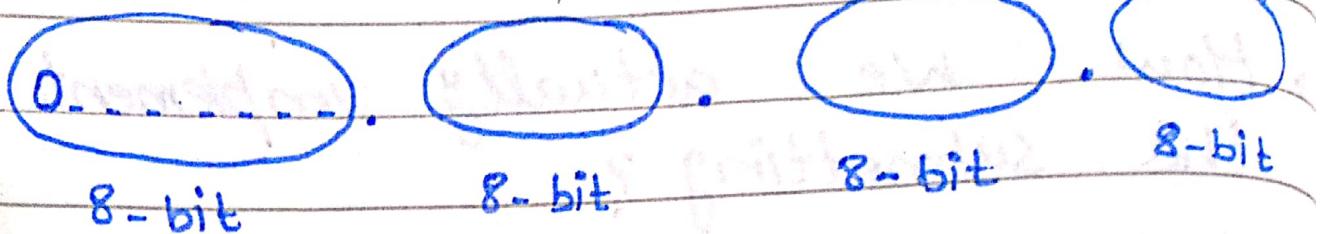


Classfull Addressing:-

Class A in IP Addressing

1-octet



1980s

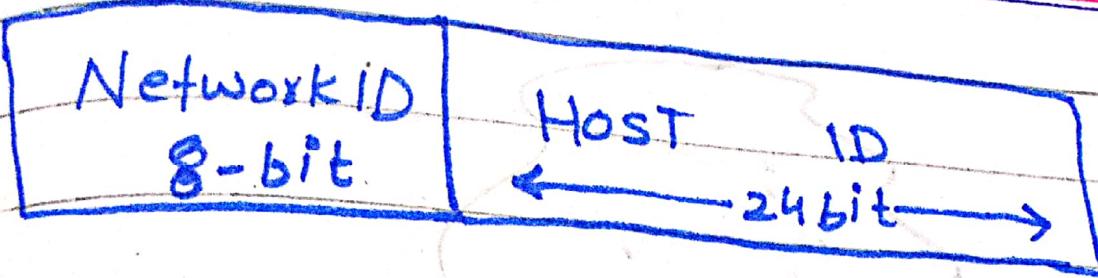
→ Dotted Decimal Representation

How many IP Addresses are there in Class A?

$$\text{No. of } \leftarrow 2^{31} = ?$$

IP Addresses

IP Address: Network ID + Host ID



0
fixbit

* 127 (Reserved)

