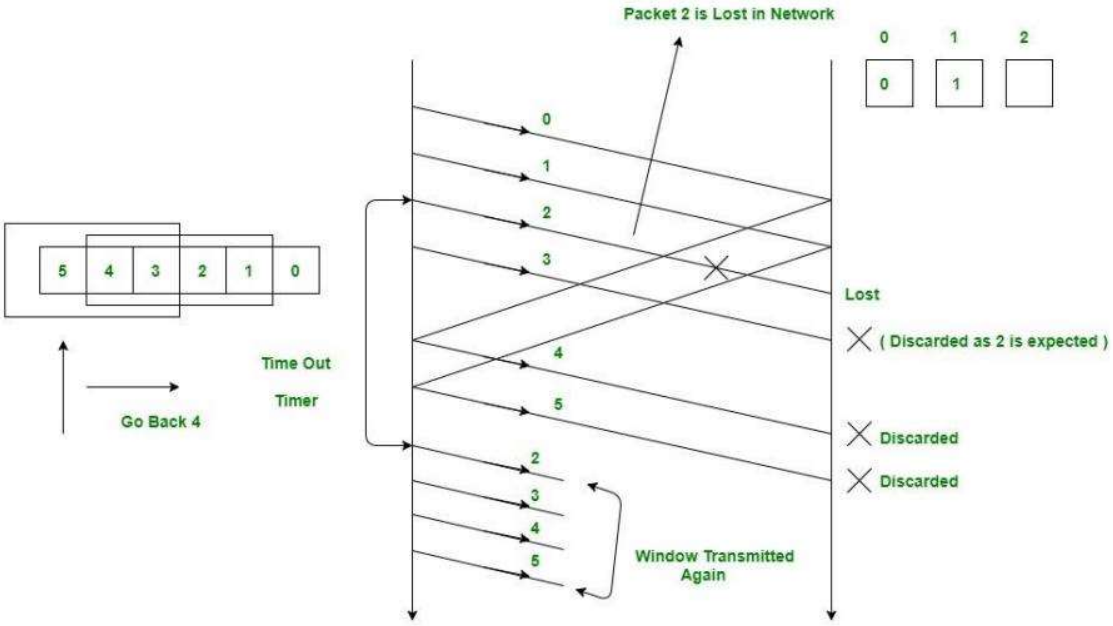
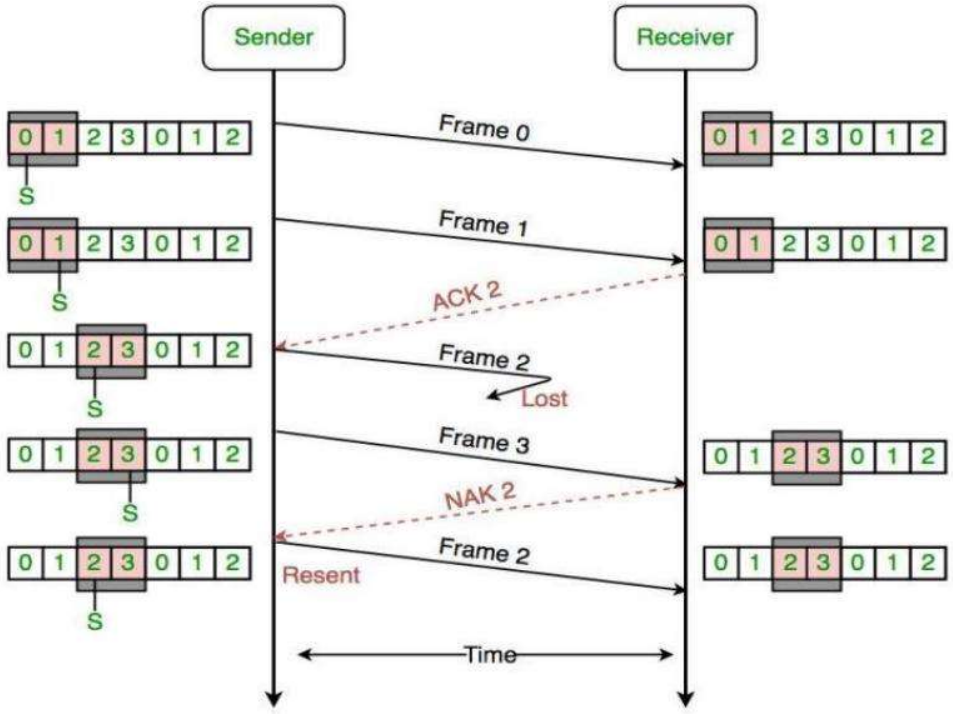
GO BACK N protocol:



SELECTIVE REPEAT protocol:



EXP NO: 09 DATE:	LLC Protocols

AIM:

To implement

- Go Back 'N' Protocol
- Selective Repeat Protocol

and to determine the throughput and delay for each.

