

CSEN404 Introduction to Networks
Spring Term 2021
Practice Assignment 9

Problem 1

Find the class of the following IP addresses:

- 123.56.77.32
- 200.50.7.11
- 12.5.17.2
- 128.4.1.2

Answer

	Binary	Class
123	<u>0</u> 1111011	A
200	<u>11</u> 001000	C
12	<u>00</u> 001100	A
128	<u>10</u> 000000	B

Problem 2

Find the maximum number of hosts that can be connected to the network in the following cases:

1. Class A IP address
2. Class B IP address
3. Class C IP address

Answer

1. $2^{24} - 2$
2. $2^{16} - 2$
3. $2^8 - 2$

Problem 3

Write the following netmasks in slash (/n) notation:

1. 255.255.255.0
2. 255.255.224.0

Answer

1. 255.255.255.0/24 Since 255 is 8 1s and we have the first 3 bytes as 255 then we have 24 1s and so the mask is 24
2. The binary representation of 224 is 11100000 and so we have 3 1s in the third byte and the rest is 0 so our mask will be 19 i.e. 255.255.224.0/19

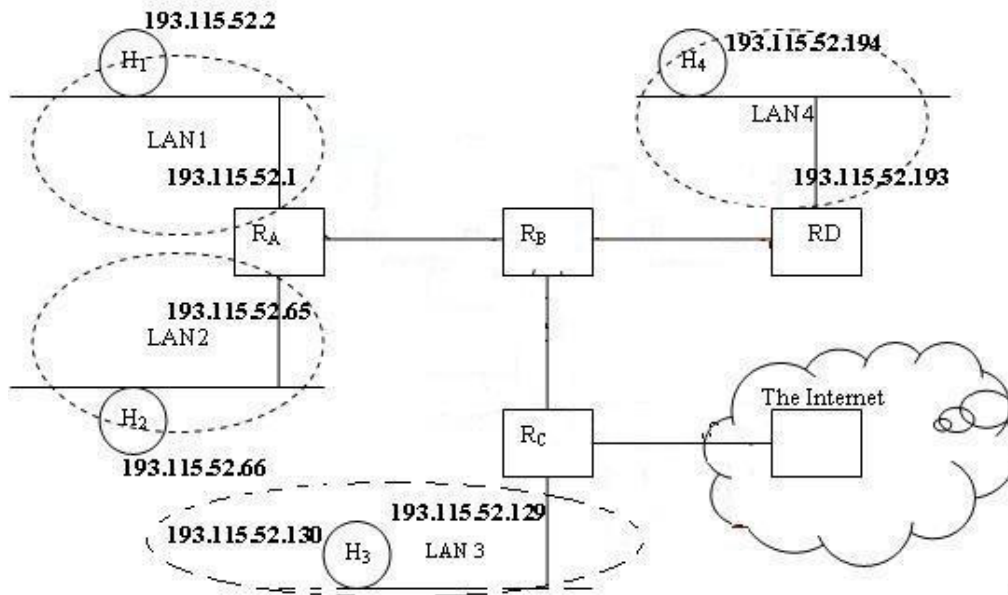
Problem 4

The following network is composed of 4 LANs: LAN1, LAN2, LAN3 and LAN4. The network addresses is class C network address 193.115.52.x Determine:

- a) Network Address for each LAN.
- b) The IP address for all the hosts in the figure and the routers used.
- c) The maximum range of hosts that can be connected to every LAN
- d) The range of IP addresses that can be given.

Answer

- a) We have only 4 LANS with routable IPs, so we only need 2 bits for subnetting.
110 Network (24 bits) Subnet (2 bits) Host(6 bits)
Subnet Mask: 255.255.255.192
LAN1: 193.115.52.0
LAN2: 193.115.52.64
LAN3: 193.115.52.128
LAN4: 193.115.52.192
- b) Addresses for all hosts and routers shown, virtual IPs shown below.



- c) Number of hosts for each LAN = $2^6 - 2 = 62$ hosts per LAN, excluding all 0's, all 1's in the host part of the address.
- d) The range of IP addresses for LAN1 would be 193.115.52.1 until 193.115.52.62 (Similarly calculate the range for LAN2, LAN3, LAN4)