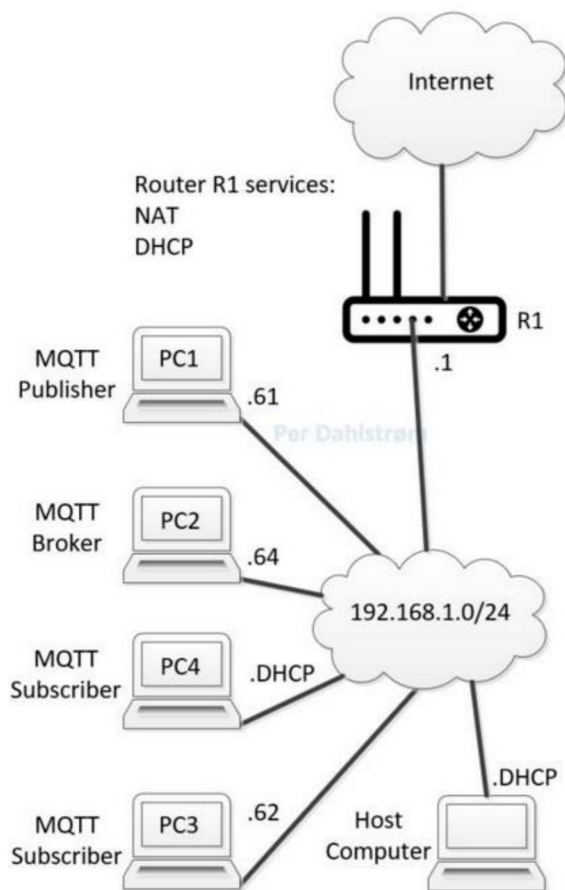
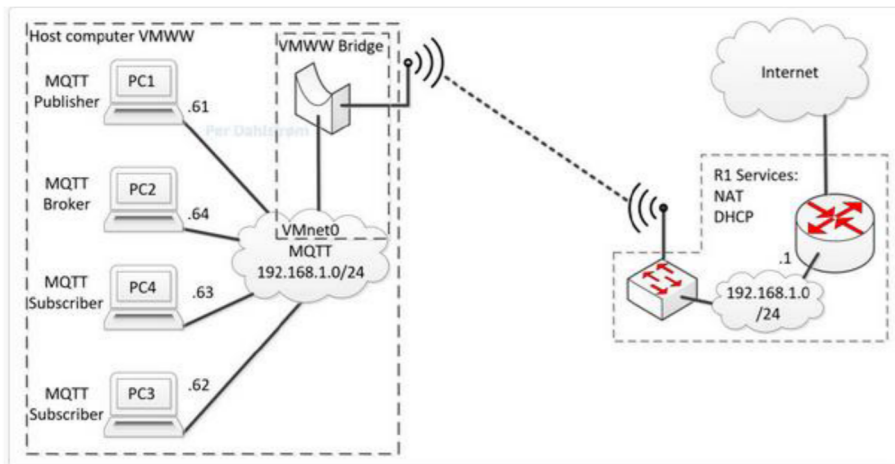


