Practical-7

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.

Program should achieve at least below given requirements. You can make it a bidirectional program wherein receiver is sending its data frames with acknowledgement (Piggybacking).

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 fields [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 the Receiver. [Induce delay in the program]
7. Reader a file called Receiver_Buffer.
8. Check ACK field for the Acknowledgement number.
9. If the Acknowledgement number is as expected, send new set of frames accordingly, [overwrite the Sender_Buffer file with new frames] Else if NACK is received, resend the frames accordingly. [Overwrite the Sender_Buffer with old frame].

Create a receiver file with following features

1. Reader a file called Sender_Buffer.
2. Check the Frame no.
3. If the Fame no. are as expected, write the appropriate ACK no. in the Receiver_ Buffer file. Else write NACK no. in the Receiver_Buffer file.

NOTE: Induce error and verify the behaviour of the program. Manually Change the Frame no and Ack no in the files].

Student observation:

```
#include<stdio.h>
int main()
{
   int w,i,f,frames[50];
```

```
    printf("Enter window size: ");
    scanf("%d",&w);
    printf("\nEnter number of frames to transmit: ");
    scanf("%d",&f);
    printf("\nEnter %d frames: ",f);

    for(i=1;i<=f;i++)
       scanf("%d",&frames[i]);

    printf("\nWith sliding window protocol the frames will be sent in the following manner
(assuming no corruption of frames)\n\n");
    printf("After sending %d frames at each stage sender waits for acknowledgement sent by
the receiver\n\n",w);

    for(i=1;i<=f;i++)
    {
       if(i%w==0)
       {
          printf("%d\n",frames[i]);
       printf("Acknowledgement of above frames sent is received by sender\n\n");
       }
       else
          printf("%d ",frames[i]);
    }

    if(f%w!=0)
       printf("\nAcknowledgement of above frames sent is received by sender\n");

    return 0;
 }
  Input:
 Enter window size: 4
 Enter number of frames to transmit: 7
 Enter 7 frames: 10 20 30 40 50 60 70
```

Output:

With sliding window protocol the frames will be sent in the following manner (assuming no corruption of frames)

After sending 4 frames at each stage sender waits for acknowledgement sent by the receiver

10 20 30 40

Acknowledgement of above frames sent is received by sender

50 60 70
Acknowledgement of above frames sent is received by sender.

Result:
Thus the flow control at data link layer using sliding window has been successfully implemented.