SLIDING WINDOW PROTOCOL

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.

CREATE A SENDER PROGRAM WITH FOLL. FEATURES:

1) Input window size from the users
2) Input a text message from user
3) Consider 1 character per frame
4) Create a frame with fields (Frame no., DATA)
5) Send Frames
6) Wait for Acknowledgement from Receiver
7) Reader a file
8) Check Ack field for acknowledgement

CREATE A RECEIVER FILE WITH FOLL. FEATURES:

1) Reader a file called sender_Buffer
2) Check the Frame no.
3) If Frame no. are as expected, write appropriate Ack no. in the Receiver_Buffer file.
4) ELSE write NACK no. in the Receiver_Buffer file.

STUDENT OBSERVATION:

```
def sender():
    window_size = int(input("window size : "))
    message = input("Message to send : ")
```

```
frames = [[i, ch) for i, ch in enumerate(message)]
base = 0
while base < len(frames):
    window = frames[base : base + window_size]
    with open('Sender_Buffer.txt', 'w') as f:
        for fr in window:
            f.write(f"{fr[0]}, {fr[1]}\n")
    print(f"Sent frames : {window}")
    time.sleep(2)
try:
    with open('Receiver_Buffer.txt', 'r') as f:
        response = f.readline().strip()
except:
    response = ' '
if response.startswith("Ack"):
    ack_no = int(response.split(',')[1])
    print(f"Ack received for frame {ack_no}")
elif response.startwith("NAck"):
    nack_no = int(response.split(',')[1])
    base = nack_no
else:
    print("No valid Ack/NAck received, resending
        window")
with open('Receiver_Buffer.txt', 'w') as f:
    pass
```

```
def receiver():
    expected_frame = 0
    while True:
        time.sleep(2)
        try:
            with open('Sender_Buffer.txt','r') as f:
                lines = f.readlines()
        except:
            continue
        if not lines:
            continue
        frames = [(int(f[0]),f[1]) for f in frames]
        for frame_no, data in frames:
            if frame_no == expected_frame:
                ack = f"Ack,{frame_no}"
            else
                ack = f"NAck,{expected_frame}"
                break
        else:
            ack = f"Ack,{frames[-1][0]}"
        with open('Receiver_Buffer.txt','w') as f:
            f.write(ack+"\n")
        print(f"Processed frames: {frames}, sent: {ack}")
```

SENDER INPUT:

Enter window size: 3

Enter the message to send: HELLO

OUTPUT:

Sending Frames 0 to 2

Frames written to Sender_Buffer.txt:

[0, H]

[1, E]

[2, L]

Waiting for receiver response:

Received ACK/NACKs from Receiver_Buffer.txt:

[('ACK', 0), ('ACK', 1), ('ACK', 2)]

RESULT:

Sliding window Protocol program implemented successfully.