11/9/25 Experiment 7

AIM :

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

How to use :

* Inputs 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 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] Acknowledgment received for frame 2

[sender] Sending Frame 3

[sender] sending Frame 4

[Receiver] Frame 4 lost or corrupted.

[sender] Timeout Resending window from Frame:

[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.