

# CS & IT ENGINEERING

COMPUTER NETWORKS

IPv4 Addressing

**Lecture No-20**



**By- Ankit Doyla Sir**





TOPICS TO  
BE  
COVERED



classless Addressing

# Subnetting in CIDR



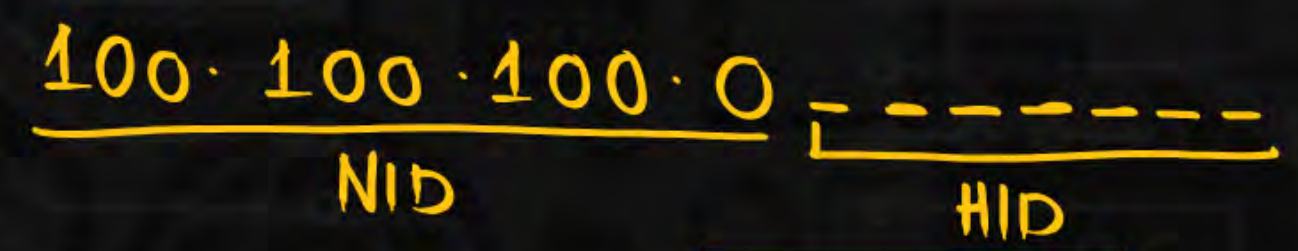
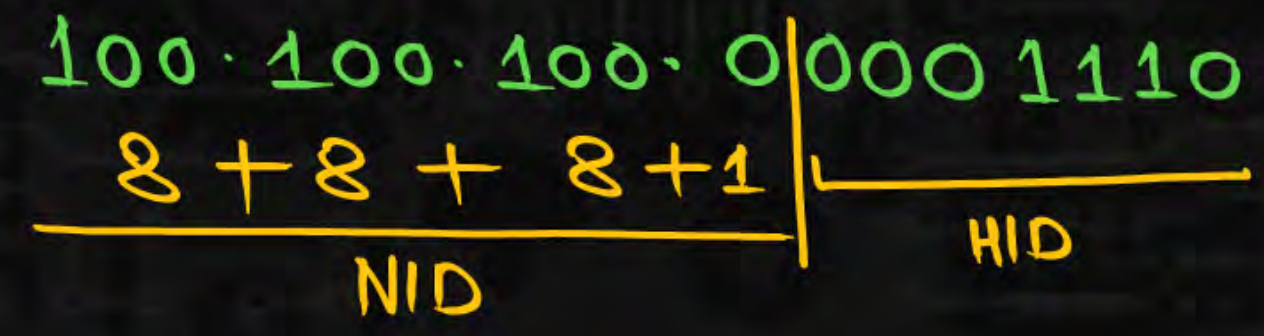
① 100.100.100.14/25

