Template Week 6 – Networking

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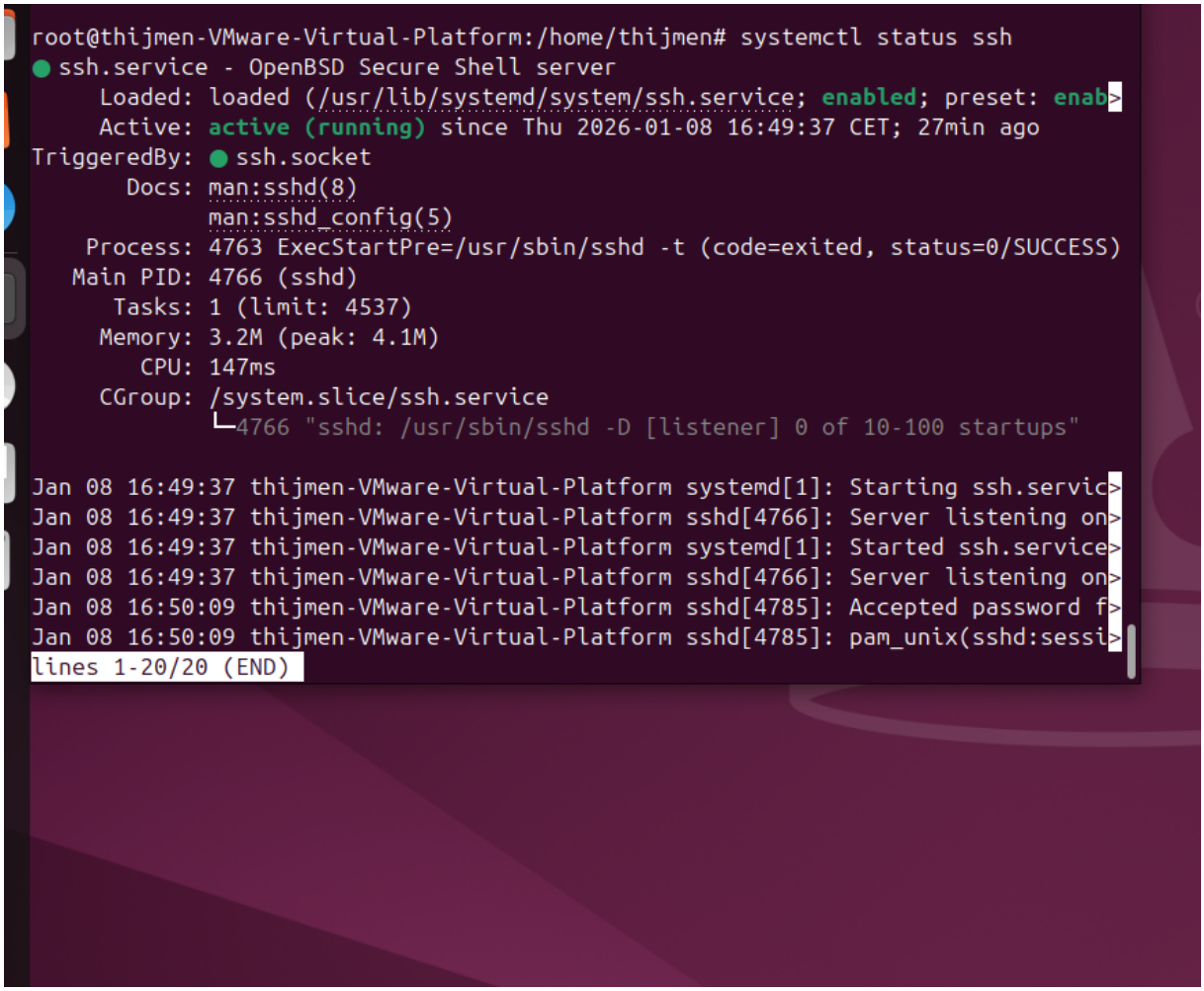
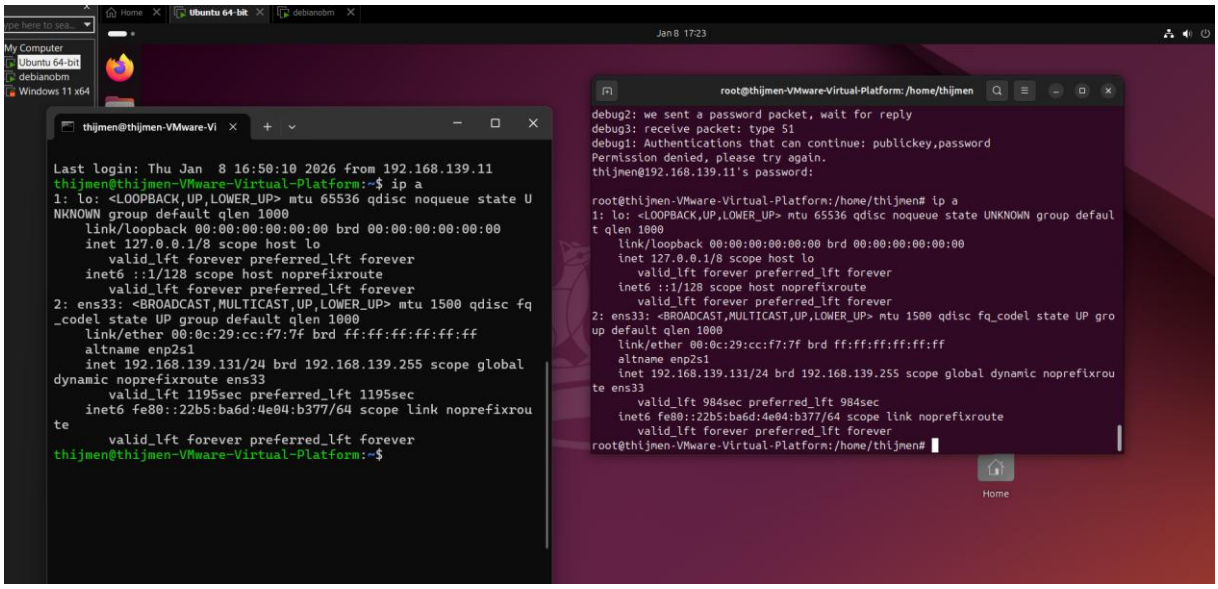
Assignment 6.1: Working from home

