58. Stop and Wait Protocol

Outcomes of the session are –

1. Understand the working of Stop and Wait Protocol.
2. Problems with Stop and wait protocol.

Stop and wait Protocol –

* It is a data link layer protocol which is used to transmit frames over the noiseless channels.
* It provides the unidirectional approach for the transmission of frames with flow control function but without error control facility.
* Since its Unidirectional, the sending and the receiving of the data cannot happen simultaneously.
* The main motive of the Stop and wait protocol is to send a data frame and wait till the receiver sends an acknowledgement to the sender.
* Till then the sender does not sends the second data frame to the receiver.

Primitives of Stop and wait Protocol –

Sender Side –

* Rule 1 – Send one data packet at a time.
* Rule 2 – Send the next data packet only after receiving ACK for the previous.

Receiver Side –

* Rule 1 – Receive and consume the data frame.
* Rule 2 – Send an acknowledgement to the sender.

The Problems Associated with the stop and wait protocol –

1. Problems due to lost data –

* Sender waits for acknowledgement for infinite amount of time.
* Receiver waits for the data for an infinite amount of time.

Data loss

Sender ------------------ X Receiver

Before sending, sender waits Waits for the data

For an acknowledgement.

1. Problems due to lost Acknowledgement –

* Here the sender sends the data to the receiver. When the receiver receives and sends the acknowledgement, the Acknowledgement is lost.
* Sender waits for acknowledgement for infinite amount of time.
* Receiver waits for the data for an infinite amount of time.

Sender ------------- > ---------------- Receiver

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X------------------------

Acknowledgement loss

1. Problems due to Delayed Data/ACK-

* If there is a delay in the sending of data or receiving of acknowledgement, the sender waits for an infinite time or the receiver waits for an infinite time.