

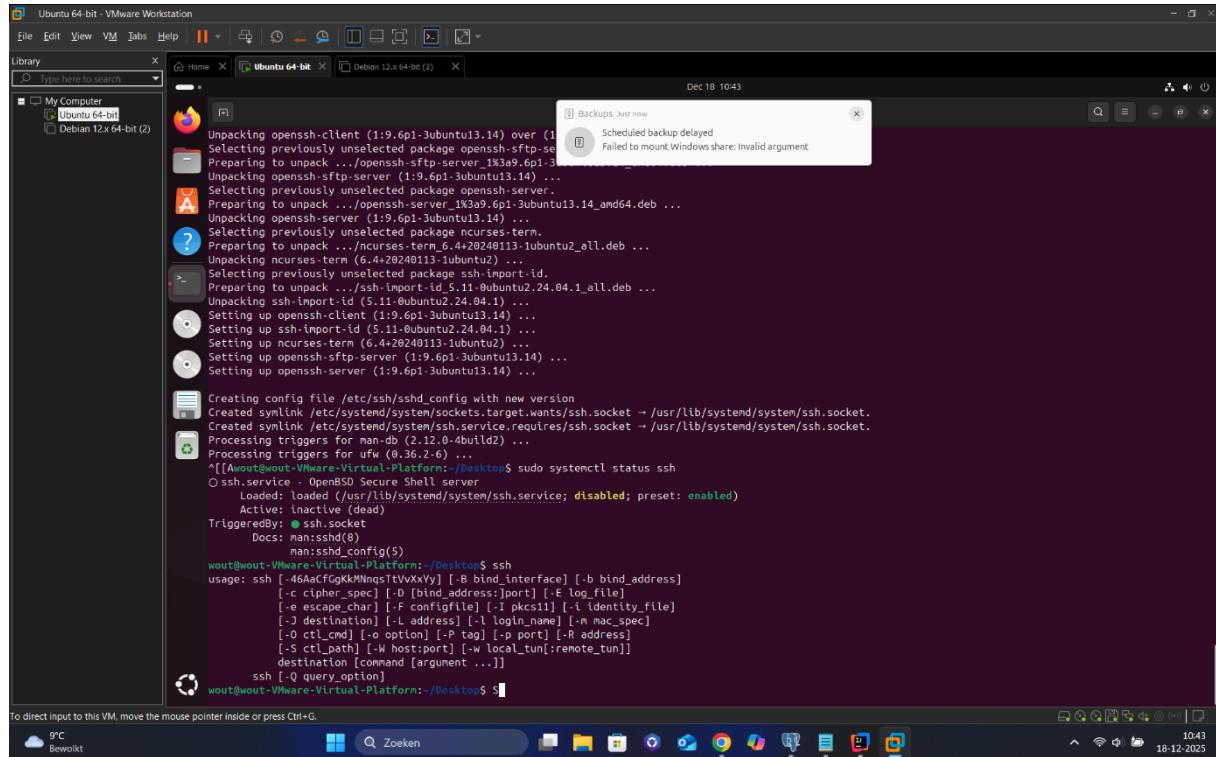
Template Week 6 – Networking

Student number:

587889

Assignment 6.1: Working from home

Screenshot installation openssh-server:



Je kan het laatste gedeelte van de installatie van openssh-server nog zien.

Daaronder heb ik de SSH op actief gezet.

