Exp No: 7

11/9/21

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

Code:

```
import java.util.Scanner;
Public class main{
    Public static void sender(string message, int window
                                                    size)
{
    int numframes = message.length();
    char[] frames = message.toCharArray();
    int sentFrame = 0;
    while (sentFrame < numframes){
        System.out.println("\n Sender: Sender frames from
        Position" + (sentFrame+1) + "to" + math.min(
        SentFrame + windowSize, numframes));
    for(int i = sentFrame; i < math.min(sentFrame +
                    window size, numframes; i++){
        System.out.println("Frame" + (i+1) + ": " +
                frames[i] + "Sent.");
    }
    System.out.println("Reciever: Acknowledgement
                recieved for frame" + (sentFrame+1));
        SentFrame++;
    }
    System.out.println("\n All frames are sent Successfully");
```

~~Public static void receiver(String message~~

Receiver:

```
def read_sender_buffer():
with open("sender_Buffer.txt", "r") as f:
    frames = f.readlines()

frame = [fram.strip().split() for frame in frames]

return [(int(frame[0]), fram[1] for frame in frames]

def send_acknowledgements(frames):
    expected_frame_no = 0
    acks = []

for frame_no, data in frames:
if frame no == expected_frame_no:
print(f"Received expected from : {frame_no}, Data: {data}")
    acks.append(frame no)
    expected_frame_no += 1

else
    print(f" Error in frame: {frame_no}, Expected:
                {expected frame_no}. Sending NACK.")

    acks = [-1]
    break
with open("Receiver_Buffer.txt", "w") as f:
```

```
    for acks in acks
        f.write(f"{ack}\n")
def main():
    print("Reading frames from sender_buffer.")
    frames = Read_sender_buffer()
    send_acknowledgement(frames)
    if __name__ == "__main__":
        main()
```

Output:-

Enter window size: 3

Enter text message: Hello

Sending frames:

Frame No: 0 Data: H

Frame No: 1 Data: e

Frame No: 2 Data: l

Waiting for acknowledgment ... e

NACK received, resending frames.

Sender_buffer.txt

```
0 H
1 e
e l
```

Receiver:

Reading frames from sender - buffer...

Received expected frame 0, Data: H

Received expected frame 1, Data: e

Received expected frame 2, Data: l

Error

senderbuffer.txt

01
20

Reading frame from from sender - buffer...

Received expected frame 0, Data l

Error in frame e, Expected: 1 Sending NACK

receiver - buffer.txt:

-1

Result:

Thus the sliding window with error detection & Correction in Studied.