

Template Week 6 – Networking

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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 (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.

```
import java.util.Scanner;

public class Main {
    static Scanner scanner = new Scanner(System.in);

    public static void main(String[] args) {
        System.out.print("Enter ip: ");
        String one = scanner.nextLine();
        System.out.print("Enter subnet: ");
        String two = scanner.nextLine();
        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++) {
            System.out.print(Integer.parseInt(octets[i]) &
Integer.parseInt(sunOctets[i]));
            if(i<3) System.out.print(".");
        }
    }
}

```

The screenshot shows an IDE with a project named 'Week 6'. The file 'Main.java' is open, displaying the following code:

```

3 public class Main {
15     public static void calculateNetworkAddress(String ip, String sub){ 1 usage
20
21         int numberOfZeros = 0;
22         for (int i = 0; i <s.length() ; i++) {
23             if (s.charAt(i) == '0'){
24                 numberOfZeros++;
25             }
26         }
27         Math.pow(2,numberOfZeros);
28         for (int i = 0; i <4 ; i++) {
29             System.out.print(Integer.parseInt(octets[i]) & Integer.parseInt(sunOctets[i]));
30             if(i<3) System.out.print(".");
31         }
32     }
}

```

The Run window shows the execution of the program with the following output:

```

"C:\Saxion\Introduction to Programming\jdk-21.0.2\bin\java.exe" "-javaagent:C:\Program
Enter ip: 192.168.1.1
Enter subnet: 255.255.255.0
192.168.1.0
Process finished with exit code 0

```

The Performance window shows the CPU and Heap Memory usage.

Ready? Save this file and export it as a pdf file with the name: [week6.pdf](#)