Computer Science & IT

COMPUTER NETWORKS (CN)

IP address Subnetting Supernetting

Lecture No. 5

By- Ravindra Sir

Recap of Previous Lecture

- Topic
- Topic
- Topic

IP add

Topics to be Covered

- Topic
- Topic
- Topic

IP add

Unstoppable Indians: Stories to Ignite Student Motivation

Kapil Dev (b. 1959) captained India to its first Cricket World Cup victory in 1983, redefining Indian cricket. An all-rounder known for fast bowling and aggressive batting, he retired as the highest wicket-taker in Test cricket at the time. After retirement, Dev founded cricket academies and advocates youth development in sports.

Lesson: Leading by example and balancing versatility with passion can achieve historic breakthroughs.

Unstoppable Indians: Stories to Ignite Student Motivation

Major Dhyan Chand (1905–1979) is celebrated as India's greatest field hockey player, winning Olympic gold medals in 1928, 1932, and 1936. His exceptional ball control earned him the nickname 'The Wizard.' Training with makeshift equipment in Uttar Pradesh, he scored over 400 international goals. Chand's sportsmanship and mastery inspired generations, making him a symbol of excellence in Indian athletics.

Lesson: Mastery through practice and ingenuity can create legends that uplift national pride.

Unstoppable Indians: Stories to Ignite Student Motivation

K. V. Kamath (b. 1947) was the founding chairman of ICICI Bank and later chaired Infosys. A graduate of IIT Bombay, he pioneered infrastructure financing in India and championed financial inclusion. Kamath's focus on governance, risk management, and digital transformation propelled his institutions to global leadership. As chair of the New Development Bank, he continues to support development financing for emerging economies.

Lesson: Ethical leadership and inclusive finance can drive economic growth and social welfare.

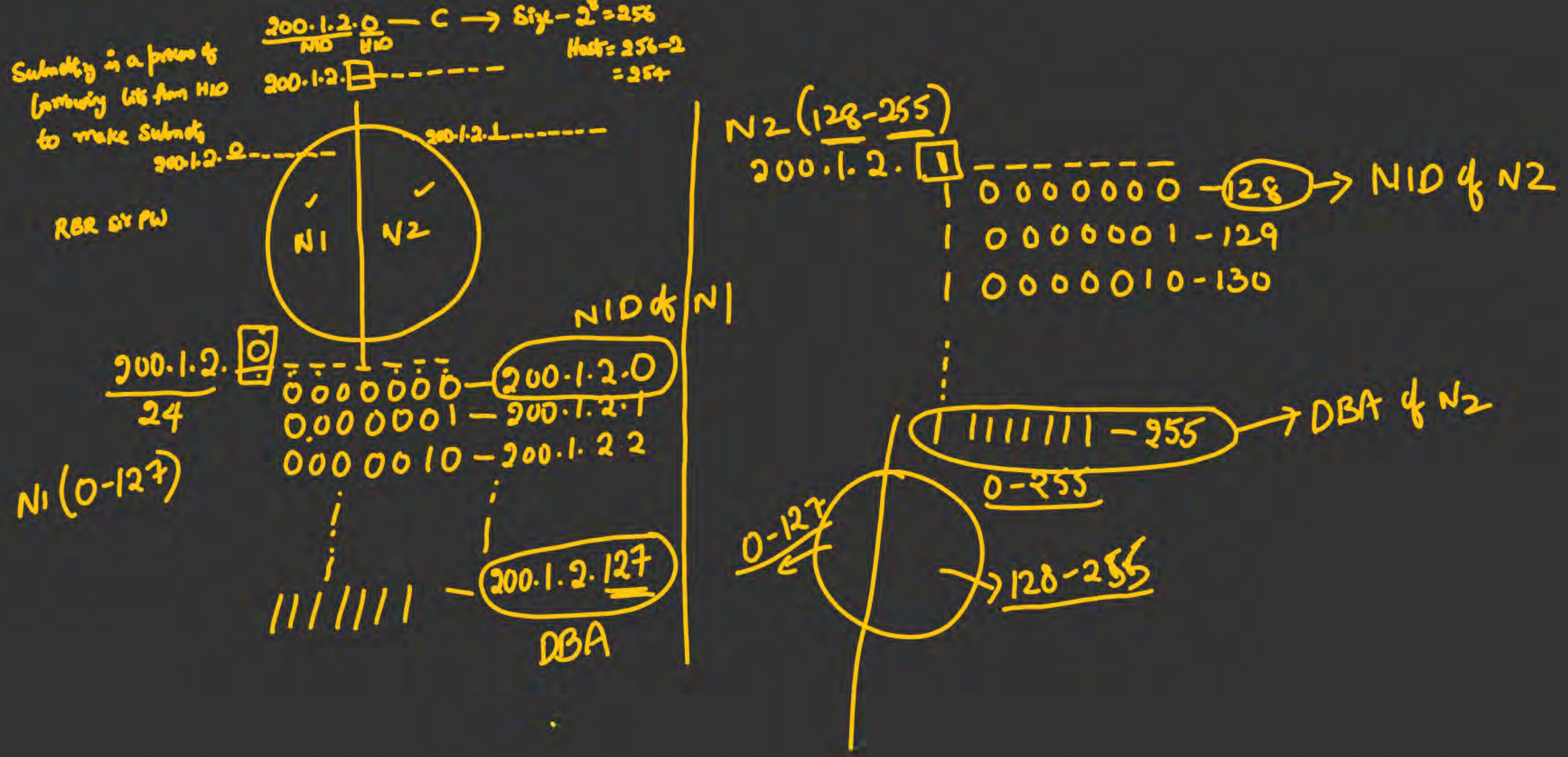
Unstoppable Indians: Stories to Ignite Student Motivation