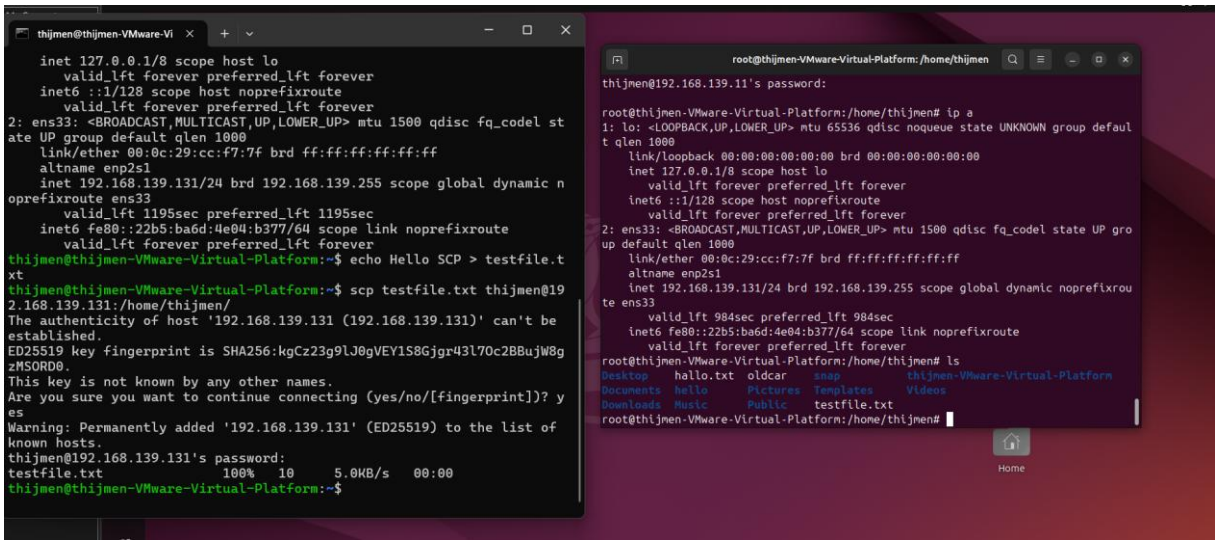
Screenshot installation openssh-server:



