CS & IT ENGINEERING

COMPUTER NETWORKS

IPv4 Addressing

Lecture No-06

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Problems in Computer Network

Problems in Computer Network

1. Communication Problem.
2. Identification Problem.
3. Connection Problem.

Communication Problem

Language ?

Meaning ?

Response ?

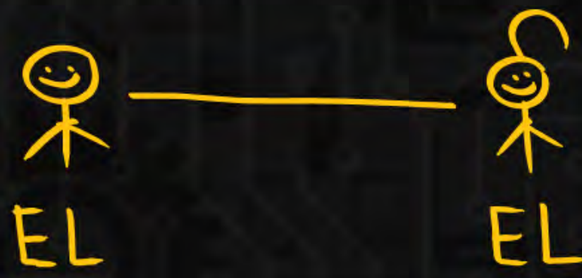
① Language

INDIA
(HL)

USA
(EL)

No communication

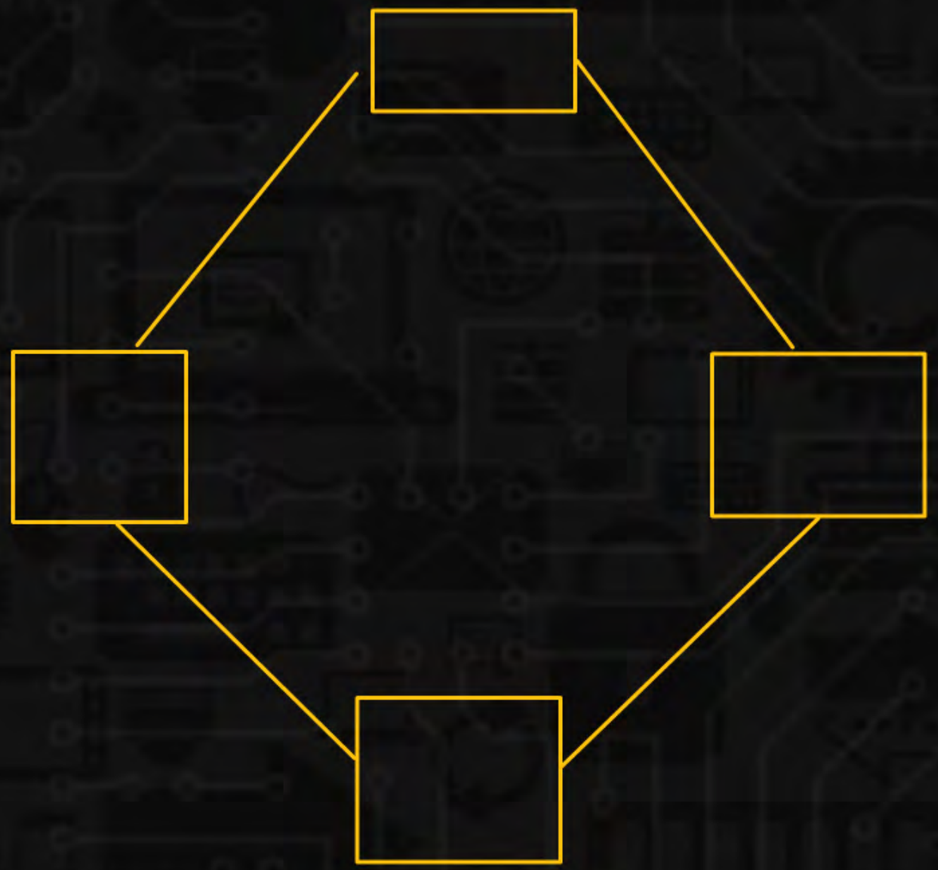
2. Meaning



No communication

3. Response

No communication



Communication Problems: communication problem can be solved by using protocols.
A Protocol is a set of rules that govern data communication

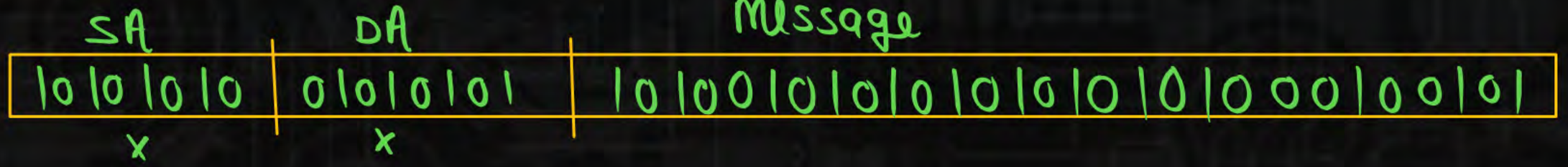
Protocol defines:
What is communicated ?
How it is communicated ?
When it is communicated ?

