East West University

CSE350
Data Communication

Project Report

on

Flow control and error control techniques in the data link layer protocol

Section: **02**

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Introduction:

In this project we are going to implement data link layer protocol using stop and wait, timeout, positive acknowledgement and retransmission. We will also verify the CRC checksum of a frame. As our requirement, we are going to use CRC-16 to as the generator polynomial.

Protocol Description:

In this project determining the possible best decision of using polynomial is the highest priority. As polynomial is related to error detection capabilities and also the processing so we have to use it in such a way so that we can get best of it.

Stop and Wait:

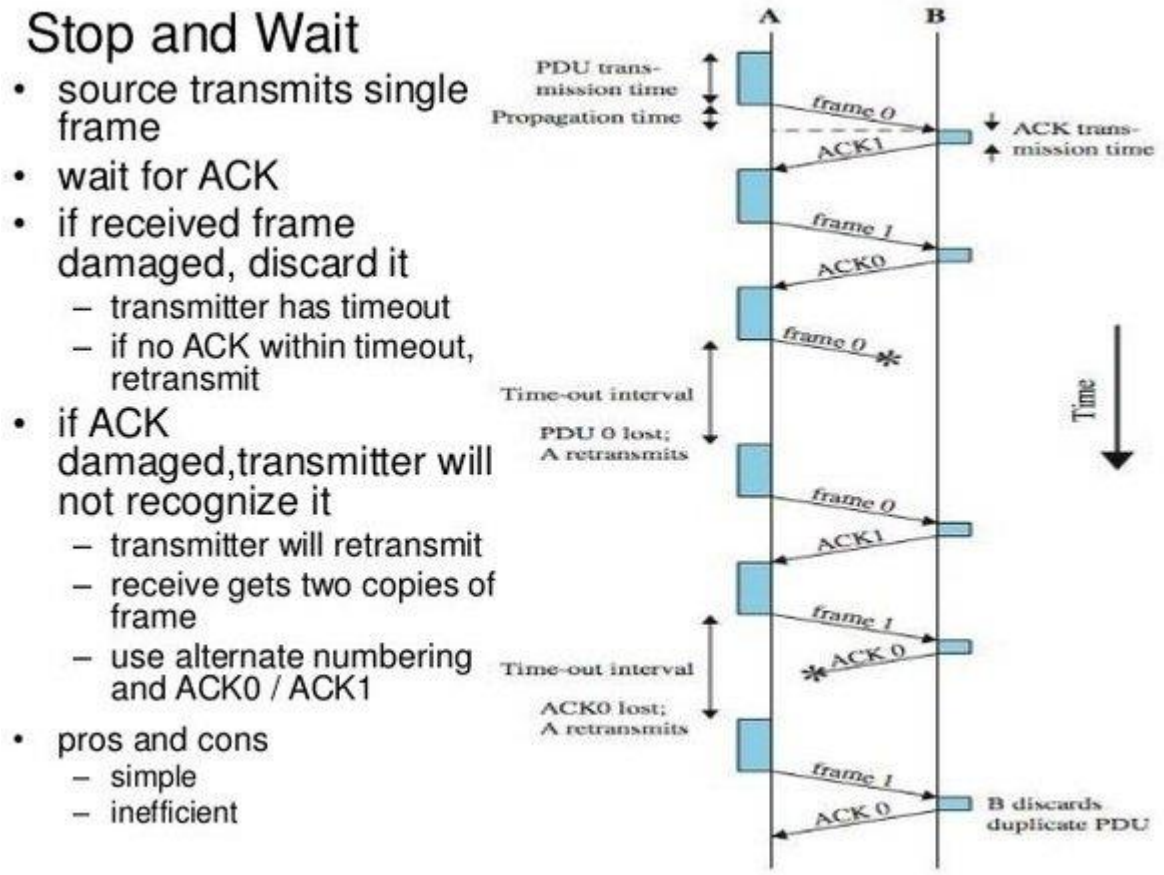


Fig 01: stop and wait

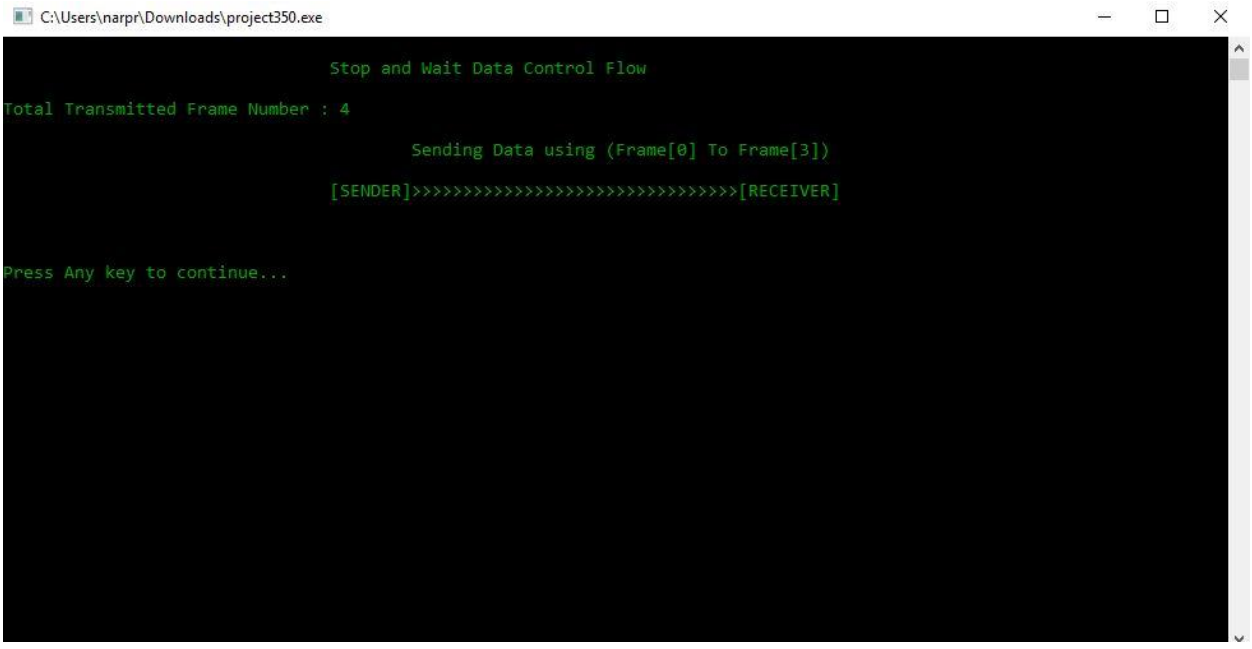
Pros and Cons:

- It is not good to use a transmission medium in this project which makes it complicated more.
- There are several protocols those use this system such as GO-BACK-N arc.
- Transition of multiple frame will be helpful as data transmission efficiency will be improved is this way. It will reduce the workload effectively and make the flow control better.
- It's very simple to use.