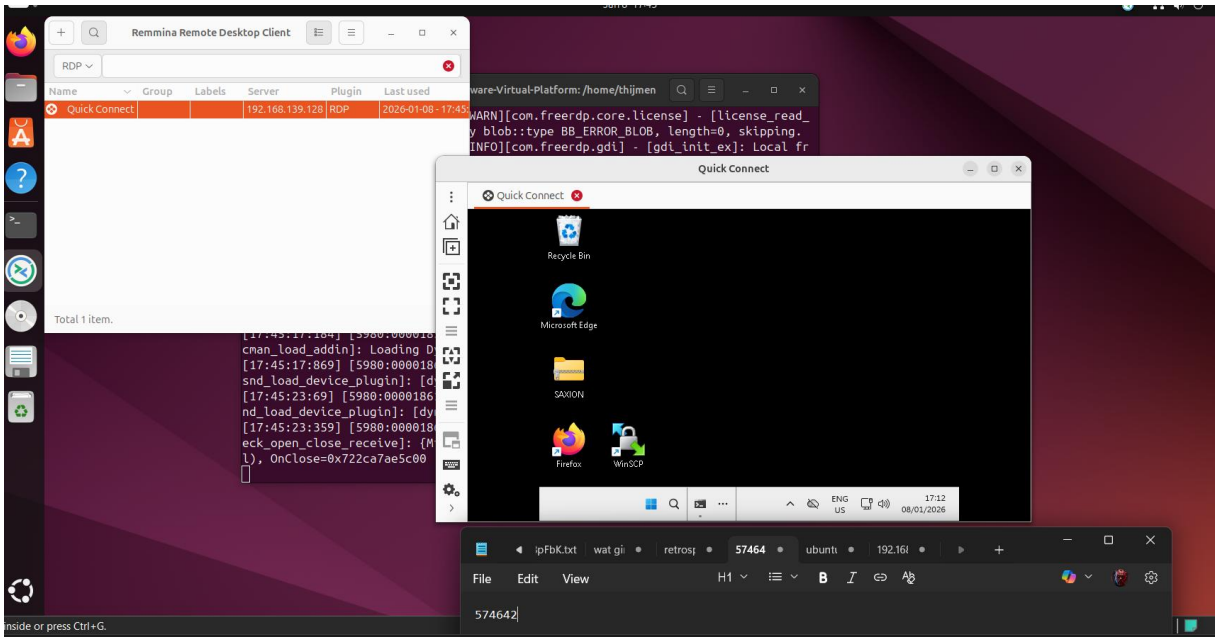
Screenshot successful SSH command execution:



Screenshot successful execution SCP command:



Screenshot remmina:



