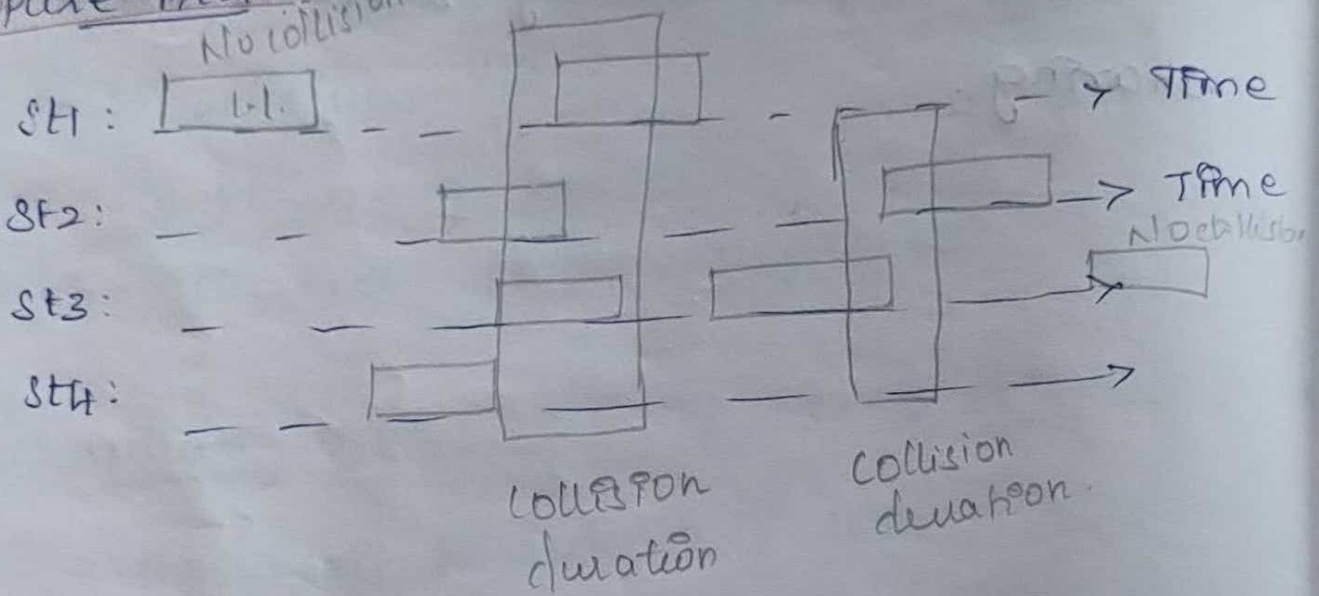


① Random Access :

① ALOHA Multiple access protocol which describes how all terminals can access a medium without interfering with others / collision.

① Pure ALOHA :

designed for wireless LAN used in shared medium



* allows station to transmit whenever they have data to be sent.

* when a station sends data it waits for ack.

* if the ack doesn't come within the allotted time then the station waits for ack for random amount of time called back-off time and resend data.

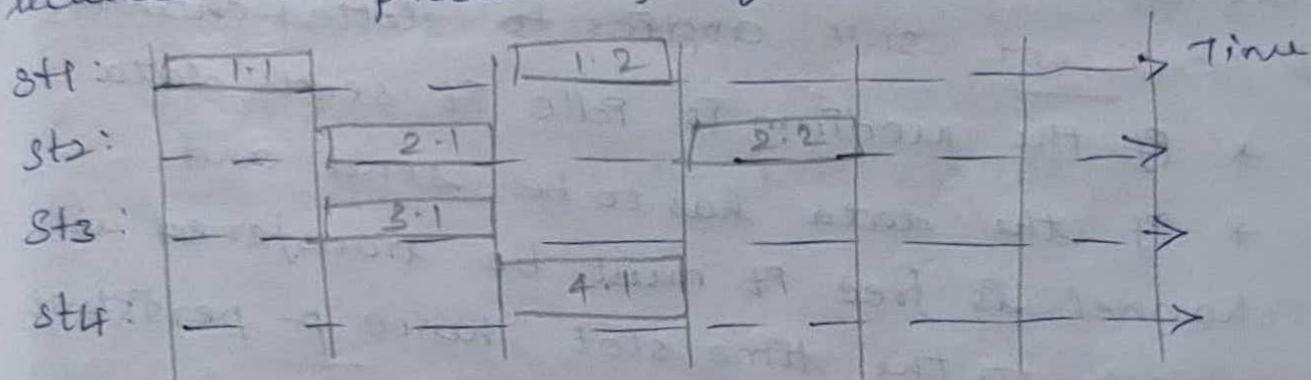
* since different stations wait for diff amount of time the probability of collision decreases

2) Slotted ALOHA : It is developed to improve the efficiency of pure ALOHA as the chance of collision is high.

the time of shared channel is divided into discrete time intervals called slots

* sending of data is allowed only at the beginning of these slots.

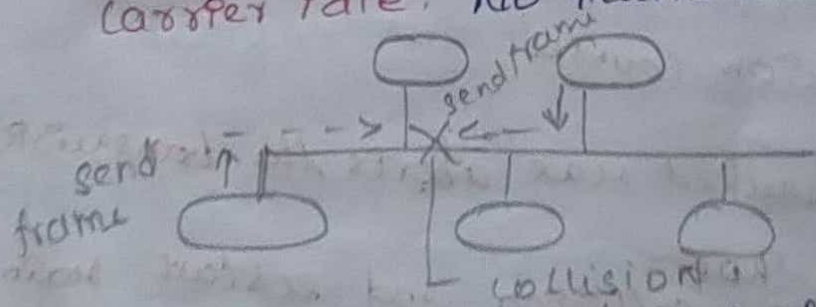
* If the station misses out the allowed time, it must wait for the next slot this reduces the probability of collision.



