-2017 14:52	47.19	69.36
10-6-2017 14:52	47.19	69.36
10-6-2017 14:52	47.19	69.36
10-6-2017 14:52	47.19	69.36
10-6-2017 14:53	47.19	69.36





← Mobile App

Name	Pi 1
Toggle LED	<input checked="" type="checkbox"/>
Temperature	24.00
Humidity	18.00 %
Rain Level	47.12 %
Moisture Level	100.00 %
Received At	Jun 10, 2017, 4:13:26 ...

Get started with Alexa

Add new voice-enabled capabilities using the Alexa Skills Kit, or add voice-powered experiences to your connected devices with the Alexa Voice Service.



Alexa Skills Kit
Easily add new skills to Alexa

Get Started >



Alexa Voice Service
Bring voice capabilities to your connected device

Get Started >

<ul style="list-style-type: none"> Skill Information <input checked="" type="checkbox"/> Interaction Model <input checked="" type="checkbox"/> Configuration <input checked="" type="checkbox"/> SSL Certificate <input checked="" type="checkbox"/> Test <input checked="" type="checkbox"/> Publishing Information <input checked="" type="checkbox"/> Privacy & Compliance <input checked="" type="checkbox"/> 	<p>Skill Type Define a custom interaction model or use one of the predefined skill APIs. Learn more</p> <p><input checked="" type="radio"/> Custom Interaction Model</p> <p><input type="radio"/> Smart Home Skill API</p> <p><input type="radio"/> Flash Briefing Skill API</p> <p><input type="radio"/> Video Skill API</p> <hr/> <p>Language Language of your skill</p> <p>English (U.S.) <input type="button" value="v"/></p> <hr/> <p>Name Name of the skill that is displayed to customers in the Alexa app. Must be between 2-50 characters.</p> <p>Advanced IoT with JavaScript</p> <hr/> <p>Invocation Name The name customers use to activate the skill. For example, "Alexa ask Tide Pooler..."</p> <p>smarty app</p>
---	--

i For successful Alexa Skills Certification, please review and follow our [Invocation Name Guidelines](#) as well as our [Certification Requirements](#).

Global Fields

These fields apply to all languages supported by the skill.

Audio Player
Does this skill use the audio player directives? Yes No [Learn more](#)

English (U.S.) Add a New Language

- Skill Information ✓
- Interaction Model ✓
- Configuration ✓
- Test ✓
- Publishing Information ✓
- Privacy & Compliance ✓

Skills Beta Testing NEW
Status: Not yet eligible ⓘ



Try the skill builder (beta), an intuitive interface for building your interaction model and creating dialog prompts.

Launch Skill Builder BETA

Intent Schema
The schema of user intents in JSON format. For more information, see [Intent Schema](#).
Also see [built-in slots](#) and [built-in intents](#).

```
1
```

ALEXA SKILLS KIT | SKILL BUILDER BETA

Advanced IoT with JavaScript
English (US)

Save Model Build Model

Skill Information Interaction Model Configuration Test Publishing Privacy & Compliance

Dashboard

- Dashboard
- Code Editor
- Intents (3)
AMAZON.CancelIntent (required)
AMAZON.HelpIntent (required)
AMAZON.StopIntent (required)
- Slot Types (0)
No slot types defined

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Dashboard

Intents ⓘ

- 3 built-ins
- 0 custom

Add an Intent +

Slot Types ⓘ

- 0 built-ins
- 0 custom
- 0 total slot values

Add a Slot Type +

ALPHA SKILLS KIT | SKILL BUILDER BETA

Advanced IoT with JavaScript
English (US)

Save Model Build Model Skill Information Interaction Model Configuration Test Publishing Privacy & Compliance

Dashboard
Code Editor
Intents (3) ADD +
AMAZON.CancelIntent (required)
AMAZON.HelpIntent (required)
AMAZON.StopIntent (required)
Slot Types (0) ADD +
No slot types defined

Add intent

Create a new custom intent

WeatherStatusIntent

Use an existing intent from the built-in library

Search built-in intents

145 / 145 Built-ins

NAME	DESCRIPTION	
Actor	A person who performs in live or recorded performances such as movies, television, or on stage. These intents let users ask about actors.	<input type="checkbox"/>
Book	A book. These intents let users ask for actions related to books, such as finding books, adding books to reading lists, and using books.	<input type="checkbox"/>
Book Series	A named series of books, such as "The Lord of the Rings." These intents let users take actions on a book series, such as adding the books in the series to a reading list.	<input type="checkbox"/>
Calendar	A calendar that contains a list of events. These intents let users make requests related to calendars, such as reading back events, looking up events, and adding items to a calendar.	<input type="checkbox"/>
Catalog	A collection or library offered and curated by an organization or collected and organized by an individual. These intents let users ask about collections of books or music.	<input type="checkbox"/>

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ALPHA SKILLS KIT | SKILL BUILDER BETA

Advanced IoT with JavaScript
English (US)

Save Model Build Model Skill Information Interaction Model Configuration Test Publishing Privacy & Compliance

Dashboard
Code Editor
Intents (4) ADD +
AMAZON.CancelIntent (required)
AMAZON.HelpIntent (required)
AMAZON.StopIntent (required)
WeatherStatusIntent
Slot Types (0) ADD +
No slot types defined

WeatherStatusIntent

Sample Utterances (3)

What might a user say to invoke this intent?

"the field conditions"
"the weather status"
"the weather report"

Intent confirmation (optional)

Does this intent require confirmation?

