IOT Lab Assignment 4

Log light sensor in database

What is influxdb

InfluxDB is an open-source time series database.

It is optimized for fast, high-availability storage and retrieval of time series data in fields such as operations monitoring, application metrics, Internet of Things sensor data, and real-time analytics.

TLDR

Influxdb is time series database used to store log, sensor and other data, over a period of time.

Install Database

- sudo dnf install docker
- systemctl start docker
- systemctl enable docker
- sudo docker pull influxdb
- sudo docker run -d --restart always -p 8086:8086 -v influxdb:/var/lib/influxdb influxdb
- Sudo docker ps (make sure its running)

```
[rpi@localhost ~]$ sudo docker ps
[sudo] password for rpi:
CONTAINER ID        IMAGE               COMMAND                  CREATED             STATUS              PORTS
            NAMES
79fbec0f629d        influxdb            "/entrypoint.sh in..."   26 minutes ago      Up 40 seconds       0.0.0.0:8086-
>8086/tcp   sleepy_easley
[rpi@localhost ~]$
```

Create a database

- curl -i -XPOST http://localhost:8086/query --data-urlencode "q=CREATE DATABASE mydb"

```
[rpi@localhost ~]$ curl -i -XPOST http://localhost:8086/query --data-urlencode "q=CREATE DATABASE mydb"
HTTP/1.1 200 OK
Content-Type: application/json
Request-Id: 8540fab9-4c3e-11ea-8008-0242ac110002
X-Influxdb-Build: OSS
X-Influxdb-Version: 1.7.9
X-Request-Id: 8540fab9-4c3e-11ea-8008-0242ac110002
Date: Mon, 10 Feb 2020 19:49:59 GMT
Transfer-Encoding: chunked

{"results":[{"statement_id":0}]}
```

Make sure it worked

- curl -i -XPOST http://localhost:8086/query --data-urlencode "q=SHOW DATABASES"

```
[rpi@localhost ~]$ curl -i -XPOST http://localhost:8086/query --data-urlencode "q=SHOW DATABASES"
HTTP/1.1 200 OK
Content-Type: application/json
Request-Id: 89b03aa8-4c43-11ea-8003-0242ac110002
X-Influxdb-Build: OSS
X-Influxdb-Version: 1.7.9
X-Request-Id: 89b03aa8-4c43-11ea-8003-0242ac110002
Date: Mon, 10 Feb 2020 20:25:54 GMT
Transfer-Encoding: chunked

{"results":[{"statement_id":0,"series":[{"name":"databases","columns":["name"],"values":[["_internal"],["mydb"]]}]}]}
```

Install Influxdb python library

- sudo pip3 install influxdb

https://influxdb-python.readthedocs.io/en/latest/

Write to db

```
Test it
```

```
curl -G 'http://localhost:8086/query?pretty=true'  --data-urlencode "db=mydb" --data-urlencode "q=SELECT \"value\" FROM \"cpu_load_short\" WHERE \"region\"='us-west'"
```

Query db

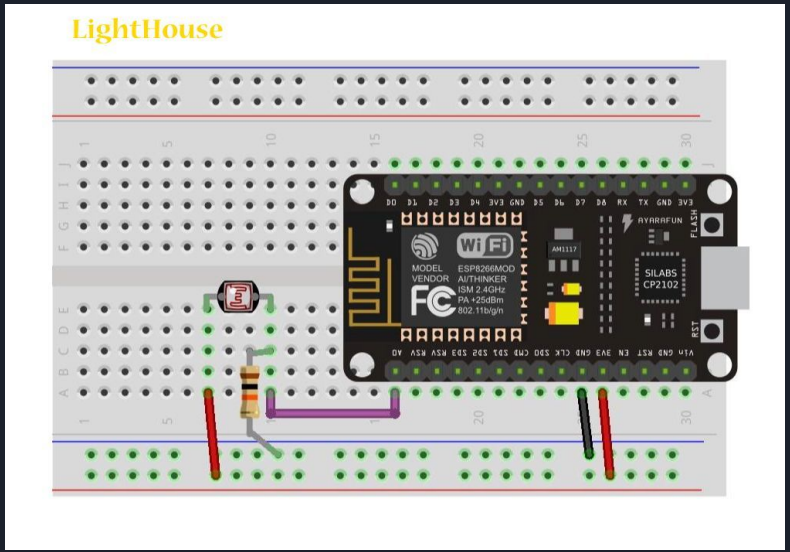
Query for assignment

```
#query db for average light value from past 30 secs
query = 'select mean("value") from "/light" where "time" > now() - 10s'

result = dbclient.query(query)


try:
    light_avg =  list(result.get_points(measurement='/light'))[0]['mean']
    print light_avg
except:
    #print 'exception'
    pass
```

Photoresistor circuit



How to read analog light sensor

Lightstate

Limit sensor data collection

lightstateslow

Assignment

- Wiring light sensor to arduino, wire led to pi
- Send light sensor value to pi from arduino using mqtt
- Pi will save all light sensor values to influxdb
- pi will query influxdb for average light sensor value from the last 10 seconds
- If value is below 200 turn led on
- If it is above 200 turn led off

Assignment video