**Setting up an Access Point**

Below are the steps for creating an access point on the Raspberry Pi.

# Step 1: Downloading needed apps

We can update the OS using these commands.

sudo apt-get update

sudo apt-get upgrade

and then we need to install hostapd and dnsmasq to make a wireless access point.

Hostpad : lets you create a wireless hotspot.

Dnsmasq : is an easy-to-use DHCP and DNS server.

sudo apt-get install hostapd

sudo apt-get install dnsmasq

we will turn-off those two apps that we just installed until we configure them using these commands.

sudo systemctl stop hostapd

sudo systemctl stop dnsmasq

# Step 2: Configuring a static ip

To configure a static IP, we need to edit the DHCPCD configuration file.

sudo nano /etc/dhcpcd.conf

to set the static IP as 192.168.4.1 add the following to the config file.

interface wlan0

static ip\_address=192.168.4.1/24

nohook wpa\_supplicant

then restart the service.

sudo service dhcpcd restart

# Step 2: Configuring the DHCP server

To configure the DHCP server, we need to edit the DHCPCD configuration file.

Before we edit the dnsmasq config file its better to make a backup.

sudo mv /etc/dnsmasq.conf /etc/dnsmasq.conf.orig

sudo nano /etc/dnsmasq.conf

we configure the dhcp like this.

interface=wlan0

dhcp-range=192.168.4.2,192.168.4.20,255.255.255.0,24h

then we start the dnsmasq service.

sudo systemctl start dnsmasq

# Step 3: Configuring the Host

To configure the access point software.

sudo nano /etc/hostapd/hostapd.conf

we need to add this info.

country\_code=DE

interface=wlan0

ssid=Gateway

channel=9

auth\_algs=1

wpa=2

wpa\_passphrase=terminal

wpa\_key\_mgmt=WPA-PSK

wpa\_pairwise=TKIP CCMP

rsn\_pairwise=CCMP

Open the hostapd file.

sudo nano /etc/default/hostapd

replace line #DAEMON\_CONF with

DAEMON\_CONF="/etc/hostapd/hostapd.conf"

# Step 4: Start the AP and enable Routing

To configure the access point software.

sudo systemctl unmask hostapd

sudo systemctl enable hostapd

sudo systemctl start hostapd

to enable routing we edit the sysctl.conf config file

sudo nano /etc/sysctl.conf

we uncomment this line

net.ipv4.ip\_forward=1

then we need to masquerade the firewall rule

sudo iptables -t nat -A POSTROUTING -o eth0 -j MASQUERADE

Now to save these firewall rules and automatically use them upon boot, we will use the netfilter-persistent service

sudo netfilter-persistent save

# Step 5: To stop the AP

First stop the hostadp service

sudo systemctl stop hostap

Edit the dhcpcd.conf file, and comment out the lines related to the static IP address.

sudo nano /etc/dhcpcd.conf

Now reboot

sudo reboot