

CS & IT ENGINEERING

COMPUTER NETWORKS

IPv4 Addressing

Lecture No-03



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TOPICS TO
BE
COVERED

Classful Addressing



CLASSFUL ADDRESSING



Class A

<u>NID</u>	<u>HID</u>
8	24

class-B

<u>NID</u>	<u>HID</u>
16	16

class-c

<u>NID</u>	<u>HID</u>
24	8



No. of IP Addresses Present in class A = 2^{31}

" " " " " " class-B = 2^{30}

" " " " " " class-C = 2^{29}

" " " " " " class-D = 2^{28}

" " " " " " class-E = 2^{28}

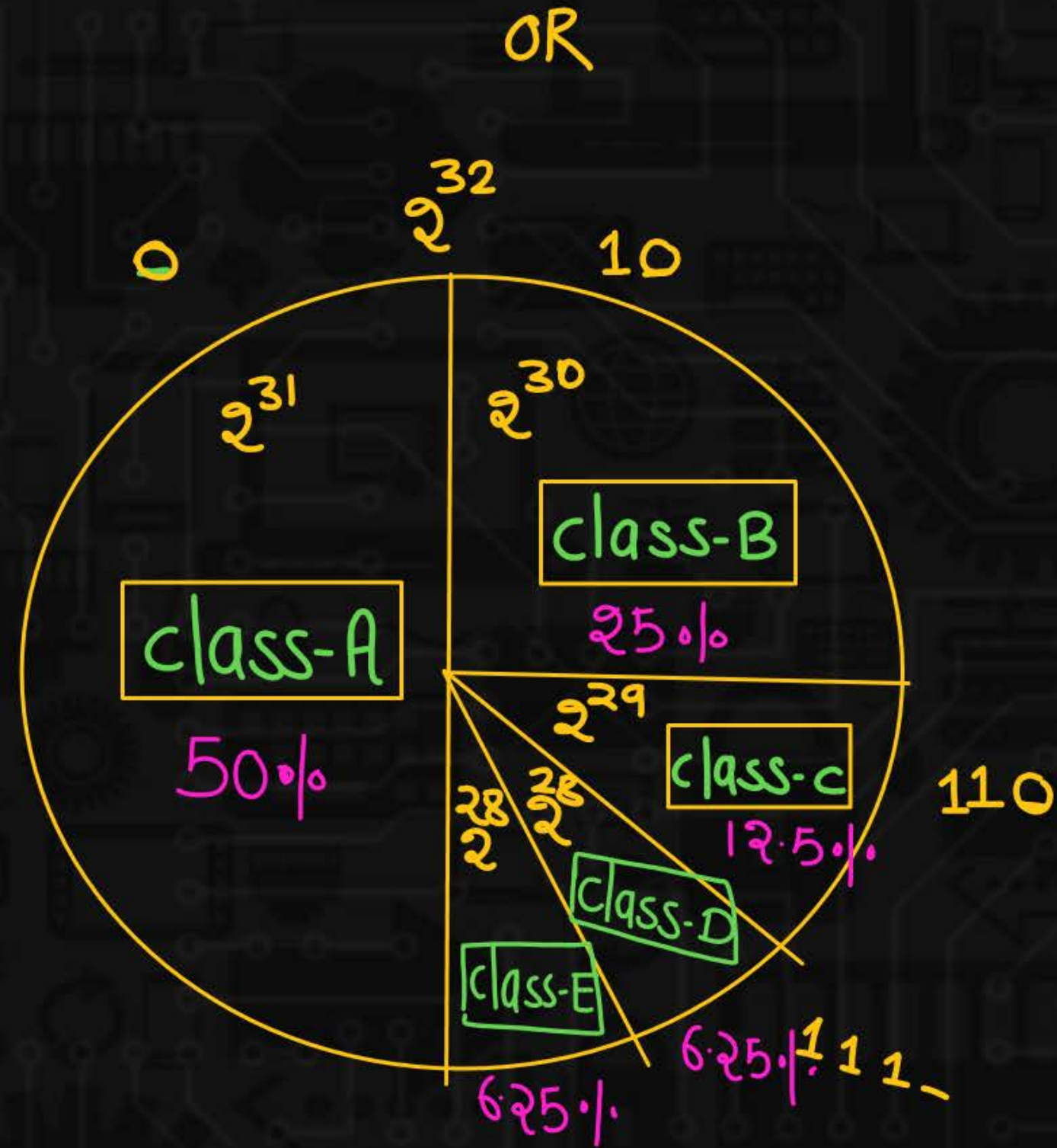
class-A \rightarrow 0

class-B \rightarrow 10

class-C \rightarrow 110

class-D \rightarrow 1110

class-E \rightarrow 1111



IP Address Representation

- Binary → 11001000 · 11111100 · 00111111 · 11110111
- Decimal → 200 · 252 · 63 · 247 (class-c)
- Hexadecimal → C8 · FC · 3F · F7