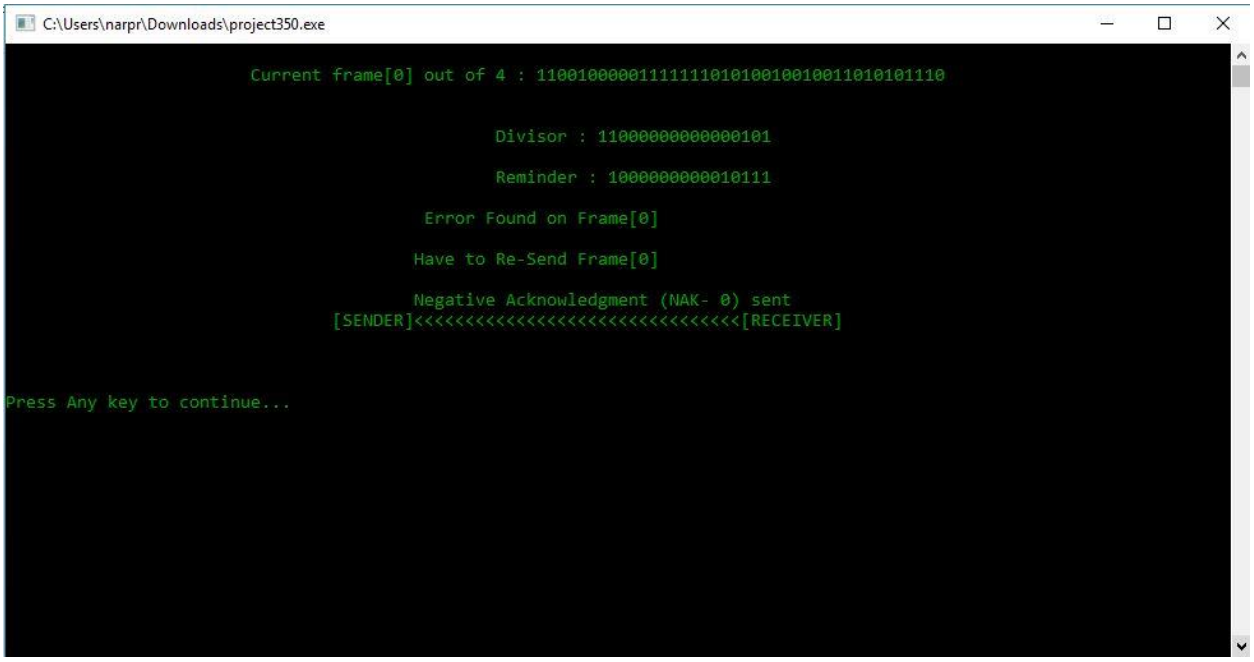
- ➢ If sender sends single frame then it is time consuming as sender have to wait for ACK after every frame.
- ➢ Longer transmissions can cause problem as error possibility gets higher.
- ➢ Frame fraction will cause long time waiting problem which will decrease the flow efficiency.

Simulation Result:

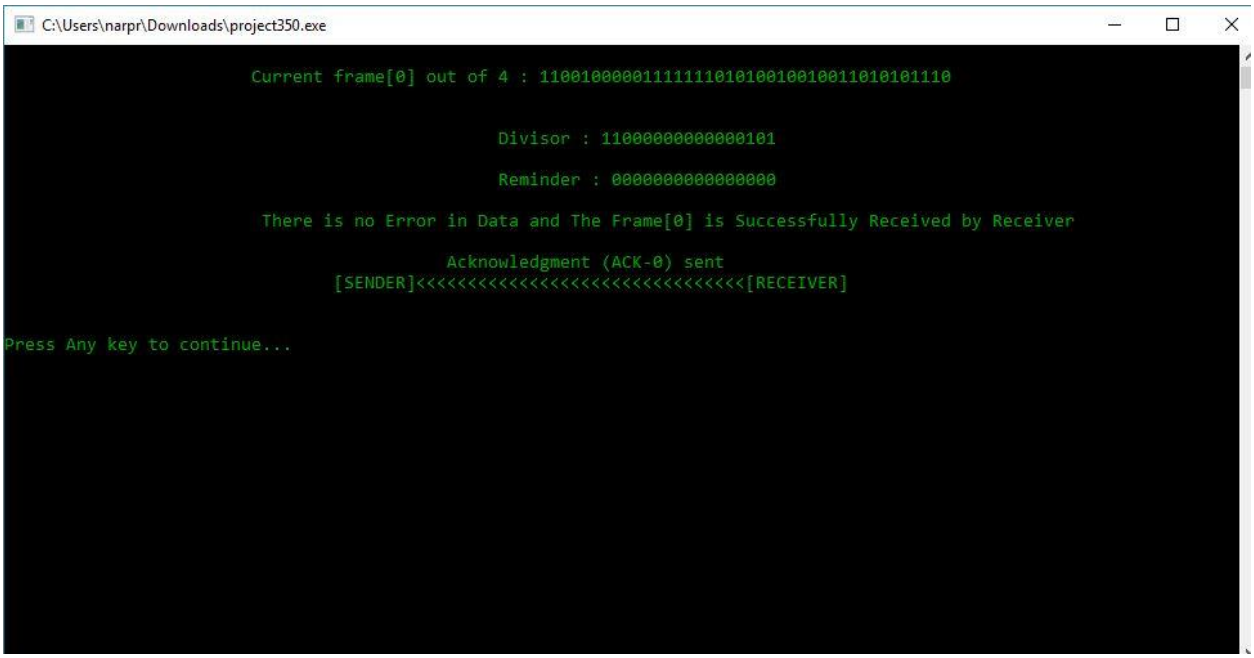
1.For this example of test case we take 4 frame as input and each frame we consider the data segment is 40 bits long.The predetermined divisor is 17 bit long and total frame size is 57 bit.