NID = 25 bit

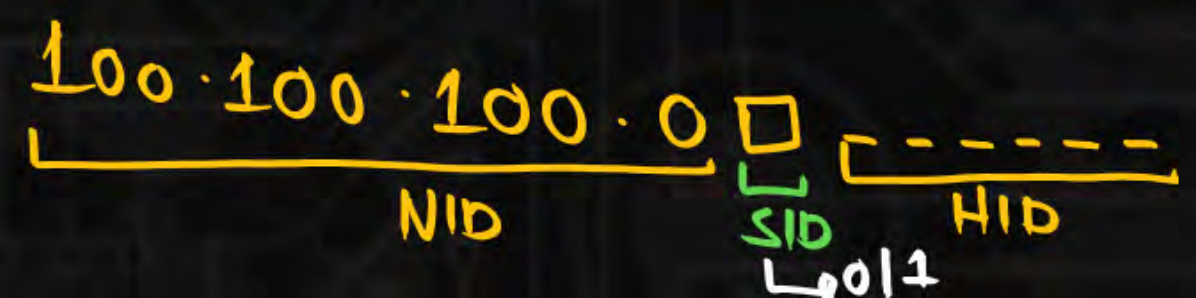
HID = 32 - 25 = 7 bit

No. of IP Addresses possible =  $2^7$

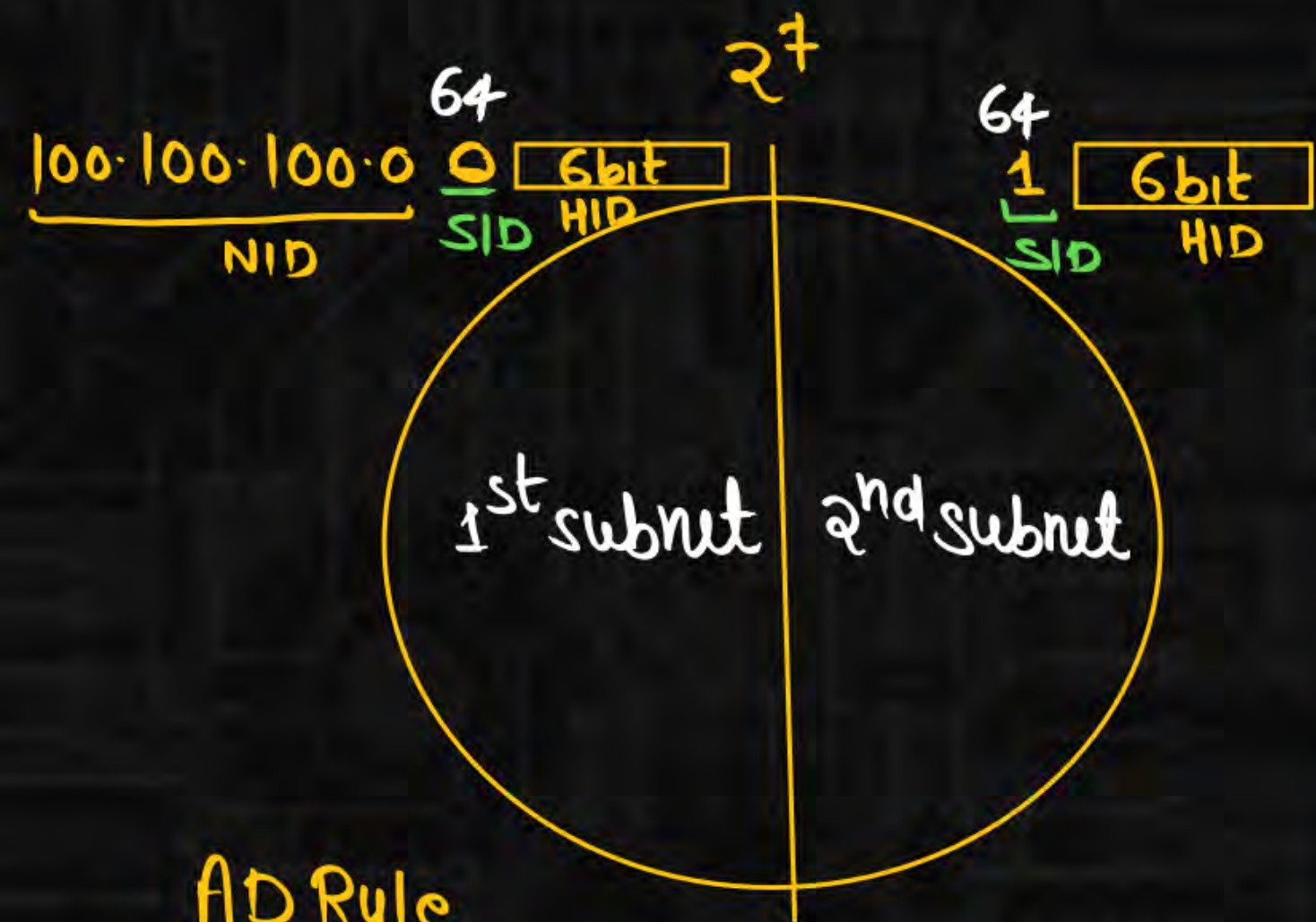
No. of Host possible =  $2^7 - 2$



2 subnet







### AD Rule

1st subnet  $\begin{cases} \text{SID} : 100.100.100.0/26 \\ \text{DBA} : 100.100.100.63/26 \end{cases}$

