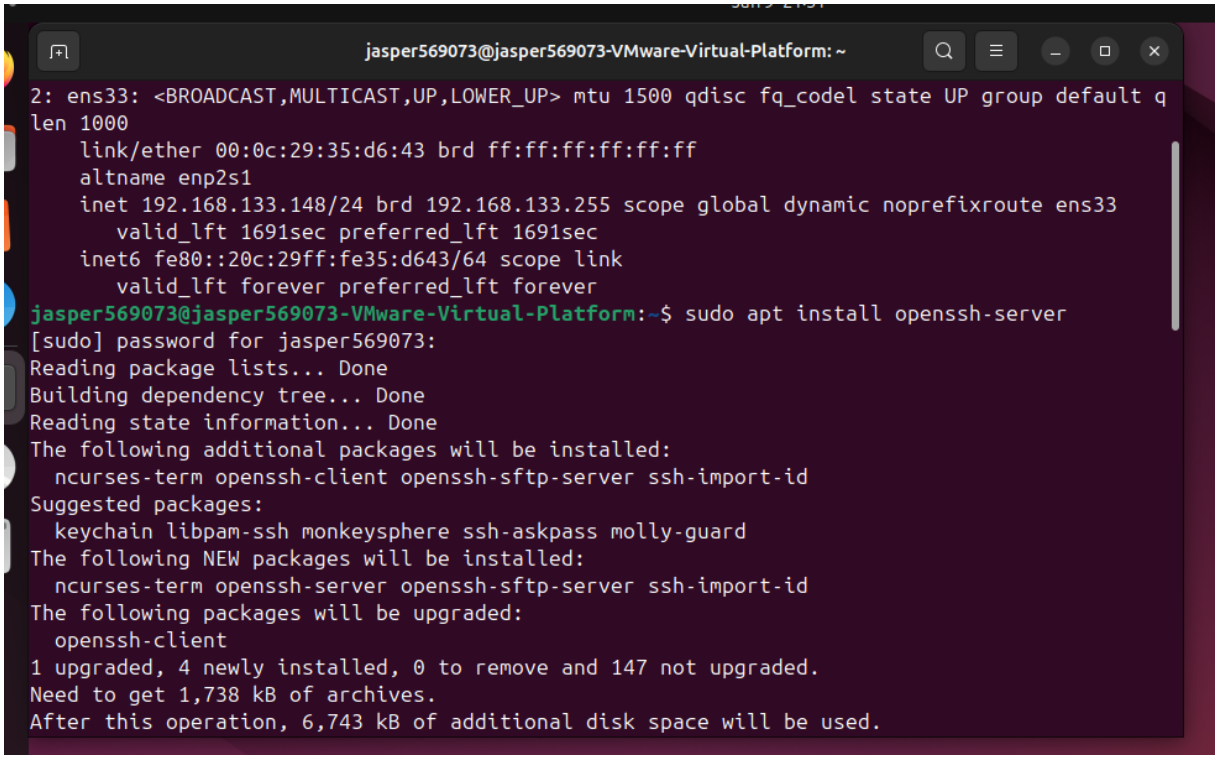
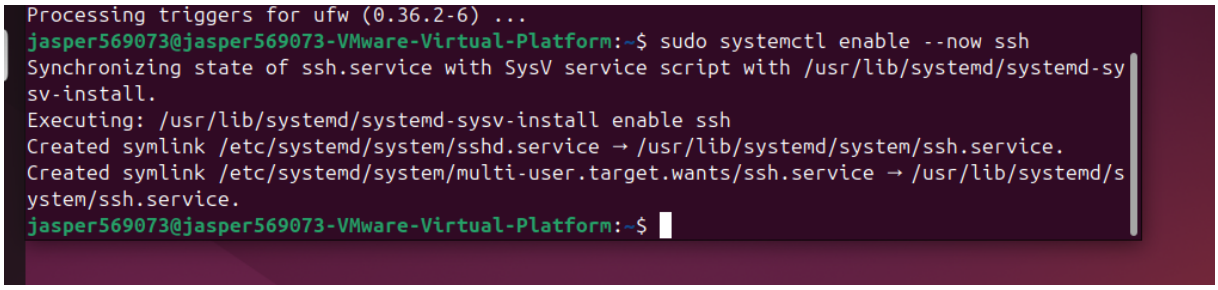
Template Week 6 – Networking

