IPv4 Address Classes

Introduction

Your supervisor is tasking you and your team to document the existing network scheme. In order to do this, you feel the need to brush up on the various address classes, network portion and host portion.

Objectives

In this project/lab the student will:

- Identify the class of an IPv4 address, given the decimal number.
- Identify the network portion of an IPv4 address.
- Identify the host portion of an IPv4 address.

Review

IP Address Classes

(Network 127 is reserved for loopback and internal testing)

Class A	1 – 127	Leading bit pattern 0 00000000 - 01111111
Class B	128 – 191	Leading bit pattern 10 10000000 - 10111111
Class C	192 – 223	Leading bit pattern 110 11000000 - 11011111
Class D	224 – 239	(Reserved for multicast) Bit pattern 1110 11100000 - 11101111
Class E	240 – 255	(Reserved for experimental, used for research) Bit pattern 1111 11110000 - 11111111

Private Address Space

Class A 10.0.0.0 to 10.255.255.255

Class B 172.16.0.0 to 172.31.255.255

Class C 192.168.0.0 to 192.168.255.255

Default Subnet Masks

Class A 255.0.0.0

Class B 255.255.0.0

Class C 255.255.255.0

Resources

- Computer with Internet connection
- Access to the textbook/lecture presentation for reference

Procedure

Part 1. For the given IP address, identify if the address is an IPV4 Class A, B, or C address:

Address	Class	Address	Class
121.1.5.74	A	15.33.219.129	A
141.36.17.251	B	199.200.15.0	C
221.9.6.131	C	226.13.45.6	D
195.14.12.0	C	231.14.141.198	D
126.156.8.0	A	229.19.134.109	D
226.161.74.11	D	123.45.67.89	A
159.161.109.13	B	55.44.222.111	A
161.131.69.27	B	161.109.78.142	B
192.168.15.14	C	131.135.109.60	B

Part 2. Given the IPv4 address, write the network address in the space to the left of the address. For Class D and E addresses, enter "N/A" for "Not applicable".

Address	Net Address	Address	Net Address
121.1.5.74	121.0.0.0	15.33.219.129	15.0.0.0
141.36.17.251	141.36.0.0	199.200.15.0	199.200.15.0
221.9.6.131	221.9.6.0	226.13.45.6	N/A
195.14.12.0	195.14.12.0	231.14.141.198	N/A
126.156.8.0	126.0.0.0	229.19.134.109	N/A

226.161.74.11	N/A	123.45.67.89	123.0.0.0
159.161.109.13	159.161.0.0	55.44.222.111	55.0.0.0
161.131.69.27	161.131.0.0	161.109.78.142	161.109.0.0
192.168.15.14	192.168.15.0	131.135.109.60	131.135.0.0

Part 3. Given the IPv4 address, write the host portion of the address in the space to the left of the address. Use the default subnet mask for the identified class. For Class D and E addresses, enter "N/A" for "Not applicable".

Address	DefaultMask	Address	DefaultMask
121.1.5.74	1.5.74	15.33.219.129	33.219.129
141.36.17.251	.17.251	199.200.15.0	.0
221.9.6.131	.131	226.13.45.6	N/A
195.14.12.0	.0	231.14.141.198	N/A
126.156.8.0	.156.8.0	229.19.134.109	N/A
226.161.74.11	N/A	123.45.67.89	45.67.89
159.161.109.13	.109.13	55.44.222.111	44.222.111
161.131.69.27	.69.27	161.109.78.142	78.142
192.168.15.14	.14	131.135.109.60	.109.60

Reflection

1. What is the default Subnet Mask of a Class A, B, and C IPv4 address? A - 255.0.0.0, B- 255.255.0.0, C 255.255.255.0
2. Can an address in the 10.0.0.0 range be used as a web server on the Internet? No, Its a Private IP address address
3. What is the IP address 255.255.255.255 used for? It is used for broadcast
4. What does it mean if a PC has an IP address whose first two octets are 169.254? It means that the DHCP server is not reachable which means it doesn't have access to a router

Rubric

Standards for This Competency	EXEMPLARY	ACCOMPLISHED	DEVELOPING	BEGINNING
Part 1	14-15 correct (24.89- 26.67 pt)	12-13 correct (23.11-21.33 pt)	<21.33	
Part 2	14-15 correct (24.89- 26.67 pt)	12-13 correct (23.11-21.33 pt)	<21.33	
Part 3	14-15 correct (24.89- 26.67 pt)	12-13 correct (23.11-21.33 pt)	<21.33	
Reflection #1	Answer is fully developed. (5 pt)		Answer shows lack of understanding of network topologies. (0 pt)	
Reflection #2	Answer is fully developed. (5 pt)		Answer shows lack of understanding of network topologies. (0 pt)	
Reflection #3	Answer is fully developed. (5 pt)		Answer shows lack of understanding of network topologies. (0 pt)	
Reflection #4	Answer is fully developed. (5 pt)		Answer shows lack of understanding of network topologies. (0 pt)	