2nd subnet  $\begin{cases} \text{SID} : 100.100.100.64/26 \\ \text{DBA} : 100.100.100.127/26 \end{cases}$

### 1st subnet

$100.100.100.0 \underline{00000000} \rightarrow 100.100.100.0$  SID

NID

$100.100.100.0 \underline{00000001} \rightarrow 100.100.100.1$  1st Host

$100.100.100.0 \underline{00000010} \rightarrow 100.100.100.2$

$100.100.100.0 \underline{00111110} \rightarrow 100.100.100.62$  Last H

$100.100.100.0 \underline{00111111} \rightarrow 100.100.100.63$  DBA



2.  $100.100.100.14/25$

$NID=25, HID=32-5=7 \text{ bit}$

No. of IP Addresses in this Block =  $2^7$

No. of Host in this Block =  $2^7 - 2$

$$\begin{array}{c|c} 100.100.100.0 & 0001110 \\ \hline 8+8+8+1 & \\ \hline NID & HID \end{array}$$

$$\begin{array}{c|c} 100.100.100.0 & \text{-----} \\ \hline & HID \end{array}$$

4 subnet

$$\begin{array}{c|c|c} 100.100.100.0 & \square\square & \text{-----} \\ \hline NID & SID & HID \end{array}$$

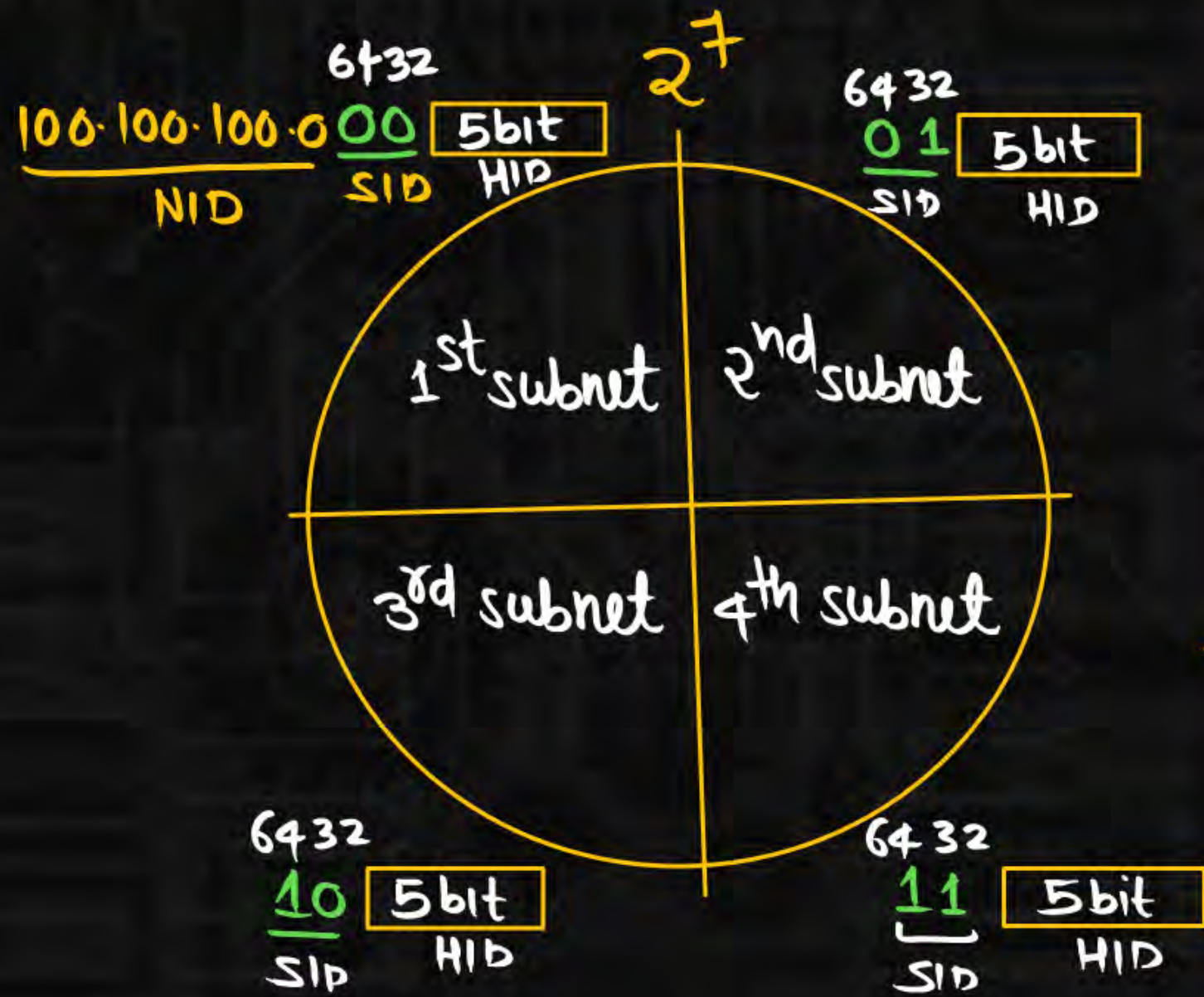
1st subnet  $\rightarrow 00$

2nd subnet  $\rightarrow 01$

3rd subnet  $\rightarrow 10$