* LoopBack

$$2^7 \rightarrow 128 \\ 2 = 0000000 = 0$$

$$00000001 = 1$$

$$00000010 = 2$$

$$00000011 = 3$$

$$\vdots \\ 01111111 = 127$$

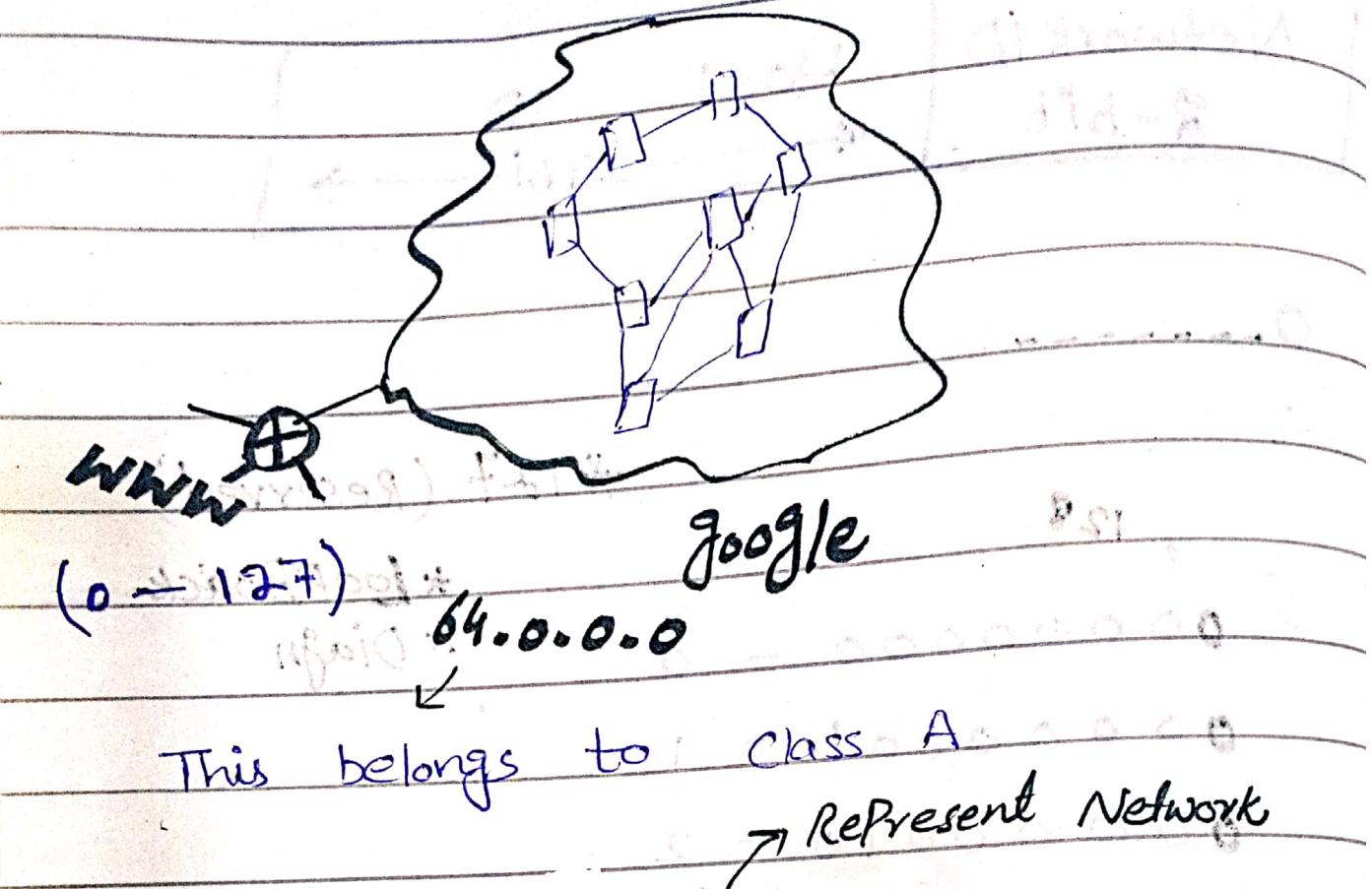
No. of Networks in Class A = $2^7 = 128$

Total Possible Addresses = $128 - 2$

126

No. of Host Possible in Every Network:

$$= 2^{24} - 2$$



First Address = 64.0.0.0

Last Address = 64.255.255.255

It is used as broadcast

Broadcast Address or Directed Broadcast Address

Default Mask of Class A = 255.0.0.0

64.0.0.8

This IP Address belongs to which Network.

(AND Operation)

01000000 . 0 . 0 . 00001000

11111111 . 0 . 0 . 00000000

↓↓↓↓↓↓

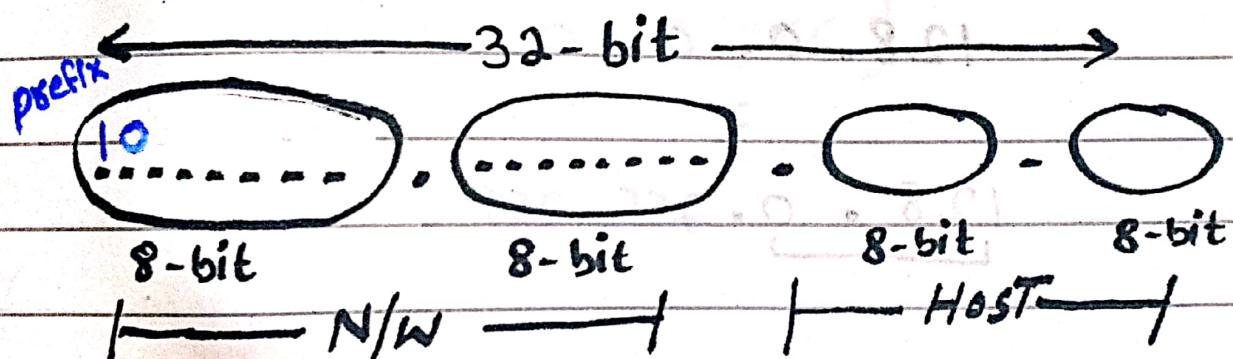
01000000 . 0 . 0 . 00000000

↓↓↓↓↓↓

01000000 . 0 . 0 . 00000000

64 . 0 . 0 . 0

Class 'B' in IP Addressing



Range: (128 - 191) 14

No. of Networks: $2^7 = 16,384$

No. of Host in each Network: $65,536$

$$2^{16} - 2 = 65,534$$

No. of Addresses: $2^{30} = 1,073,741,824$ 30 = 925% ~~of 100%~~

130.2.3.4

This IP Address Belongs to
which Class?