Student number: 569073

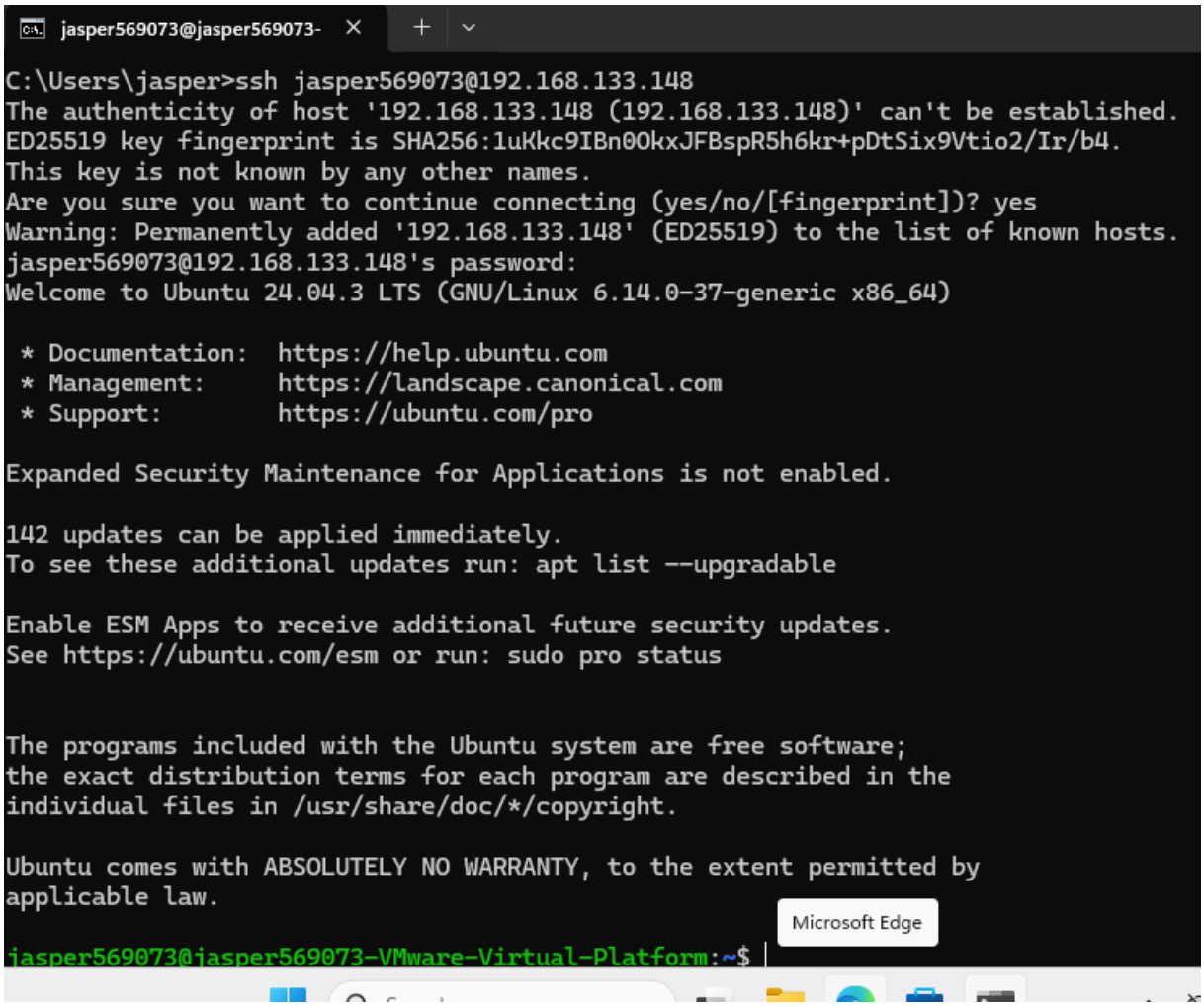
Assignment 6.1: Working from home

Screenshot installation openssh-server:

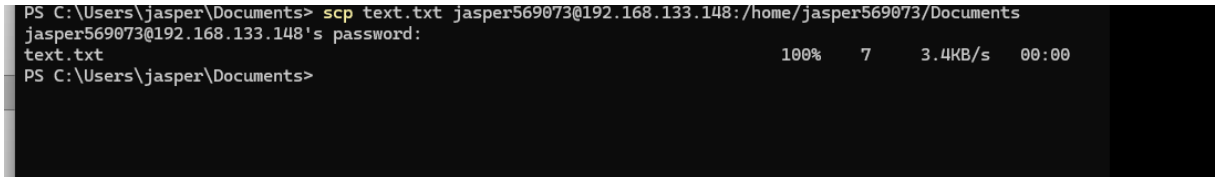


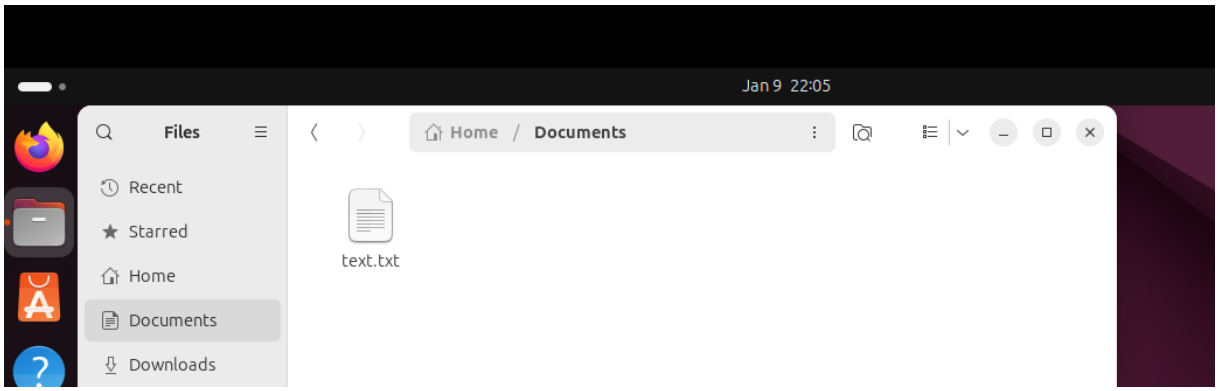


Screenshot successful SSH command execution:



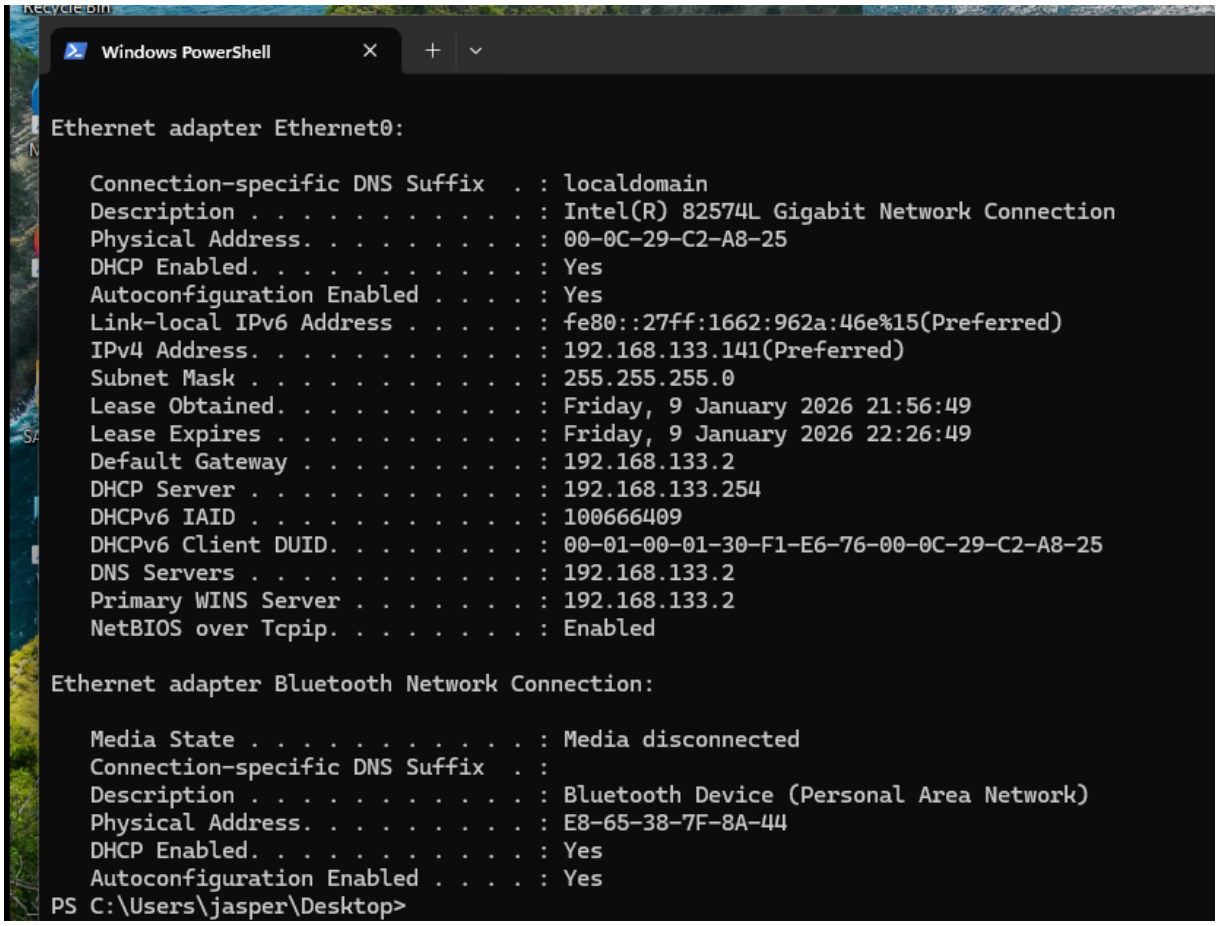
Screenshot successful execution SCP command:

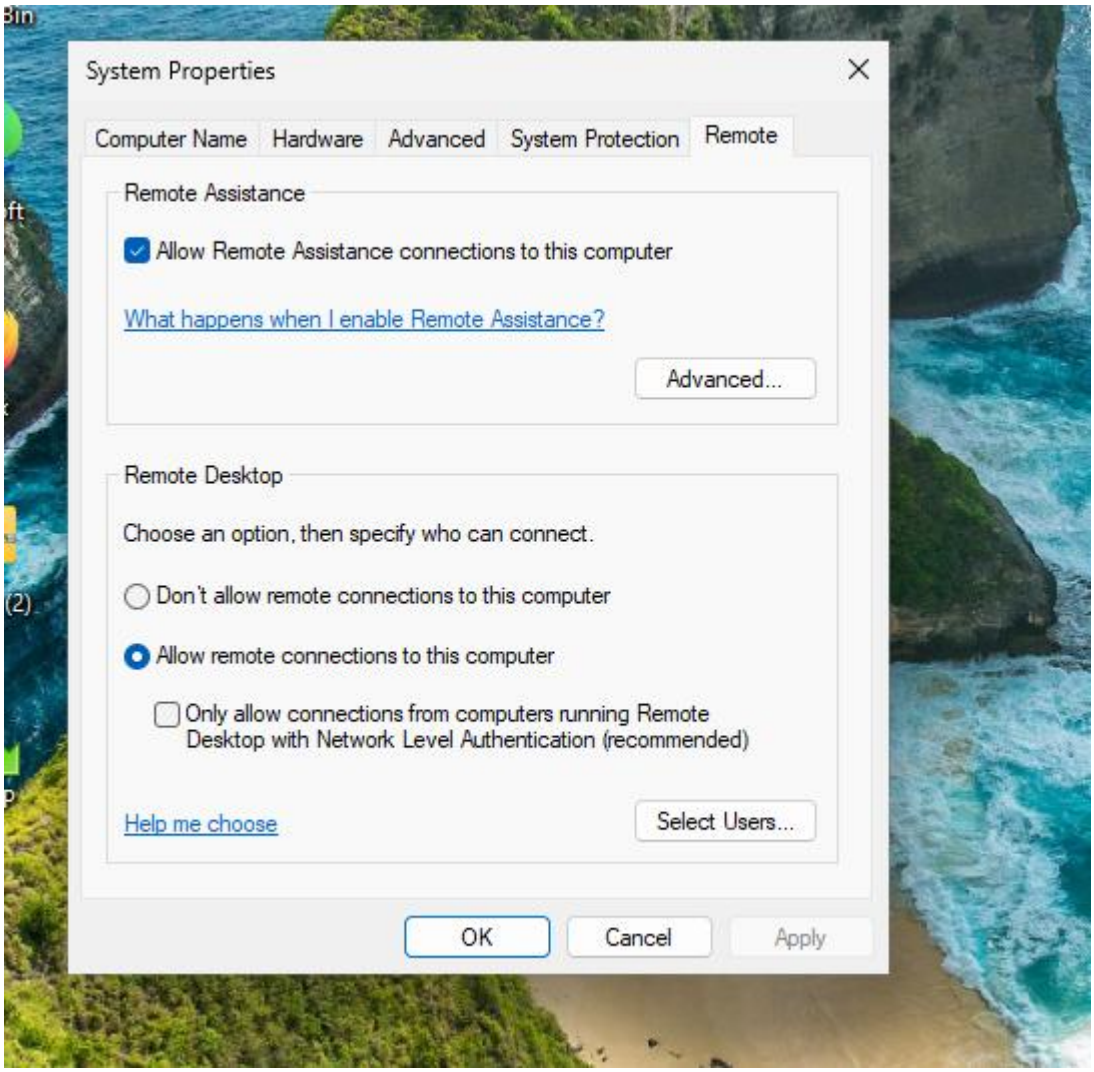


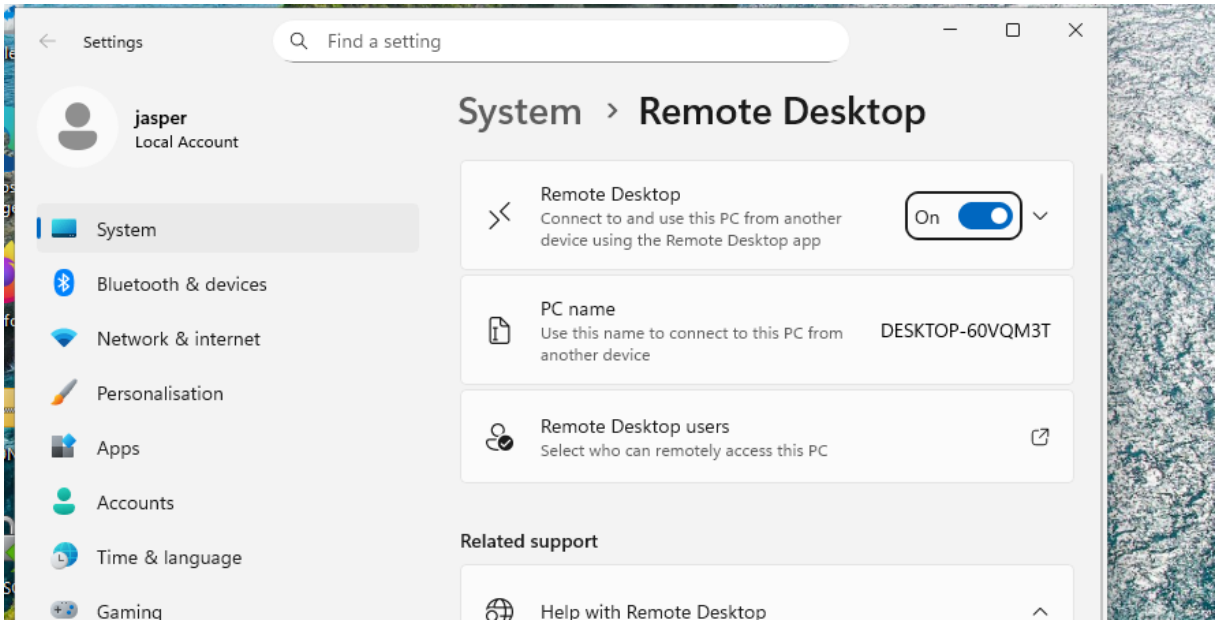


Screenshot remmina:


192.168.133.141
192.168.133.141
Lost connection to the RDP server "192.168.133.141".
Close