SOFTWARE REQUIRED:

NETSIM Software

THEORY:

GO BACK 'N' PROTOCOL:

Go Back 'N' is a connection-oriented transmission. The sender transmits the frames continuously. Each frame in the buffer has a sequence number starting from 1 and increasing up to the window size. The sender has a window i.e., a buffer to store the frames. This buffer size is the number of frames to be transmitted continuously. The size of the window depends on the protocol designer

SELECTIVE REPEAT PROTOCOL:

It is similar to Go Back 'N' Protocol, but the sender send frame only after the reception of ACK signal. It may be used as a protocol for delivery and ACK for message units for delivery of subdivided message. It is used as a protocol for delivery of message sender continuous to send frames specifies by windows size even after becoming frameless. Once the sender has sent all the frame in its windows, it resends the frame number given by ACK and continuous where it left off.

GO BACK ‘N’ PROTOCOL

LAYOUT:

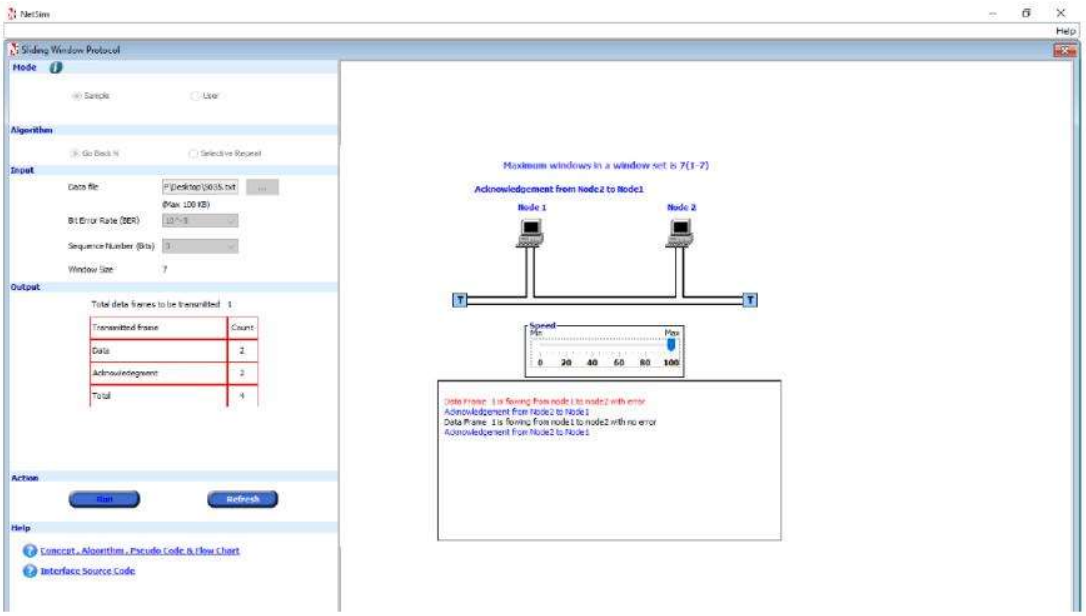


TABLE: (Sequence number : 3 bits)

BER	TOTAL DATA FRAMES TO BE TRANSMITTED	DATA	ACKNOWLEDGEMENT	TOTAL
10^-5	1	2	2	4
10^-6	1	2	2	4
10^-7	1	1	1	2
10^-8	1	1	1	2
10^-9	1	1	1	2
NO ERROR	1	1	1	2

ALGORITHM:

GO BACK 'N' PROTOCOL:

- The source code transmits the frames continuously.
- Each frame in the buffer has a sequence number starting from 1 and increasing up to the window size.
- The source code has a window i.e., a buffer to store the frames. This buffer size is the number of frames to be transmitted continuously. The size of the window depends on the protocol designer.
- For the first frame, the receiving node forms a positive acknowledgement if the frame is received without any error.
- If subsequent frames are received without error (up to window size) cumulative positive acknowledgement is formed.
- If the subsequent frame is received with error, the cumulative acknowledgement error-free frames are transmitted. If, In the same window two frames or more frames are received with error, the second and the subsequent error frames are neglected. Similarly, even the frames received without error after the receipt of a frame with error are neglected.
- The source code re-transmits all frames of window from the first error frame.
- If the frames are errorless in the next transmission and if the acknowledgement is error-free, the window slides by the number of error-free frames being transmitted.
- If the acknowledgement is transmitted with error, all the frames of window at source are re-transmitted and window doesn't slide.
- This concept of replacing the transmission from the first error frame in the window is called as Go Back-N transmission flow control protocol.

