# ITMO 440/540 - Data Networks

# Assignment 9b – Classless IP Addressing

# Assigned: 10/22/15 Due: 10/29/2015

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### Purpose: Practice concepts related to IPv4 Classless Addresses

For each of the three **Classless** IP addresses given below in **slash notation**, answer the questions that follow.

CLASSLESS ADDRESSES

**Given the classless IP address 100.24.10.11/18,**  **answer the following questions about the address and the network on which it is found.**

1. What is the binary representation of this address?

**\_\_\_01100100 00011000 00001010 00001011\_\_\_**

1. What is the binary representation of the network mask of this network?

\_\_\_**11111111 11111111 11000000 00000000**\_\_\_\_

1. What is the dotted-decimal representation of the network mask of this network? \_\_\_**255.255.192.0**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. What is the prefix portion of this IP Address in binary? **\_\_01100100 00011000 00\_\_\_**
3. What is the suffix portion of this IP Address in binary? **\_\_001010 00001011\_**
4. How many total IP addresses can there be on the network on which this IP address is found? \_\_\_\_**2(32-18)=214=16384**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. What is the network address (first address) of the network on which this IP address is found ? Give your answer in binary notation.

**\_\_01100100 00011000 00000000 00000000\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. What is the network address (first address) of the network on which this IP address is found? Give your answer in dotted-decimal notation. \_\_**100.24.0.0**\_\_\_\_\_\_\_\_\_\_\_\_
2. What is the limited broadcast address (last address) of the network on which this IP address is found? Give your answer in binary notation.

\_\_**01100100 00011000 00111111 11111111**\_\_\_\_\_\_\_\_\_\_\_\_

1. What is the limited broadcast address (last address) of the network on which this IP address is found? Give your answer in dotted-decimal notation. \_\_\_**100.24.63.255**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Given the classless IP address 175.78.56.42/ 20,**  **answer the following questions about the address and the network on which it is found.**

1. What is the **binary** representation of this address?

\_\_**10101111 01001110 00111000 00101010**\_\_\_\_\_\_\_\_\_\_\_\_\_

1. What is the **binary** representation of the **network mas**k of this network?

\_\_**11111111 11111111 11110000 00000000**\_\_\_\_\_\_\_\_

1. What is the dotted-decimal representation of the **network mask** of this network? \_\_\_\_**255.255.240.0**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. What is the NetID portion of this IP Address in binary?

**\_\_10101111 01001110 0011\_\_\_**

1. What is the HostID portion of this IP Address in binary? **\_\_\_\_1000 00101010\_\_\_\_\_\_**
2. How many total IP addresses can there be on the network on which this IP address is found? \_\_\_\_**2(32-20)=212=4096**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. What is the network address (first address) of the network on which this IP address is found ? Give your answer in binary notation.

**\_\_10101111 01001110 00110000 00000000\_\_\_\_\_\_**

1. What is the network address (first address) of the network on which this IP address is found? Give your answer in dotted-decimal notation. \_\_**175.78.48.0**\_\_\_\_\_\_\_\_\_\_\_\_
2. What is the limited broadcast address (last address) of the network on which this IP address is found? Give your answer in binary notation.

\_\_\_\_**10101111 01001110 00111111 11111111**\_\_\_

1. What is the limited broadcast address (last address) of the network on which this IP address is found? Give your answer in dotted-decimal notation. \_\_\_\_\_**175.78.63.255**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Given the classless IP address 220.151.109.200/11,**  **answer the following questions about the address and the network on which it is found.**

1. What is the **binary** representation of this address?

\_\_\_**11011100 10010111 01101101 11001000**\_\_\_\_\_\_\_

1. What is the **binary** representation of the **network mas**k of this network? \_\_\_**11111111 11100000 00000000 00000000**\_\_\_\_\_\_
2. What is the dotted-decimal representation of the **network mask** of this network? \_\_\_\_**255.224.0.0**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. What is the NetID portion of this IP Address in binary? \_\_**11011100 100**\_\_\_\_\_\_\_\_\_
4. What is the HostID portion of this IP Address in binary?

\_\_\_\_\_**10111 01101101 11001000**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. How many total IP addresses can there be on the network on which this IP address is found? \_\_\_\_**2(32-11)=221=2097152**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. What is the network address (first address) of the network on which this IP address is found ? Give your answer in binary notation.

**\_\_11011100 10000000 00000000 00000000\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. What is the network address (first address) of the network on which this IP address is found? Give your answer in dotted-decimal notation. \_\_**220.128.0.0**\_\_\_\_\_\_\_\_\_\_\_\_
2. What is the limited broadcast address (last address) of the network on which this IP address is found? Give your answer in binary notation.

\_\_\_**11011100 10011111 11111111 11111111**\_\_\_\_\_\_\_\_\_\_\_

1. What is the limited broadcast address (last address) of the network on which this IP address is found? Give your answer in dotted-decimal notation. \_\_**220.159.255.255** \_