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:

Assignment 6.2: IP addresses websites

Relevant screenshots nslookup command:

Screenshot website visit via IP address:

Assignment 6.3: subnetting

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

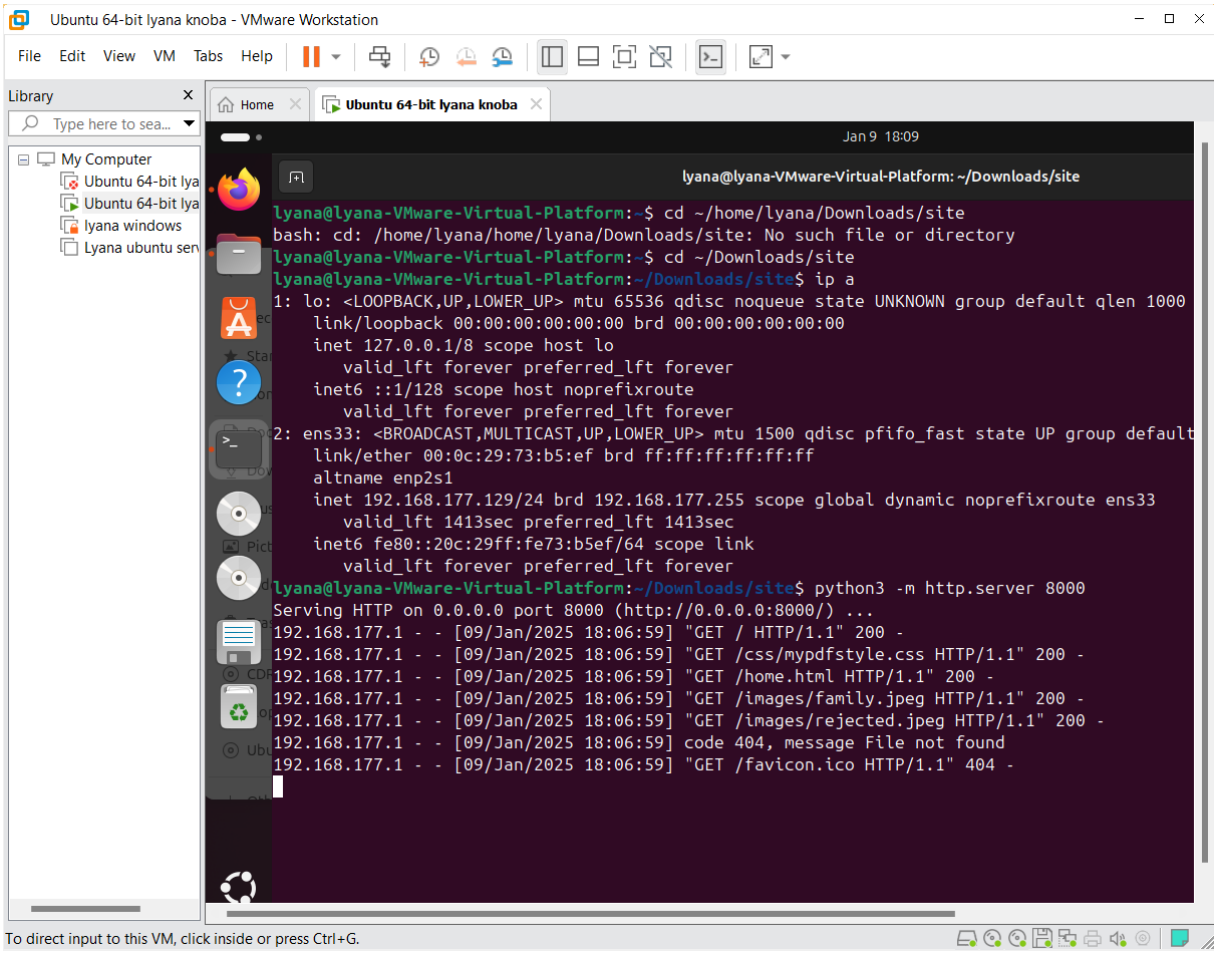
What is the usable IP range to hand out to the connected computers?