Screenshot successful SSH command execution:

```
wout@wout-VMware-Virtual-:~ + 
ED25519 key fingerprint is SHA256:Xj1NxFlsK0+axBWNXq2AwyLAC/0F5jxCL4iqRPWEUPI.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '192.168.139.130' (ED25519) to the list of known hosts.
wout@192.168.139.130's password:
Permission denied, please try again.
wout@192.168.139.130's password:
Welcome to Ubuntu 24.04.3 LTS (GNU/Linux 6.14.0-33-generic x86_64)

 * Documentation: https://help.ubuntu.com
 * Management: https://landscape.canonical.com
 * Support: https://ubuntu.com/pro

Expanded Security Maintenance for Applications is not enabled.

42 updates can be applied immediately.
To see these additional updates run: apt list --upgradable

11 additional security updates can be applied with ESM Apps.
Learn more about enabling ESM Apps service at https://ubuntu.com/esm

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*copyright.

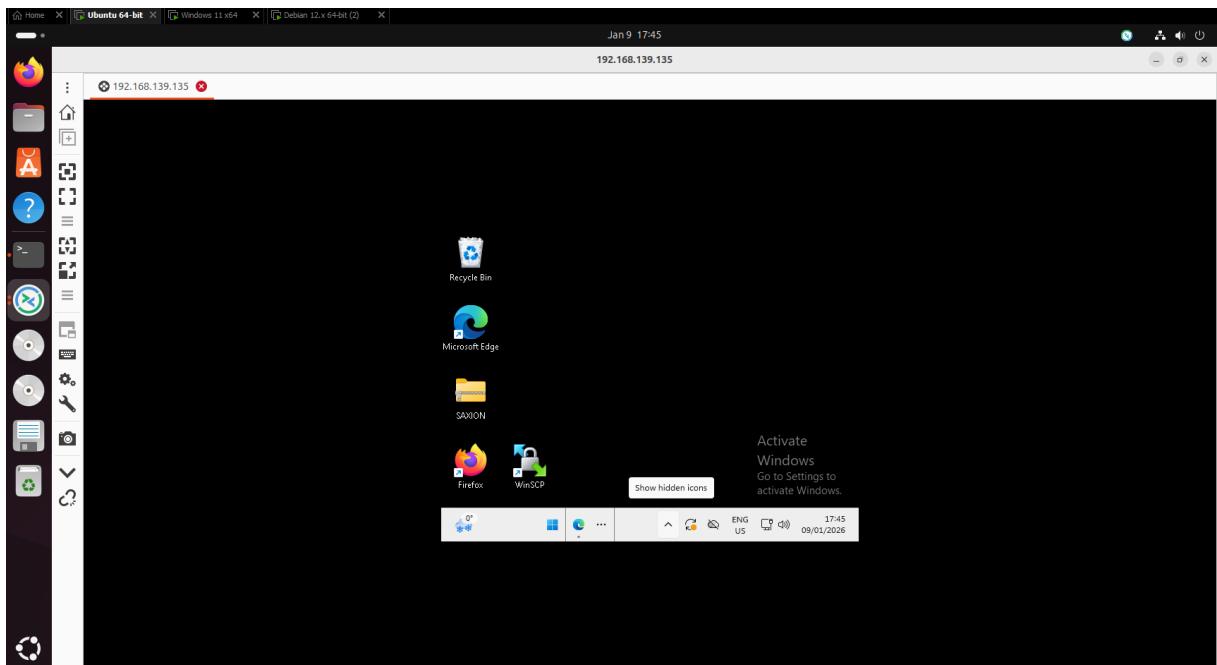
Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

wout@wout-VMware-Virtual-Platform:~$ |
```

Screenshot successful execution SCP command:

```
PS C:\Users\woutd> scp "C:\Users\wout\Desktop\test.txt" wout@192.168.139.130:~
wout@192.168.139.130's password:
test.txt                                              100%    21      6.8KB/s   00:00
PS C:\Users\woutd> |
```

Screenshot remmina:



Assignment 6.2: IP addresses websites

Relevant screenshots nslookup command:

```
wout@wout-VMware-Virtual-Platform:~/Desktop$ nslookup  
> amazon.com  
Server:      127.0.0.53  
Address:     127.0.0.53#53  
  
Non-authoritative answer:  
Name:  amazon.com  
Address: 98.82.161.185  
Name:  amazon.com  
Address: 98.87.170.71  
Name:  amazon.com  
Address: 98.87.170.74  
> google.com  
Server:      127.0.0.53  
Address:     127.0.0.53#53  
  
Non-authoritative answer:  
Name:  google.com  
Address: 216.58.214.14  
Name:  google.com  
Address: 2a00:1450:400e:802::200e  
> one.one.one.one  
Server:      127.0.0.53  
Address:     127.0.0.53#53
```

```
Non-authoritative answer:  
Name: one.one.one.one  
Address: 1.0.0.1  
Name: one.one.one.one  
Address: 1.1.1.1  
Name: one.one.one.one  
Address: 2606:4700:4700::1001  
Name: one.one.one.one  
Address: 2606:4700:4700::1111  
> dns.google.com  
Server: 127.0.0.53  
Address: 127.0.0.53#53
```

