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BSSE4:

SUBJECT: COMPUTER COMMUNICATION AND NETWORKS.

Question 1: and Answer.

In a block of addresses, we know the IP address of one host is 101.10.11.X/ID4+5.

What are the first address (network address) and the last address (limited broadcast address)

In this block?

Answer:

Mask – It is a 32-bit binary number that gives the network address in the address block when AND operation is bitwise applied on the mask and any IP address of the block.

The default mask in different classes are :

Class A – 255.0.0.0

Class B – 255.255.0.0

Class C – 255.255.255.0

Example : Given IP address 132.6.17.85 and default class B mask, find the beginning address (network address).

Solution : The default mask is 255.255.0.0, which means that the only the first 2 bytes are preserved and the other 2 bytes are set to 0. Therefore, the network address is 132.6.0.0.

The first address is IP:101.10.0.1

Subnetmask :255.255.0.0

The last address is 101.10.255.254

Limited broadcast address is 509 in this block.

Question 2. And answer.

Take your Roll no as decimal notation, now convert it ot Binary notation. Draw the graph of the NRZ-L scheme using the binary notation of your roll no as data stream, assuming that the last signal level has been positive.?

Example

Decimal $14607_{10} = 11100100001111_2$

Dcimal to binary conversion table

Decimal Number	Binary Number	Hex Number
0	0	0
1	1	1
2	10	2
3	11	3
4	100	4
5	101	5
6	110	6
7	111	7
8	1000	8
9	1001	9
10	1010	A
11	1011	B
12	1100	C
13	1101	D
14	1110	E
15	1111	F
16	10000	10
17	10001	11
18	10010	12
19	10011	13
20	10100	14

21	10101	15
22	10110	16
23	10111	17
24	11000	18
25	11001	19
26	11010	1A
27	11011	1B
28	11100	1C
29	11101	1D
30	11110	1E
31	11111	1F
32	100000	20
64	1000000	40
128	10000000	80
256	100000000	100

Question 3. And answer.

Two neighboring nodes (A and B) use a sliding-window protocol with a 3-bit sequence number. As the ARQ mechanisim, go-back-N is used with a window size of ID last. Assuming A is transmitting and B is receiving, show the window positions for the following succession of events:

Answer:

--Before A sends any frames

Sender : 0 1 2 3 4 5 6 transmitted =4 bit window

Reciver : 0 1 2 3 4 5 6

--After A sends frames 0,1,2,3,4 and receives acknowledgment from B for 0,1 and 2

Sender : 0 1 2 3 4 5 6

A has shrunk its window as it has transmitted three but has received ack 2 hence it is keeping copy of one of them 0 1 2 3 4 5 6 Ackowlegment received for two bits.

Reciver : 0 1 2 3 4 5 6 Receiver all data hence the windows remains in 4 bit size.

--After A sends frames 5, 6 and B acknowledges 5 and the ACK is received by A.

Sender : 0 1 2 3 4 5 6 7 0 1

Receiver : 0 1 2 3 4 5 6 7 0 1 .

Question 4. And answer.

An ISP is granted a block of addresses starting with 160.(X). (ID3+4).0/16

The ISP needs to distribute these addresses to three groups of customers as follows:

a. **The first group has 16 customers; each needs 64 addresses.**
b. **The second group has 64 customers; each needs 32 addresses.**
c. **The third group has 64 customers. Each needs 16 addresses.**

Design thesub-blocks and find out how many addresses are still available after these allocations.

Answers: