8 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?

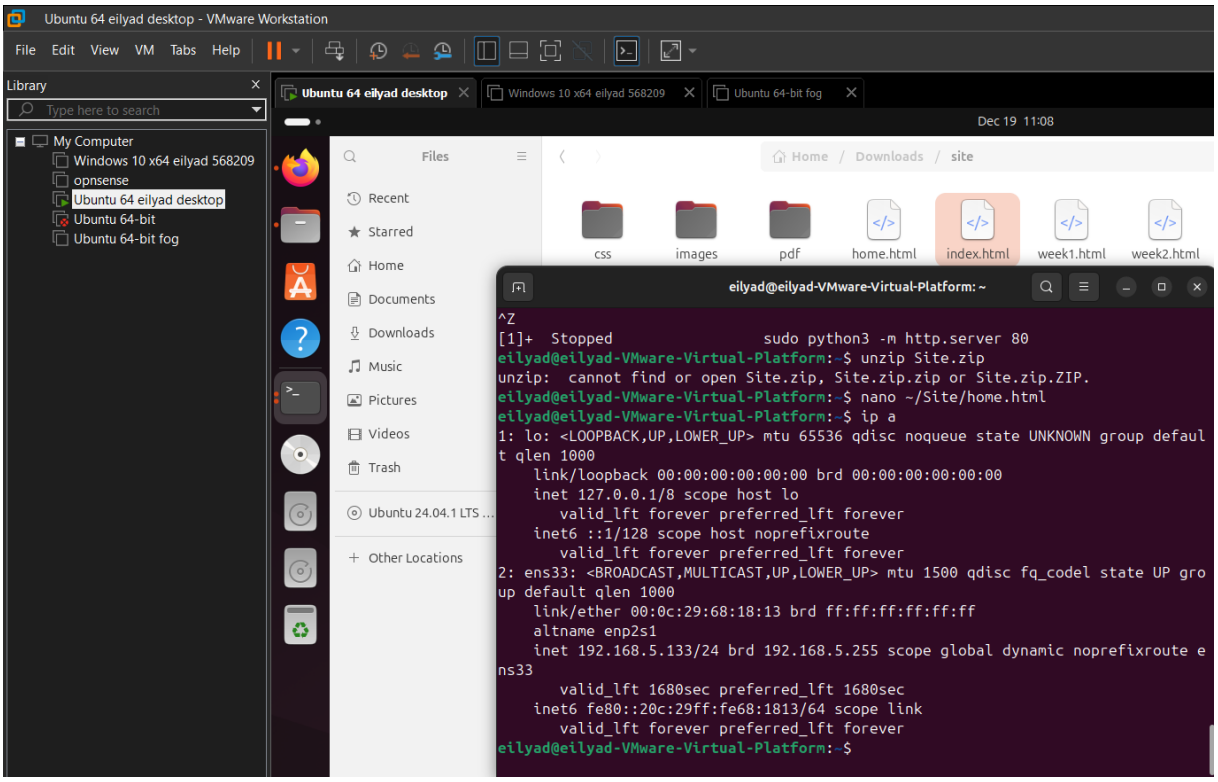
What is the usable IP range to hand out to the connected computers?

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

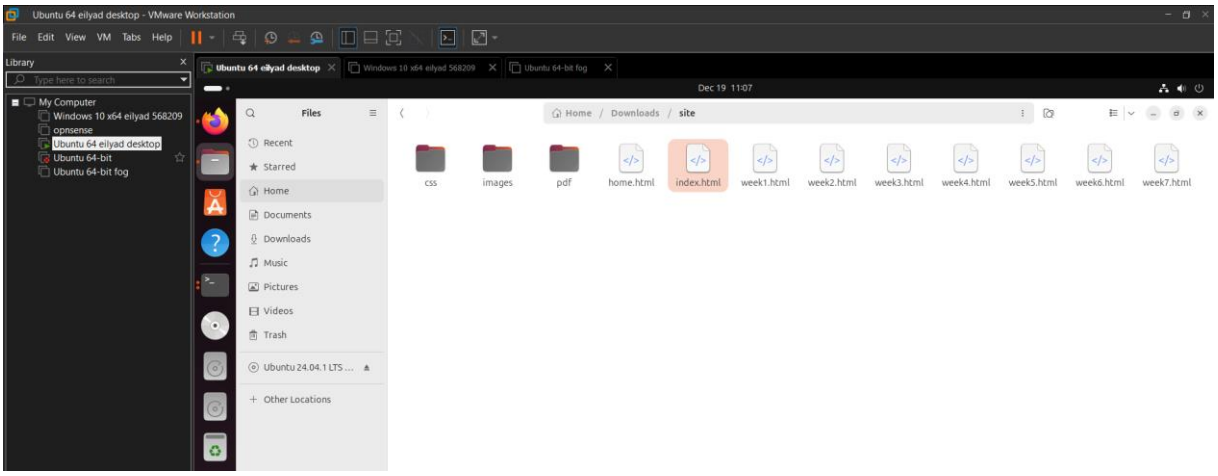
Explain the above calculation in your own words.