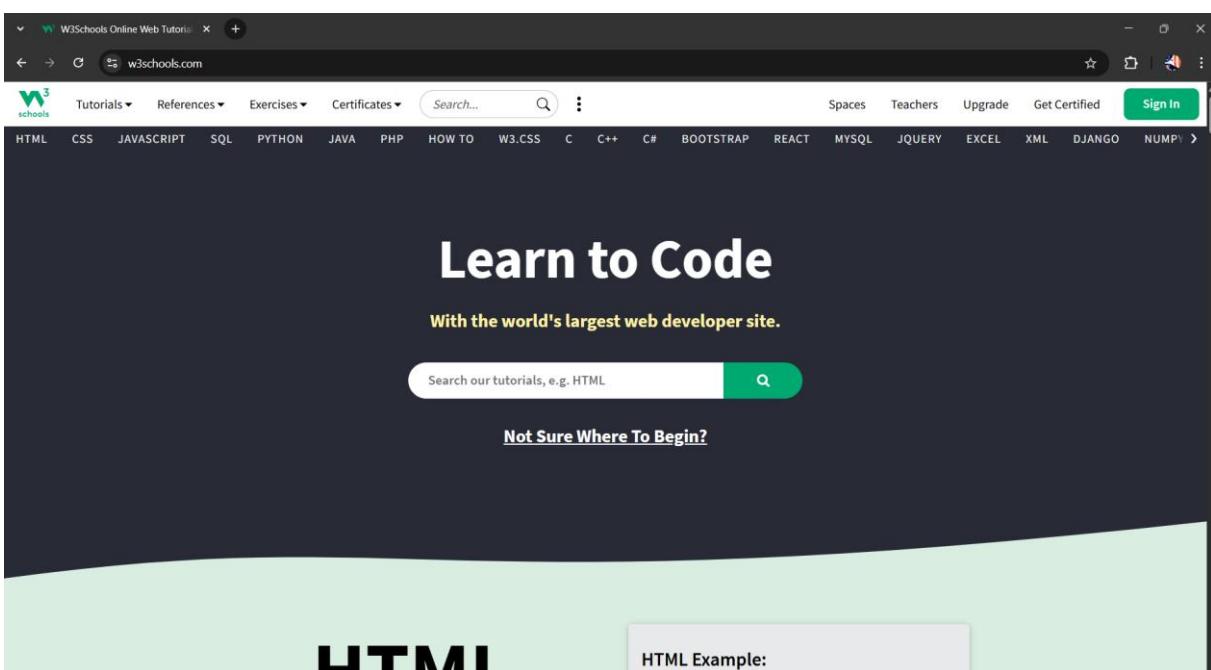
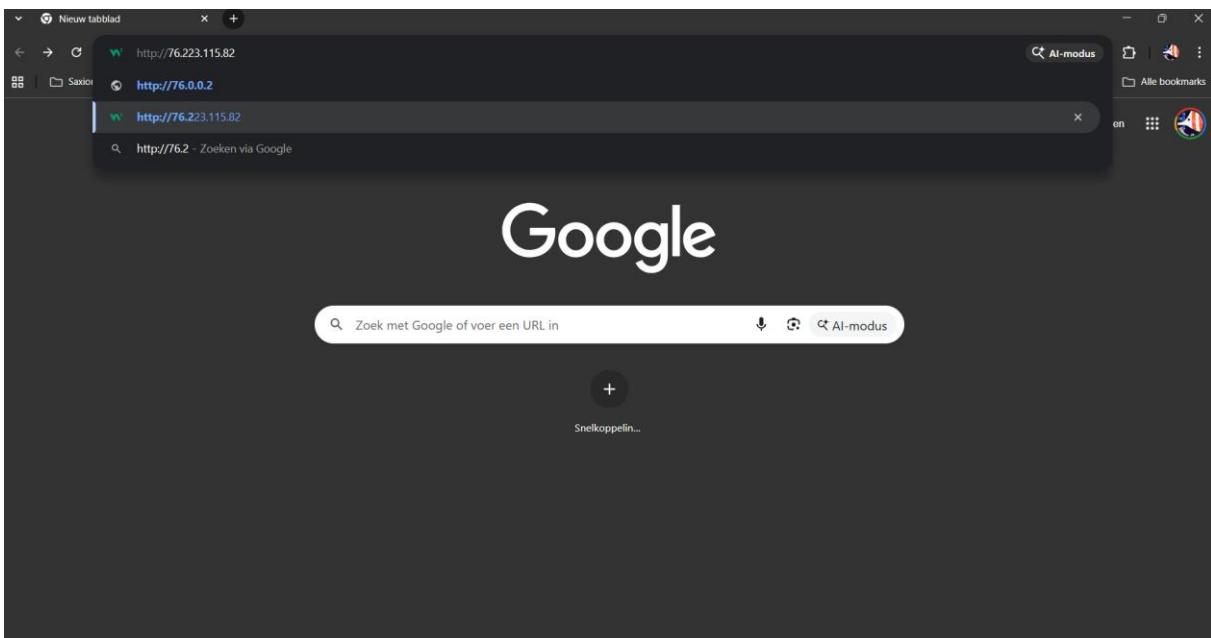
```
Non-authoritative answer:  
Name: dns.google.com  
Address: 8.8.8.8  
Name: dns.google.com  
Address: 8.8.4.4  
Name: dns.google.com  
Address: 2001:4860:4860::8888  
Name: dns.google.com  
Address: 2001:4860:4860::8844  
> bol.com  
Server: 127.0.0.53  
Address: 127.0.0.53#53
```

```
Non-authoritative answer:  
Name: bol.com  
Address: 79.170.100.62  
> w3schools.com  
Server: 127.0.0.53  
Address: 127.0.0.53#53
```

```
Non-authoritative answer:  
Name: w3schools.com  
Address: 76.223.115.82  
Name: w3schools.com  
Address: 13.248.240.135  
> exit
```

```
wout@wout-VMware-Virtual-Platform:~/Desktop$ █
```