Prompts (0)
What will Alexa say to ask the user to confirm the intent?

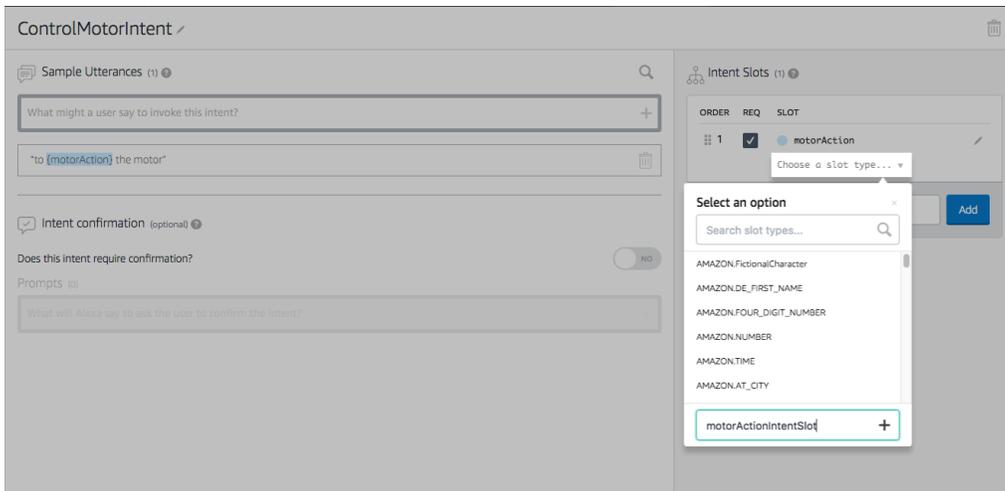
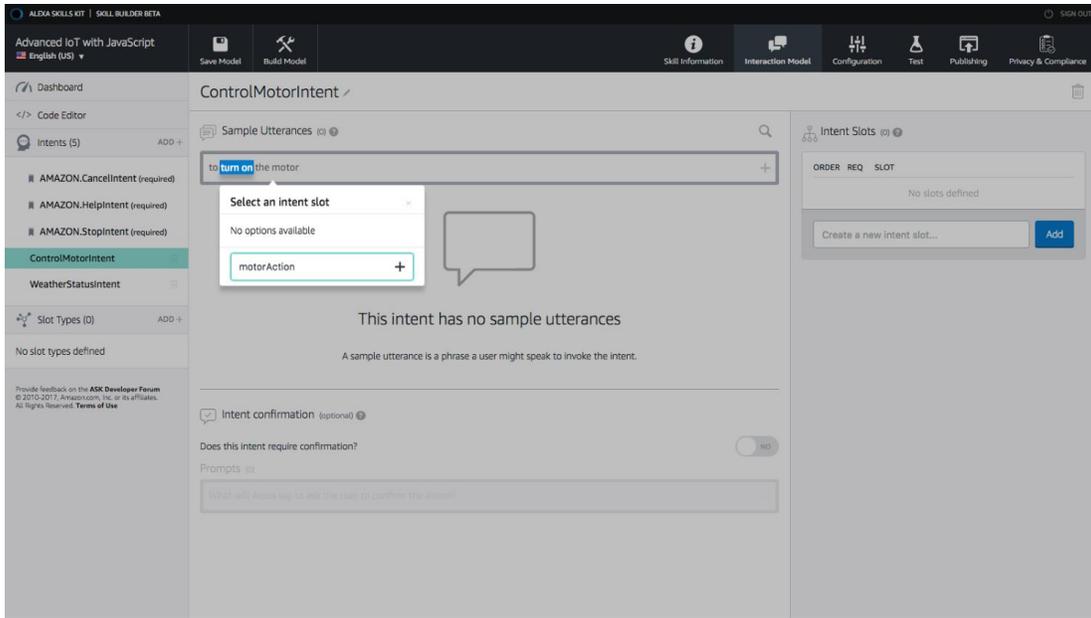
Intent Slots (0)

ORDER REQ SLOT

No slots defined

Create a new intent slot...

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ALExa SKILLS KIT | SKILL BUILDER BETA

Advanced IoT with JavaScript

English (US)

Save Model Build Model Skill Information Interaction Model Configuration Test Publishing Privacy & Compliance

Dashboard Code Editor Intents (5)

- AMAZON.CancelIntent (required)
- AMAZON.HelpIntent (required)
- AMAZON.StopIntent (required)
- ControlMotorIntent
 - motorAction
- WeatherStatusIntent

Slot Types (1)

- motorActionIntentSlot

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motorActionIntentSlot

Slot Values

Enter a new value for this slot type...

- "turn off"
- "turn on"

Slots using motorActionIntentSlot (1)

SLOT NAME	INTENT
motorAction	ControlMotorIntent

ALExa SKILLS KIT | SKILL BUILDER BETA

Advanced IoT with JavaScript

English (US)

Save Model Build Model Skill Information Interaction Model Configuration Test Publishing Privacy & Compliance

Dashboard Code Editor Intents (5)

- AMAZON.CancelIntent (required)
- AMAZON.HelpIntent (required)
- AMAZON.StopIntent (required)
- ControlMotorIntent
 - motorAction
- WeatherStatusIntent

Slot Types (1)

- motorActionIntentSlot

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ControlMotorIntent

BACK TO SAMPLE UTTERANCES

{motorAction}

Slot Type: motorActionIntentSlot

Dialog Model

Slot filling

Is this slot required to fulfill the intent? **YES**

Prompts (1)

What will Alexa say to ask the user to fill this slot?