(Hexadecimal)₁₆

0000 → 0

0001 → 1

0010 → 2

0011 → 3

0100 → 4

0101 → 5

0110 → 6

0111 → 7

1000 → 8

1001 → 9

1010 → 10 → A

1011 → 11 → B

1100 → 12 → C

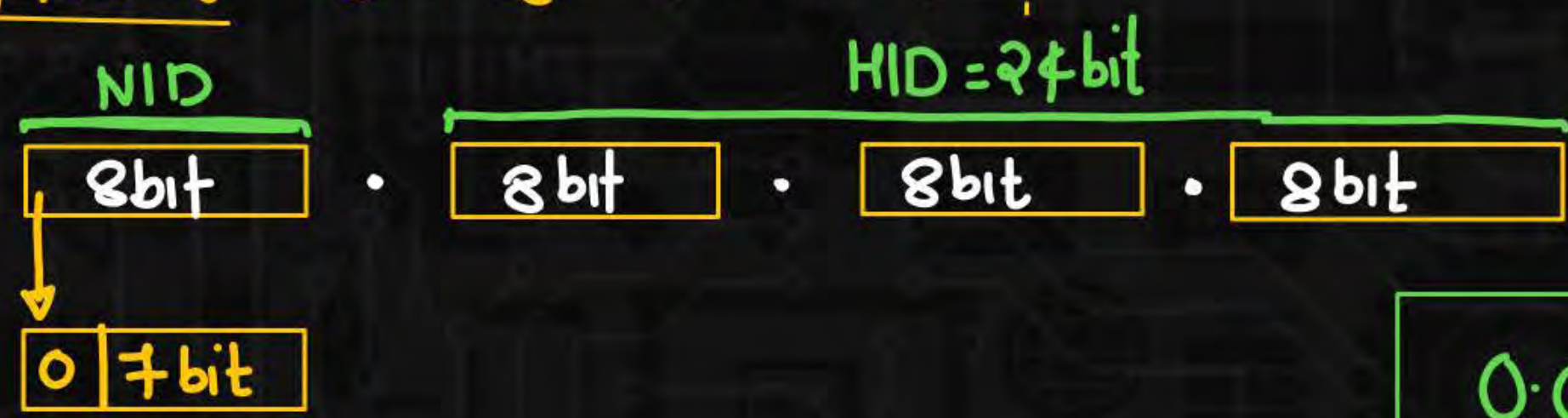
1101 → 13 → D

1110 → 14 → E

1111 → 15 → F

{ 0-9, A-F }

class-A $\rightarrow 0 \rightarrow 2^{31}$ (1-126)



0	-----	
0	00000000	→ 0 X
0	00000001	→ 1
0	00000010	→ 2
0	00000011	→ 3
⋮		
0	11111110	→ 126
0	11111111	→ 127 X

}

(1-126)
class-A

0.0.0.0 → Default Route
or
DHCP client

127.X.X.X → Self connectivity
or
Loop Back testing
or
Interprocess commⁿ

Note

Whenever we have all 0's or All 1's either in Network-id or in the Host-id of any IP Address. These IP Addresses are reserved for some special purpose. So we can't assign these IP Addresses to any Host (Computer)