Key elements of Protocols

1. Syntax
2. Semantics
3. Timing

Syntax: The term syntax refers to the structure or format of data, meaning the order in which they are presented.

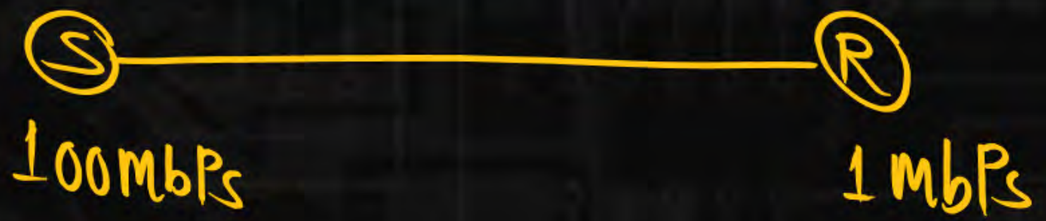
For example: some protocol might accept the first 8 bit of data to be the Address of sender, the second 8 bit to be the address of receiver and rest of the stream to be the message itself.



Semantics: The word semantics refers to the meaning of each section of bits.

Timing: The term timing refers of two characteristics when data should be sent and How fast they can be sent.

For example: If a sender produces data at 100 Mbps but receiver can process data at only 1 mbps, the transmission will overload the receiver and some data will be lost.



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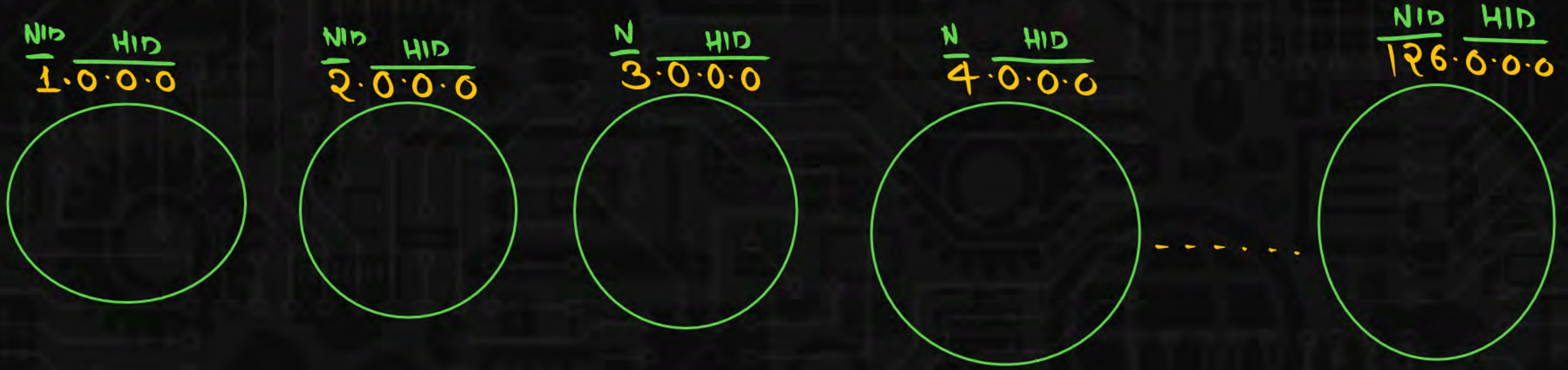


NOTE:

When ever we have all 0's in HID part of any IP address , that IP address represent the NID of entire network this is the reason we can't assign this IP address to any host. ((omputer)

Identification Problem

To send a packet from source to destination we need 3 identification steps.

a. Identify the Network
b. Identify the host with in the network i.e. among all computer one computer is Identified.
c. Identify the process with in the Host.

a. Solution for identification of network is IP Address or logical Address. Now we get destination IP using DNS.