Dr. Ranjan Pai (b. 1972) leads Manipal Education and Medical Group, expanding it into a premier network of hospitals and educational institutions. After earning a Wharton MBA, he introduced digital health platforms and global academic partnerships. Through the Pai Foundation, he funds scholarships and rural healthcare initiatives, improving outcomes for marginalized communities. Pai's holistic vision integrates education, research, and compassionate care.

Lesson: Investing in human capital through education and health creates lasting societal impact.


2^{32}
10
2^{16}
110
2^{8}
111
1110
1111
2^{24}
0
CA
CB
CC
CD
CE
CA - 1-126
CB - 128-191
CC - 192-223
CD - 223-239
CE - 240-255

main ✓
Secure ✓


200.1.2.0 — C → Size = 2^8 = 256
NID HID
Hosts = 256-2 = 254
Subnetting is a process of borrowing bits from HID to make Subnets
200.1.2.
200.1.2.0
200.1.2.1
RBR or PW
N1
N2
200.1.2.0/24
N1 (0-127)
NID of N1
0000000 — 200.1.2.0
0000001 — 200.1.2.1
0000010 — 200.1.2.2
1111111 — 200.1.2.127
DBA
N2 (128-255)
200.1.2.1
10000000 — 128 → NID of N2
10000001 — 129
10000010 — 130
11111111 — 255 → DBA of N2
0-255
0-127
128-255

200.1.2.0 IP = 2^8 = 256

Hosts = 256 - 2

254 Hosts

NID 200.1.2.0

DBA 200.1.2.255

IP = 2^7 = 128.