SELECTIVE REPEAT PROTOCOL

LAYOUT:

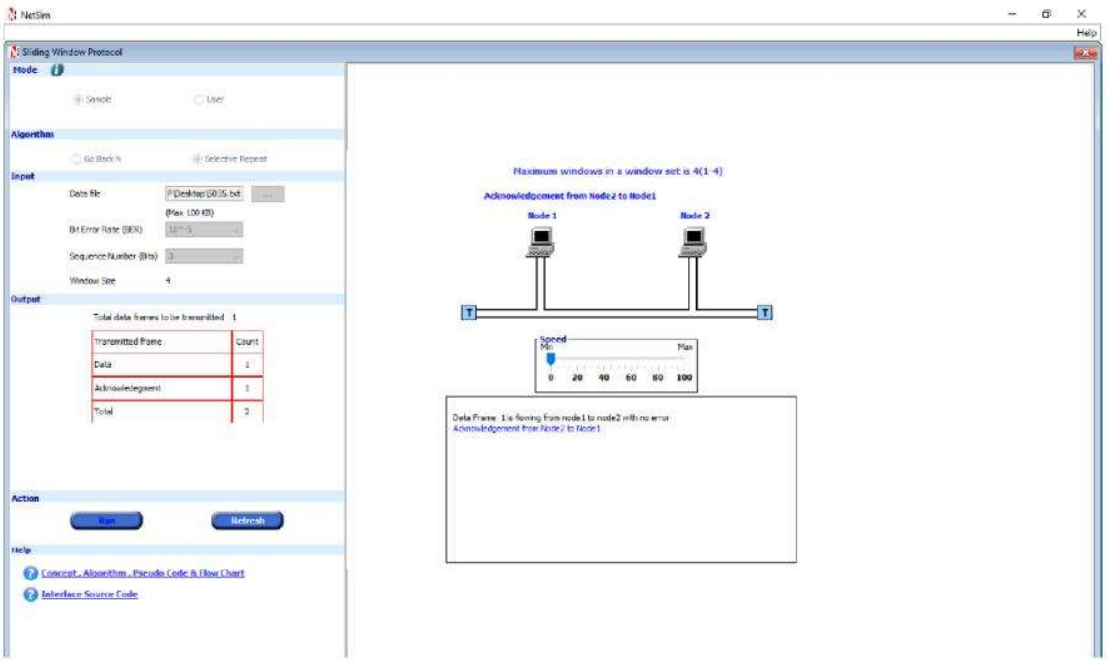


TABLE: (Sequence number : 3 bits)

BER	TOTAL DATA FRAMES TO BE TRANSMITTED	DATA	ACKNOWLEDGEMENT	TOTAL
10^-5	1	1	1	2
10^-6	1	1	1	2
10^-7	1	1	1	2
10^-8	1	1	1	2
10^-9	1	1	1	2
NO ERROR	1	1	1	2

SELECTIVE REPEAT PROTOCOL:

- The source node transmits the frames continuously.
- Each frame in the buffer has a sequence number starting from 1 and increasing up to the window size.
- The source node has a window i.e., buffer to store the frames. This buffer size is the number of frames to be transmitted continuously.
- The receiver has a buffer to store the received frames. The size of the buffer depends upon the window size defined by the protocol designer.
- The source node transmits frames continuously till the window size is exhausted. If any of the frames are received with error only those frames are requested for retransmission (with a negative acknowledgement).
- If all the frames are received without error, a cumulative positive acknowledgement is sent.
- If there is an error in frame 3, an acknowledgement for the frame 2 is sent and then only frame 3 is retransmitted. Now the window slides to get the next frames to the window.
- If acknowledgement is transmitted with error, all the frames of window are retransmitted. Else ordinary window sliding takes place. (*In implementation part, Acknowledgement error is not considered).
- If all the frames transmitted are errorless the next transmission is carried out for the new window.
- This concept of repeating the transmission for the error frames only is called Selective Repeat transmission flow control protocol.

PROCEDURE:

1. Open NETSIM.
2. Click Programming >> Transmission Flow Control.
3. Select Sample.
4. Select Go Back-N transmission.
5. Enter input data and BER.
6. Click Link to execute the program.
7. Repeat steps 1 to 3.
8. Select Selective Repeat protocol.
9. Enter input data and BER. Click Link to execute the program.

INFERENCE:

It is found that Selective Repeat Protocol is the most optimum out of these two LLC protocols. But the complexity equipment's are high. So, a trade off exists the total number of transmissions taken place and complexity.

RESULT:

Thus, the LLC protocols such as "Go Back 'N'" and "Selective Repeat" were studied using NETSIM and their performance were analysed.

CONCLUSION:

Both the LLC protocols were studied and it can be concluded that Selective Repeat is more effective but also more complex as compared to Go back n protocol.