1. Find out your public IP: Go online and type [https://whatismyipaddress.com.](https://whatismyipaddress.com./) Compare the result with a colleague. What conclusions can you draw?

The conclusion of both have the same IP’s is that both are in the same red

1. Using shell commands, display the network settings of your current computer and answer the questions:
   * What is your IP address? Is it public or private?

The Wi-Fi adapter is 192.168.1.74. This is a private IP address, which means it is assigned by the local network rather than the ISP.

* + What is your mask?

The mask is 255.255.255.0, which means that the first three numbers of the IP address (192.168.1) represent the network address, and the last number (74) represents the host address.

* + What is your gateway?

The gateway is 192.168.1.1.

* + What are your DNS servers?

No he conseguido que me salga con ipconfig

1. Explain what it's for:
   * The IP address: A unique identifier assigned to every device on a network that enables communication between devices.
   * The netmask:A 32-bit number used to divide an IP address into a network address and host address to determine if a device is on the same local network.
   * The gateway:The IP address of a router that connects a local network to the internet, allowing devices on the network to access resources outside the local network.
   * DNS servers:Computers that translate domain names into IP addresses so that devices can access websites and services on the internet.
2. Enter your IP in CIDR format and in IP format with netmask. What is your network address? Which broadcast? How many hosts can be assigned on that network?
3. Which is equivalent of this IPv6 address -1234:2001:acbc:0001:0004:0000:1234:0000

o 1234:201:acbc:1:4:0:1234::

o 1234:2001:acbc:1:4::1234:0

o 1234:2001:acbc:1:4::1234::

o 1234:21:acbc:1:4::1234:0

Which is equivalent of this IPv6 address - 5030:0101:00ac:0001:4001:0000:0000:0000

o 5030:11:00ac:0001:4001:0000:0000:0000

o 5030:101:ac:1:4001::

o 5030:11:00ac:1:4001::

o 5030:0101:AM:1:41::

Which is equivalent of this IPv6 address - 0000:0000:0000:0000:abcd:0000:0000:0000

* :0:abcd::
* ::abcd:0:0

o ::abcd:0:0:0

::abcd::

1. Set up your Linux VM, with a network card in bridge mode. Configure the card graphically in DHCP. Do you have Internet access? What is the configuration that the card receives? Show it and explain it.

IP address: 10.2.1.48

Subnet mask: /24 (or 255.255.255.0)

Broadcast address: 10.2.1.255

The "link/ether" value specifies the MAC address (Media Access Control) of the network card, which is unique to the device.

Overall, these settings indicate that the eth0 network card has been configured to receive a dynamic IP address using DHCP. The IP address 10.2.1.48 is within the scope of the network with a subnet mask of /24, allowing communication with other devices on the same network segment.

Based on this configuration, the system should have internet access as long as the DHCP server provides the necessary routing information and the network infrastructure is properly set up.

1. Configure your Linux VM with a network card in NAT mode. Configure the card graphically in DHCP. Do you have Internet access? What is the configuration that the card receives? Show it and explain it.
2. Search the Internet for information about Cat5e, Cat6, Cat6a, Cat7, Cat7a and Cat8 categories indicating their bandwidth and maximum distance. Write a table with the results.

|  |  |  |
| --- | --- | --- |
|  | Bandwidth | maximum distance |
| Cat5e | 100 Mbps | 100 meters |
| Cat6 | 10 Gbps | 55 meters |
| Cat6a | 10 Gbps | 100 meters |
| Cat7 | 10 Gbps | 100 meters |
| Cat7 | 10 Gbps | 100 meters |
| Cat8 | 40 Gbps | 30 meters |

1. Search the Internet for Ethernet versions for coaxial, twisted pair, and fiber optic cables. Specifies their bandwidth.
2. Search the Internet for the meaning of the following standards: 100BaseT, 100BaseFX and 10GBASE-T.
3. Search the Internet for information about the Wi-Fi standards studied, as well as 802.11ad, 802.11af, and 802.11ax. Create a table describing its working band (frequency), range, and maximum theoretical bandwidth.
4. Install Wireshark on your virtual machine <https://itsfoss.com/install-wireshark-ubuntu/>. Scan network traffic and upload a screenshot of at least one packet you “sniffed” indicating what you find on it.
5. On Windows and Ubuntu, access the Windows Task Manager and System Monitor, respectively, by navigating through their various options and familiarizing yourself with them. (In this activity you do not have to deliver anything)