

Computer Networks Lab 5

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Objective:

The objective is to implement a one-bit sliding window protocol. The window size in a one-bit sliding window protocol is 1.

PROBLEM STATEMENT:

In one-bit sliding window protocol, the window size is 1. So the sender transmits a frame, waits for its acknowledgment, then transmits the next frame. The data frames to be transmitted additionally have an acknowledgment field. The ack field contains the sequence number of the last frame received without error. If this sequence number matches with the sequence number of the frame to be sent, then it is inferred that there is no error and the frame is transmitted. Otherwise, it is inferred that there is an error in the frame and the previous frame is retransmitted.

ALGORITHM:

One-bit sliding window protocol is used for the delivery of data frames.

- 1. Sender has sending window.*
- 2. Receiver has to receive the window.*
- 3. Sending and receiving windows act as buffer storage.*
- 4. Here size of the window is 1.*
- 5. One-bit sliding window protocol uses Stop and Wait.*
- 6. Sender transmits a frame with a sequence number.*

7. Then the sender waits for acknowledgment from the receiver.
8. Receiver sends back an acknowledgment with a sequence number.
9. If the sequence number of acknowledgment matches with the sequence number of the frame.
10. Sender transmits the next frame.
11. Else sender re-transmits the previous frame.
12. Its bidirectional protocol.

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: 1
Enter number of frames to transmit: 5
Enter 5 frames: 1 2 3 4 5

With sliding window protocol the frames will be sent in the following manner (assuming no corruption of frames)
Here window size is 1 so, at each stage only 1 frame is send and wait until Acknowledgement is sent by the receiver.

Frame no. 1
Acknowledgement is received

Frame no. 2
Acknowledgement is received

Frame no. 3
Acknowledgement is received

Frame no. 4
Acknowledgement is received

Frame no. 5
Acknowledgement is received

```

EXPLANATION:

Here as it is a 1-bit sliding window, so the window size is given as 1 and the number of frames along with the frame numbers are taken as input, here 4 frames are taken and only one frame is sent at each stage. If the frame is successfully received by the receiver then the acknowledgment is sent back.

PROBLEMS FACED:

The problem I faced during this experiment is understanding the mechanism of the 1-bit sliding protocol.

CONCLUSION:

Hence by this experiment, I understood that In 1– bit sliding window protocol, the size of the window is 1. So the sender transmits a frame, waits for its acknowledgment, then transmits the next frame. Thus it uses the concept of stop and waits for the protocol.