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 frame one node to another.

Features:

- -> Input window size and message
- -> sends window size frames at a time
- -> writes frames to sender Buffer
- -> receives 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 error.

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 < seq.base + self.window_size and
self.next_seq < self.total_frames:
printf(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 receive_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 number 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 1

[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

Transmission completed.

Result:

Sliding window protocol is executed successfully.