## Assignment 55 Basic MQTT devices on VMWW bridged network.

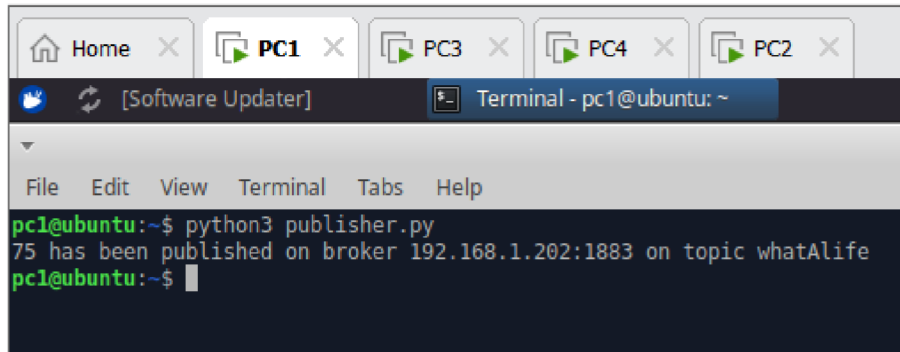


**PC1, PC2, PC3 on static IP, PC4 on dhcp**

**The static pc's should be outside automatic dhcp range of the router**

**All pc's connected to vmnet0 and vmnet0 bridged to the host pc wifi**

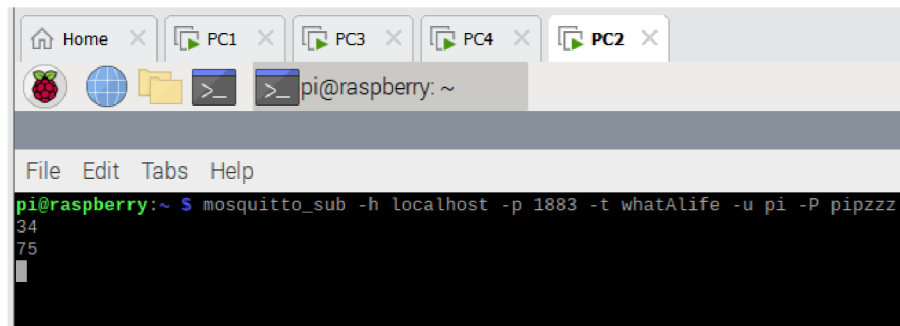
**PC1 as a publisher**



The screenshot shows a terminal window titled "Terminal - pc1@ubuntu: ~". The terminal output is as follows:

```
pc1@ubuntu:~$ python3 publisher.py
75 has been published on broker 192.168.1.202:1883 on topic whatAlife
pc1@ubuntu:~$
```

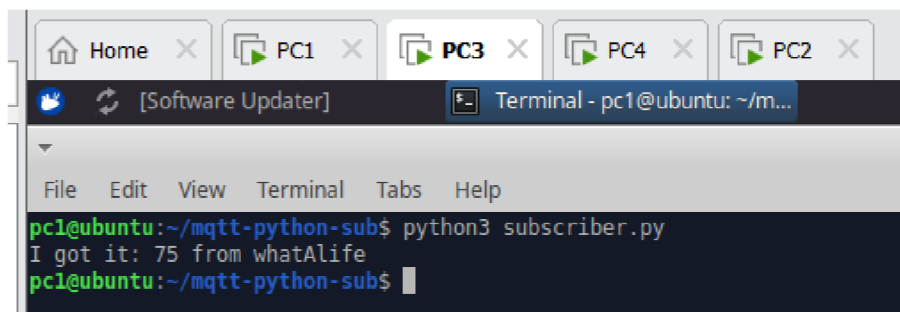
**PC2 as a broker, host**



The screenshot shows a terminal window titled "pi@raspberrypi: ~". The terminal output is as follows:

```
pi@raspberrypi:~$ mosquitto_sub -h localhost -p 1883 -t whatAlife -u pi -P pipzzz
34
75
```

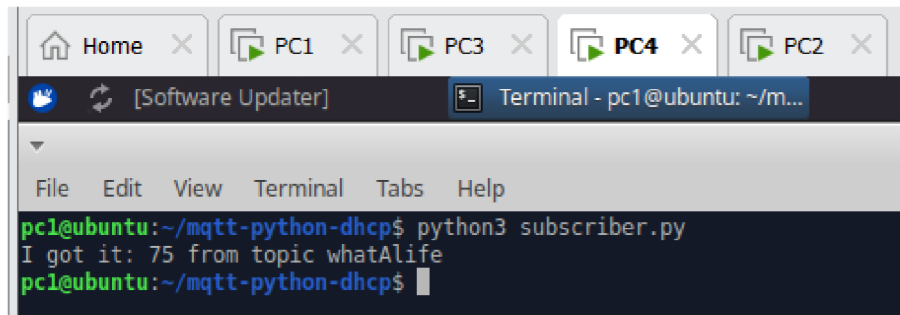
**PC3 as a static subscriber**



The screenshot shows a terminal window titled "Terminal - pc1@ubuntu: ~/m...". The terminal output is as follows:

```
pc1@ubuntu:~/mqtt-python-sub$ python3 subscriber.py
I got it: 75 from whatAlife
pc1@ubuntu:~/mqtt-python-sub$
```