Range: 128 - 191

Ans: This IP Address belongs
to Class B.

128.0.0.0

128.0.0.0

128.0.255.255

128.0.0.0

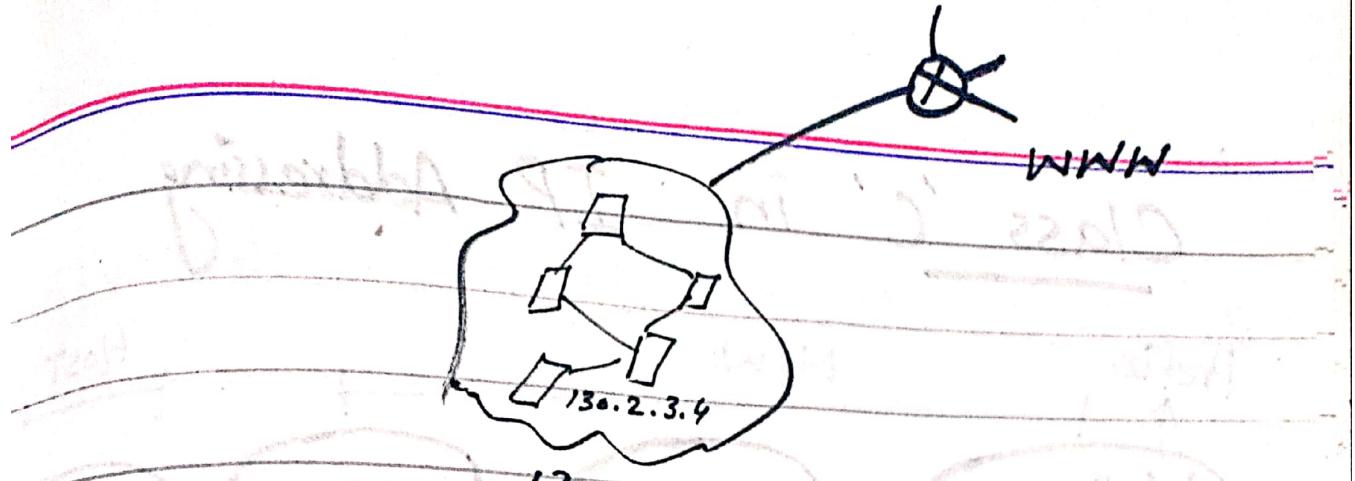
128.0.0.0

Default Mask of Class B: 255.255.0.0

Question:

130.2.3.4

This IP Address Belongs to
which Network?



