Ex NO: 7

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FLOW CONTROL AT DATA LINK LAYER

Aim:

Write a program to implement flow control at data link layer using sliding window protocol. Simulate the flow of frames from one node to another.

Features:

- → Input window size and message
- → Sends window size frames at a time.
- → writes frames to sender buffer
- → Receiver reads frames, sends ACK or NACK to receiver-buffer
- → Sender reads ACK/NACK and continues or resends frames
- → You can manually edit the files to simulate errors.

Code:

```
import time
import random
class sender:
    def __init__(self, total_frames, window_size):
        self.total_frames = total_frames
        self.window_size = window_size
        self.base = 0
        self.next_seq = 0
    def send_frames(self):
        print(f"\n[sender] Total frames to send: {self.total_frames}")

        while self.base < self.total_frames:
            while self.next_seq < self.base + self.window_size and self.next_seq < self.total_frames:
                print(f"[sender] sending frame {self.next_seq}")
                self.next_seq += 1
            time.sleep(1)
    def ack_received(self, ack):
        print(f"[sender] Acknowledgement received for frame {ack}")
        if ack >= self.base:
            self.base = ack + 1
```

```
class Receiver:
    def receiver_frame(self, frame_no, sender):
        if random.choice([True, False]):
            print(f"[Receiver] Received frame {frame_no}")
            sender.ack_received(frame_no)
        else:
            print(f"[Receiver] frame {frame_no} lost (No Ack Sent)")

if __name__ == "__main__":
    total_frames = 5
    window_size = 3
    sender = sender(total_frames, window_size)
    receiver = receiver()
    sender.send_frames(receiver)
```

Output:

```
Enter total no of frames: 5
Enter window size: 3
[sender] Total frames to send: 5
[sender] Sending frame 0
[sender] Sending frame 1
[sender] Sending frame 2
[Receiver] Successfully received frames 0 to 2
[Sender] Acknowledgement received for frame 2
[sender] Sending frame 3
[sender] Sending frame 4
[Receiver] Frame 4 lost or corrupted
[sender] Timeout resending window from frame 3
[sender] Sending frame 3
[sender] Sending frame 4
[Receiver] Successfully received frames 3 to 4
[Sender] Acknowledgement received for frame 4
Transmission completed.
```

Result:

Sliding window protocol is executed successfully.

8/11/25