

# **CNL ASSIGNMENT 08**

## **IP ADDRESS**

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**Objective:** To give IP Address of different classes in given Network id..

### **Theory:**

IP addresses enable computers to communicate by providing unique identifiers for the computer itself and for the network over which it is located. An IP address is a 32 bit value that contains a network identifier (net-id) and a host identifier (host-id). The network administrators need to assign IP addresses to the system on their network. This address needs to be a unique one. All the computers on a particular subnet will have the same network identifier but different host identifiers. The Internet Assigned Numbers Authority (IANA) assigns network identifiers to avoid any Duplication of addresses.

Host Identifier Network Identifier 32 bits

The 32 bit IPv4 address is grouped into groups of eight bits, separated by dots. Each 8 bit group is then converted into its equivalent binary number. Thus each octet (8bit) can take value from 0 to 255. The IPv4 in the dotted decimal notation can range from 0.0.0.0 to 255.255.255.255. The IPv4 Address are classified into 5 types as follows:

1. Class A 2. Class B
3. Class C 4. Class D
5. Class E

### **Class A**

The first bit of the first octet is always set to 0 (zero). Thus the first octet ranges from 1-127 i.e.

00000000 - 01111111  
1-127

Class A addresses only include IP starting from 1.x.x.x to 126.x.x.x only. The IP range 127.x.x.x is reserved for loopback IP addresses. The default subnet mask for class Class A IP address is 255.0.0.0 which implies that Class A addressing can have 126 networks and 167777214 hosts. Class A IP address format is thus:

0NNNNNNN.HHHHHHHH.HHHHHHHH.HHHHHHHH

## Class B

An IP address which belongs to class B has the first two bits in the first octet set to 10, i.e.

10000000 - 10111111

128 - 191

Class B IP Addresses range from 128.0.x.x to 191.255.x.x. The default subnet mask for Class B is 255.255.x.x.

Class B has 16384 Network addresses and 65534 Host addresses. Class B IP addresses format is:

10NNNNNN.NNNNNNNN.HHHHHHHH.HHHHHHHH

## Class C

The first octet of Class C IP address has its first 3 bits set to 110, that is:

11000000–11011111

192 - 223

Class C IP addresses range from 192.0.0.x to 223.255.255.x. The default subnet mask for Class C is 255.255.255.x.

Class C gives 2097152 Network addresses and 254 Host addresses. Class C IP address format is :

110NNNNN.NNNNNNNN.NNNNNNNN.HHHHHHHH





## IPv4 Addressing

Choose the Class in which the Ip addressing is to be done

Give IP Addresses for the following Computers with a Network id 48.0.0.0 in Class A

PC 1

IPv4 Address:	48	1	121	201
Subnet Mask:	255	0	0	0

PC 2

IPv4 Address:	48	2	102	202
Subnet Mask:	255	0	0	0

PC 3

IPv4 Address:	48	3	103	203
Subnet Mask:	255	0	0	0

PC 1 in Network

PC 2 in Network

PC 3 in Network



## IPv4 Addressing

Choose the Class in which the Ip addressing is to be done

Give IP Addresses for the following Computers with a Network id 174.118.0.0 in Class B

PC 1

IPv4 Address:	174	118	1	101
Subnet Mask:	255	255	0	0

PC 2

IPv4 Address:	174	118	2	102
Subnet Mask:	255	255	0	0

PC 3

IPv4 Address:	174	118	3	103
Subnet Mask:	255	255	0	0

PC 1 in Network

PC 2 in Network

PC 3 in Network



## IPv4 Addressing

Choose the Class in which the Ip addressing is to be done

Give IP Addresses for the following Computers with a Network id 223.150.122.0 in Class C

PC 1

IPv4 Address:	223	150	122	101
Subnet Mask:	255	255	255	0

PC 2

IPv4 Address:	223	150	122	102
Subnet Mask:	255	255	255	0

PC 3

IPv4 Address:	223	150	122	103
Subnet Mask:	255	255	255	0

PC 1 in Network

PC 2 in Network

PC 3 in Network

Virtual Labs

Not secure | <https://vls.its.ac.in/index.php/computer-networks/labview4/posttest.php>

IT Bombay

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Computer Networks

Computer Networks > IPv4 Addressing > Post Test

### IPv4 Addressing

#### Post Test

1) How many bits are there in the MAC(Media Access control) Address.

☐ 48bits

☒ 48bits

☐ 32bits

☐ 16bits

2) Which of the following IP Address is valid for A-Class

☐ 172.51.4.2

☐ 192.126.42.2

☐ 128.4.2.1

☒ 26.2.3.1

Evaluate

1) Correct

2) Correct