Faculty of Computing



**[Computer Communications & Network]**

**Lab No 5 Tasks**

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**Task 1: Use the IP address chart and your knowledge of IP address classes to answer the following questions:**

* **What is the decimal and binary range of the first octet of all possible Class B IP addresses?**
* Decimal: From: 128 To: 191
* Binary: From:10000000 To:10111111
* **Which octet(s) represent the network portion of a Class C IP addres**

**The first three octets**

* **Which octet(s) represent the host portion of a Class A IP address?**

**The last three octets**

* **What is the maximum number of useable hosts with a Class C network address? 254**
* **How many Class B networks are there? 16384 networks**
* **How many hosts can each Class B network have? 65534 host**
* **How many octets are there in an IP address? 4 octets**

**How many bits per octet? 8 bits**

**Task 2: Determine the host and network portions of the IP address**

With the following IP host addresses, indicate the following:

* Class of each address
* Network address or ID
* Host portion
* Default subnet mask

The host portion will be all zeros for the network ID. Enter just the octets that make up the host. The host portion will be all ones for a broadcast. The network portion of the address will be all ones for the subnet mask. Fill in the following table:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Host IP Address | **Address Class** | **Network Address** | **Host Address** | **Default Subnet Mask** |
| **216.14.55.137** | C | 216.14.55.0 | 137 | 255.255.255.0 |
| **123.1.1.15** | A | 123.0.0.0 | 1.1.15 | 255.0.0.0 |
| **150.127.221.244** | B | 150.127.0.0 | 221.244 | 255.255.0.0 |
| **194.125.35.199** | C | 194.125.35.0 | 199 | 255.255.255.0 |
| **175.12.239.244** | B | 175.12.0.0 | 239.244 | 255.255.0.0 |

**Task 3: Given an IP address of 142.226.0.15, answer the following questions:**

What is the binary equivalent of the second octet? 11100010

What is the class ofthe address? Class B

What is the network address of this IPaddress? \_142.226.0.0

Is this a valid IP host address (Y/N)? Why or why not?

(yes) The network part of the address (the first 2 octets or 16 bits) is 142.226 which is a valid class B address. The host part (last 2 octets or 16 bits) is 0.15 or 00000000.00001111. Since all 16 bits of the host ID are not all zeros or all ones it is a valid host address. \_\_

**Task 4: Determine which IP host addresses are valid for commercial networks**

|  |  |  |
| --- | --- | --- |
| IP Host Address | Valid Address? (Yes/No) | Why or Why Not |
| 150.100.255.255 | No | This is a broadcast address for a class B and cannot be used for a host address.150.100.0.0. is a Class B network. |
| 175.100.255.18 | Yes | The host portion is the 3rd and 4th 11111111.00010010 and is not all zeros or all ones. It is valid even though the 3rd octet is all ones.175.100.0.0 is a class B network. |
| 195.234.253.0 | No | This is the network address or ID for this network and cannot be used for a host address since all the host bits are zeros. 195.234.253.0 is a Class C network. |
| 100.0.0.23 | Yes | The host portion of the address is the 2nd, 3rd and 4th octets 00000000.00000000.00010111 and is not all zeros or all ones. It is valid even though the 2nd and 3rd octets are all zeros. 100.0.0.0 is a Class A network. |
| 188.258.221.176 | No | This would be a class B network but is invalid because the 2nd octet is greater than 255. No octet can be greater then 255 (all ones) in any IP address (network or host). |
| 127.34.25.189 | No | This would be a Class A network but is invalid because the 127 can't be used in the first octet since it is reserved for diagnostic testing. |
| 224.156.217.73 | No | This is a Class D network and class D is reserved for multicasting and can't be used as a commercial IP address. |