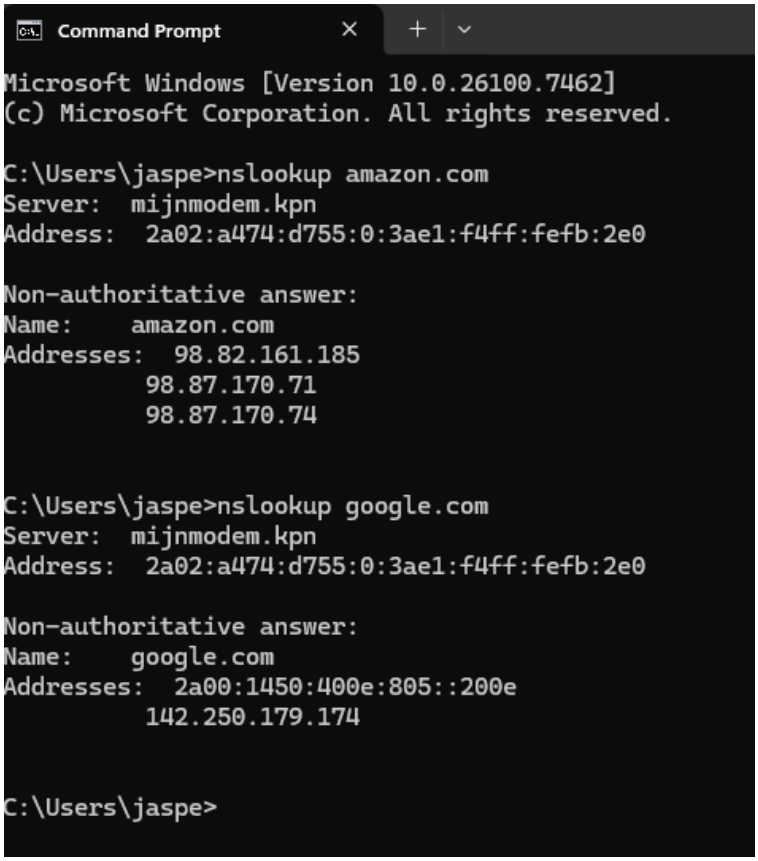

Windows PowerShell
Ethernet adapter Ethernet0:
Connection-specific DNS Suffix . : localdomain
Description . . . . . : Intel(R) 82574L Gigabit Network Connection
Physical Address. . . . . : 00-0C-29-C2-A8-25
DHCP Enabled. . . . . : Yes
Autoconfiguration Enabled . . . . : Yes
Link-local IPv6 Address . . . . . : fe80::27ff:1662:962a:46e%15(Preferred)
IPv4 Address. . . . . : 192.168.133.141(Preferred)
Subnet Mask . . . . . : 255.255.255.0
Lease Obtained. . . . . : Friday, 9 January 2026 21:56:49
Lease Expires . . . . . : Friday, 9 January 2026 22:26:49
Default Gateway . . . . . : 192.168.133.2
DHCP Server . . . . . : 192.168.133.254
DHCPv6 IAID . . . . . : 100666409
DHCPv6 Client DUID. . . . . : 00-01-00-01-30-F1-E6-76-00-0C-29-C2-A8-25
DNS Servers . . . . . : 192.168.133.2
Primary WINS Server . . . . . : 192.168.133.2
NetBIOS over Tcpip. . . . . : Enabled
Ethernet adapter Bluetooth Network Connection:
Media State . . . . . : Media disconnected
Connection-specific DNS Suffix . :
Description . . . . . : Bluetooth Device (Personal Area Network)
Physical Address. . . . . : E8-65-38-7F-8A-44
DHCP Enabled. . . . . : Yes
Autoconfiguration Enabled . . . . : Yes
PS C:\Users\jasper\Desktop>


System Properties
Computer Name
Hardware
Advanced
System Protection
Remote
Remote Assistance
Allow Remote Assistance connections to this computer
What happens when I enable Remote Assistance?
Advanced...
Remote Desktop
Choose an option, then specify who can connect.
Don't allow remote connections to this computer
Allow remote connections to this computer
Only allow connections from computers running Remote Desktop with Network Level Authentication (recommended)
Help me choose
Select Users...
OK
Cancel
Apply


Settings
Find a setting
jasper
Local Account
System
Bluetooth & devices
Network & internet
Personalisation
Apps
Accounts
Time & language
Gaming
System › Remote Desktop
Remote Desktop
Connect to and use this PC from another device using the Remote Desktop app
On
PC name
Use this name to connect to this PC from another device
DESKTOP-60VQM3T
Remote Desktop users
Select who can remotely access this PC
Related support
Help with Remote Desktop

Assignment 6.2: IP addresses websites

Relevant screenshots nslookup command:



```
C:\Users\jaspe>nslookup one.one.one.one
Server:  mijnmodem.kpn
Address:  2a02:a474:d755:0:3ae1:f4ff:fefb:2e0

Non-authoritative answer:
Name:    one.one.one.one
Addresses:  2606:4700:4700::1001
          2606:4700:4700::1111
          1.0.0.1
          1.1.1.1


C:\Users\jaspe>nslookup dns.google.com
Server:  mijnmodem.kpn
Address:  2a02:a474:d755:0:3ae1:f4ff:fefb:2e0

Non-authoritative answer:
Name:    dns.google.com
Addresses:  2001:4860:4860::8844
          2001:4860:4860::8888
          8.8.8.8
          8.8.4.4
```

```
C:\Users\jaspe>nslookup bol.com
Server:  mijnmodem.kpn
Address:  2a02:a474:d755:0:3ae1:f4ff:fefb:2e0

Non-authoritative answer:
Name:    bol.com
Address:  79.170.100.62


C:\Users\jaspe>nslookup w3schools.com
Server:  mijnmodem.kpn
Address:  2a02:a474:d755:0:3ae1:f4ff:fefb:2e0

Non-authoritative answer:
Name:    w3schools.com
Addresses:  13.248.240.135
          76.223.115.82


C:\Users\jaspe>
```

Screenshot website visit via IP address:

I got a certificate warning before entering the page.

Assignment 6.3: subnetting

How many IP addresses are in this network configuration 192.168.110.128/25?

128

What is the usable IP range to hand out to the connected computers?