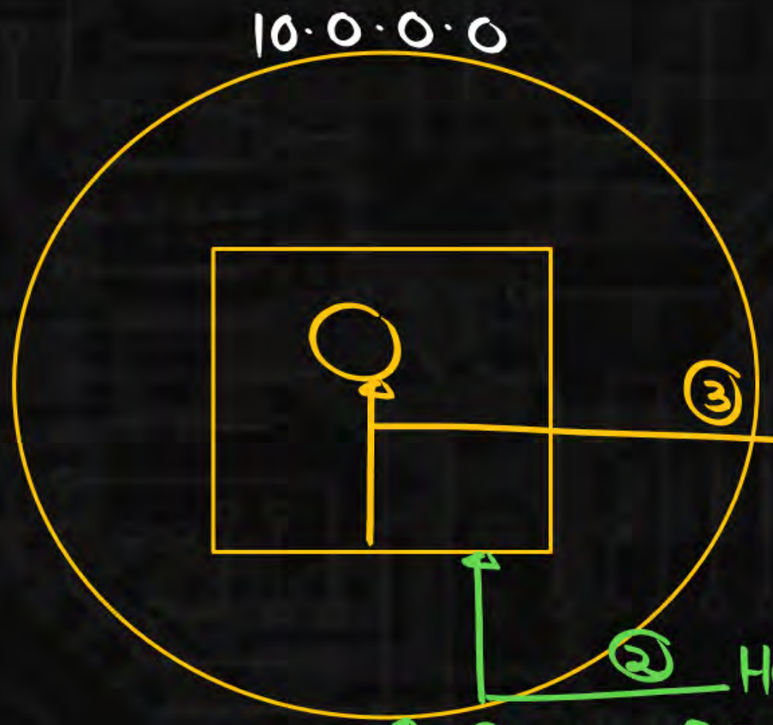
b. Solution For Identification of Host within the Network is physical Address or MAC Address. given an IP Address we get MAC address using ARP (Address Resolution protocol).

c. Solutions for the identification of process within the Host is Port Number

	S.IP	DIP
1.	—	10.35.92.155

NID HID

NID = 10.0.0.0

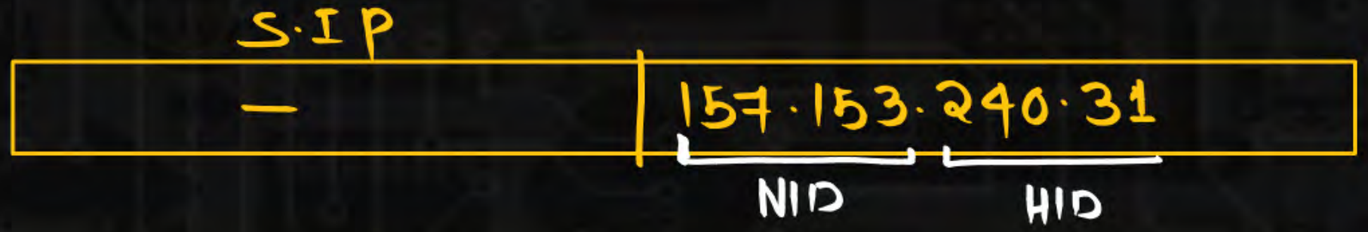


3 Process [Port No or service Point Address]

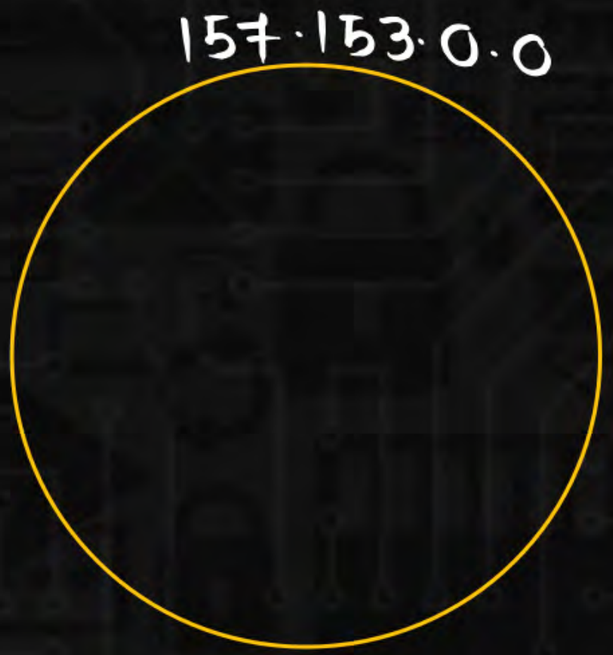
2 Host [MAC Address or Physical Add]

1 n/w [IP Address or Logical Address]

2.



NID = 157.153.0.0



3.

SIP	DIP
—	200.30.90.137

NID HID

NID = 200.30.90.0

ARP Request

IP Address	MAc Add
10.35.92.155	?