Check your two previous answers with this calculator:
https://www.calculator.net/ip-subnet-calculator.html

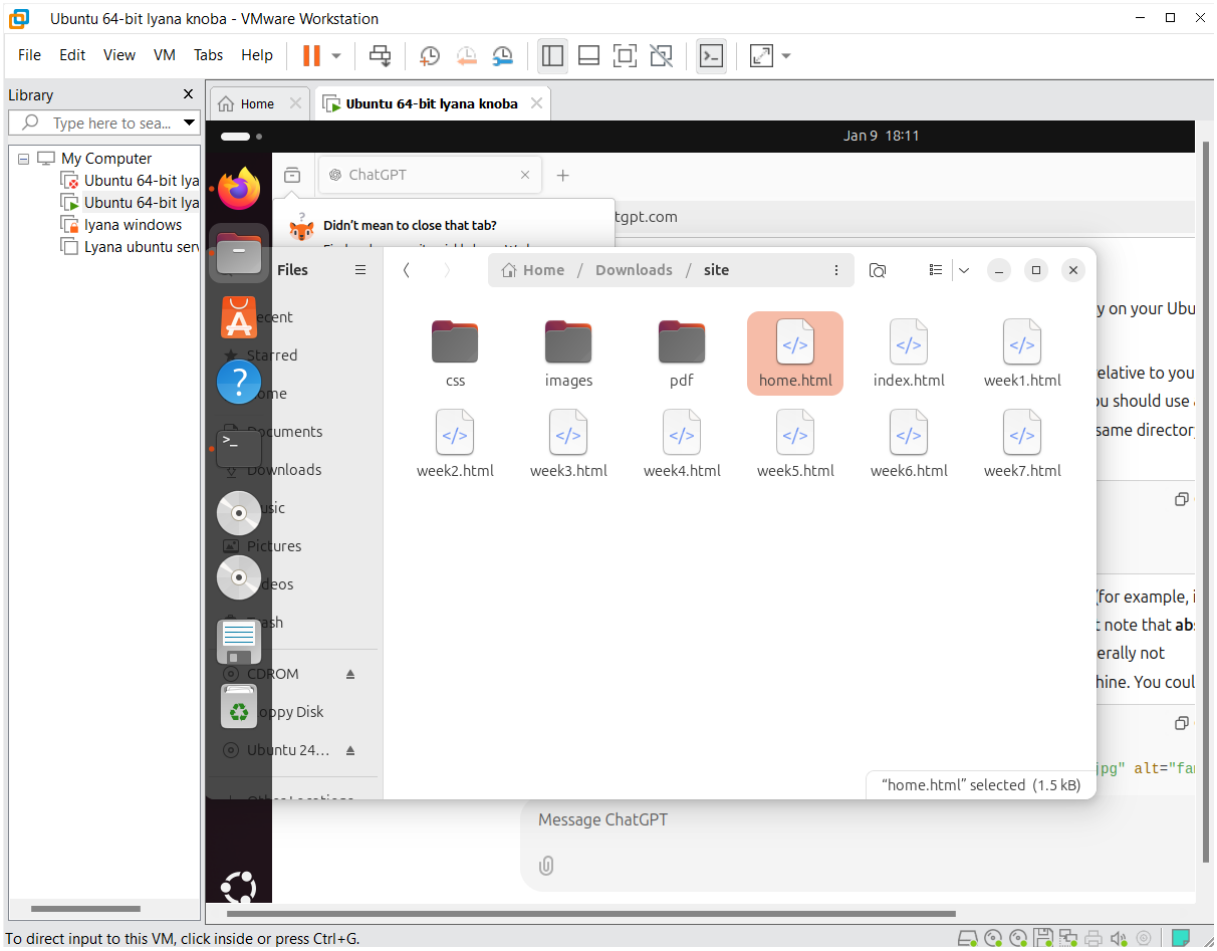
Explain the above calculation in your own words.

