

# **Computer Networks Lab 7**

## **Title: Implementation of n-bit Sliding Protocol**

### **Objective:**

The objective is to implement an n-bit sliding window protocol. The window size in an n-bit sliding window protocol is n.

### **Problem Statement:**

In n – the bit sliding window protocol, the window size is n. In this protocol, multiple frames can be sent by a sender at a time before receiving an acknowledgment from the receiver. The size of the sending window determines the sequence number of the outbound frames.

### **Algorithm:**

*Step 1 – Here, the size of the sliding window is N.*

*Step 2 – After receiving a frame from the sender, the receiver sends an acknowledgment (ACK), which includes the number of the next frame it expects to receive.*

*Step 3 – If the N value is 3, we can see the sender first sends 1, 2, and 3 to the receiver, then after receiving an acknowledgment for receiving 1 and sending 4 from the receiver, the sender again sends 4. It works similarly for sending 5, 6, and so on to N.*

*Step 4 – But this process can face errors sometimes. Considering the receiver faces some error while receiving a frame, the receiver doesn't send an ACK back. For these situations, the sender maintains a timeout for receiving an ACK for every frame.*

*Step 5 – If it exceeds the time, then the sender resends the frame and adds it to the receiver if it's not already present there otherwise ignores it.*

## **CODE:**

```
#include<stdio.h>

int main()

{

    int w,i,f,frames[50];

    printf("Enter window size: "); //input window size

    scanf("%d",&w);

    printf("\nEnter number of frames to transmit: "); //input no of frames

    scanf("%d",&f);

    printf("\nEnter %d frames: ",f);

    for(i=1;i<=f;i++) //input frames

        scanf("%d",&frames[i]);

    printf("\nWith sliding window protocol the frames will be sent in the following manner\n(assuming no corruption of frames)\n\n");

    printf("Here window size is %d so, at each stage only %d frame is send and wait until\nAcknowledgement is sent by the receiver. \n\n",w,w);

    for(i=1;i<=f;i++)

    {

        if(i%w==0)

        {

            printf("Frame no. %d\n",frames[i]);

            printf("Acknowledgement is received\n\n"); //acknowledgement received

        }

        else
```

```

printf("%d ",frames[i]);

}

if(f%w!=0)

printf("\nAcknowledgement of above frames sent is received by
sender\n");

return 0;

}

```

## **Output:**

```

Enter window size: 4

Enter number of frames to transmit: 4

Enter 4 frames: 1 2 3 4

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

Here window size is 4 so, at each stage only 4 frame is send and wait until Acknowledgement is sent by the receiver.

1 2 3 Frame no. 4
Acknowledgement is received

...Program finished with exit code 0
Press ENTER to exit console.

```

## **EXPLANATION:**

Here as it is an n-bit sliding window, so the window size is given as 3 and the number of frames along with the frame numbers are taken as input, here 4 frames are taken. As the window size is 3 at each stage only 3 frames are sent ack wait until an ack is sent

*by the receiver. Here the number of frames is 4 so, 3 frames are sent ack is received and the 4th frame is sent then ack is received for 1 to 3 frames.*

### **PROBLEMS FACED:**

*The problem I faced during this experiment is understanding the mechanism of the n-bit sliding protocol.*

### **CONCLUSION:**

*Hence by doing this experiment I have learned that, in this technique, each frame has sent from the sequence number. The sequence numbers are used to find the missing data in the receiver end. The purpose of the sliding window technique is to avoid duplicate data, so it uses the sequence number.*