4th subnet  $\rightarrow 11$





1<sup>st</sup> subnet  $\begin{matrix} \text{SID} \\ \text{DBA} \end{matrix} \begin{matrix} 100.100.100.0/27 \\ 100.100.100.31/27 \end{matrix}$

2<sup>nd</sup> subnet  $\begin{matrix} \text{SID} \\ \text{DBA} \end{matrix} \begin{matrix} 100.100.100.32/27 \\ 100.100.100.63/27 \end{matrix}$

3<sup>rd</sup> subnet  $\begin{matrix} \text{SID} \\ \text{DBA} \end{matrix} \begin{matrix} 100.100.100.64/27 \\ 100.100.100.95/27 \end{matrix}$

4<sup>th</sup> subnet  $\begin{matrix} \text{SID} \\ \text{DBA} \end{matrix} \begin{matrix} 100.100.100.96/27 \\ 100.100.100.127/27 \end{matrix}$

# VLSM IN CIDR



$$1. \quad 100 \cdot 100 \cdot 100 \cdot 14 / 25$$

$$NID = 25 \text{ bit}$$

$$HID = 32 - 25 = 7 \text{ bit}$$

No. of IP Addresses Available in this block =  $2^7$

" " Host " " " " =  $2^7 - 2$

$$\begin{array}{c|c} 100 \cdot 100 \cdot 100 \cdot 0 & 0001110 \\ \hline 8 + 8 + 8 + 1 & \text{HID} \\ \hline \text{NID} & \end{array}$$

$$\begin{array}{c|c} 100 \cdot 100 \cdot 100 \cdot 0 & \text{-----} \\ \hline \text{NID} & \text{HID} \end{array}$$