Hosts = 128 - 2

IP add = 2^7 = 128

Hosts in N2 = 128 - 2 = 126

N1

N2

N2

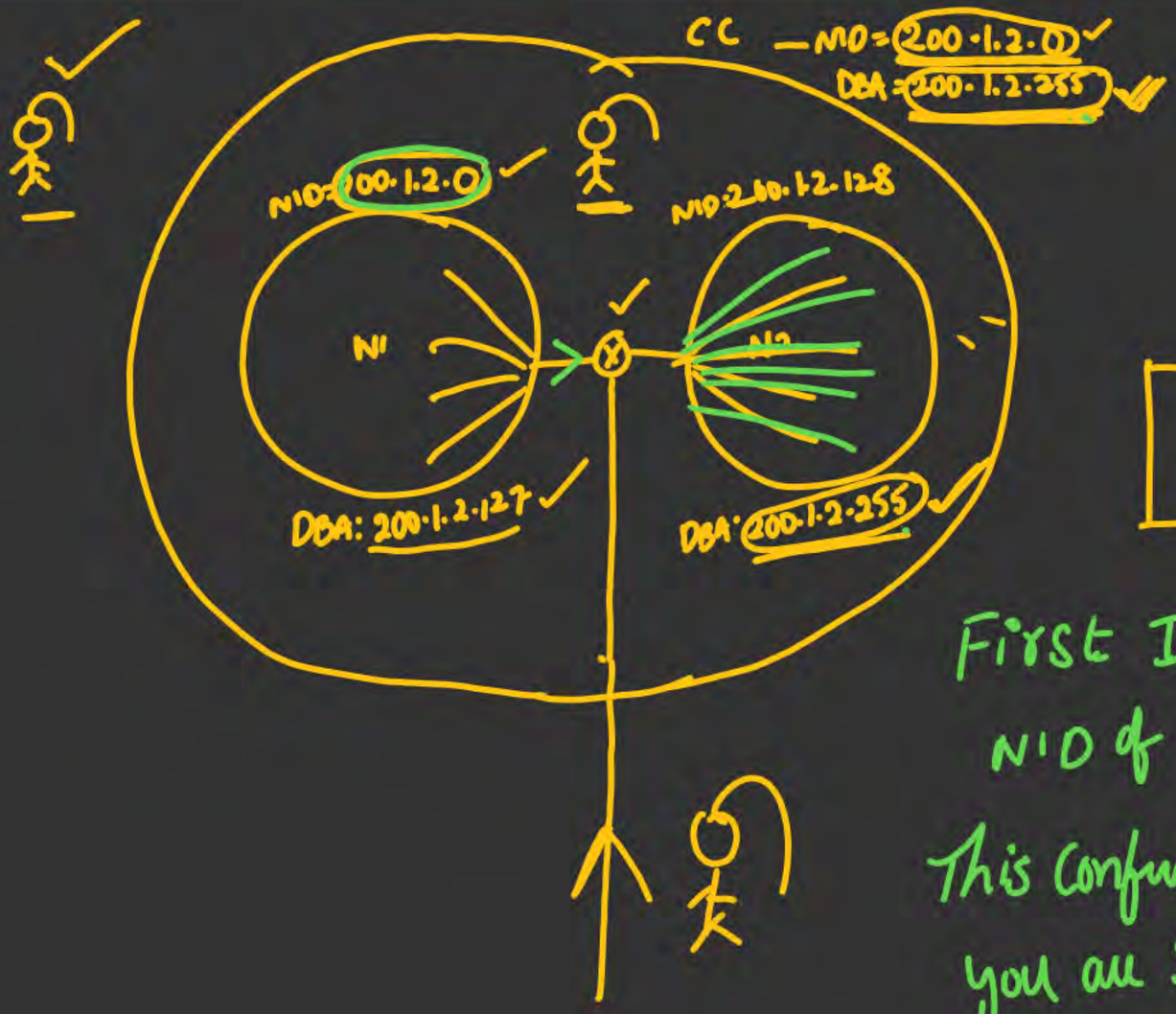
N1 - 200.1.2.0

DBA - 200.1.2.127

252

NID = 200.1.2.128

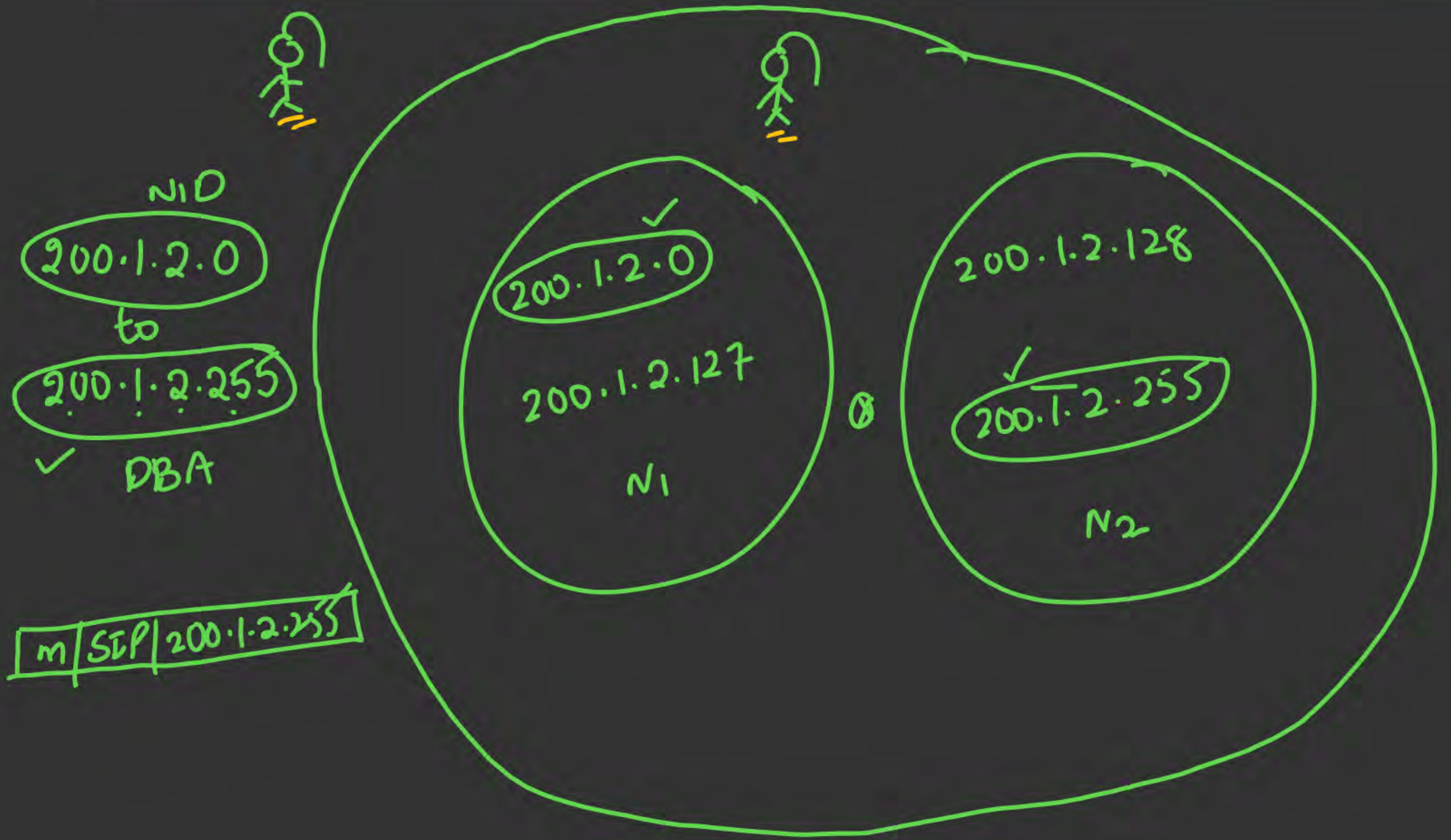
DBA = 200.1.2.255

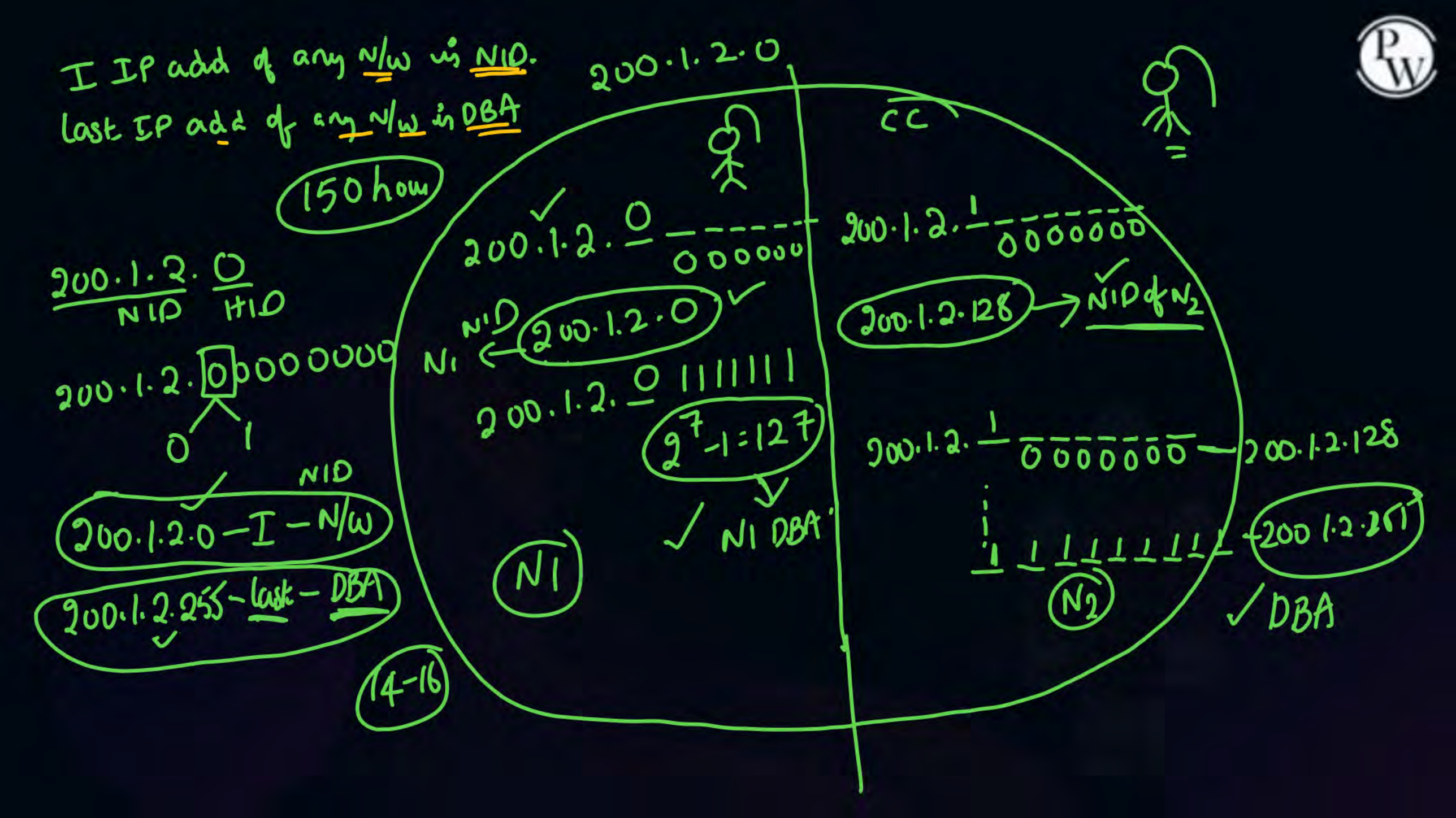


First IP add of first SN is equal to NID of both I SN and NID of the whole N/W

This confusion can be resolved depending on where you are standing. If you are inside the N/W, then I IP add is N/D of the I SN.

If you are outside, then I IP will be the NID of whole N/W.


NID
200.1.2.0
to
200.1.2.255
DBA
200.1.2.0
200.1.2.127
N1
200.1.2.128
200.1.2.255
N2
m | SIP | 200.1.2.255


I IP add of any N/w is NID.
last IP add of any N/w is DBA
150 hosts
200.1.2.0
200.1.2.0/NID HID
200.1.2.0 00000000
0 1
200.1.2.0 - I - N/w
200.1.2.255 - last - DBA
14-16
CC
200.1.2.0 00000000
200.1.2.0
NID
N1
200.1.2.0 11111111
2^7 - 1 = 127
N1 DBA
N1
200.1.2.1 00000000
200.1.2.128
NID of N2
200.1.2.1 00000000
200.1.2.255
N2
DBA