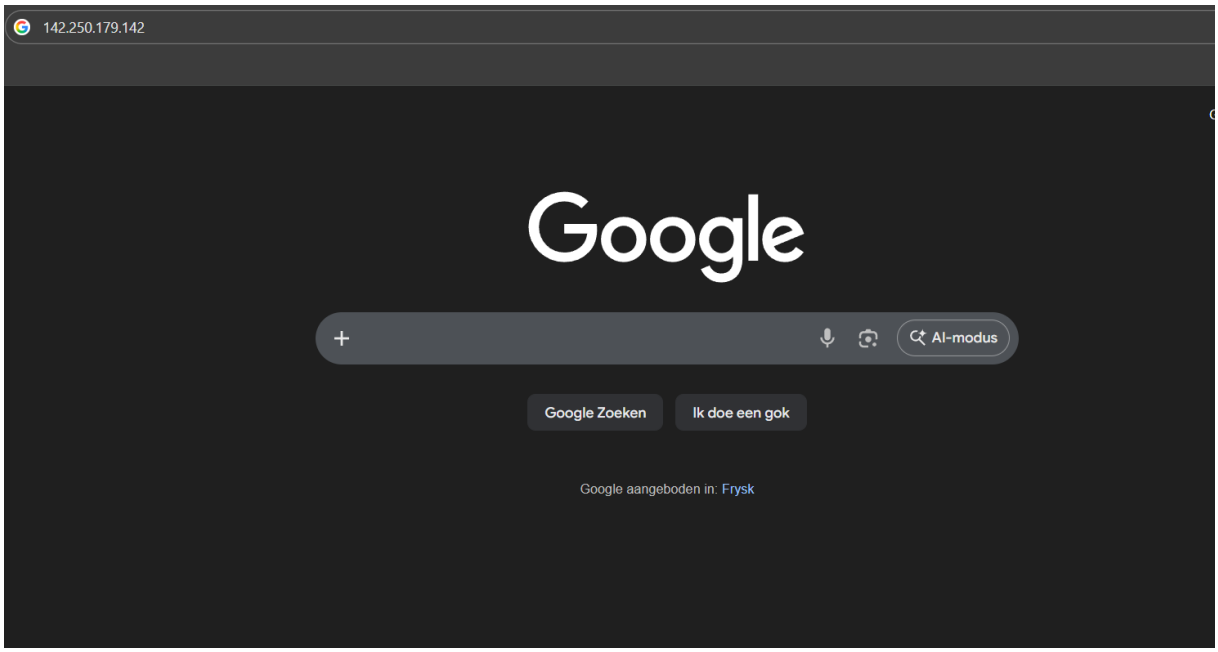
Je ziet hier da tik via remmina geconnect ben met mijn windows vm

Assignment 6.2: IP addresses websites

Relevant screenshots nslookup command:

```
Microsoft Windows [Version 10.0.26100.7462]
(c) Microsoft Corporation. All rights reserved.

C:\Users\thijm>nslookup amazon.com
Server:  e-kw-mer-ib01.infra.saxion.net
Address:  145.76.14.10

Non-authoritative answer:
Name:    amazon.com
Addresses:  98.87.170.71
          98.82.161.185
          98.87.170.74


C:\Users\thijm>nslookup google.com
Server:  e-kw-mer-ib01.infra.saxion.net
Address:  145.76.14.10

Non-authoritative answer:
Name:    google.com
Addresses:  2a00:1450:400e:801::200e
          142.250.179.142


C:\Users\thijm>nslookup one.one.one.one
Server:  e-kw-mer-ib01.infra.saxion.net
Address:  145.76.14.10

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


C:\Users\thijm>nslookup dns.google.com
Server:  e-kw-mer-ib01.infra.saxion.net
Address:  145.76.14.10

Non-authoritative answer:
```

Screenshot website visit via IP address:



Assignment 6.3: subnetting

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

128 ip addressen

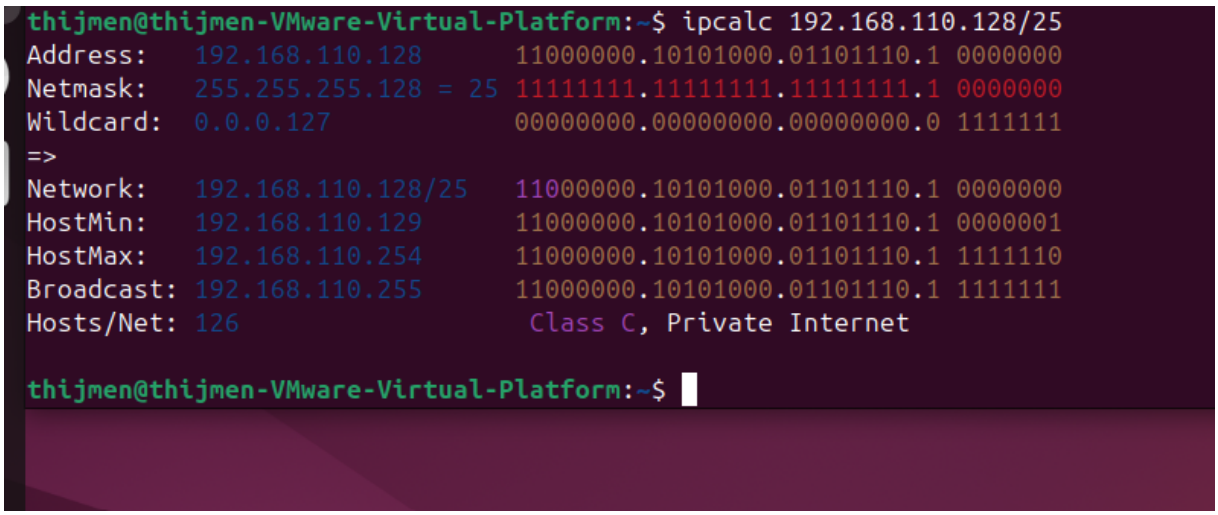
32 – 25 = 7 bits, twee tot de macht 7 is 128