$$CSE_A = 60$$

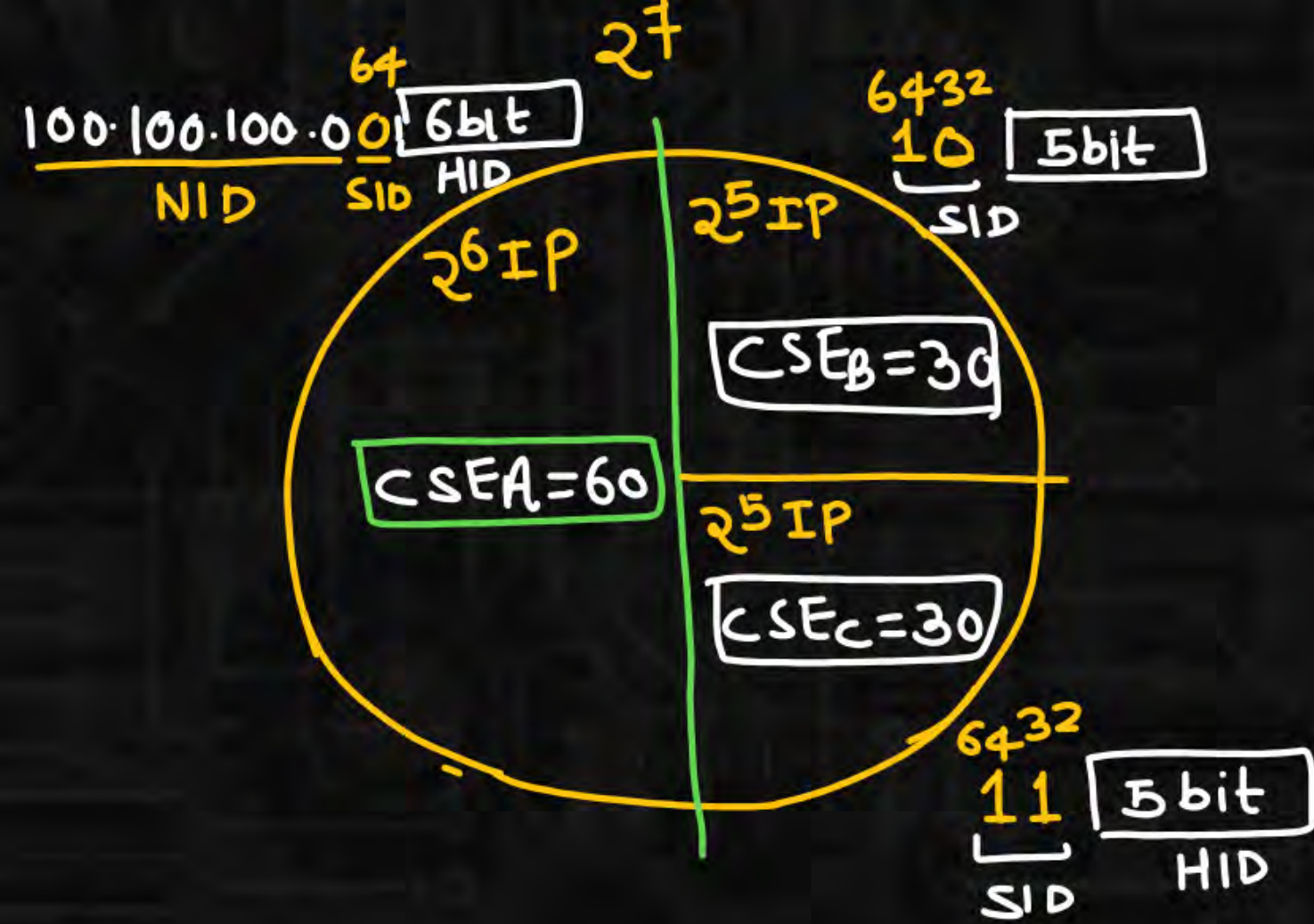
$$CSE_B = 30$$

$$CSE_C = 30$$

$$120 \leq 126 \text{ (Yes)}$$







1st way

CSEA

SID  $100.100.100.0/26$

DBA  $100.100.100.63/26$

CSEB

SID  $100.100.100.64/27$

DBA  $100.100.100.95/27$

CSEC

SID  $100.100.100.96/27$

DBA  $100.100.100.127/27$



