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2K17/EC/022

Computer Networks

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Assignment -1

MC308

Ans 1(i) we convert down the given address 192.0.025 from dotted decimal notation to binary notation.

192.0.0.25

11000000 00000000 00000000 00011001

classic IP address ⇒ the first 3 bytes are the network id & the last bytes is the host id.

'192.0.0' → network id

'25' → host id.

clearly all the bits of host are are neither zero, all 1.

∴ the given IP address is a Normal IP address.

(ii) 139.255.0.0

10001011 11111111 00000000 00000000

it is a class B IP address ⇒ 2 bytes for network id & 2 bytes for host id.

Network id = '192.0'

host id = '0.0'

clearly since all bits of host id are zero. Thus it is a network address.

(iii) given IP address = 140.0.255.255

10001100 00000000 11111111 11111111

Network id = 140.0 host id = '255.255'

clearly all the bits of the host id are 1. Thus the given IP address is broadcasting address.

(iv) given address = 197.10.5.0

Class C address: 11000101 00001010 00000101 00000000

Network id = '197.10.5' host id = 0

clearly all bits of IP address are 0. the given IP address is a network address

Ans: To determine the network address for a given IP address we need to perform a logical AND with the default mask

we first observe from the IP address that it lies within the range of 0.0.0.0 to 127.255.255.255

∴ it belongs to class A (i.e. 1byte for network id & 3 for host id).

To create a default mask we set all bits of network id to 1 and all host id to 0.

Default mask = 11111111 00000000 00000000 00000000
255 0 0 0

Now we perform logical AND operation.

(65.100.200.250) & (255.0.0.0)

01000001 01100100 11001000 11111010

& 11111111 00000000 00000000 00000000

01000001 00000000 00000000 00000000

Network id is 65.0.0.0

Ans 3 To find ~~network~~ broadcast address of 180.75.99.101

180.75.99.101

10110100 01001010 01100011 01100101

Network id 180075

host id 99.101

To find out the broadcast address we convert all bits of host id to 1

host id = 11111111 11111111 = 255.255

broadcast address = 180.75.255.255

is

Ans 4. no. of addresses in the given block = $2^{32-20} = 2^{12}$
= 4096

and default mask has 20 bits as 1 and rest as 0

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Default mask = 11111111 11111111 11110000 00000000

The network address for the given address is IP & default mask

IP = 00101110 . 00111011 . 10011111 . 10110011

Default mask = 11111111 . 11111111 . 11110000 . 00000000 AND

(they can be either larger)

The network address is 46.59.144.0

The last address is

00101110 . 00111011 . 10011111 . 11111111

46 . 59 . 159 . 255

∴ the range of the given block is from 46.59.144.0 to 46.59.159.255 (4096 addresses)