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

254 bij een /24 1 bit voor broadcast en 1 bit voor het network

Bij een 25/ dan is het 126

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

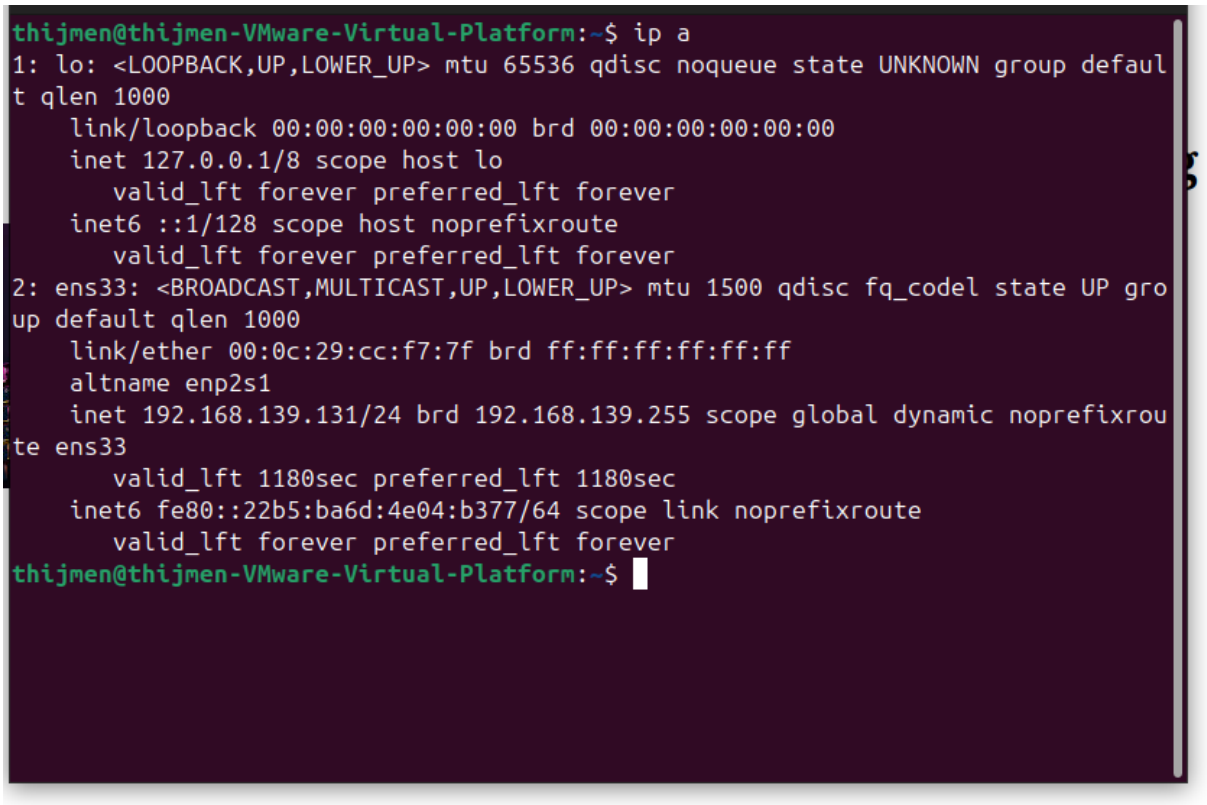


Explain the above calculation in your own words.

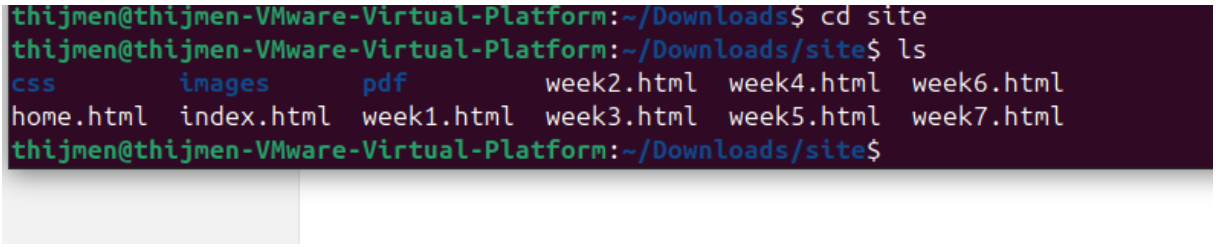