**PC4 as a dhcp subscriber**



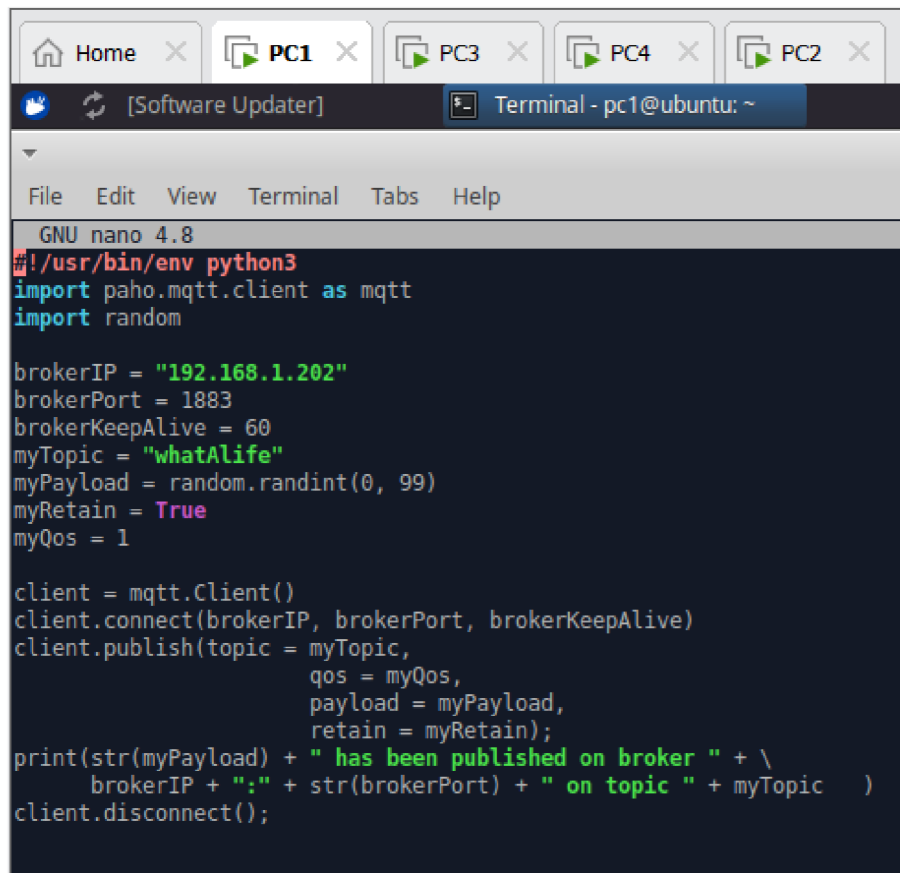
A terminal window titled "Terminal - pc1@ubuntu: ~/m..." is shown. The window has a menu bar with "File", "Edit", "View", "Terminal", "Tabs", and "Help". The terminal output shows the command `python3 subscriber.py` being executed, followed by the message "I got it: 75 from topic whatAlife". The prompt is `pc1@ubuntu:~/mqtt-python-dhcp$`.

```
pc1@ubuntu:~/mqtt-python-dhcp$ python3 subscriber.py
I got it: 75 from topic whatAlife
pc1@ubuntu:~/mqtt-python-dhcp$
```

**Run `sudo apt update` and `upgrade` and after “`sudo apt install python3-pip`”, then “`sudo pip3 install paho-mqtt`” for publisher and subscriber**