2^8 Network

↓
 $2^7 - 2 = 126$ Networks

2^{24} Host/Network

↓
 $2^{24} - 2$ Host/Network

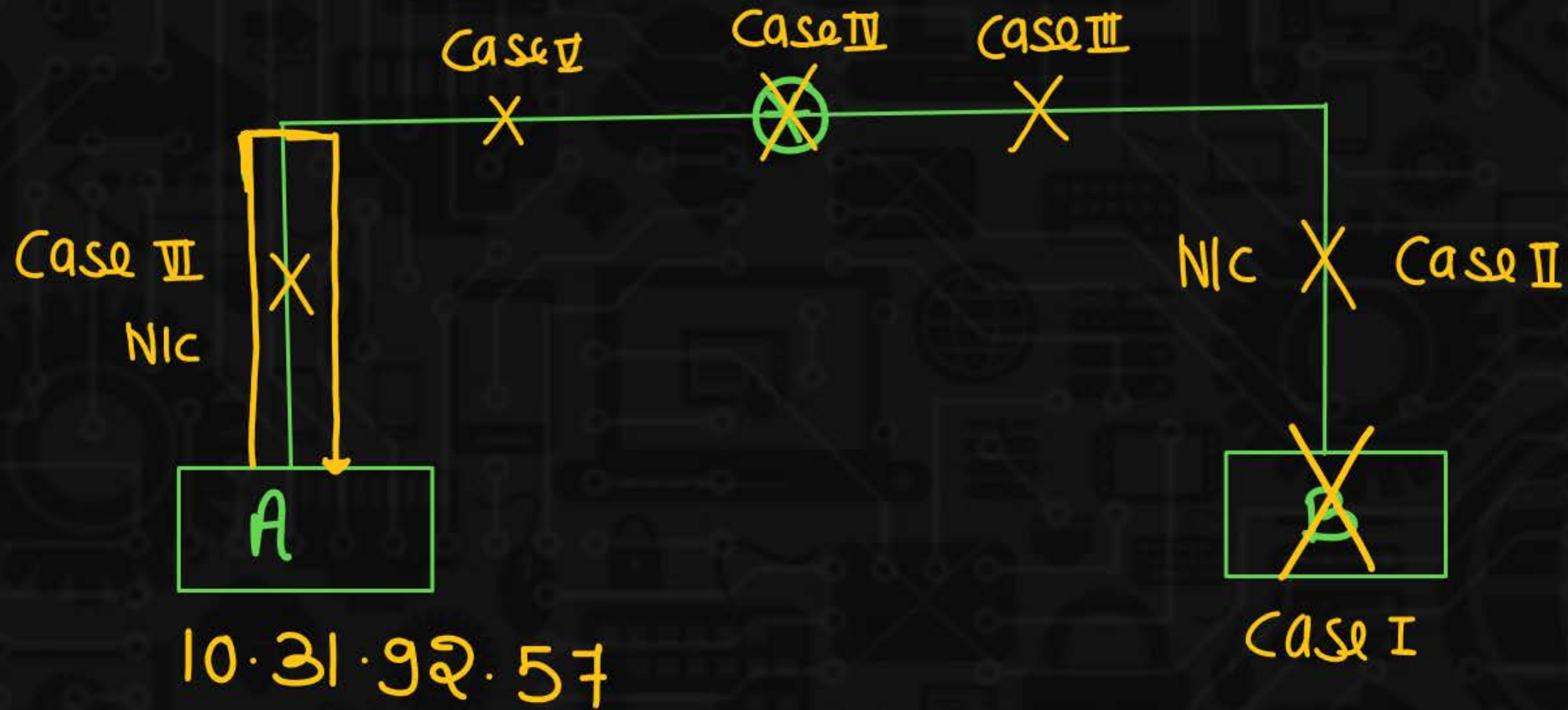
$10 \cdot 0 \cdot 0 \cdot 0 \rightarrow X$

$10 \cdot 255 \cdot 255 \cdot 255 \rightarrow X$

UID = 24 bit

$00000000 \cdot 00000000 \cdot 00000000 \rightarrow 0 \cdot 0 \cdot 0 \quad X$

$11111111 \cdot 11111111 \cdot 11111111 \rightarrow 255 \cdot 255 \cdot 255 \quad X$



SIP	DIP
10.31.92.57	127.X.X.X

✓

SIP	DIP
127.X.X.X	10.31.92.57

X

Note

- ① $127.X.X.X$ can't be used as a source IP Address (S.I.P)
- ② $127.X.X.X$ will Always be used as a Destination IP Add (D.I.P)
- ③ $127.X.X.X$ are reserved For some special purpose so it can't be assigned to any Computer (Host)