Het adress 192.168.110.128 gebruikt een subnet 255.255.255.128. Dit betekend dat er nog 7 bits over zijn als je die in de macht van 2 doet krijgt je 128. Je moet er vervolgens mog 2 bits vanaf halen voor het broadcast en het netwerk adress en dan krijg je 126

Assignment 6.4: HTML

Screenshot IP address Ubuntu VM:



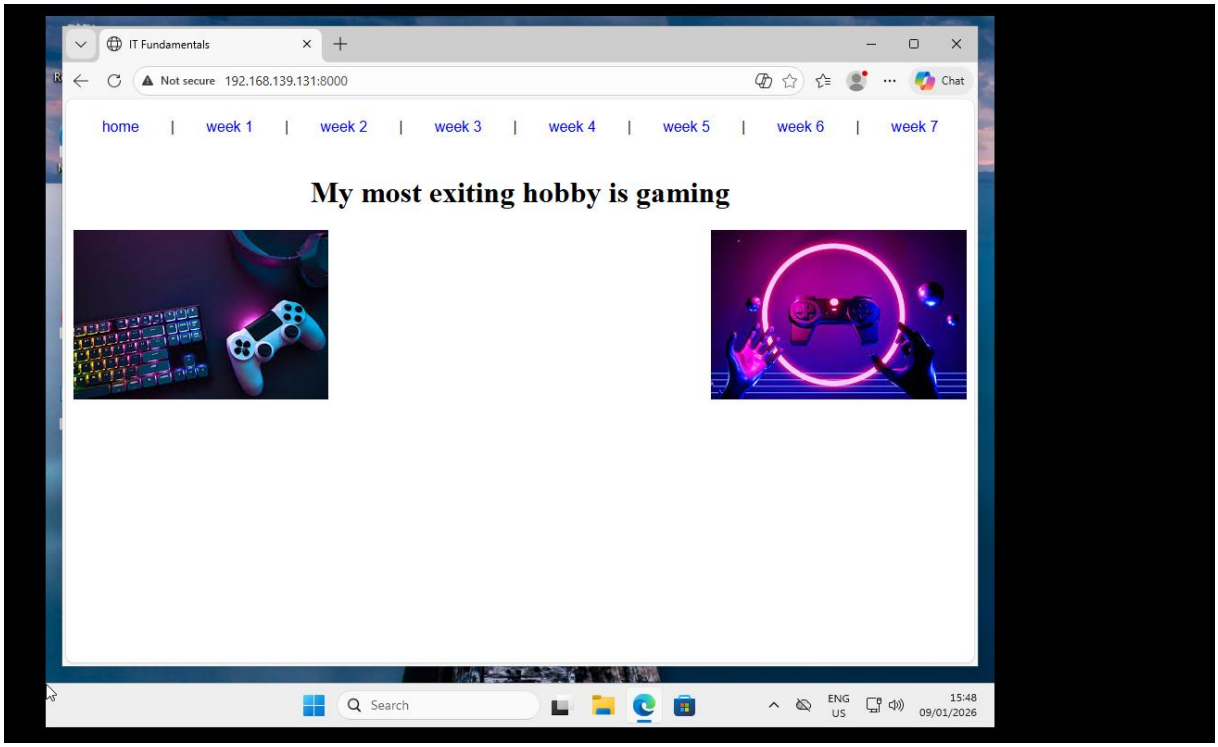
Screenshot of Site directory contents:



Screenshot python3 webserver command:

```
thijmen@thijmen-VMware-Virtual-Platform:~/Downloads$ cd site
thijmen@thijmen-VMware-Virtual-Platform:~/Downloads/site$ python3 -m http.server
 8000
Serving HTTP on 0.0.0.0 port 8000 (http://0.0.0.0:8000/) ...
192.168.139.128 - - [09/Jan/2026 16:21:17] "GET / HTTP/1.1" 200 -
192.168.139.128 - - [09/Jan/2026 16:21:17] "GET /home.html HTTP/1.1" 200 -
192.168.139.128 - - [09/Jan/2026 16:21:17] "GET /css/mypdfstyle.css HTTP/1.1" 20
0 -
192.168.139.128 - - [09/Jan/2026 16:21:17] "GET /images/Untitled.jpeg HTTP/1.1"
200 -
192.168.139.128 - - [09/Jan/2026 16:21:17] "GET /images/gaming.jpeg HTTP/1.1" 20
0 -
192.168.139.128 - - [09/Jan/2026 16:21:18] code 404, message File not found
192.168.139.128 - - [09/Jan/2026 16:21:18] "GET /favicon.ico HTTP/1.1" 404 -
```

Screenshot web browser visits your site



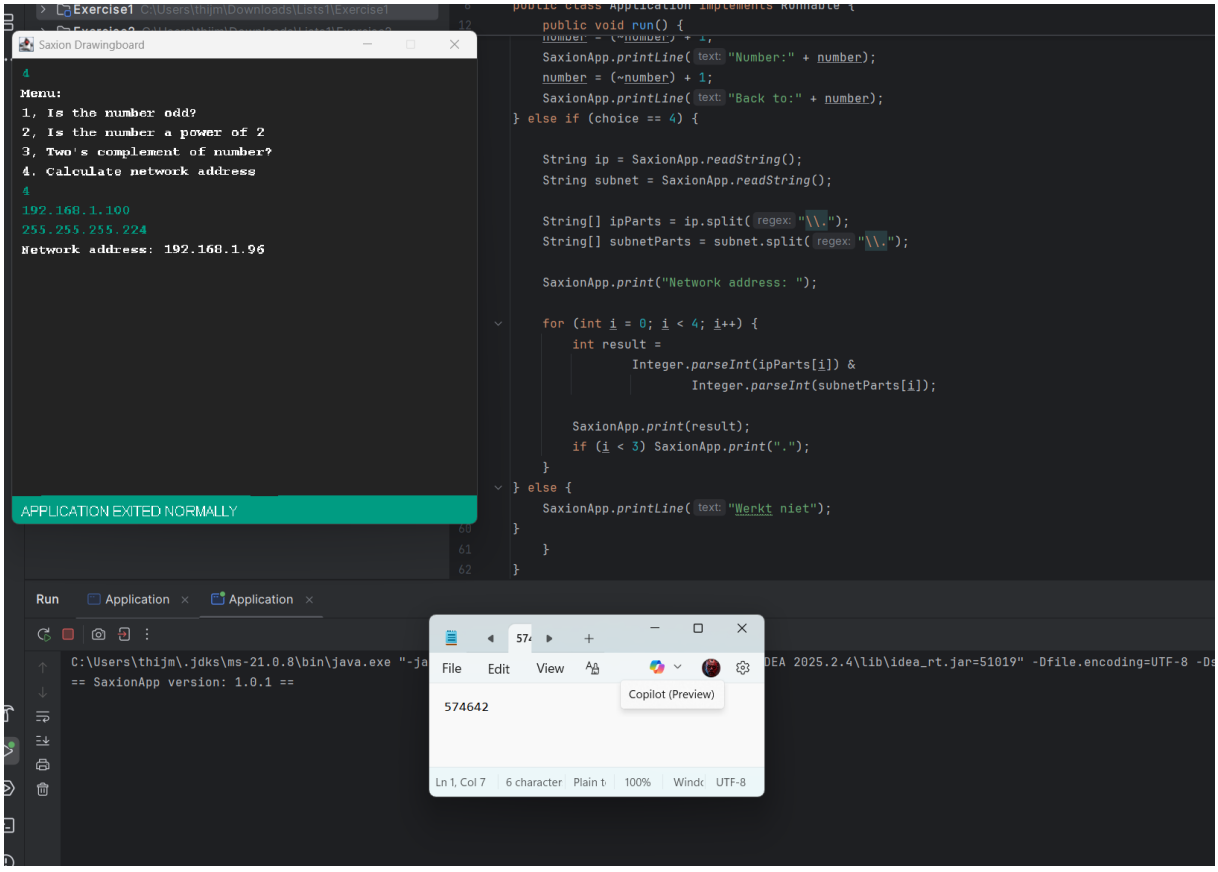
Assignment 6.5: Network segment

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 (2⁵).
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.




```java
import nl.saxion.app.SaxionApp;

import java.awt.color.ICC_ColorSpace;
import java.util.ArrayList;

public class Application implements Runnable {

    public static void main(String[] args) {
        SaxionApp.start(new Application(), 500, 500);
```

```
    }

    public void run() {
int number = SaxionApp.readInt("Please enter a number:");

SaxionApp.printLine("Menu:");
SaxionApp.printLine("1, Is the number odd?");
SaxionApp.printLine("2, Is the number a power of 2");
SaxionApp.printLine("3, Two's complement of number?");
SaxionApp.printLine("4. Calculate network address");
int choice = SaxionApp.readInt("Choose an option:");


if (choice == 1) {
    if ((number & 1) == 1){
        SaxionApp.printLine("The number is odd");
    } else {
        SaxionApp.printLine("The number is even");
    }
} else if (choice == 2) {
    if (number > 0 && (number & (number - 1)) == 0) {
        SaxionApp.printLine(number + "is a power of 2");
    } else {
        SaxionApp.printLine(number + "Isnt a power of 2");
    }
} else if (choice == 3){
    number = (~number) + 1;
    SaxionApp.printLine("Number:" + number);
    number = (~number) + 1;
    SaxionApp.printLine("Back to:" + number);
} else if (choice == 4) {

    String ip = SaxionApp.readString();
    String subnet = SaxionApp.readString();

    String[] ipParts = ip.split("\\.");
    String[] subnetParts = subnet.split("\\.");

    SaxionApp.print("Network address: ");

    for (int i = 0; i < 4; i++) {
        int result =
                Integer.parseInt(ipParts[i]) &
                        Integer.parseInt(subnetParts[i]);

        SaxionApp.print(result);
        if (i < 3) SaxionApp.print(".");
    }
} else {
    SaxionApp.printLine("Werkt niet");
```

```
}
    }
}
```

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