EXNO:07 Practical-7

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AIM:-

write a program to implement flow control at a data link layer using SLIDING WINDOW PROTOCOL. Stimulate the flow of frames from one node to another.

create a sender Program with following features:-

1. Input window size from the user.
2. Input a Text message from the user.
3. consider 1 character per frame.
4. create a frame with following field [frame no, DATA].
5. send the frames. [print the output on screen and save it in a file called Sender_buffer].
6. wait for the acknowledgement from Receiver [Induce delay in the program].
7. Read a file called Receiver buffer
8. check ACK field for acknowledgement number.
9. If the Ack number is expected, send new set of frames accordingly [overwrite the Sender_buffer file with new frame] Else NACK is received, resend the frames accordingly [overwrite the Sender_buffer with old frame].

create a receiver file with following features.

1] Reader a file called sender_buffer.

2] check the frame no.

3] If the frame no are as expected, write the appropriate ACK no. in the Receiver_buffer file.

Else write NACK no in the Receiver file.

NOTE:- Induce error and verify the behaviour of the program. Manually change the frame no and Ack no in the files].

Student Observation:-

```
Import math
Import time
def sender(message, window_size):
    num_frames = math.ceil(len(message)/window_size)
    sent_frames=0
    while sent_frame <num frames:
        start = sent_frame * window_size
        end = min(start + window_size, len(message))
        Print(f"\n sender: Sending frames from
                    position {start+1} to {end}")
        for i in range(start, end):
            Print(f"frame {i+1}: '{message[i]}' sent.")
        if random.choice([True, false]):
            Print(f"Receiver: Acknowledgement received for
                    frames from {start+1} to {end}")
            sent_frame += 1
        else:
            Print(f"Receiver: Ack NOT received from frames
                {start+1} to {end}. Resending frames.")
        time.sleep(2)
    Print("\n All frames sent successfully")
def receiver(message, windowsize):
    pass
if __name__ == "__main__":
    message = input("Enter message to send:")
    windowsize = int(input("Enter the window size."))
```

Sender (message, window_size)
Receiver (message, window_size)

Output:-

Enter the message to send: hello
Enter the window size: 2
Sender: Sending frames from 1 to 2
frame 1: 'h' sent
frame 2: 'e' sent.
Receiver: Acknowledgement Received frame 1 to 2.

Sender: Sending frame from 3 to 4
frame 3: 'l' sent.
frame 4: 'o' sent.
Receiver: Acknowledgement NOT received for frames
frame 3 to 4. Resending the frames.

Sender: Sending frames from 3 to 4.
frame 3: 'l' sent.
frame 4: 'o' sent
Receiver: Acknowledgement Received from 3 to 4.

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Result:-

Thus program is executed and output verified successfully.