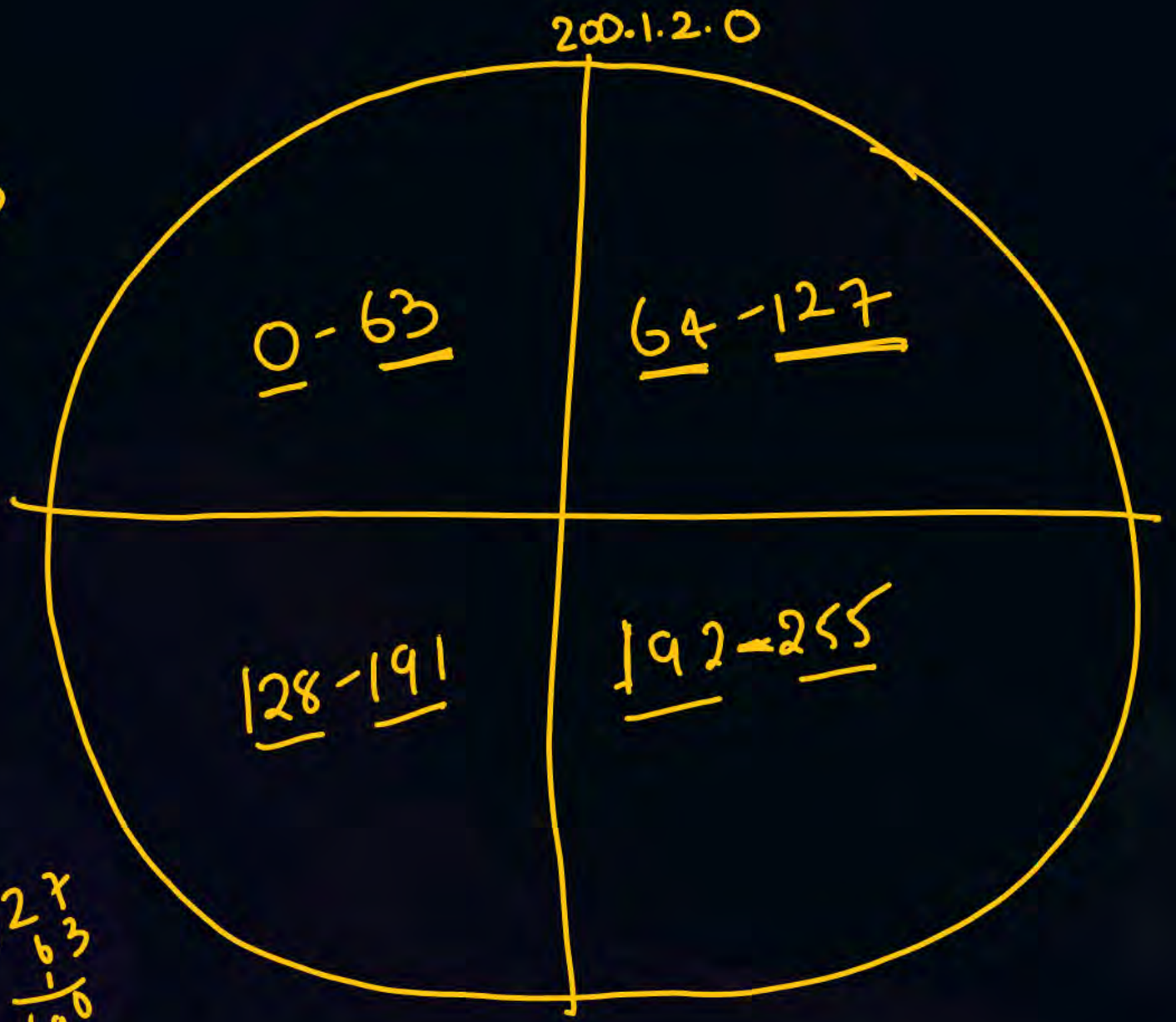
Lets make india great again

DBA

LBA = 200.1.2.255

DBA

m	SLP	200.1.2.25



200.1.2.0

IP

2^8

0 - 255

$\frac{2^8}{4} = 2^6$

64

127
63
190

a) Short cut

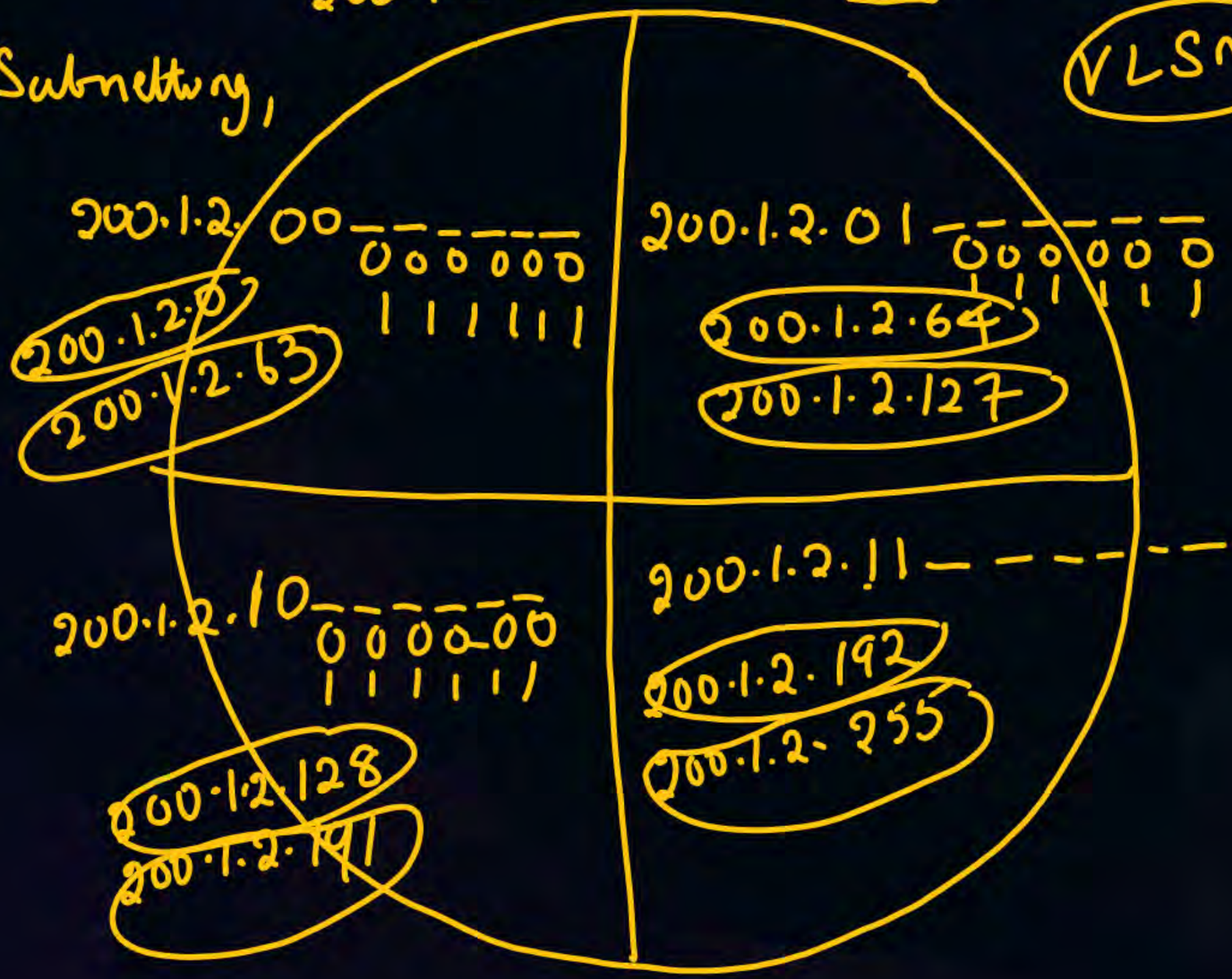
b) Long process

c) Dono

200.1.2.0 = 200.1.2.[--]------

