Title: 1-bit Sliding Protocol

Sravani Tangeda

AP20110010174

sravani_tangeda@srmap.edu.in

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:

Here, The sender sends a frame, waits for its acknowledgment, and then transmits the next frame. The data frames that need to be transferred have an acknowledgment field. The last frame that was successfully received is identified by its sequence number in the ack field. It is assumed that there is no error and that the frame is transmitted if this sequence number matches the sequence number of the frame that will be sent. If not, it is assumed that there is a frame fault and the previous frame is sent again.

Algorithm:

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

- Sender has sending window.
- Receiver has to receive window.
- Sending and receiving windows act as buffer storage.
- Here size of the window is 1.
- One-bit sliding window protocol uses Stop and Wait.
- Sender transmits a frame with a sequence number.
- Then the sender waits for acknowledgment from the receiver.
- Receiver sends back an acknowledgment with a sequence number.
- If the sequence number of acknowledgment matches with a sequence number of the frame.
- Sender transmits the next frame.
- Else sender re-transmit the previous frame.
- Its bidirectional protocol.

Code:

```c
#include<stdio.h>

int main()
{
    int w,i,f,frames[50];

    printf("Enter window size: ");
    scanf("%d",&w);        //Input the window size as 1

    printf("\nEnter number of frames to transmit: ");
    scanf("%d",&f);     // Input number of frames that need to be transmitted

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

    for(i=1;i<=f;i++)
        scanf("%d",&frames[i]);   //Enter the frame numbers

    printf("\nWith sliding window protocol the frames will be sent in the following manner (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 Acknowledgement is sent by the receiver. \n\n",w,w);

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

```c
    if(i%w==0)  // if frame is successfully transmitted acknowledgement is received
    {
        printf("Frame no. %d\n",frames[i]);
        printf("Acknowledgement is received\n\n");
    }
    else
        printf("%d ",frames[i]);
    }


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


    return 0;
}
```
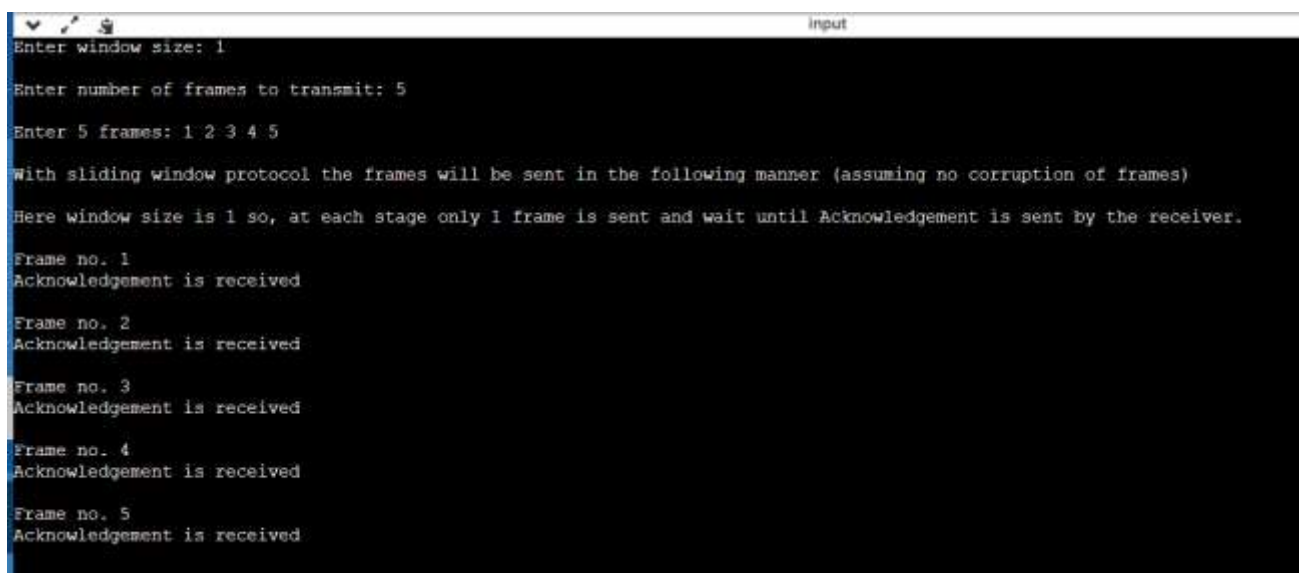
Output:

Explanation:

Here as it is a 1-bit sliding window, the window size is given as 1 and the number of frames along with the frame numbers are taken as input 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:

Initially I found it difficult to understand the concept behind frame transmission and sending the acknowledgement. Later understood and implemented it.

Conclusion:

Here in this experiment, I have learnt about implementation of 1-bit sliding window protocol using C programming. The transmission of frames by sender and acknowledgement of received frames is clearly understood.