Expt 7 Sliding Window
Date: 8/9/24 Protocol

Aim:
to write a program to implement flow control to data link layer using sliding window protocol.

Code -
Sender.py
import time
import os
def create_frames (text_message):
frames = [(i, char) for i, char in enumerate(text_message)]
return frames
def write_to_file (filename, data):
with open (filename, 'w') as file:
for frame in data:
file.write(f"{frame}\n")
def read_file (filename):
if not os.path.exists (filename):
return []

```
with open(filename, 'r') as file:
    return [line.strip().split(',')
            for line in file.readlines()]

def send_frames(frames, window_size):
    i = 0
    while i < len(frames):
        window = frames[i:i + window_size]

        print("sending frames:")
        write_to_file('sender_buffer.txt',
                      window)
        time.sleep(3)
        receiver_buffer = read_from_file('receiver_
                          buffer.txt')
        if not receiver_buffer:
            continue

        ack_frame = receiver_buffer[0].
        ack_number, ack_type = int(ack_frame[0])

        if ack_type == 'ack':
            i += window_size;
        elif ack_type == 'Nack':
            i = ack_number
```

```
def main_sender():
    window_size = input_win_size()
    text_message = input_text_message()
    frames = create_frames
    send_frames(frames, window_size)

if __name__ == "__main__":
    main_sender()
```

Receiver.py

```
import random
import time
import os

def write_file(filename, data):
    with open(filename, "w") as f:
        f.write(data)

def read_file(filename):
    if not os.path.exists(filename):
        return []

def process_frames(frames):
    acks = []
```

```
for frame in frames:
    frame_number = int(frames[0])
    data = frames[1]

    if frame_no. in frame_seen:
        continue

    if random.choice([True, False]):
        print("sending ack for frame
                {frame_number}")
        acks.append("{frame_no}, ack}").

    else:
        acks.append("{frame_no}, NACK")

    break.

    return "".join(acks)

def main_receiver():
    while True:
        time.sleep(3)
        frames = r_f_f("sender.txt")

        continue.
    ack = process_frames(frames)
    w_t_f("receiver_buffer.txt", acks)
```

if any(frame[1] == 'END' for frame in frames):

print("End")

break

if __name__ == "__main__":

main.receiver()

Output:

Enter window size = 2

Enter message : hello

Sending frame : [(0, 'h'), (1, 'e')]

Ack received for frame, sending next frame

Sending frame : [(4, 'END')]

Ack received for frame 12, sent next frame

:

End of transmission received.

Result:

Thus flow control using sliding window protocol is verified.