Assignment 6.4: HTML

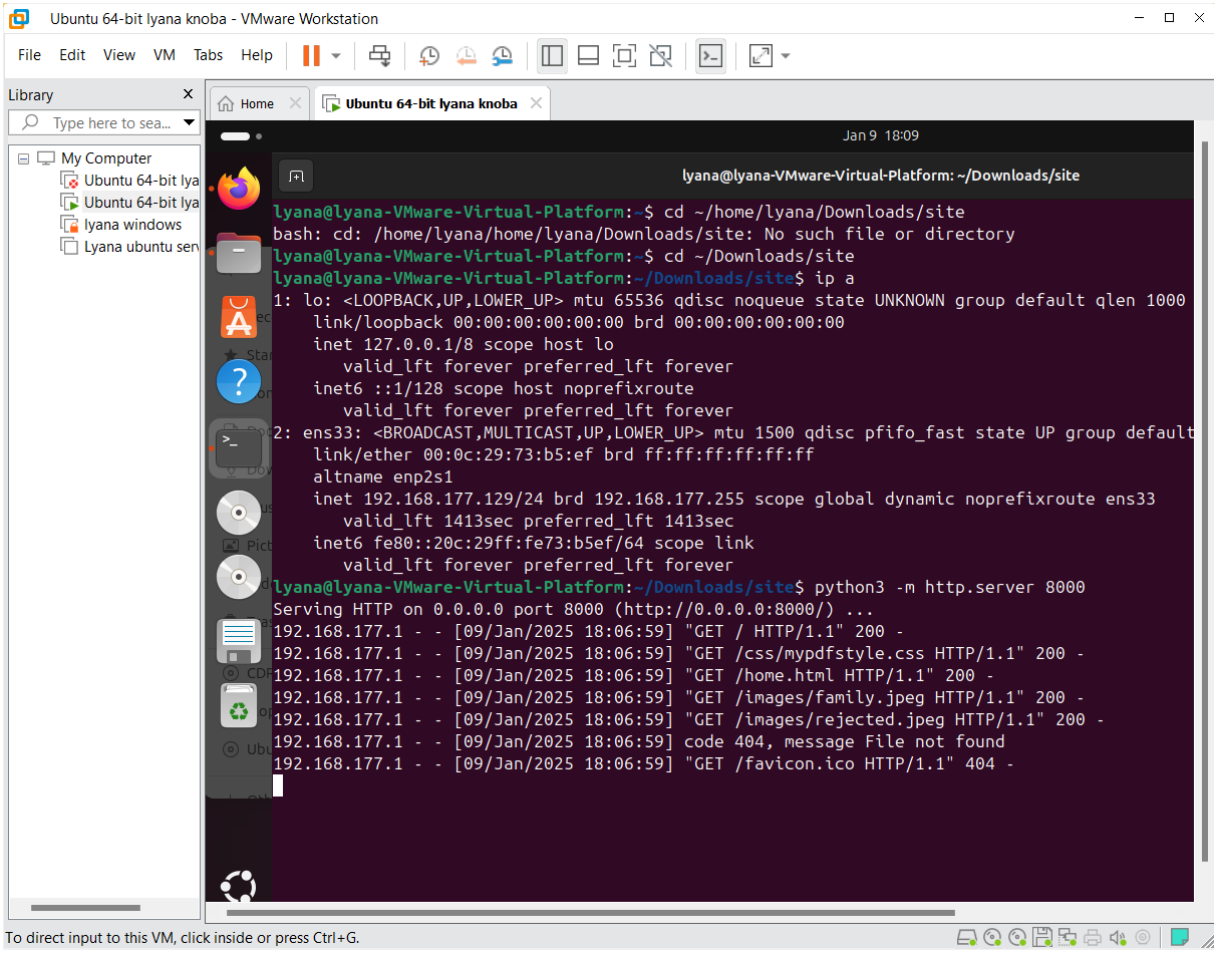
Screenshot IP address Ubuntu VM:



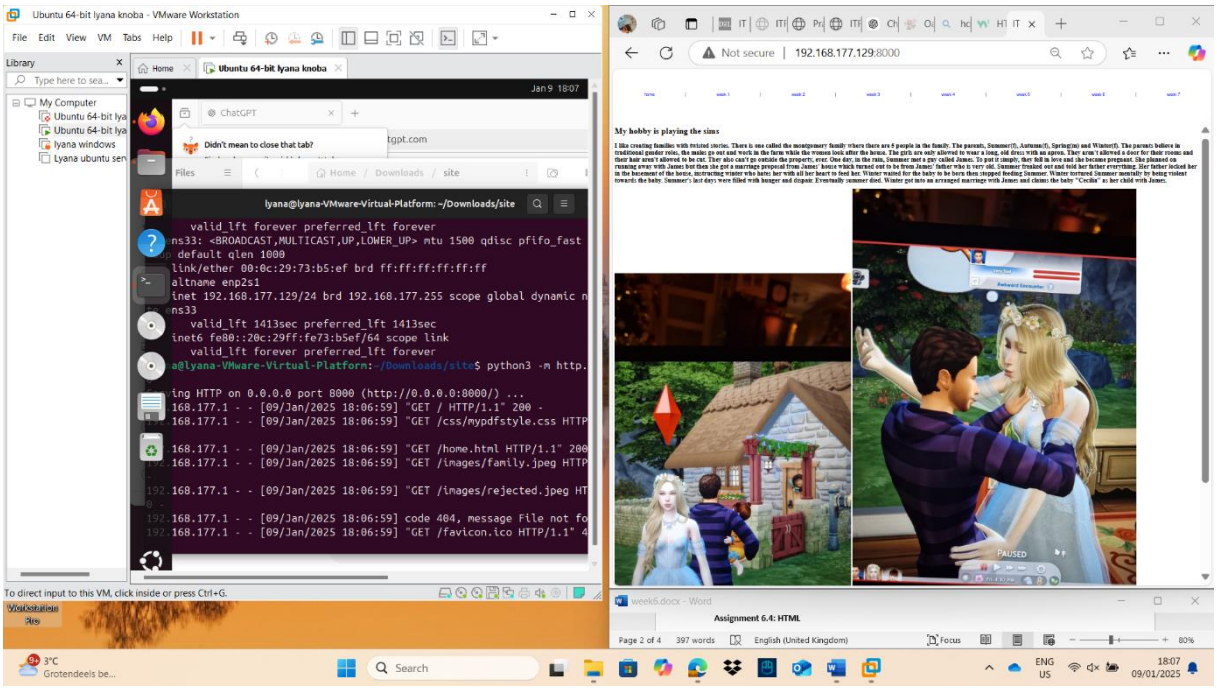
Screenshot of Site directory contents:



Screenshot python3 webserver command:



Screenshot web browser visits your site



Bonus point assignment – week 6

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.

