

23/08/24

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 frames] Else NACK is received, resend the frames accordingly [overwrite the sender-buffer with old frame].

create a receiver file with following features.

- 1] Read 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"In 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("In All frames sent successfully")
```

```
def success(message, window_size):
```

```
    pass
```

```
if __name__ == "__main__":
```

```
    message = input("Enter message to send:")
```

```
    window_size = 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.

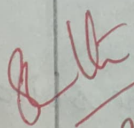
Receiver: Acknowledgement NOT received for frames
frame 3 to 4. Resending the frames.

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:-

~~This program is executed and output
is verified successfully.~~