# ASSIGNMENT No. 3

## Problem statement:
Write a program to demonstrate subnetting & find the subnet masks.

## Objective:
- To understand subnetting
- To to compute the subnet mask.

## Theo

## S/w/H/w requirements:
1 GB RAM, 120 GB HDD, Monitor, keyboard, Mouse, Eclipse, CDT.

## Theory:

1) ### Subnetting
   Subnetting is when you enter a lease with someone else, known as a sto subnet, for an
   Subnetting is a network inside a network. Subnets make networks more efficient. Through subnetting, network traffic can travel a shorter distance without passing through unnecessary routers to reach its destination.

2) ### Netmask:
   A netmask is a 32-bit mask used to divide an IP address into subnets and specify the network's available hosts. In a netmask, two bits are always automatically assigned.

Eg :

Netmask :   255.      255.      255.      255.

Binary :    11111111   11111111   11111111   11111111

Netmask         8          16        24        32
length :

Counting out the bits in the binary conversion allows
you to determine the netmask length. Above is
example of 32-bit address.

A simple formula can be used to determine the
capable amount of networks a netmask can support.

$$2^{(netmask\ length\ -\ \#\ of\ used\ segment)}$$

For eg :
If we used a netmask length of 24, having a
netmask of 255.255.255.0 with 3 used segments,
subtract 3 from netmask length. eg. 24-3 = 21.

3) subnet mask :

Subnet mask is a mask used to determine what
subnet an IP address belongs to. An IP address
has two components, the network address and the
host address.

For eg :
IP address :- 150. 215. 17. 09

Assuming this is part of part class B network
First 2 no. (150.215) represent class B.
& second 2 no. (17, 9) identify particular host
on this network.

Full address : 10010110 . 11010111 . 00010001 . 00001001
class B network part is : 10010110 . 11010111
host address : 00010001 . 00001001.

The subnet mask is the network address plus the
bits reserved for identifying the subnetwork.
Therofore, the subnet mask would be. 11111111 . 11111111 .
11110000 . 00000000. It's called mask because it can
be used to identify the subnet to which an IP address
belongs by performing a bitwise AND operation on the
mask and the IP address.

∴ subnet mask : 255 . 255 . 240 . 000
~~IP Address~~
IP address : 150 . 215 . 017 . 009
11111111 . 11111111 . 11110000 . 00000000
10010110 . 11010111 . 00010001 . ~~00000001 00000000~~
00001001

∴ Subnet Address : 10010110 . 11010111 . 00010000 . 0000000
: ② 150 . 215 . 16 . 0

Conclusion
Thus, I successfully implemented subnetting & ~~dis~~
computed subnet mask & subnet Address.