Template Week 6 – Networking

Student number:

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

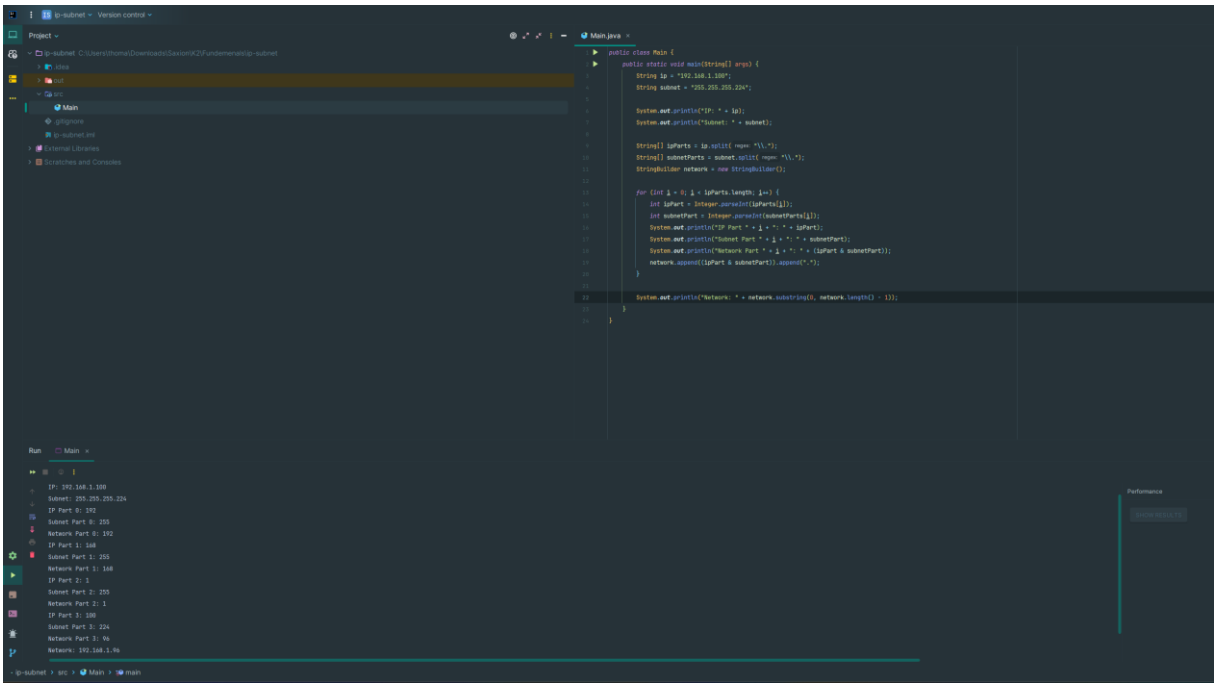
Remember that bitwise java application you've made in week 2? Expand that application so that you can also calculate a network segment as explained in the PowerPoint slides of week 6. Use the bitwise & AND operator. You need to be able to input two Strings. An IP address and a subnet.

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.



```
public class Main {
    public static void main(String[] args) {
        String ip = "192.168.1.100";
        String subnet = "255.255.255.224";

        System.out.println("IP: " + ip);
        System.out.println("Subnet: " + subnet);

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

        for (int i = 0; i < ipParts.length; i++) {
            int ipPart = Integer.parseInt(ipParts[i]);
            int subnetPart = Integer.parseInt(subnetParts[i]);
            System.out.println("IP Part " + i + ": " + ipPart);
            System.out.println("Subnet Part " + i + ": " + subnetPart);
            System.out.println("Network Part " + i + ": " + (ipPart & subnetPart));
            network.append((ipPart & subnetPart)).append(".");
        }

        System.out.println("Network: " + network.substring(0, network.length() - 1));
    }
}
```

```
IP: 192.168.1.100
Subnet: 255.255.255.224
IP Part 0: 192
Subnet Part 0: 255
Network Part 0: 192
IP Part 1: 168
Subnet Part 1: 255
Network Part 1: 168
IP Part 2: 1
Subnet Part 2: 255
Network Part 2: 1
IP Part 3: 100
Subnet Part 3: 224
Network Part 3: 96
Network: 192.168.1.96
```

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