"Do you want me to Turn on or Turn off?"

Utterances (0)

Include slot names in curly brackets {} as variables in utterances.

What will a user say in response to the above prompts?

Slot confirmation (optional)

Does this slot require confirmation? **NO**

Intent Slots (1)

ORDER	REQ	SLOT
1	<input checked="" type="checkbox"/>	motorAction

motorActionIntentSlot

Create a new intent slot... Add

Configure triggers

You can choose to add a trigger that will invoke your function.

Remove

Filter integrations

- API Gateway
- AWS IoT
- Alexa Skills Kit
- Alexa Smart Home
- CloudFront
- CloudWatch Events - Schedule
- CloudWatch Logs
- CodeCommit

Cancel Previous Next

Lambda > New function

Select blueprint

Configure triggers

Configure function

Review

Configure function

A Lambda function consists of the custom code you want to execute. [Learn more about Lambda functions.](#)

Name*

Description

Runtime*

Lambda function code

Provide the code for your function. Use the editor if your code does not require custom libraries (other than the aws-sdk). If you need custom libraries, you can upload your code and libraries as a .ZIP file. [Learn more about deploying Lambda functions.](#)

Code entry type

```
1 'use strict';
2
3 // Route the incoming request based on type (LaunchRequest, IntentRequest,
4 // etc.) The JSON body of the request is provided in the event parameter.
5 exports.handler = function(event, context) {
6   try {
7     console.log("event.session.application.applicationId=" + event.session.application.applicat
8
9     if (event.session.new) {
10      onSessionStarted({ requestId: event.request.requestId }, event.session);
11    }
12  }
```

AWS Lambda requires access to your resources

AWS Lambda uses an IAM role that grants your custom code permissions to access AWS resources it needs.

▼ Hide Details

Role Summary

Role Description Lambda execution role permissions

IAM Role

Role Name

▼ Hide Policy Document

[Edit](#)

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Effect": "Allow",
      "Action": [
        "logs:CreateLogGroup",
        "logs:CreateLogStream",
        "logs:PutLogEvents"
      ],
      "Resource": "arn:aws:logs:*:*:*"
    }
  ]
}
```

You can define Environment Variables as key-value pairs that are accessible from your function code. These are useful to store configuration settings without the need to change function code. [Learn more](#). For storing sensitive information, we recommend encrypting values using KMS and the console's encryption helpers.

Enable encryption helpers

Environment variables 

Lambda function handler and role

Handler* 

Role* 

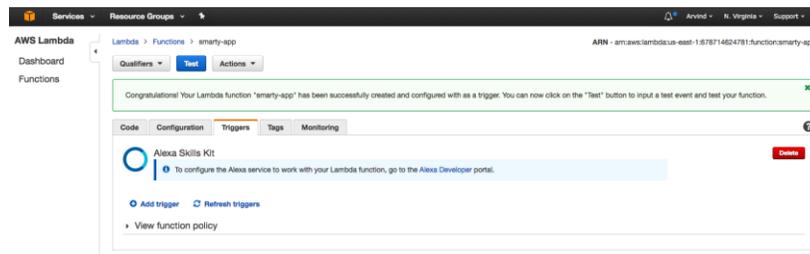
Existing role* 

▸ Tags

▸ Advanced settings

* These fields are required.

[Cancel](#) [Previous](#) [Next](#)



Text

JSON

Enter Utterance

Alexa ask smarty app to turn on the motor

Ask Advanced IoT with JavaScript

Reset

Lambda Request

```
13  "request": {
14    "type": "IntentRequest",
15    "requestId": "EdwRequestId.c241081d-efd6-
16    "locale": "en-US",
17    "timestamp": "2017-06-11T08:13:03Z",
18    "intent": {
19      "name": "ControlMotorIntent",
20      "slots": {
21        "motorAction": {
22          "name": "motorAction",
23          "value": "turn on"
24        }
25      }
26    }
27  },
28  "version": "1.0"
```

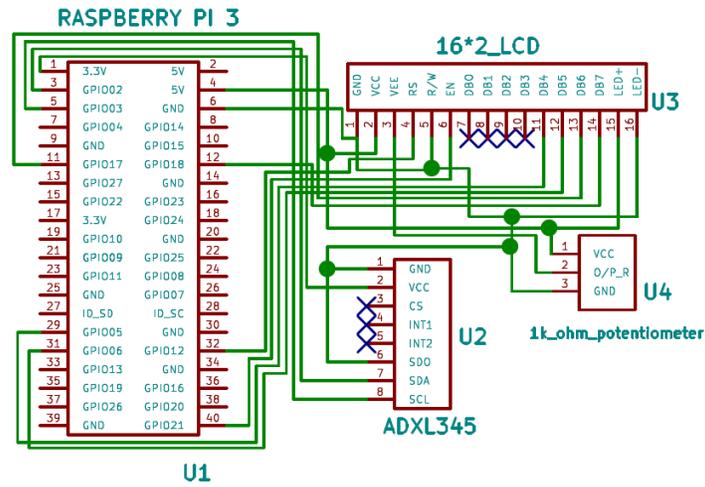
Lambda Response

