```
==> Caveats
==> mosquitto
mosquitto has been installed with a default configuration file.
You can make changes to the configuration by editing:
    /usr/local/etc/mosquitto/mosquitto.conf

To restart mosquitto after an upgrade:
  brew services restart mosquitto
Or, if you don't want/need a background service you can just run:
  /usr/local/opt/mosquitto/sbin/mosquitto -c /usr/local/etc/mosquitto/mosquitto.conf
Roshans-MacBook-Pro:lesson3 roshansoni$
```

```
Roshans-MacBook-Pro:lesson3 roshansoni$ brew services start mosquitto
==> Tapping homebrew/services
Cloning into '/usr/local/Homebrew/Library/Taps/homebrew/homebrew-services'...
remote: Enumerating objects: 1930, done.
remote: Counting objects: 100% (437/437), done.
remote: Compressing objects: 100% (174/174), done.
remote: Total 1930 (delta 308), reused 318 (delta 257), pack-reused 1493
Receiving objects: 100% (1930/1930), 534.14 KiB | 5.93 MiB/s, done.
Resolving deltas: 100% (863/863), done.
Tapped 1 command (45 files, 683.5KB).
==> Successfully started `mosquitto` (label: homebrew.mxcl.mosquitto)
```

```
Roshans-MacBook-Pro:lesson3 roshansoni$ mosquitto_sub -h localhost -v -t test/topic
[1] 10559
Roshans-MacBook-Pro:lesson3 roshansoni$ test/topic Hello
```

```
Roshans-MBP:~ roshansoni$ mosquitto_pub -h localhost -t test/topic -m "Hello
```

```
Roshans-MacBook-Pro:lesson3 roshansoni$ sudo pip3 install -U paho-mqtt
Password:
WARNING: The directory '/Users/roshansoni/Library/Caches/pip' or its parent directory is not ow
ned or is not writable by the current user. The cache has been disabled. Check the permissions
and owner of that directory. If executing pip with sudo, you should use sudo's -H flag.
Collecting paho-mqtt
  Downloading paho-mqtt-1.6.1.tar.gz (99 kB)
     |████████████████████████████████| 99.4/99.4 KB 16.9 MB/s eta 0:00:00
  Preparing metadata (setup.py) ... done
Using legacy 'setup.py install' for paho-mqtt, since package 'wheel' is not installed.
Installing collected packages: paho-mqtt
  Running setup.py install for paho-mqtt ... done
Successfully installed paho-mqtt-1.6.1
WARNING: Running pip as the 'root' user can result in broken permissions and conflicting behavi
our with the system package manager. It is recommended to use a virtual environment instead: ht
tps://pip.pypa.io/warnings/venv
```

```
Roshans-MacBook-Pro:lesson3 roshansoni$ git clone https://github.com/eclipse/paho.mqtt.python.g
it
Cloning into 'paho.mqtt.python'...
remote: Enumerating objects: 4491, done.
remote: Counting objects: 100% (929/929), done.
remote: Compressing objects: 100% (369/369), done.
remote: Total 4491 (delta 547), reused 826 (delta 490), pack-reused 3562
Receiving objects: 100% (4491/4491), 1.37 MiB | 3.04 MiB/s, done.
Resolving deltas: 100% (2395/2395), done.
```

```
Roshans-MacBook-Pro:lesson5 roshansoni$ python3 client.py
Connected with result code 0
$SYS/broker/publish/messages/received 806555095
$SYS/broker/publish/messages/sent 273428525
$SYS/broker/publish/bytes/received 8768125233
$SYS/broker/publish/bytes/sent 4489757278
$SYS/broker/publish/messages/received 806555653
$SYS/broker/publish/messages/sent 273430348
$SYS/broker/publish/bytes/received 8768192356
$SYS/broker/publish/bytes/sent 4489842918
$SYS/broker/publish/messages/received 806556218
$SYS/broker/publish/messages/sent 273432200
$SYS/broker/publish/bytes/received 8768259325
$SYS/broker/publish/bytes/sent 4489927087
```

```
Roshans-MacBook-Pro:lesson5 roshansoni$ python3 sub.py
Connected with result code 0
```

```
Roshans-MBP:lesson5 roshansoni$ python3 pub.py
Roshans-MBP:lesson5 roshansoni$
```

```
Roshans-MacBook-Pro:lesson5 roshansoni$ python3 sub-multiple.py
Connected with result code 0
```

```
Roshans-MacBook-Pro:lesson5 roshansoni$ python3 subcpu.py
Connected with result code 0
```

```
Roshans-MBP:lesson5 roshansoni$ python3 pub-multiple.py
Roshans-MBP:lesson5 roshansoni$ python3 pubcpu.py
2022-03-23 11:07:55
CPU Usage:   16.3 %
2022-03-23 11:08:05
CPU Usage:   8.0 %
2022-03-23 11:08:15
CPU Usage:   3.0 %
2022-03-23 11:08:25
CPU Usage:   4.9 %
2022-03-23 11:08:35
CPU Usage:   2.9 %
```

```
Roshans-MacBook-Pro:~ roshansoni$ cp ~/roshangit/iot/lesson5/subraspi.py ~/roshangit/dem
Roshans-MacBook-Pro:~ roshansoni$ cp ~/roshangit/iot/lesson5/system_info.py ~/roshangit/
Roshans-MacBook-Pro:~ roshansoni$ cp ~/roshangit/iot/lesson5/pubraspi.py ~/roshangit/dem
Roshans-MacBook-Pro:~ roshansoni$ cd ~/roshangit/demo/
Roshans-MacBook-Pro:demo roshansoni$ nano subraspi.py
Roshans-MacBook-Pro:demo roshansoni$ python3 subraspi.py
Connected with result code 0
```

```
  GNU nano 2.0.6                    File: subraspi.py

import paho.mqtt.client as mqtt
def on_connect(client, userdata, flags, rc):
    print("Connected with result code "+str(rc))
    client.subscribe("Raspberry Pi")
def on_message(client, userdata, msg):
    print(msg.topic+" "+str(msg.payload.decode()))
client = mqtt.Client()
client.on_connect = on_connect
client.on_message = on_message
client.connect("mqtt.eclipseprojects.io", 1883, 60)
client.loop_forever()
```

```
^CRoshans-MBP:lesson5 roshansoni$ cd ~/roshangit/demo/
Roshans-MBP:demo roshansoni$ ls
pubraspi.py     subraspi.py     system_info.py
Roshans-MBP:demo roshansoni$ nano pubraspi.py
Roshans-MBP:demo roshansoni$ python3 pubraspi.py
```

```
  GNU nano 2.0.6                                File: pubraspi.py

import time
import datetime
from system_info import get_temperature
import psutil
import paho.mqtt.client as mqtt
mqttc = mqtt.Client()
mqttc.connect("mqtt.eclipseprojects.io", 1883, 60)
mqttc.loop_start()
while True:
    try:
        cpu = psutil.cpu_percent()
        tmp = get_temperature()
        if cpu is None or tmp is None:
            time.sleep(2)
            continue
        now = datetime.datetime.now()
        dt = now.replace(microsecond=0)
        print(dt)
        print('Temperature: {0:0.1f} C'.format(tmp))
        print('CPU Usage:   {0:0.1f} %'.format(cpu))
        mqttc.publish("Raspberry Pi", "%s" % dt)
        mqttc.publish("Raspberry Pi", "Temperature: %.1f C" % tmp)
        mqttc.publish("Raspberry Pi", "CPU Usage:   %.1f %%" % cpu)
        time.sleep(10)
    except KeyboardInterrupt:
        exit()
```