**LAB 5 - CALCULATE IPv4 SUBNETS**

**Scenario**

The ability to work with IPv4 subnets and determine network and host information based on a given IP address and subnet mask is critical to understanding how IPv4 networks operate. The lab is designed to reinforce how to compute network IP address information from a given IP address and subnet mask. When given an IP address and subnet mask, you will be able to determine other information about the subnet.

**Problem**

Given Host IP address: 192.168.10.160

Original Subnet Mask: 255.255.255.0

New Subnet Mask: 255.255.255.192

Note: *x* is the last number of your student code, *yy* are the last 2 numbers of your student code. Example: your student code is CE123456 then Host IP address is 192.168.16.156

You need to detail how to find the following parameters:

1. Number of Subnet Bits: 2
2. Number of Subnets Created: 4
3. Number of Host Bits per Subnet: 6
4. Number of Hosts per Subnet: 62
5. Network Address of this Subnet: 192.168.10.128
6. IPv4 Address of First Host on this Subnet: 192.168.10.129
7. IPv4 Address of Last Host on this Subnet: 192.168.10.190
8. IPv4 Broadcast Address on this Subnet: 192.168.10.191

Your student code: CE200360

Full name: Võ Lưu Tường Anh

1. Number of subnet bits:

255.255.255.192 has 26 bits of mask in total

255.255.255.0 has 24 bits of mask in total

Subnet bits is 26 - 24 = 2

1. Number of subnet created from /24 into subnets of /26 is: 2^2 = 4
2. Number of host bits per subnet: 32 - 26 = 6
3. Number of hosts per subnet 256 / 4 - 2 = 62 (there are 4 subnets total, each has 2 reserved addresses)
4. 192.168.10.160 = 11000000.10101000.00001010.10100000

255.255.255.192 = 11111111.11111111.11111111.11000000

AND = 192.168.10.128

6. IPv4 Address of First Host on this Subnet: 192.168.10.129

7. IPv4 Address of Last Host on this Subnet: 192.168.10.190

8. IPv4 Broadcast Address on this Subnet: 192.168.10.191