```
1  {
2    "version": "1.0",
3    "response": {
4      "outputSpeech": {
5        "type": "PlainText",
6        "text": "Motor has been successfully
7      },
8    },
9    "reprompt": {
10     "outputSpeech": {
11       "type": "PlainText",
12       "text": ""
13     }
14   }
```

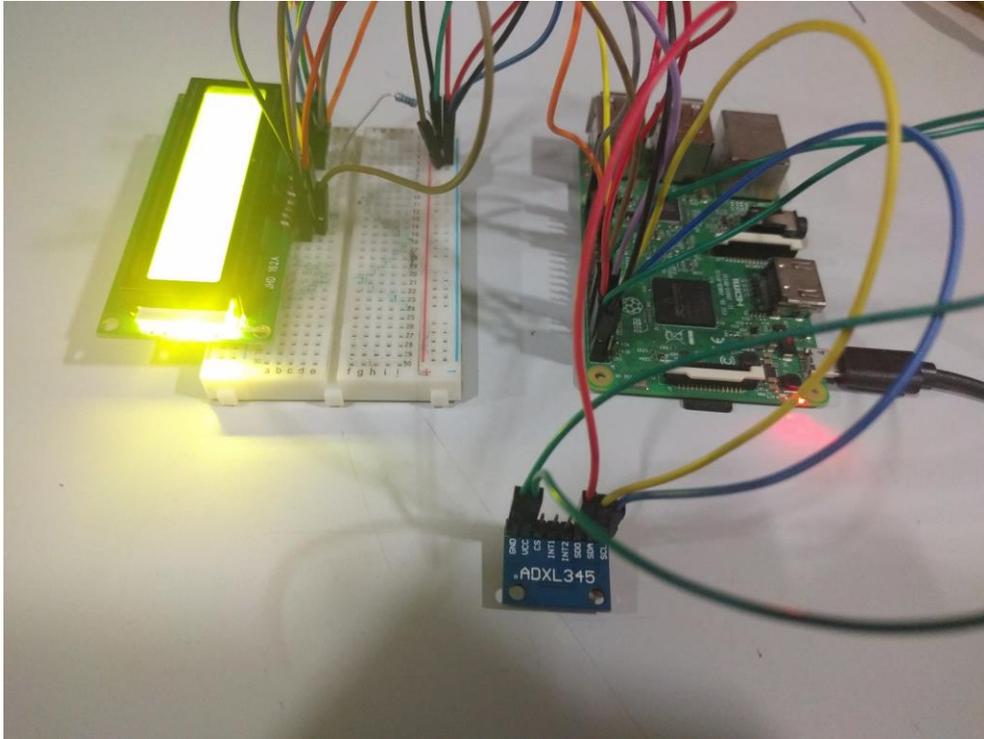
Listen



Chapter 6: Smart Wearable



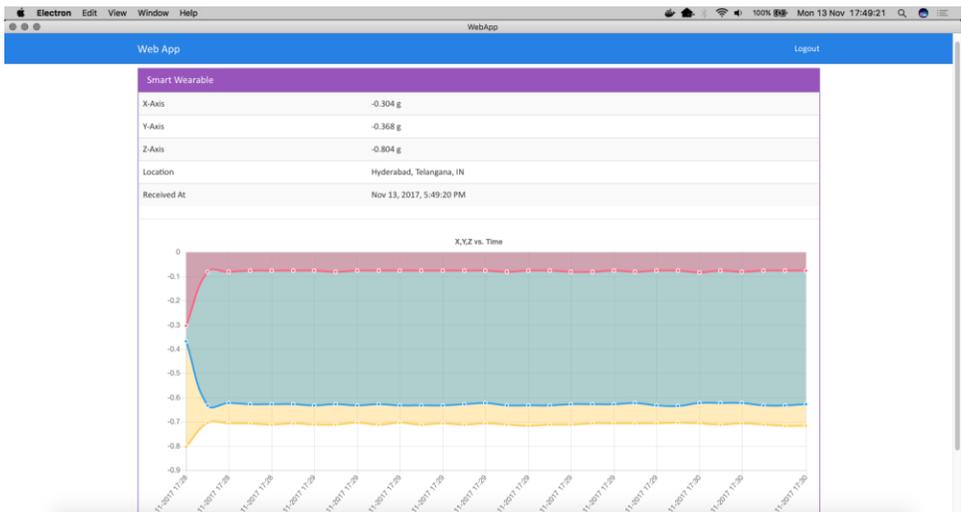
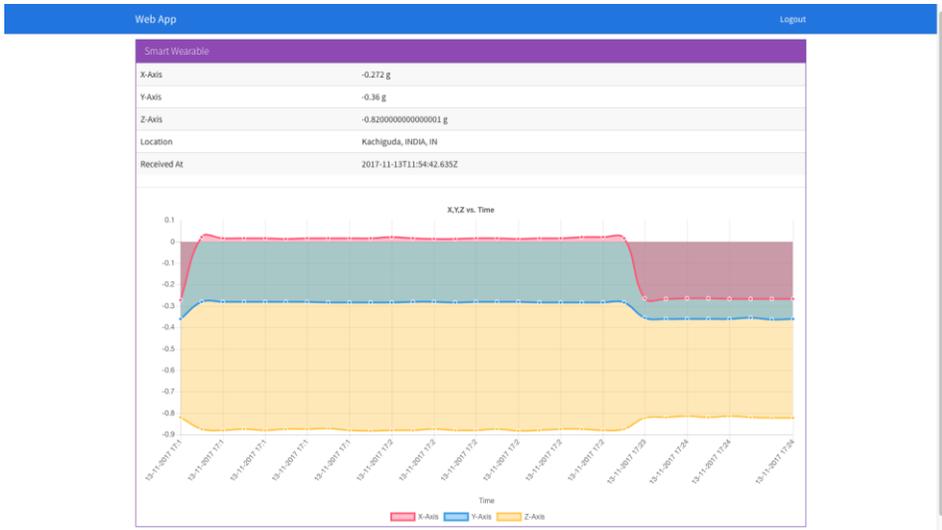
```
pi@raspberrypi: ~/Desktop/pi-client
File Edit Tabs Help
pi@raspberrypi:~/Desktop/pi-client $ sudo node index.js
Found ADXL345 device id 0xe5 on bus i2c-1, address 0x53
ADXL345 initialization succeeded
data2Send { data:
  { acclVals: { x: -0.016, y: -0.064, z: -0.936, units: 'g' },
    location:
      { ip: '183.82.5.11',
        hostname: 'broadband.actcorp.in',
        city: 'Hyderabad',
        region: 'Telangana',
        country: 'IN',
        loc: '17.3753,78.4744',
        org: 'AS18209 Atria Convergence Technologies pvt ltd' } },
    macAddress: 'b8:27:eb:39:92:0d' }
Data Published
```