192.168.110.129 - 192.168.110.254 is the usable network range 2 addresses are reserved for network address and broadcast address

Check your two previous answers with this Linux command: `ipcalc 192.168.110.128/25`

Address: 192.168.110.128 11000000.10101000.01101110.1 0000000

Netmask: 255.255.255.128 = 25 11111111.11111111.11111111.1 0000000

Wildcard: 0.0.0.127 00000000.00000000.00000000.0 1111111

=>

Network: 192.168.110.128/25 11000000.10101000.01101110.1 0000000

HostMin: 192.168.110.129 11000000.10101000.01101110.1 0000001

HostMax: 192.168.110.254 11000000.10101000.01101110.1 1111110

Broadcast: 192.168.110.255 11000000.10101000.01101110.1 1111111

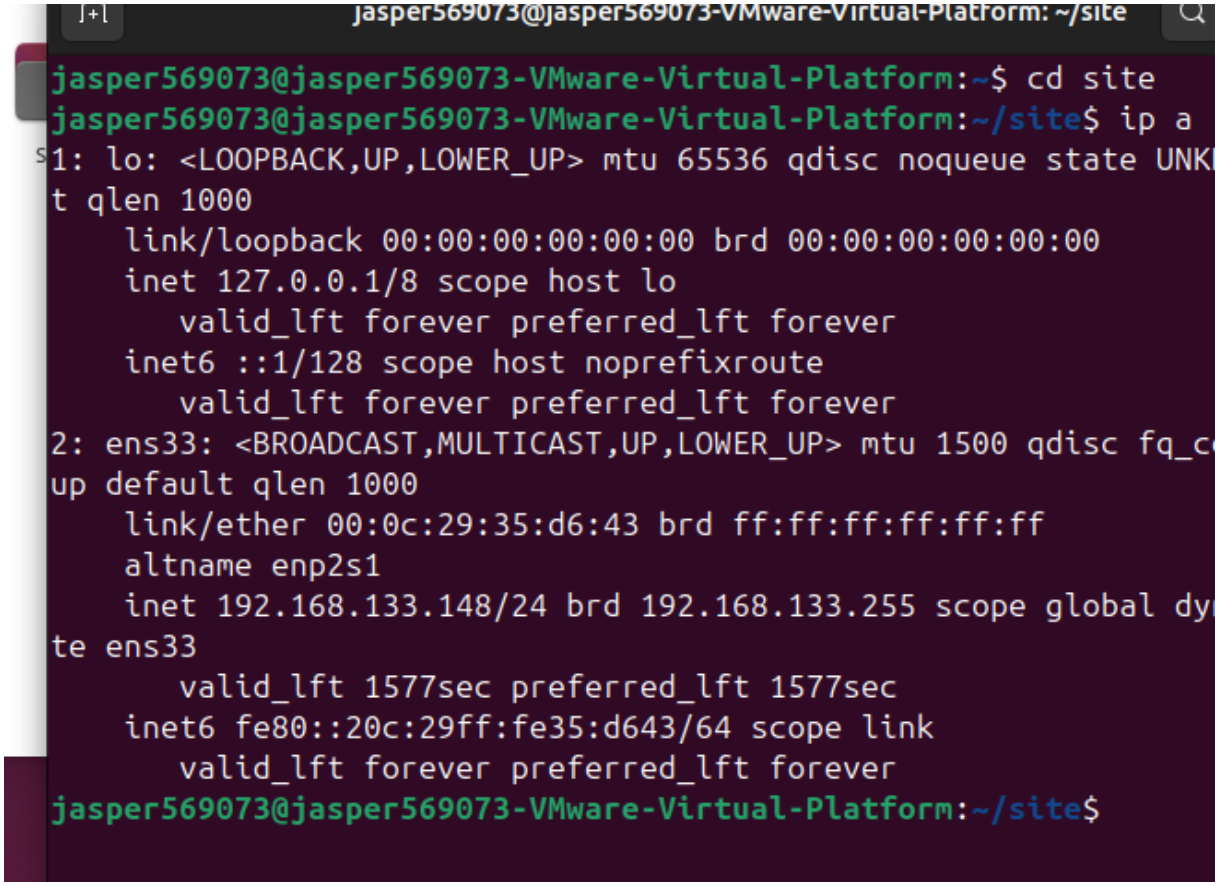
Hosts/Net: 126 Class C, Private Internet

Explain the above calculation in your own words.

25 ip mask gets a subnet of 255.255.255.128 which means there are 128 usuable adresses since the network uses 192.168.110.128 as network adress the ip range starts from there.