3) CSMA: (Carrier Sense Multiple Access):

principle of CSMA: "Sense before transmit" / "Listen before talk".

Carrier Busy: Transmission is taking place
Carrier Idle: No transmission currently.



Types 1- persistent CSMA: Before sending data,

the station first listens to the channel to see

if anyone else is transmitting the data.

* If channel is idle, the frame is transmitted

* If busy, then it senses the transmission

medium continuously until it becomes idle

* since the station transmits the frame with the probability of 1 hence 1-persistent.

Non-persistent CSMA: Before sending, a station senses the channel. If no one sends, the station sends the data.

* If the channel is in use, the station does not continuously sense it for the purpose, instead it waits a random period of time and then repeats the same

P-persistent CSMA: applies to slotted channels

* If the medium is idle it sends data.

* If the data has to be send and channel is free it must be transferred with respect to the time slot. hence p-persistent

0-persistent CSMA: Each node is assigned to transmission order by supervisory node
waits for timeslot

CSMA/CD: ALGORITHM

frame contains Jam signal

Retransmission counter

↳ If reached max aborts the transmission

Backoff time ^{no of} collision and restart main alg.

CSMA/CA: Interframe space

Senses the channel if busy senses again

If idle (wait for time period called IFS)

Contention window: amount of time div into slots

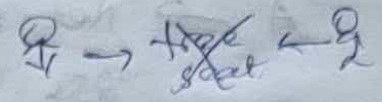
ACK

(Sets the timer)

trans reserve before

Controlled access:

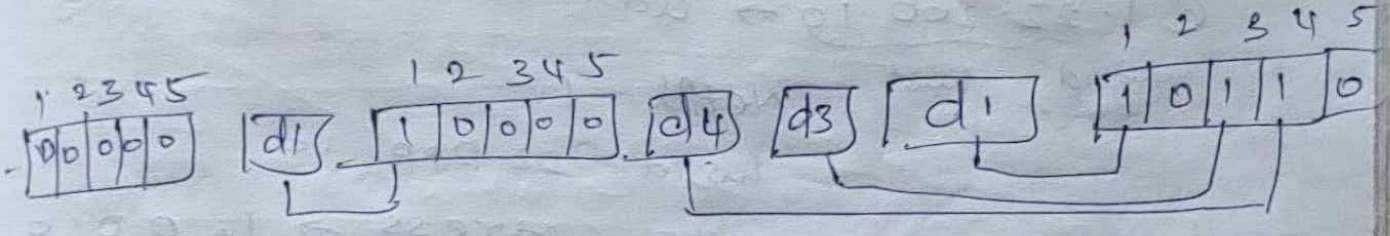
① Reservation:



* station reserve before sending data

reserved for applicable only on that time

- * In each interval, a reservation frame precedes the data frame send in interval
- * If N station then N reservation windows
- * each window belongs to station



② Polling:

teacher student
same name
↳ collision
Rollao

- * requires one of the node to be designated as a master node
- * The master node polls each of the node in round robin fashion

* The M.N first sends a msg to node 1, saying that you can transmit max no of frame and then node 2.

Functions:

① poll func: if primary wants to receive data, it asks the secondary if they have anything to send

② Select func: p. wants to send data. it tells the sec. to get ready to receive.

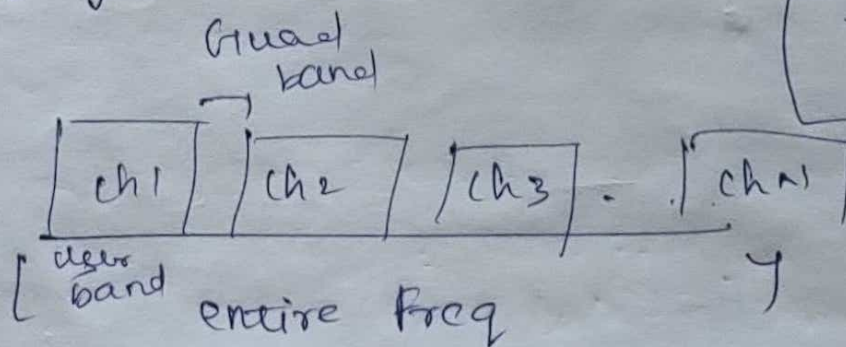
③ Token passing: A station is authorized to send data when it receives a spec frame called token.

⇒ when a node receives a token, it holds onto the token only if it has some frames to transmit; else it immediately forwards the token to next node.

⇒ The failure of one node can crash the entire channel. (token not passed)

channelization: FDMA - freq div mul Accs

⇒ the avail bandwidth of common channel is div into bands that are separated by guard bands.



{ if 5 stns then 5 bands are sepae

TDMA - Time div

⇒ each station is allotted a time so the frame is sent at that particular

period of time, ⇒ The entire bandwidth is

just one channel

CDMA ^{code div.} one channel carries all transmission simultaneously.

⇒ CDMA differs from FDMA only one channel occupies the entire bandwidth

⇒ TDMA because all stations can send data simultaneously there is no time sharing.