```
[+] api-engine npm start
```

```
> api-engine@0.1.0 start /Users/arvindravulavaru/Arvind/Books/Advanced IoT with JS/FD/code/chapter6/api-engine  
> nodemon server/app.js
```

```
[nodemon] 1.10.0  
[nodemon] to restart at any time, enter `rs`  
[nodemon] watching: *.*  
[nodemon] starting `node server/app.js`  
Express server listening on 9000, in development mode  
Connected to Mosca at 127.0.0.1 on port 8883  
Mac Address >> b8:27:eb:39:92:0d  
data >> { data:  
  { accelVals: { x: -0.016, y: -0.064, z: -0.936, units: 'g' },  
    location:  
      { ip: '183.82.5.11',  
        hostname: 'broadband.actcorp.in',  
        city: 'Hyderabad',  
        region: 'Telangana',  
        country: 'IN',  
        loc: '17.3753,78.4744',  
        org: 'AS18209 Atria Convergence Technologies pvt ltd' } },  
    macAddress: 'b8:27:eb:39:92:0d' }
```



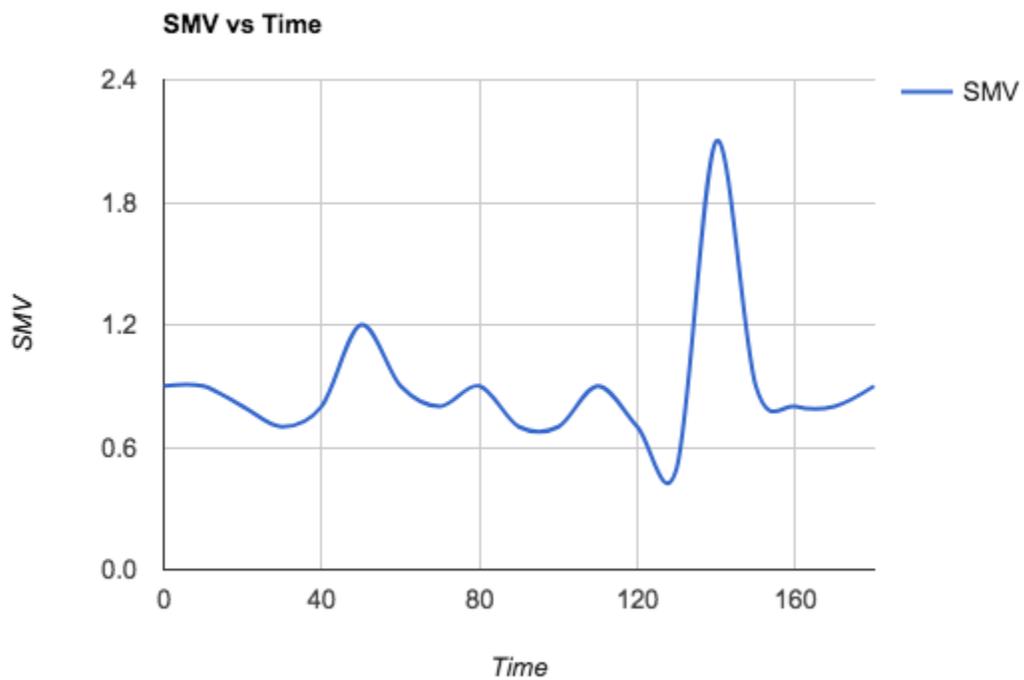
← Mobile App

Name	Smart Wearable
X-Axis	-0.076 g
Y-Axis	-0.628 g
Z-Axis	-0.716 g
Location	Hyderabad, Telangana, IN
Received At	Nov 13, 2017, 5:30:15 PM

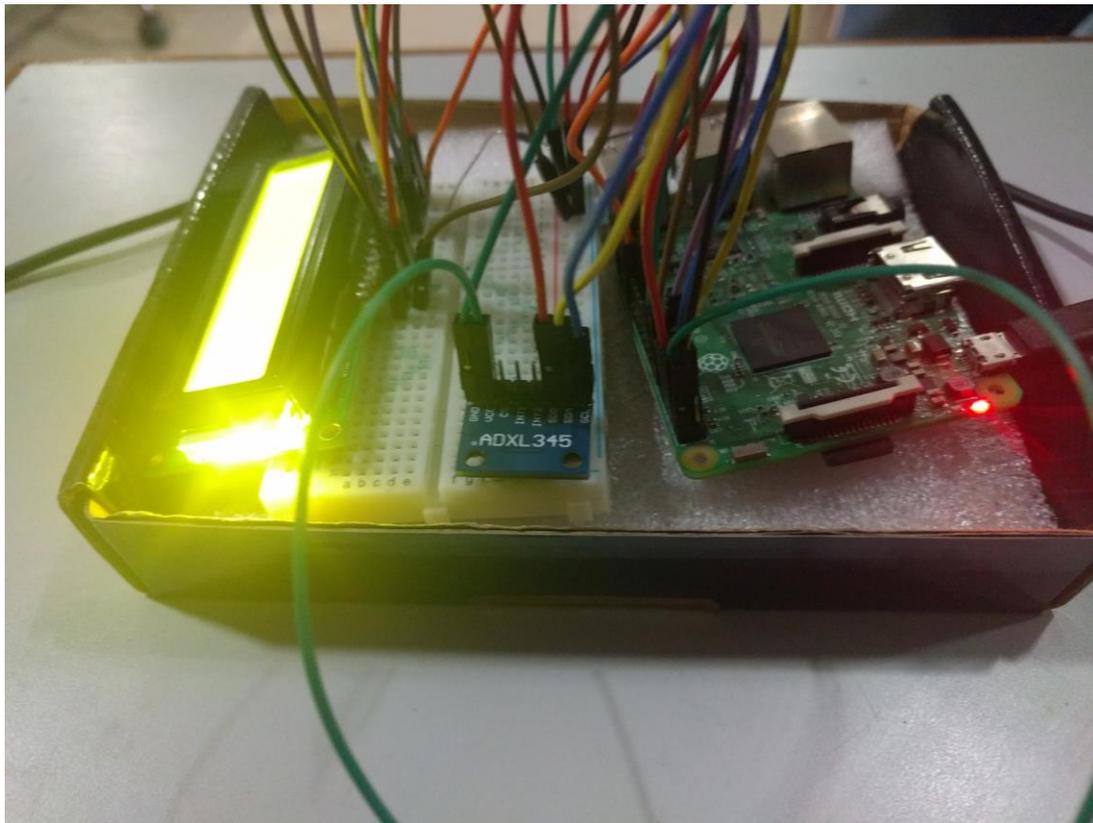


Chapter 7: Smart Wearable and IFTTT

$$SMV = \sqrt{x^2 + y^2 + z^2}$$