Screenshot website visit via IP address:



Assignment 6.3: subnetting

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

/25 = 25 bits voor het network

$32 - 25 = 7$ hostbits

$2^7 = 128$ ip adressen in het subnet

$128 - 2$ voor het netwerk adres en broadcast adres = 126 bruikbare ip adressen

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

128 ip adressen zit hier tussen: 192.168.110.128 – 192.168.110.255

De eerste en laatste worden gebruikt door het internet en broadcast dus:

192.168.110.129 – 192.168.110.254 zijn de bruikbare ip adressen.

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

```
wout@wout-VMware-Virtual-Platform:~/Desktop$ ipcalc 192.168.110.128/25
Address: 192.168.110.128      11000000.10101000.01101110.1 00000000
Netmask: 255.255.255.128 = 25 11111111.11111111.11111111.1 00000000
Wildcard: 0.0.0.127          00000000.00000000.00000000.0 11111111
=>
Network: 192.168.110.128/25  11000000.10101000.01101110.1 00000000
HostMin: 192.168.110.129    11000000.10101000.01101110.1 00000001
HostMax: 192.168.110.254    11000000.10101000.01101110.1 11111110
Broadcast: 192.168.110.255   11000000.10101000.01101110.1 11111111
Hosts/Net: 126              Class C, Private Internet

wout@wout-VMware-Virtual-Platform:~/Desktop$
```

Dit komt overeen met mijn berekeningen

Explain the above calculation in your own words.

Het subnet /25 betekent dat er 7 bits overblijven voor hosts.

Met 7 bits kun je $2^7 = 128$ IP-adressen maken.

Daarvan zijn er 2 gereserveerd (network + broadcast), dus 126 bruikbaar.

De bruikbare IP-range is 192.168.110.129 t/m 192.168.110.254.

Assignment 6.4: HTML

Screenshot IP address Ubuntu VM:

```
wout@wout-VMware-Virtual-Platform:~/Website2/site$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host noprefixroute
        valid_lft forever preferred_lft forever
2: ens33: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether 00:0c:29:4e:b0:a1 brd ff:ff:ff:ff:ff:ff
    altname enp2s1
    inet 192.168.139.130/24 brd 192.168.139.255 scope global dynamic noprefixroute ens33
        valid_lft 1719sec preferred_lft 1719sec
    inet6 fe80::204:d513:c47f:55be/64 scope link noprefixroute
        valid_lft forever preferred_lft forever
```