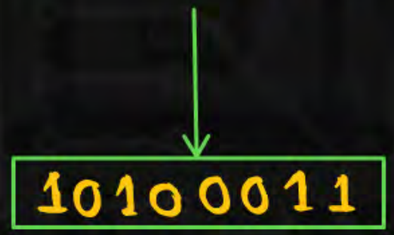
Note① ARP Request is Broadcasting

② ARP reply is unicasting

ARP → Address Resolution Protocal

IP Address = 32 bit

MAC Address = 48bits : A3:B7:F2:D5:E7:DF



Port No = 16 bit

0 to $2^{16}-1$

0 to 65,535

0

1023

Well Known Port No

Assinged & Control by IANA

SMTP → 25

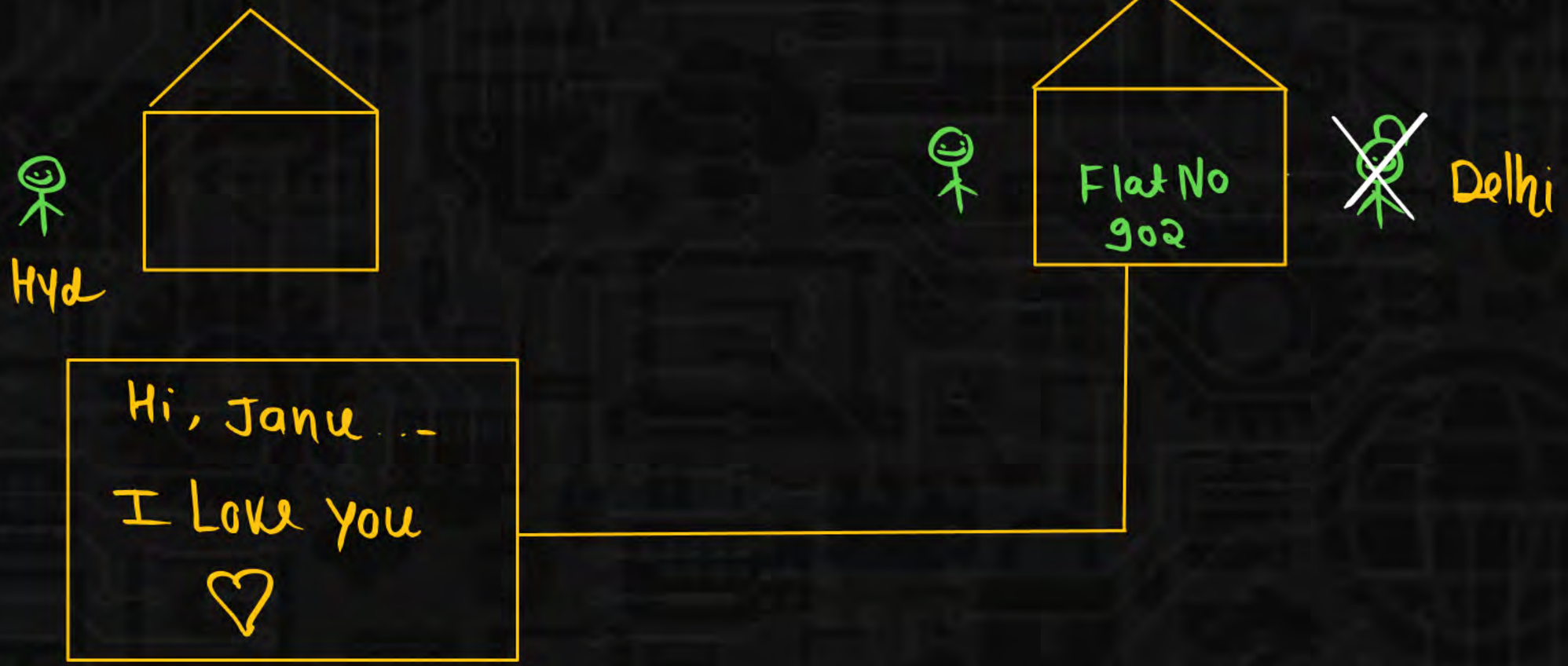
FTP → 20, 21

HTTP → 80

DNS → 53

POP → 110

IMAP → 143


Hyd
Flat No
902
Delhi
Hi, Janu ..
I Love you
♡
To Rani, Flat No - 902 (H-Block)
Supertech Ecocity
CP, Delhi

Connection Problem

There are various ways to connect the system

(i) Bus topology
(ii) Ring topology
(iii) Mesh topology
(iv) Tree topology
(v) Star topology


THANK YOU
GW
SOLDIERS !