```
pi@raspberrypi: ~/Desktop/pi-client
File Edit Tabs Help
pi@raspberrypi:~/Desktop/pi-client $ sudo node index.js
Found ADXL345 device id 0xe5 on bus i2c-1, address 0x53
Measurement range: RANGE_2_G
Data rate: DATARATE_100_HZ
Offsets: {
  "x": 0,
  "y": 0,
  "z": 0
}
ADXL345 initialization succeeded
Fall Detected >> { x: -2.048, y: -2.048, z: -2.048, units: 'g', smv: 2.048, fall: 1 }
Data Published
```



Fall Alert!!



Inbox x



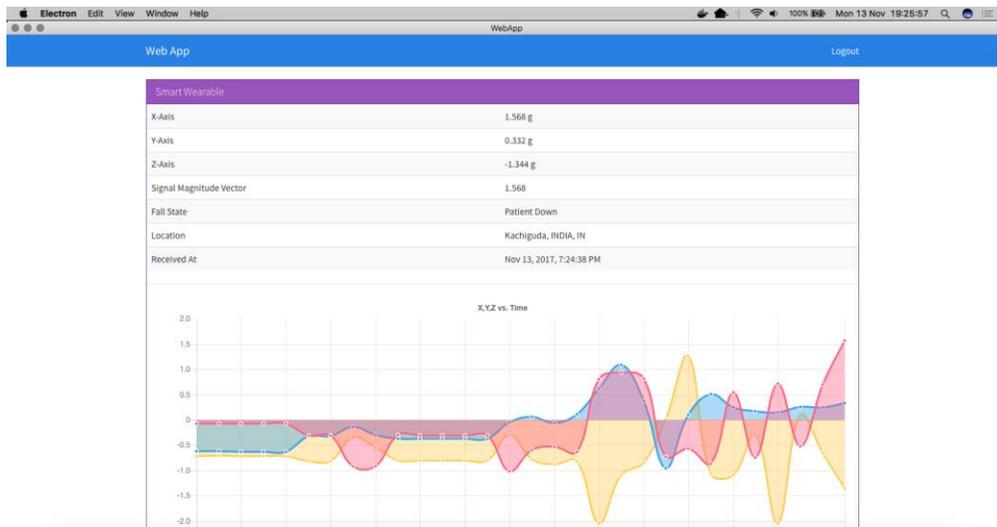
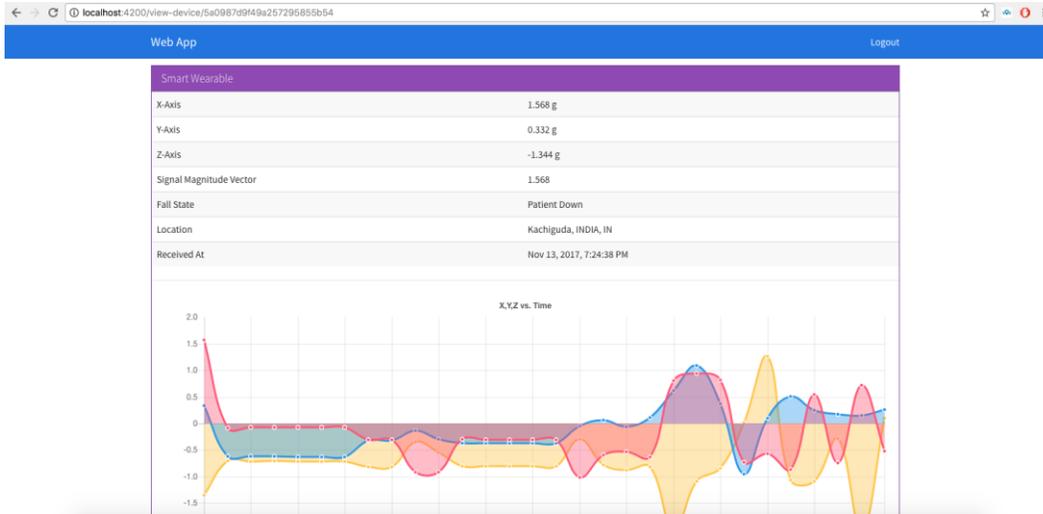