Perform AND Operation

$130 \cdot 2 \cdot 3 \cdot 4$

$255 \cdot 255 \cdot 0 \cdot 0$

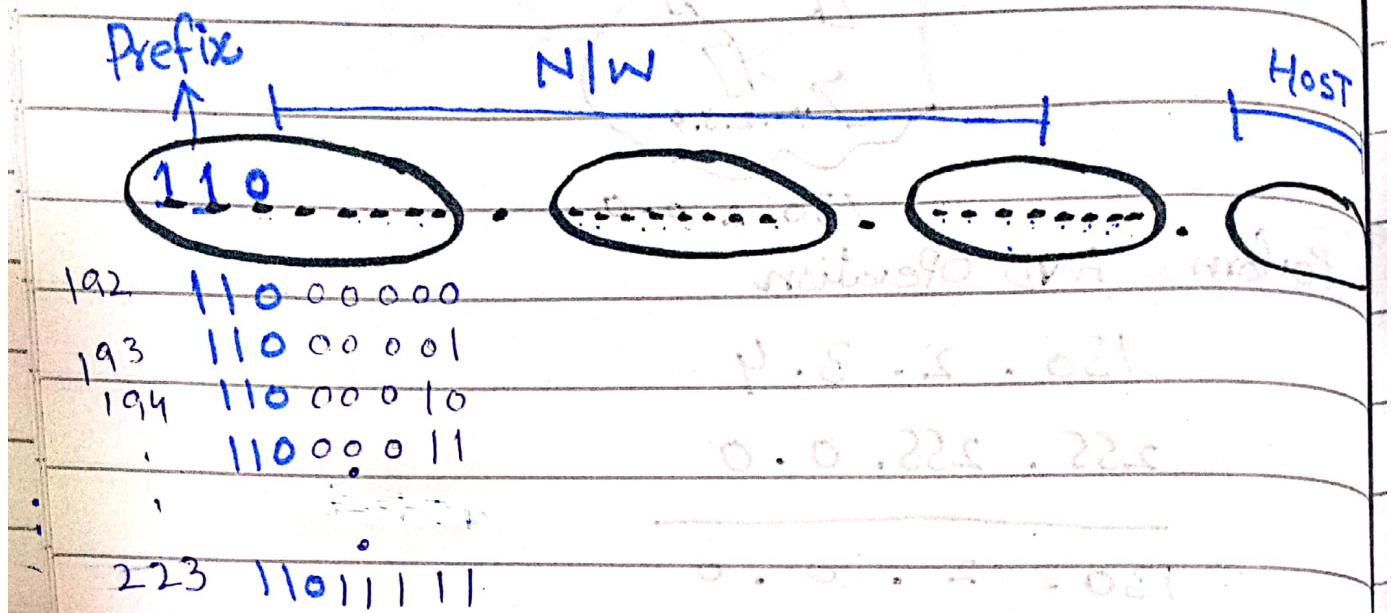
$\underline{130 \cdot 2 \cdot 0 \cdot 0}$

$130 \cdot 2 \cdot 0 \cdot 0$

$130 \cdot 2 \cdot 255 \cdot 255$

65,536

Class 'C' in IP Addressing



Range: (192 - 223)

No. of Networks: $2^{21} \approx 20$

No. of Hosts in each Network: 2^8

No. of Possible Hosts = $2^8 - 2 = 256 - 2 = 254$

No. of IP Addresses in Class C =

$$= 2^{29} = 12.5\%$$

194.2.3.4

This IP address belongs to
Class C.

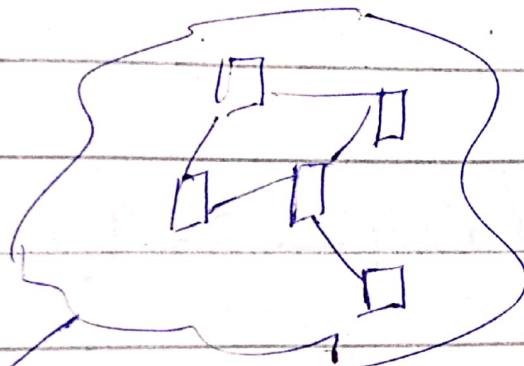
Default Mask of Class C = 255.255.255.0

194.2.3.4

255.255.255.0

194.2.3.0

Network ID



194.2.3.0

194.2.3.0

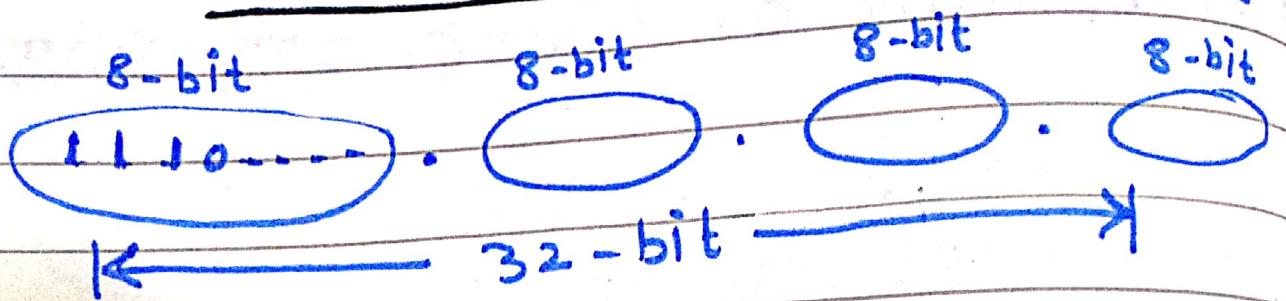
(Network ID)

:

:

194.2.3.255 (Direct Broadcast ID)

Class 'D' in IP Addressing



Reserved For

- * Multicasting
- * Group Email / Broadcast

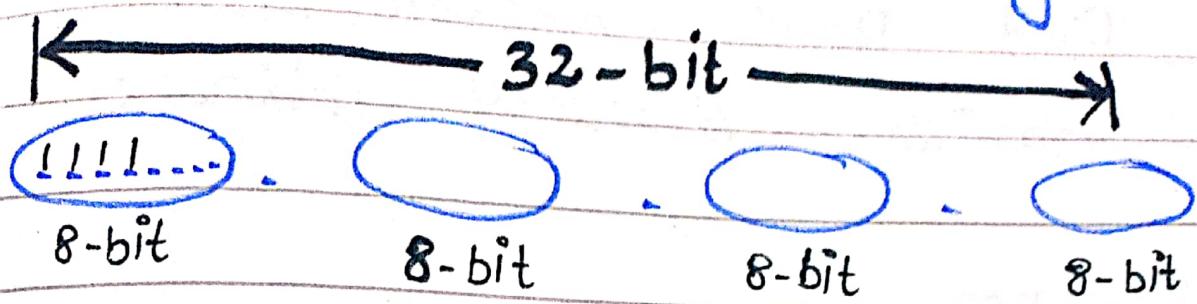
3. Range: (224 - 239)

4. No. of IP Addresses in Class D:

$$= 2^{28} = 6.55\%$$

5.

Class 'E' in IP Addressing:



No. of IP Address. : $2^{28} = 6.25 \cdot 10^8$

Range: (240 - 255)

* Reserved for
Military Purpose

Example:

239. 1. 2. 3

Belongs to which IP Class

⇒ Class D

245. 0. 1. 2. 3

Class E

Find Range, Network ID,
HOST ID Broadcast Address

Question

IP Address: 201.20.30.40

This IP Addr Belongs to class \leftarrow (C) = (192 - 223)

2

Network ID: 201.20.30.0

4th HOST ID : 201.20.30.4

3. Last Host ID: 201.20.30.254

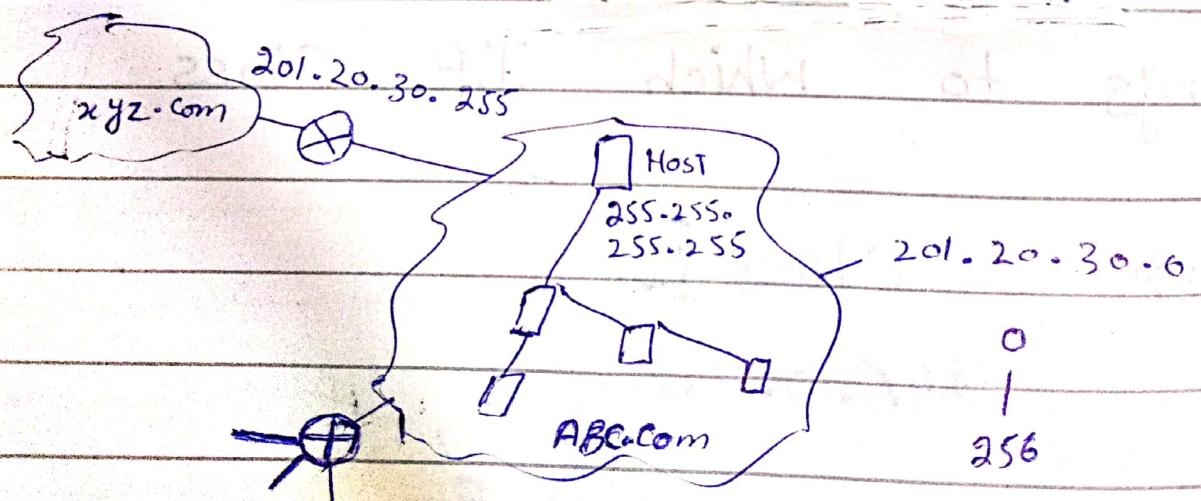
Broadcast Address: 201.20.30.255

Limited Direct Broadcast Address

4. \leftarrow 201.20.30.40

(255.255.255.255) 255.255.255.0

201.20.30.0



Problems with Classfull Addressing:

→ Wastage of IP addresses

→ Maintenance is time consuming