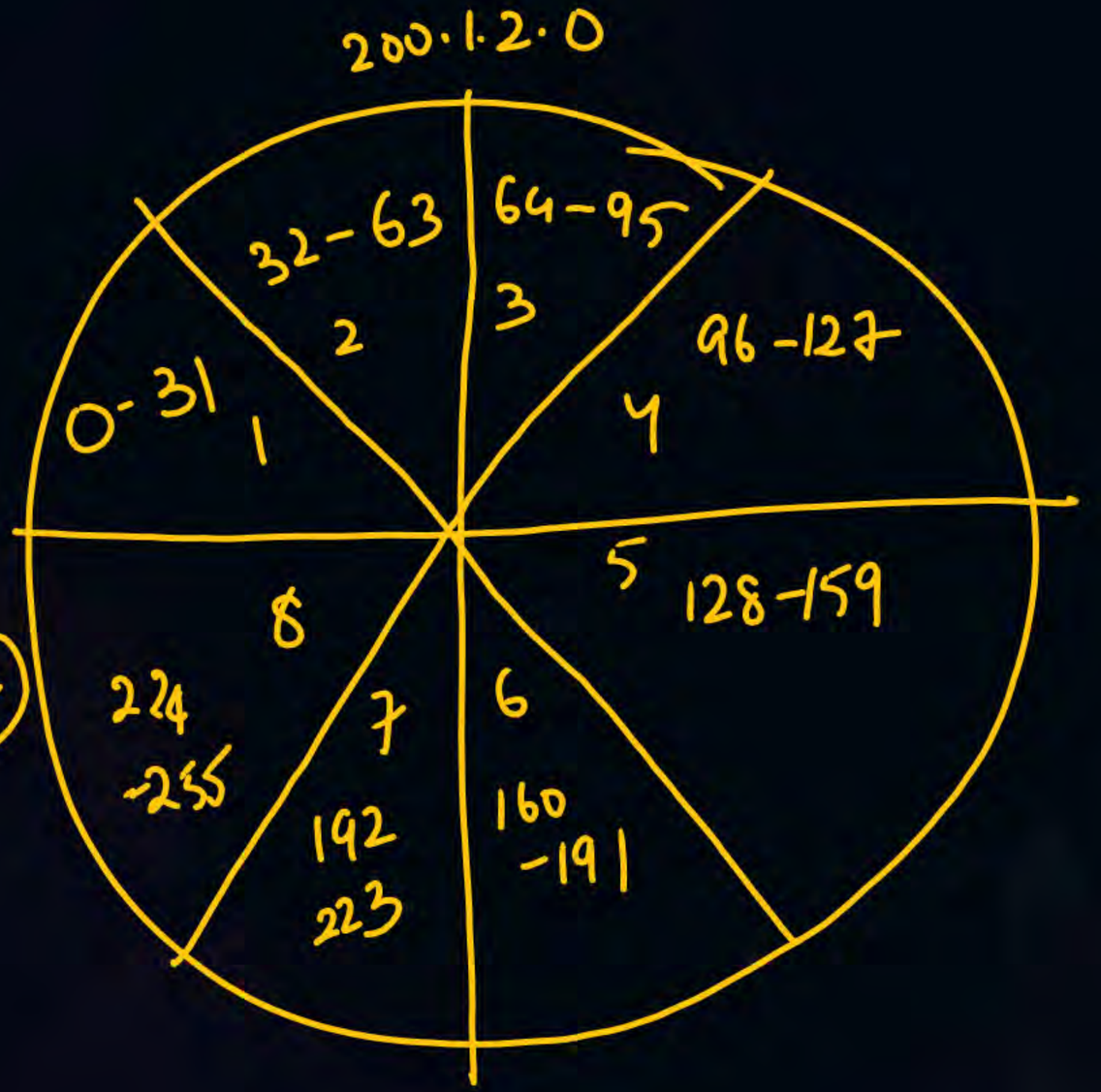
VLSM

When we do Subnetting, the IP add get wasted



I → 2 waste

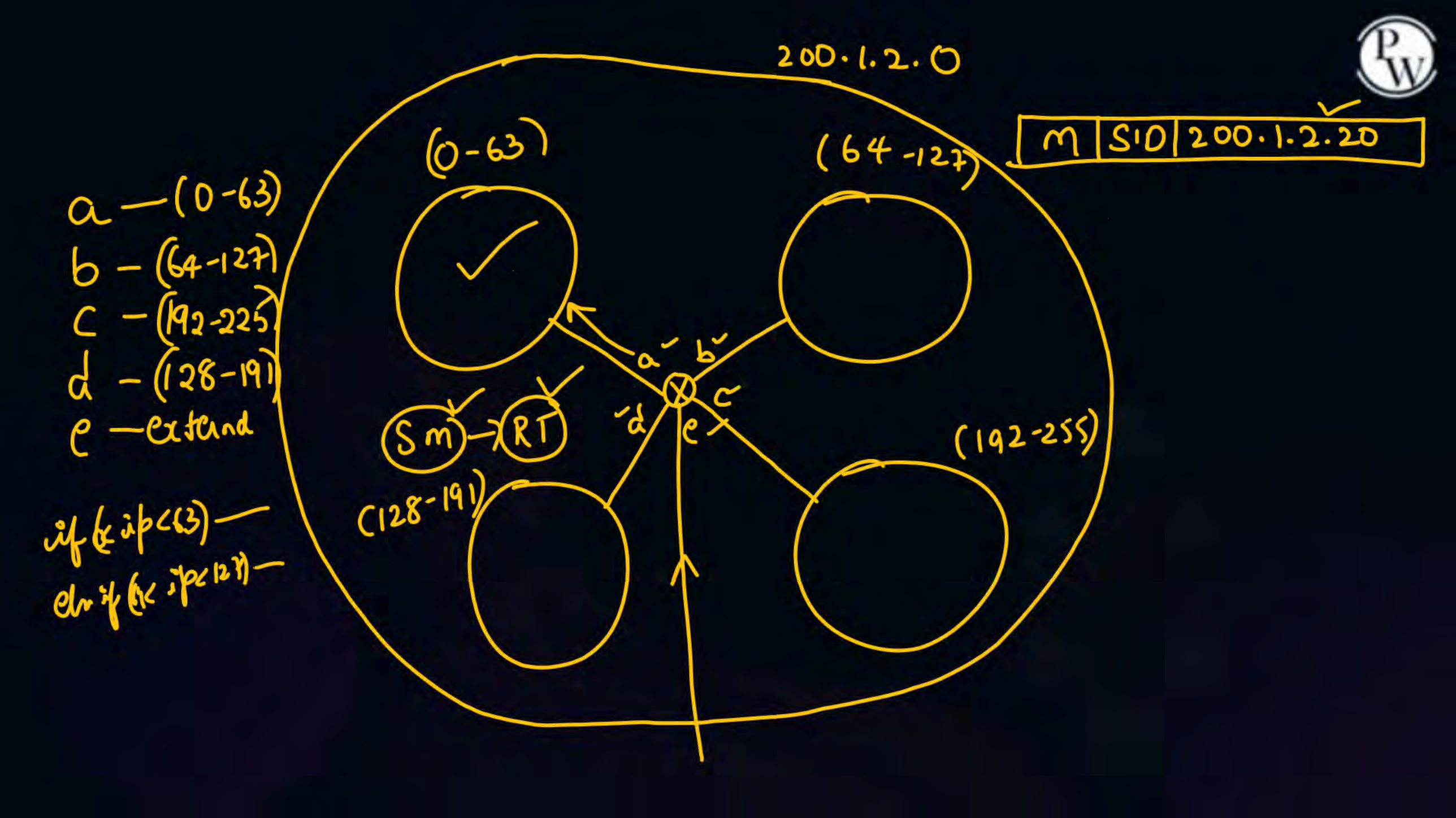
4 − 4X2 = 8 waste



Class C - 256

$$\frac{256}{8} = \frac{2^8}{2^3} = 32$$

$$\frac{256}{8} = \frac{2^8}{2^3} = (32)$$


200.1.2.0
(0-63)
(64-127)
(128-191)
(192-255)
Sm
RT
a
b
c
d
e
a — (0-63)
b — (64-127)
c — (192-225)
d — (128-191)
e — extend
if (ip<63) —
else if (ip<127) —
M | SID | 200.1.2.20

3
5
6
7
8

255.255.255.255

CN
Compiler
TOC

11:15 → TOC → PW english

RBR Table 1
RBR T2
RBR T3
RBR T4

4 marks

THANK - YOU