Patient Bot <arvind.ravulavaru@gmail.com>

7:24 PM (3 hours ago) ☆



to me ▾

Fall has been detected. Please attend to the patient

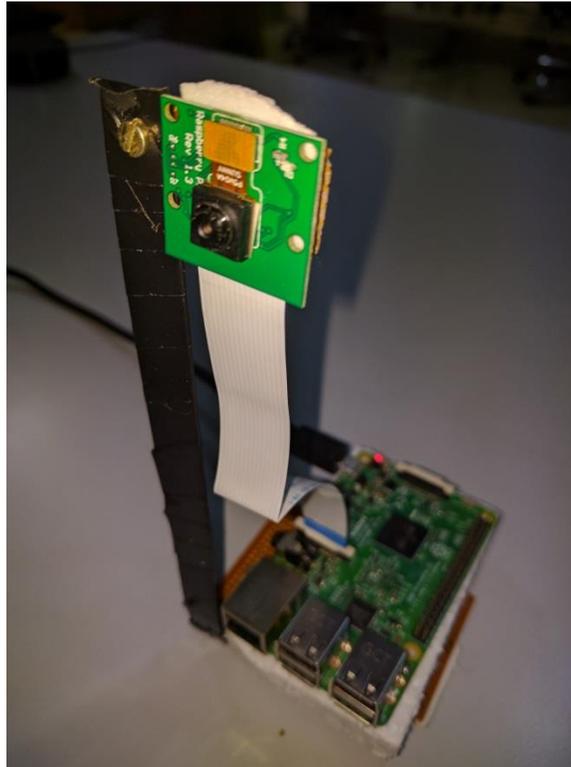


← Mobile App

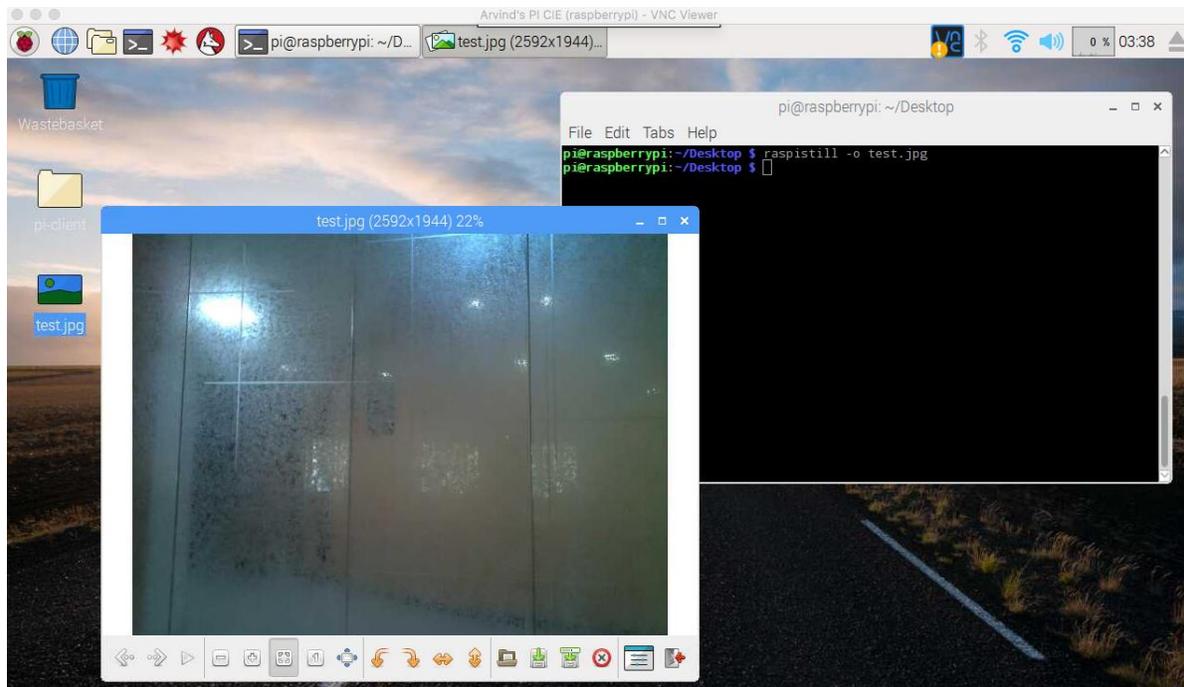
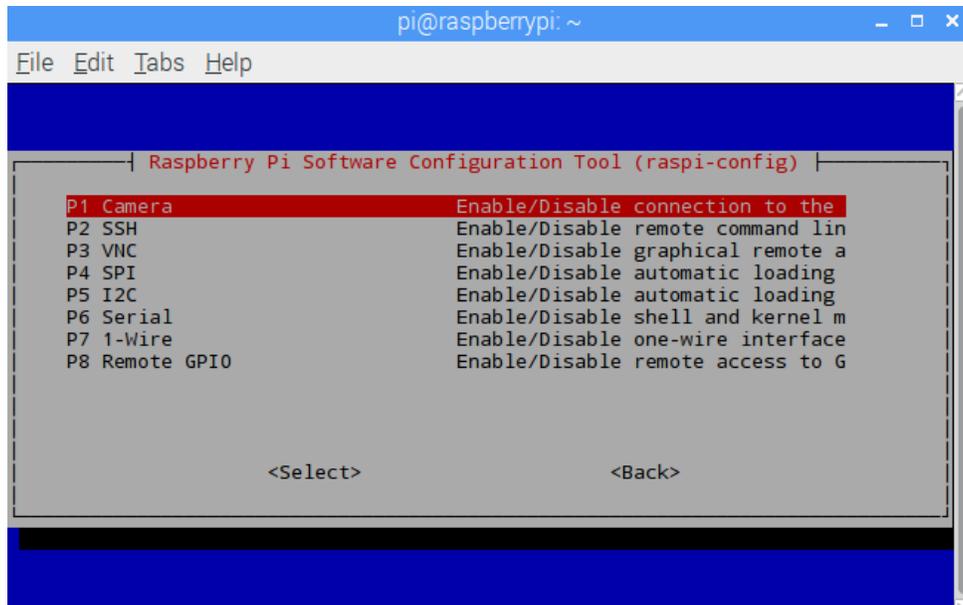
Name	Smart Wearable
X-Axis	1.568 g
Y-Axis	0.332 g
Z-Axis	-1.344 g
Signal Magnitude Vector	1.568
Fall State	Patient Down
Location	Kachiguda, INDIA, IN
Received At	Nov 13, 2017, 7:24:38 PM



Chapter 8: Raspberry Pi Image Streaming