**For the broker “`sudo apt install mosquitto`” and “`sudo apt install mosquitto-clients`”**

**The publisher program**



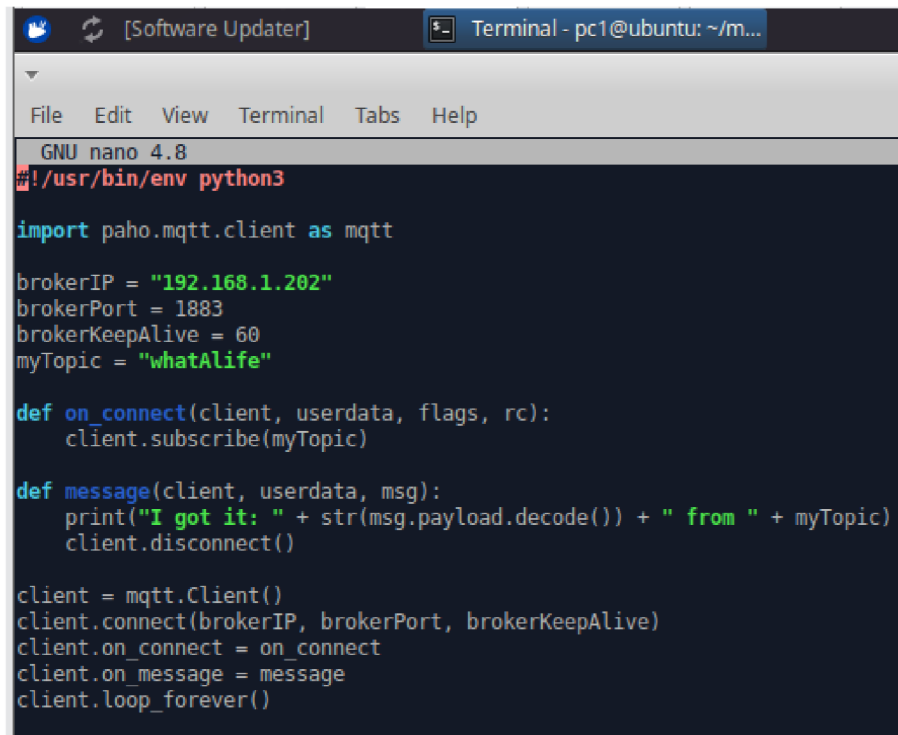
A terminal window titled "Terminal - pc1@ubuntu: ~" is shown. The window has a menu bar with "File", "Edit", "View", "Terminal", "Tabs", and "Help". The terminal output shows the code for the publisher program being written in a nano editor. The code includes imports for `paho.mqtt.client` and `random`, defines broker IP, port, and topic, and publishes a random payload to the topic "whatAlife". The prompt is `GNU nano 4.8`.

```
GNU nano 4.8
#!/usr/bin/env python3
import paho.mqtt.client as mqtt
import random

brokerIP = "192.168.1.202"
brokerPort = 1883
brokerKeepAlive = 60
myTopic = "whatAlife"
myPayload = random.randint(0, 99)
myRetain = True
myQos = 1

client = mqtt.Client()
client.connect(brokerIP, brokerPort, brokerKeepAlive)
client.publish(topic = myTopic,
               qos = myQos,
               payload = myPayload,
               retain = myRetain);
print(str(myPayload) + " has been published on broker " + \
      brokerIP + ":" + str(brokerPort) + " on topic " + myTopic )
client.disconnect();
```

**The subscriber program**



The image shows a terminal window with a dark theme. At the top, there are two tabs: "[Software Updater]" and "Terminal - pc1@ubuntu: ~/m...". Below the tabs is a menu bar with "File", "Edit", "View", "Terminal", "Tabs", and "Help". The main area of the terminal shows the GNU nano 4.8 editor with a Python script. The script defines an MQTT client, sets broker details, and implements connection and message handling functions. The script is as follows:

```
#!/usr/bin/env python3

import paho.mqtt.client as mqtt

brokerIP = "192.168.1.202"
brokerPort = 1883
brokerKeepAlive = 60
myTopic = "whatALife"

def on_connect(client, userdata, flags, rc):
    client.subscribe(myTopic)

def message(client, userdata, msg):
    print("I got it: " + str(msg.payload.decode()) + " from " + myTopic)
    client.disconnect()

client = mqtt.Client()
client.connect(brokerIP, brokerPort, brokerKeepAlive)
client.on_connect = on_connect
client.on_message = message
client.loop_forever()
```