Assignment 6.4: HTML

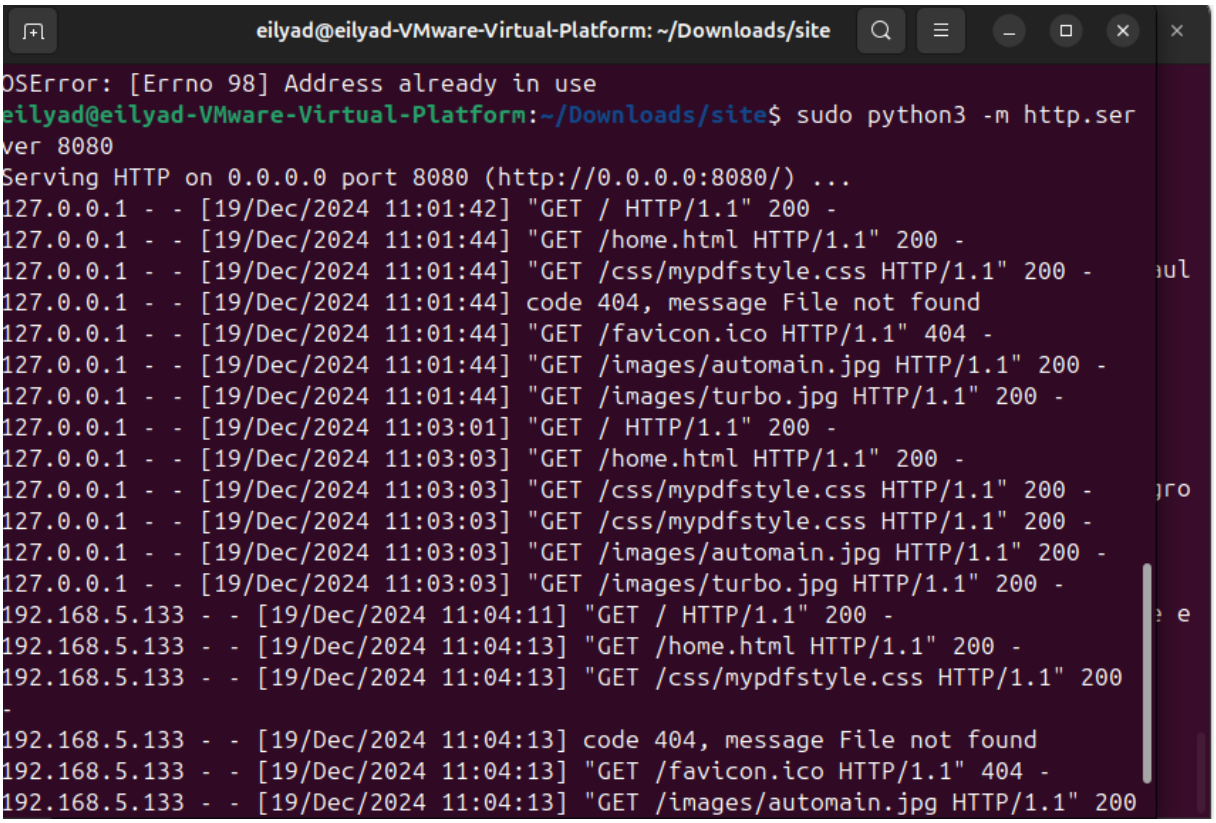
Screenshot IP address Ubuntu VM:



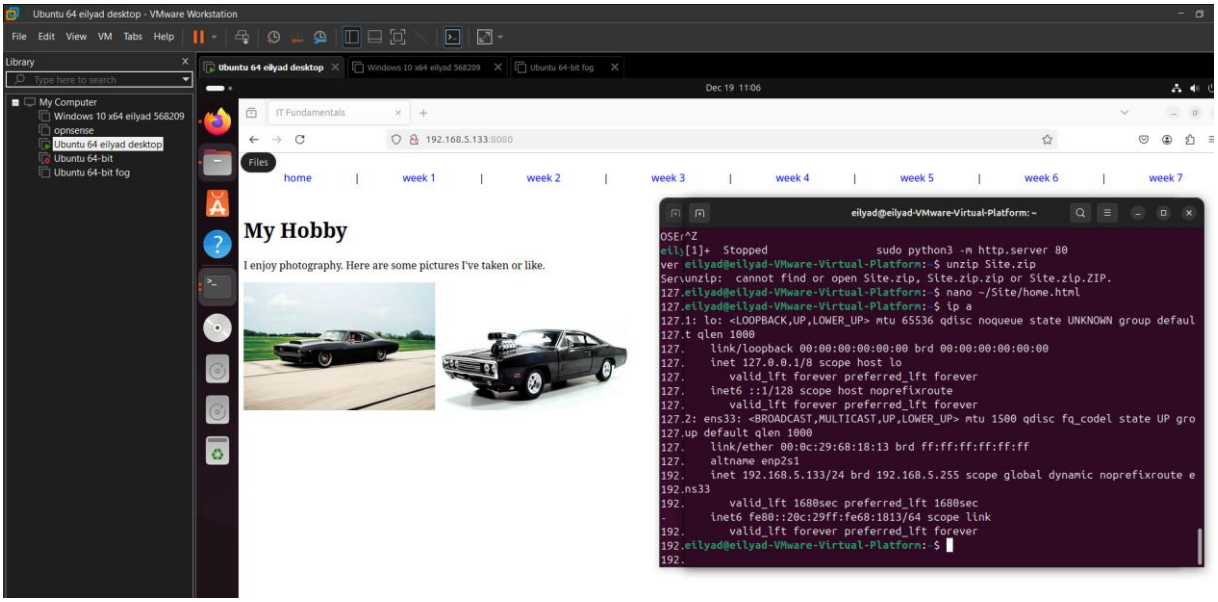
Screenshot of Site directory contents:



Screenshot python3 webserver command:



Screenshot web browser visits your site



Bonus point assignment – week 6

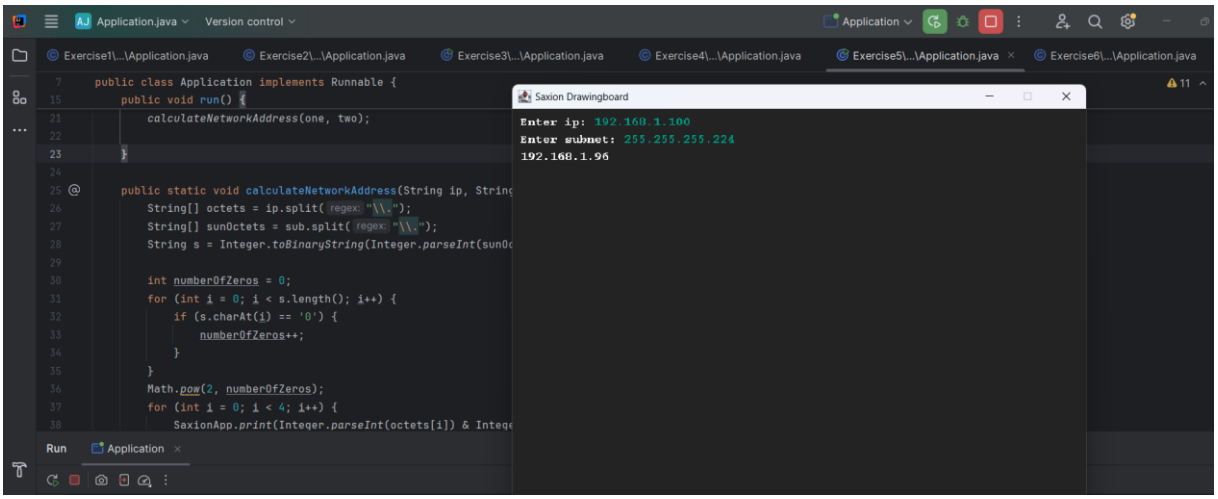
Remember that bitwise java application you've made in week 2? Expand that application so that you can also calculate a network segment as explained in the PowerPoint slides of week 6. Use the bitwise & AND operator. You need to be able to input two Strings. An IP address and a subnet.

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;

import java.awt.*;
import java.util.ArrayList;
import java.util.Scanner;

public class Application implements Runnable {

    public static void main(String[] args) {
        SaxionApp.start(new Application(), 700, 700);
    }

    static Scanner scanner = new Scanner(System.in);

    public void run() {
```

```
    SaxionApp.print("Enter ip: ");
    String one = SaxionApp.readString();
    SaxionApp.print("Enter subnet: ");
    String two = SaxionApp.readString();
    calculateNetworkAddress(one, two);

  }

  public static void calculateNetworkAddress(String ip, String sub) {
    String[] octets = ip.split("\\.");
    String[] sunOctets = sub.split("\\.");
    String s = Integer.toBinaryString(Integer.parseInt(sunOctets[3]));

    int numberOfZeros = 0;
    for (int i = 0; i < s.length(); i++) {
      if (s.charAt(i) == '0') {
        numberOfZeros++;
      }
    }
    Math.pow(2, numberOfZeros);
    for (int i = 0; i < 4; i++) {
      SaxionApp.print(Integer.parseInt(octets[i]) & Integer.parseInt(sunOctets[i]));
      if (i < 3) SaxionApp.print(".");
    }
  }


  private double calculateAreaOfCircle(int radius) {
    double result = Math.PI * radius * radius;
    return result;
  }

  private boolean isPalindrome(String word) {
    String result = "";
    for (int i = word.length() - 1; i >= 0; i--) {
      result += word.charAt(i);
    }
    if (word.equalsIgnoreCase(result)) {
      return true;
    }
    return false;
  }
```

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