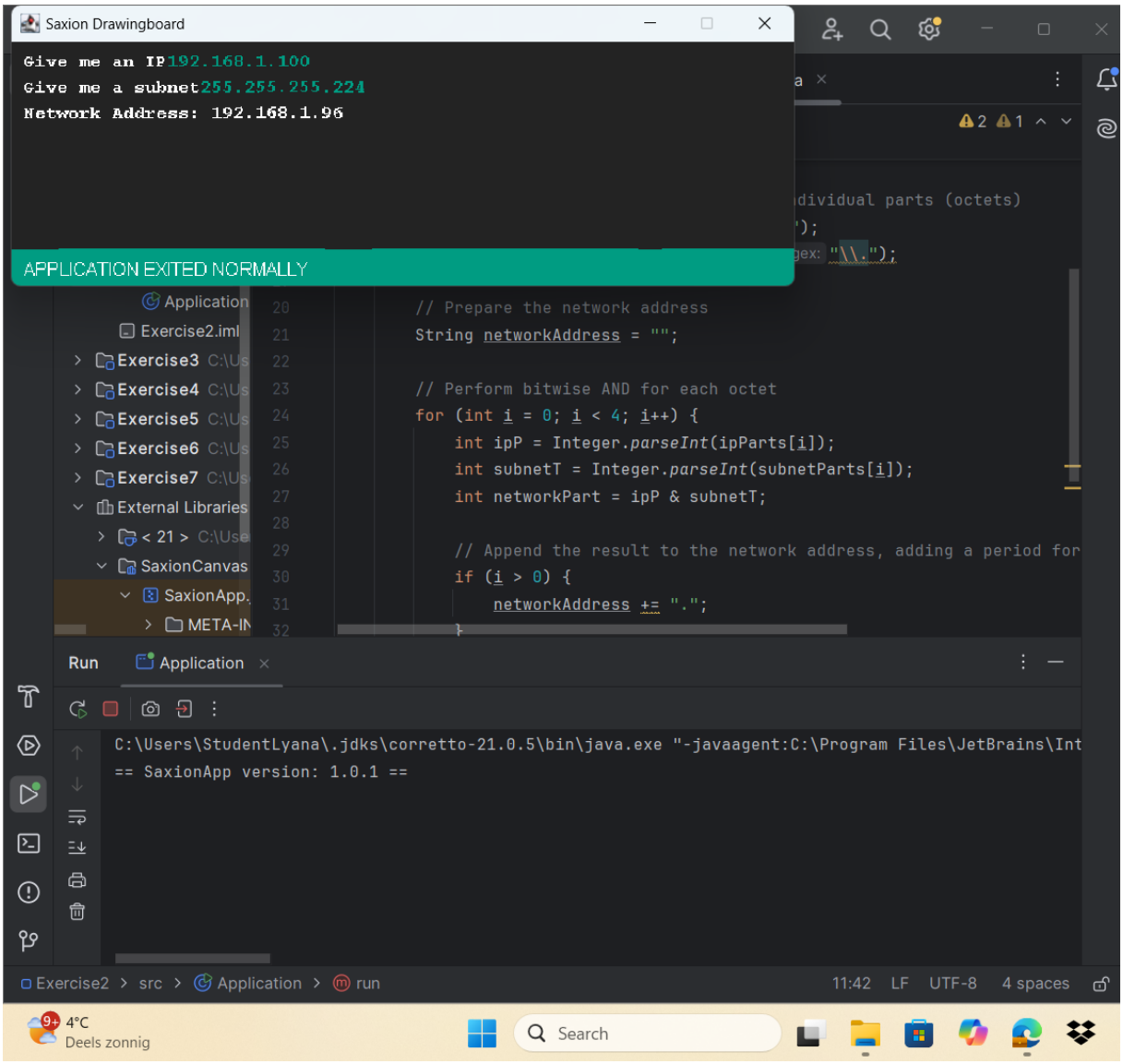
IP: 192.168.1.100 and subnet: 255.255.255.224 for /27

```
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.

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

public class Application implements Runnable {

  public static void main(String[] args) {
    SaxionApp.start(new Application(), 640, 200);
  }

  public void run() {
    // Prompt user for IP address and subnet mask
    SaxionApp.print("Give me an IP");
    String ip = SaxionApp.readString();
    SaxionApp.print("Give me a subnet");
    String subnet = SaxionApp.readString();

    // Split the IP and subnet mask into individual parts (octets)
    String[] ipParts = ip.split("\\.");
    String[] subnetParts = subnet.split("\\.");

    // Prepare the network address
    String networkAddress = "";
```

```
        // Perform bitwise AND for each octet
        for (int i = 0; i < 4; i++) {
            int ipP = Integer.parseInt(ipParts[i]);
            int subnetT = Integer.parseInt(subnetParts[i]);
            int networkPart = ipP & subnetT;

            // Append the result to the network address, adding a period for each part after the first
            if (i > 0) {
                networkAddress += ".";
            }
            networkAddress += networkPart;
        }

        // Output the calculated network address
        SaxionApp.print("Network Address: " + networkAddress);
    }
}
```



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