Ex No: 7
Date: 6.9.24

Practical - 7

Aim:

program should achieve at least below given requirement you can make it a bidirectional program wherein receiver is sending it data frames with acknowledgement

program

sender.py

```
import os
def sender(window_size, message)
    sender_buffer = "sender_Buffer.txt"
    receiver_buffer = "Receiver_Buffer.txt"
    frame_no = 0
frames = [(i, message[i]) for i in
in range(len(message))
while frame_no < len(frames):
    for i in range(window_size):
        if frame_no + i < len(frames):
            print(f'sending frame:
            {frames[frame_no+i][0]}')
with open(sender_buffer, 'a') as f:
    f.write(f'{frames[frame_no+i][0]}
    {frames[frame_no+i][1]}\n')
time.sleep(1)
```

```
while True:
    if os.path.exists("receiver_buffer"):
        with open("receiver_buffer","r") as f:
            ack_no = int(f.read().strip())
        os.remove("receiver_buffer")
        break

if ack_no >= frame_no:
    print(f"Ack received for frame : {ack_no}")

    frame_no = ack_no + 1

else:
    print(f"NACK received for frame : {frame_no}")

if __name__ == "__main__":
    window_size = int(input("Enter window size"))
    message = input("Enter message")
    sender(window_size, message)
```

Receiver.py

```
import os
def receiver():
    sender_buffer = "sender_buffer.txt"
    receiver_buffer = "receiver_buffer.txt"
    expected_frame_no = 0
```

```
while True:
    if os.path.exist(sender_buffer):
        with open(sender_buffer, 'r') as b:
            lines = b.readlines()
        os.remove(sender_buffer)

    for line in lines:
        frame = line.strip().split()
        frame_no = int(frame[0])
        data = frame[1]
        if frame_no == expected_frame_no:
            print(f"Received frame: {frame_no}, data: {data}")
            with open(receiver_buffer, 'w') as b:
                b.write(str(frame_no))
            expected_frame_no += 1
        else:
            print(f'unexpected frame {frame_no}, data: {data}")
            with open(receiver_buffer, 'w') as b:
                b.write(str(expected_frame_no-1))
if __name__ == "__main__":
    receiver()
```

OUTPUT : Python sender.py

Enter window size : 5

Enter message : hello

sending frame : [0, 'h']

sending frame : [1, 'e']

sending frame : [2, 'l']

sending frame : [3, 'l']

sending frame : [4, 'o']

NACK recieved for frame : 0, resending

sending frame : [0, 'h']

Sending frame : [1, 'e']

sending frame : [2, 'l']

sending frame : [3, 'l']

Sending frame : [4, 'o']

NACK recieved for frame : 0, resending

Sending frame : [0, 'h']

sending frame : [1, 'e']

sending frame : [2, 'l']

sending frame : [3, 'l']

sending frame : [4, 'o']

ACK recieved for frame 4

python server.py
unexpected frame: 2 expected 0
unexpected frame: 2 expected 0
unexpected frame: 3 expected 0

6/9/24

Result

Thus the program was successfully executed & the output is verified