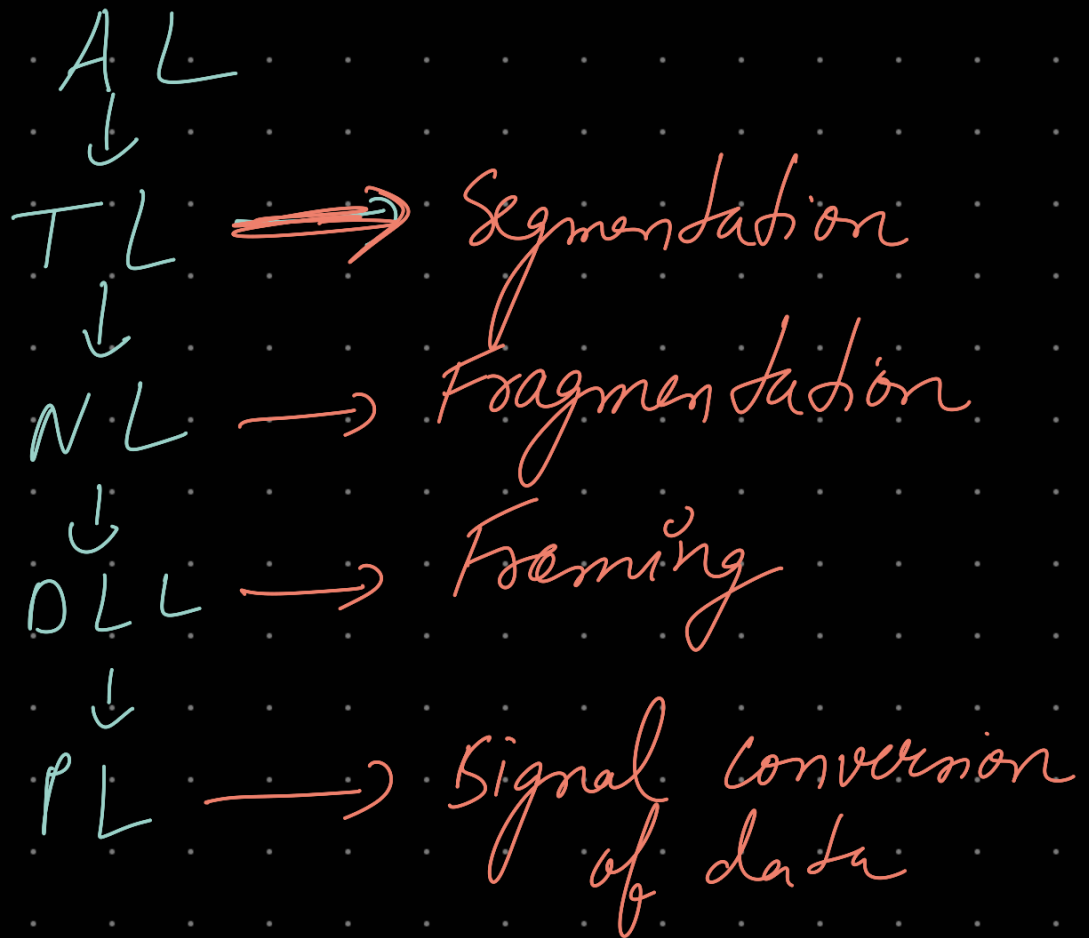


# [Segmentation, fragmentation and frames]



① If application is sending 1 MB data  $\rightarrow$  OS(TCP)  $\rightarrow$  divides it into Segments

$\Downarrow$   
Segment size is determined by

MTU of medium.

(2) When Server Machine receives Segments  $\rightarrow$  Its OS (TCP) will reassemble 1 MB data store and in socket and give pointer to this location in RAM to Node process or any other program

↳ Our Node server process copies Socket data to its process memory space (RAM) and perform operation on this data.



# How TCP Segmentation Works

## 1. Application Data Division:

- An application sends a large data stream to TCP at the transport layer.
- TCP breaks this data into segments that fit within the Maximum Segment Size (MSS).

## 2. Segment Creation:

- Each segment contains:
  - A portion of the data.
  - A TCP header with control information (e.g., sequence numbers, acknowledgment numbers).

## 3. MTU and MSS:

- MTU (Maximum Transmission Unit): The largest data packet size that can be sent on the network layer (e.g., Ethernet MTU is 1500 bytes).
- MSS (Maximum Segment Size): The maximum amount of data TCP can send in a single segment, typically MTU - TCP/IP headers.

## 4. Transmission and Reassembly:

- TCP sends each segment to the destination.
- At the receiving end, TCP reassembles the segments into the original application data.