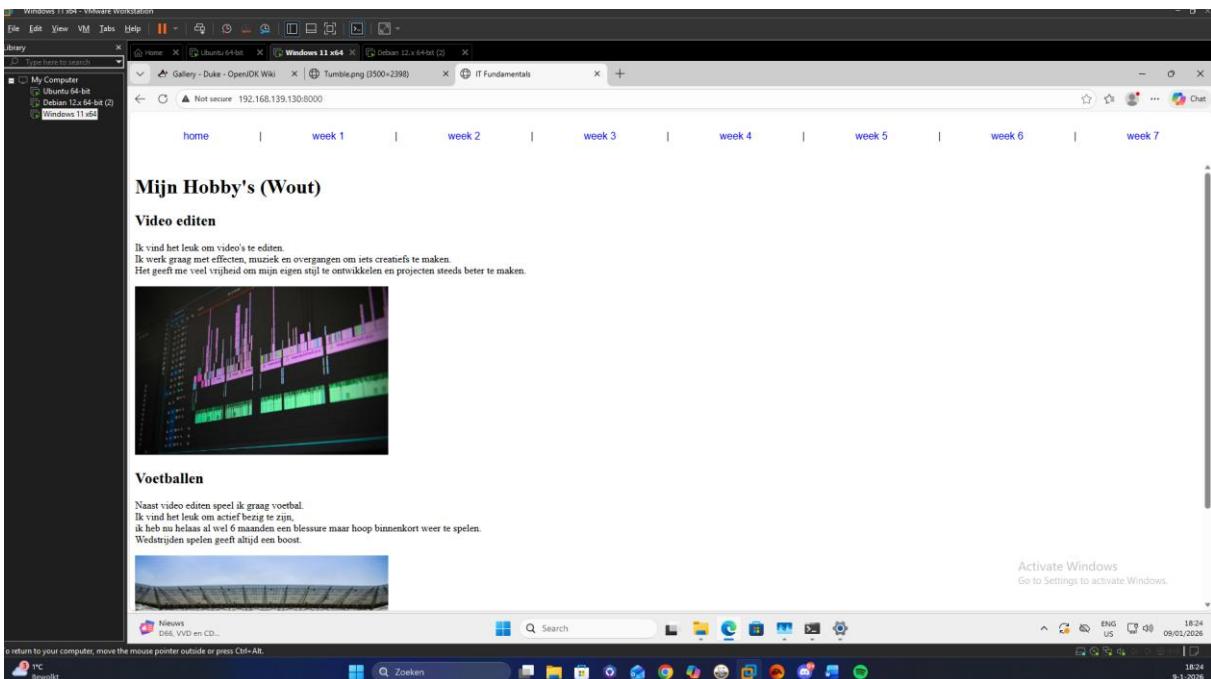
Screenshot of Site directory contents:

```
wout@wout-VMware-Virtual-Platform:~/Desktop$ cd ~  
wout@wout-VMware-Virtual-Platform:~$ ls  
archive.tar.gz Desktop Documents Downloads hello Music Pictures Public snap tekst2.txt tekst.txt Templates test.txt Videos Website2  
wout@wout-VMware-Virtual-Platform:~$ cd Website2  
wout@wout-VMware-Virtual-Platform:~/Website2$ tree  
  
└── site  
    ├── css  
    │   └── mypdfstyle.css  
    ├── home.html  
    ├── images  
    ├── index.html  
    └── pdf  
        ├── week1.pdf  
        ├── week2.pdf  
        ├── week3.pdf  
        ├── week4.pdf  
        ├── week5.pdf  
        ├── week6.pdf  
        └── week7.pdf  
    ├── week1.html  
    ├── week2.html  
    ├── week3.html  
    ├── week4.html  
    ├── week5.html  
    ├── week6.html  
    └── week7.html  
  
5 directories, 17 files  
wout@wout-VMware-Virtual-Platform:~/Website2$
```

Screenshot python3 webserver command:

```
wout@wout-VMware-Virtual-Platform:~/Website2/site$ python3 -m http.server 8000  
Serving HTTP on 0.0.0.0 port 8000 (http://0.0.0.0:8000/) ...  
192.168.139.135 - - [09/Jan/2026 18:24:15] "GET / HTTP/1.1" 200 -  
192.168.139.135 - - [09/Jan/2026 18:24:15] "GET /css/mypdfstyle.css HTTP/1.1" 200 -  
192.168.139.135 - - [09/Jan/2026 18:24:15] "GET /home.html HTTP/1.1" 200 -  
192.168.139.135 - - [09/Jan/2026 18:24:16] code 404, message File not found  
192.168.139.135 - - [09/Jan/2026 18:24:16] "GET /favicon.ico HTTP/1.1" 404 -
```

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](#)