Check Ethernet & Wifi

Make sure the Ethernet cable is connected in and you can **ping** out from the Pi

Install software

Next up we install the software onto the Pi that will act as the 'hostap' (host access point) **You need internet access for this step so make sure that Ethernet connection is up!**

```
sudo apt-get install hostapd isc-dhcp-server
```

(You may need to **sudo apt-get update** if the Pi can't seem to get to the apt-get repositories)

Set up DHCP server

Next we will edit /etc/dhcp/dhcpd.conf, a file that sets up our DHCP server - this allows wifi connections to automatically get IP addresses, DNS, etc.

Run this command to edit the file

sudo nano /etc/dhcp/dhcpd.conf

Find the lines that say

option domain-name "example.org";
option domain-name-servers ns1.example.org, ns2.example.org;

and change them to add a # in the beginning
Find the lines that say

 # If this DHCP server is the official DHCP server for the local
 # network, the authoritative directive should be uncommented.
#authoritative;

and remove the # at the beginning.

Then scroll down to the bottom and add the following lines:

subnet 192.168.42.0 netmask 255.255.255.0 {
range 192.168.42.10 192.168.42.50;
option broadcast-address 192.168.42.255;
option routers 192.168.42.1;
default-lease-time 600;

max-lease-time 7200;
option domain-name "local";
option domain-name-servers 8.8.8.8, 8.8.4.4;
}

Save the file by typing in **Control-X** then **Y** then **return**

Run

sudo nano /etc/default/isc-dhcp-server

and scroll down to **INTERFACES=""** and update it to say
INTERFACES="wlan0"

Set up wlan0 for static IP

Run

```
sudo ifdown wlan0
```

Next we will set up the **wlan0** connection to be static and incoming. Run
`sudo nano /etc/network/interfaces`
to edit the file. Find the line **auto wlan0** and add a **#** in front of the line, and in front of every line afterwards. Add the lines

iface wlan0 inet static
  address 192.168.42.1
  netmask 255.255.255.0

Save the file (Control-X Y <return>)
Assign a static IP address to the wifi adapter by running

```
sudo ifconfig wlan0 192.168.42.1
```

Configure Access Point

Create a new file by running

```
sudo nano /etc/hostapd/hostapd.conf
```

Paste the following in, you can change the text after `ssid=` to another name, that will be the network broadcast name. The password can be changed with the text after `wpa_passphrase=`

```
interface=wlan0
driver=rtl871xdrv
ssid=Pi_AP
hw_mode=g
channel=6
macaddr_acl=0
auth_algs=1
ignore_broadcast_ssid=0
wpa=2
wpa_passphrase=Raspberry
wpa_key_mgmt=WPA-PSK
wpa_pairwise=TKIP
rsn_pairwise=CCMP
```

Now we will tell the Pi where to find this configuration file. Run

```
sudo nano /etc/default/hostapd
```

Find the line #DAEMON_CONF="" and edit it so it says DAEMON_CONF="/etc/hostapd/hostapd.conf"
Don't forget to remove the # in front to activate it!

Then save the file.

Configure Network Address Translation

Run

```
sudo nano /etc/sysctl.conf
```

Scroll to the bottom and add

```
net.ipv4.ip_forward=1
```

on a new line. Save the file. This will start IP forwarding on boot up. Also run

```
sudo sh -c "echo 1 > /proc/sys/net/ipv4/ip_forward”
```

Run the following commands to create the network translation between the ethernet port **eth0** and the wifi port **wlan0**. Also add the last line to redirect every outgoing tcp connection to the apache server:

sudo iptables -t nat -A POSTROUTING -o eth0 -j MASQUERADE
sudo iptables -A FORWARD -i eth0 -o wlan0 -m state --state RELATED,ESTABLISHED -j ACCEPT
sudo iptables -A FORWARD -i wlan0 -o eth0 -j ACCEPT
sudo iptables -t nat -A PREROUTING -p tcp -j DNAT —to-destination 192.168.42.1
To make this happen on reboot (so you don't have to type it every time) run

```
sudo sh -c "iptables-save > /etc/iptables.ipv4.nat”
```

Update hostapd

First get the new version by typing in:

wget http://www.adafruit.com/downloads/adafruit_hostapd.zip

to download the new version (check the next section for how to compile your own updated **hostapd**) then

unzip adafruit_hostapd.zip

to uncompress it. Move the old version out of the way with

sudo mv /usr/sbin/hostapd /usr/sbin/hostapd.ORIG

And move the new version back with

sudo mv hostapd /usr/sbin

set it up so its valid to run with

sudo chmod 755 /usr/sbin/hostapd

Finishing up!

Run the following commands

```
sudo service hostapd start
sudo service isc-dhcp-server start
```

you can always check the status of the host AP server and the DHCP server with

```
sudo service hostapd status
sudo service isc-dhcp-server status
```

To start the daemon services. Verify that they both start successfully (no 'failure' or 'errors'). Then to make it so it runs every time on boot

```
sudo update-rc.d hostapd enable
sudo update-rc.d isc-dhcp-server enable
```

Install apache web-server

Run

sudo apt-get install apache2

Put content in /var/www and enjoy!