```
pi@raspberrypi: ~  
File Edit Tabs Help  
-----| Raspberry Pi Software Configuration Tool (raspi-config) |-----  
1 Change User Password          Change password for the default u  
2 Hostname                      Set the visible name for this Pi  
3 Boot Options                  Configure options for start-up  
4 Localisation Options          Set up language and regional sett  
5 Interfacing Options           Configure connections to peripher  
6 Overclock                     Configure overclocking for your P  
7 Advanced Options              Configure advanced settings  
8 Update                        Update this tool to the latest ve  
9 About raspi-config            Information about this configurat  
  
                <Select>                <Finish>
```



Pi 1



Received At

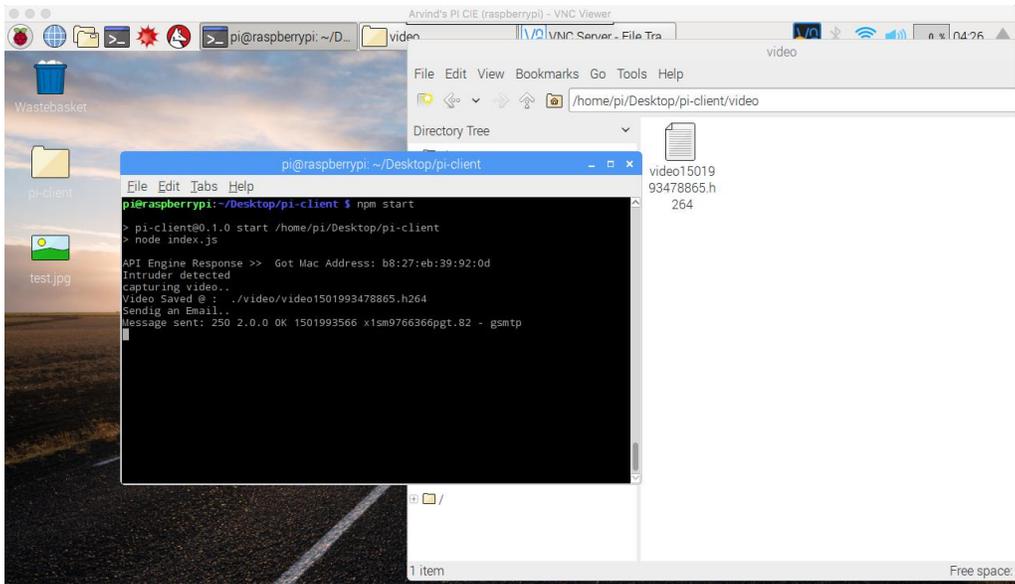
Aug 5, 2017, 1:24:44 PM

← Mobile App



Received At

Aug 5, 2017, 1:44:19 ...



[Pi Bot] Intruder Detected

Inbox x



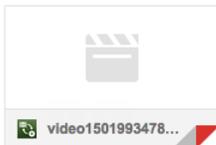
Pi Bot
to me

9:54 AM (2 minutes ago)



Intruder Detected. Please check the video attached.

Intruder Detected At : Sun Aug 06 2017 04:24:44 GMT+0000 (UTC)



Chapter 9: Smart Surveillance

```
+ ~ aws configure
AWS Access Key ID [*****KwNA]: *****
AWS Secret Access Key [*****io/6]: *****
Default region name [ap-southeast-1]: ap-southeast-1
Default output format [None]: json
```