Assignment 6.4: HTML

Screenshot IP address Ubuntu VM:



Ip= 192.168.133.148

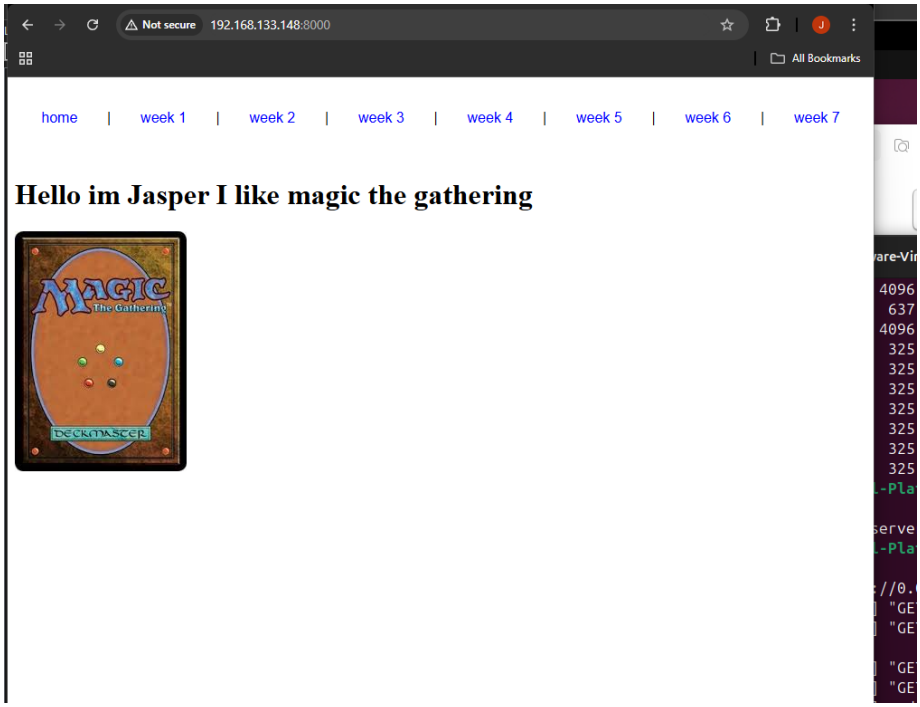
Screenshot of Site directory contents:

```
       valid_lft forever preferred_lft forever
jasper569073@jasper569073-VMware-Virtual-Platform:~/site$ ls -la
total 56
drwxrwxr-x  5 jasper569073 jasper569073 4096 Jan  9 22:42 .
drwxr-x--- 17 jasper569073 jasper569073 4096 Jan  9 22:36 ..
drwxrwxr-x  2 jasper569073 jasper569073 4096 Sep  9  2023 css
-rw-rw-r--  1 jasper569073 jasper569073  206 Jan  9 22:42 home.html
drwxrwxr-x  2 jasper569073 jasper569073 4096 Jan  9 22:41 images
-rw-rw-r--  1 jasper569073 jasper569073  637 Sep  9  2023 index.html
drwxrwxr-x  2 jasper569073 jasper569073 4096 Sep  9  2023 pdf
-rw-rw-r--  1 jasper569073 jasper569073  325 Sep  9  2023 week1.html
-rw-rw-r--  1 jasper569073 jasper569073  325 Sep  9  2023 week2.html
-rw-rw-r--  1 jasper569073 jasper569073  325 Sep  9  2023 week3.html
-rw-rw-r--  1 jasper569073 jasper569073  325 Sep  9  2023 week4.html
-rw-rw-r--  1 jasper569073 jasper569073  325 Sep  9  2023 week5.html
-rw-rw-r--  1 jasper569073 jasper569073  325 Sep  9  2023 week6.html
-rw-rw-r--  1 jasper569073 jasper569073  325 Sep  9  2023 week7.html
jasper569073@jasper569073-VMware-Virtual-Platform:~/site$
```

Screenshot python3 webserver command:

```
jasper569073@jasper569073-VMware-Virtual-Platform:~/site$ python3 -m http.server
 8000
Serving HTTP on 0.0.0.0 port 8000 (http://0.0.0.0:8000/) ...
```

Screenshot web browser visits your site



Assignment 6.5: Network segment

Remember that bitwise java application you've made in week 2? Expand that application so that you can also calculate a network segment as explained in the PowerPoint slides of week 6. Use the bitwise & AND operator. You need to be able to input two Strings. An IP address and a subnet.

IP: 192.168.1.100 and subnet: 255.255.255.224 for /27

```
Example: 192.168.1.100/27
Calculate the network segment
IP Address:   11000000.10101000.00000001.01100100
Subnet Mask:  11111111.11111111.11111111.11100000
-----------------------------------------------
Network Addr: 11000000.10101000.00000001.01100000

This gives 192.168.1.96 in decimal as the network address.
For a /27 subnet, each segment (or subnet) has 32 IP addresses (2^5).
The range of this network segment is from 192.168.1.96 to 192.168.1.127.
```

Paste source code here, with a screenshot of a working application.

Ready? Save this file and export it as a pdf file with the name: **week6.pdf**