

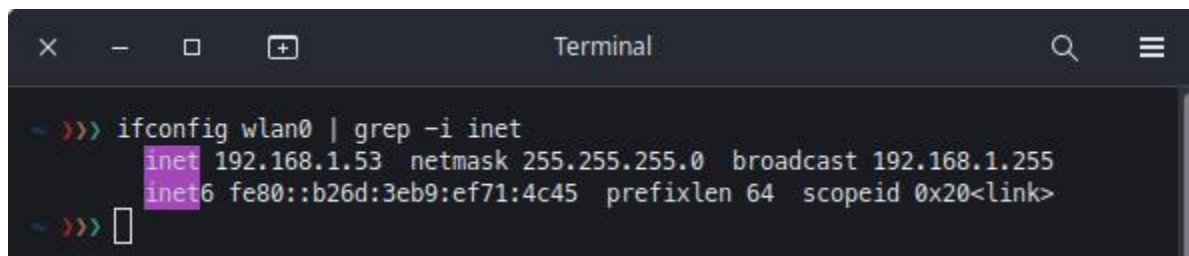
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## IT Lab 1

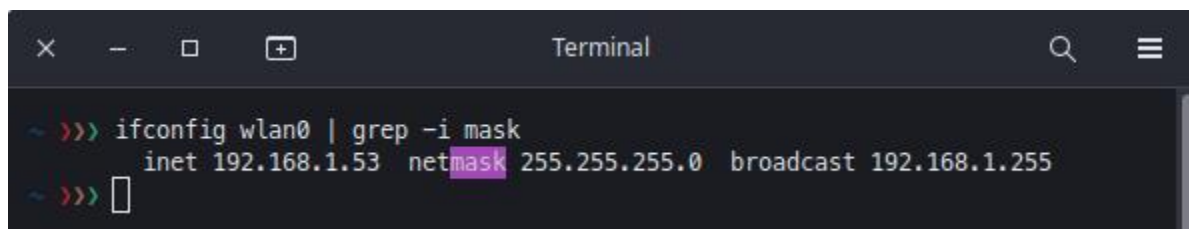
Display your systems IP Address, Subnet mask using ipconfig, and find out the network address and the maximum number of systems possible on your network and range of IP addresses available to these systems.

**IP Address for wlan0 interface:**

A terminal window titled "Terminal" with a dark background. It shows the command `ifconfig wlan0 | grep -i inet` and its output. The output consists of two lines: `inet 192.168.1.53 netmask 255.255.255.0 broadcast 192.168.1.255` and `inet6 fe80::b26d:3eb9:ef71:4c45 prefixlen 64 scopeid 0x20<link>`. The word "inet" is highlighted in pink in both lines.

```
~ >>> ifconfig wlan0 | grep -i inet
inet 192.168.1.53 netmask 255.255.255.0 broadcast 192.168.1.255
inet6 fe80::b26d:3eb9:ef71:4c45 prefixlen 64 scopeid 0x20<link>
~ >>> 
```

**Subnet Mask for wlan0 interface:**

A terminal window titled "Terminal" with a dark background. It shows the command `ifconfig wlan0 | grep -i mask` and its output: `inet 192.168.1.53 netmask 255.255.255.0 broadcast 192.168.1.255`. The word "netmask" is highlighted in pink.

```
~ >>> ifconfig wlan0 | grep -i mask
inet 192.168.1.53 netmask 255.255.255.0 broadcast 192.168.1.255
~ >>> 
```

**Network Address:**

Since Network Address is the numeric part of IP Address, thus the Network Address in this case is **192.168.1.53**

**Maximum Number of Systems Possible on the Network:**

Subnet mask = 255.255.255.0

Subnet mask (bin) = 11111111.11111111.11111111.00000000

Count zero in subnet mask = 8

Max. no. of systems possible on the network =  $2^8 = 256$

**Range of IP Addresses:**

IP Address = 192.168.1.53

IP Address (bin) = 11000000.10101000.00000001.00110101

Subnet mask = 255.255.255.0

Subnet mask (bin) = 11111111.11111111.11111111.00000000

For Starting IP:

IP Address (bin) & Subnet mask (bin)

First IP Address (bin) = 11000000.10101000.00000001.00000000

First IP Address = 192.168.1.0

For Last IP:

First IP Address (bin) | inverse of (Subnet mask (bin))

Inverse of Subnet Mask (bin) = 00000000.00000000.00000000.11111111

Last IP Address (bin) = 11000000.10101000.00000001.11111111

Last IP Address = 192.168.1.255