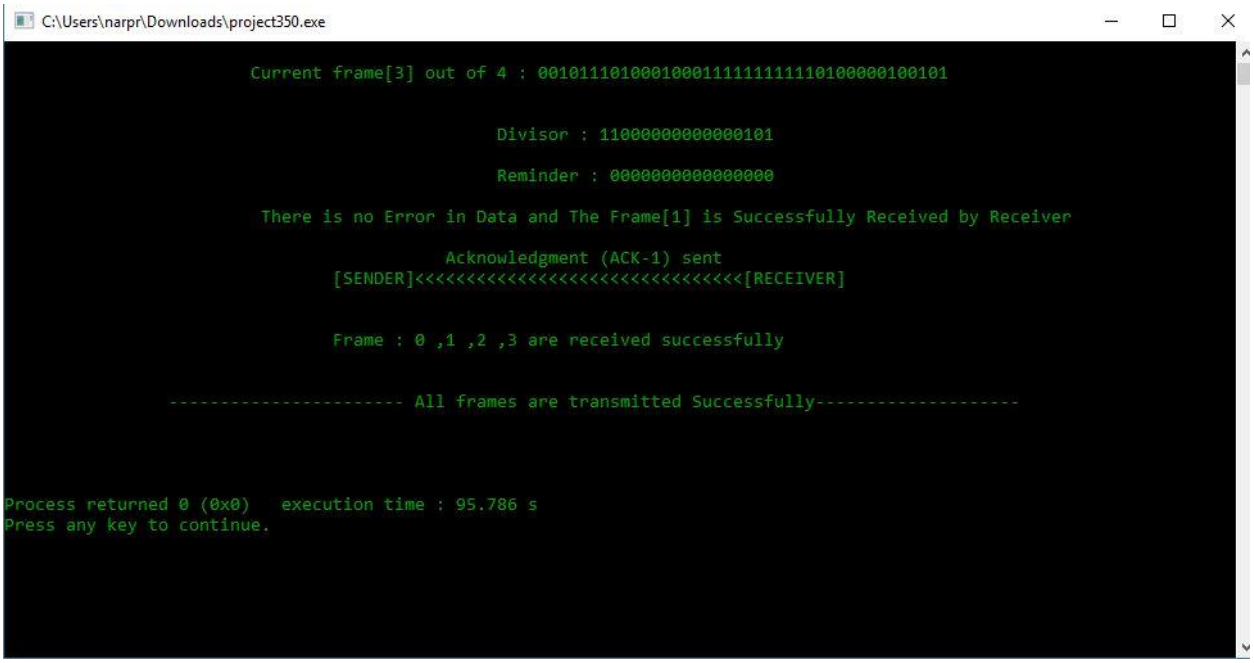
2. This time Receiver got an error in the data and it sent back NAK-0 that means Transmitter need to send Frame[0] again because there was a problem in the Frame[0]



3. This time Transmitter sent Frame[0], Frame[1], Frame[0] and so on one after another consecutively and Receiver sent back to Transmitter to ACK-1, ACK-0, ACK-1 and so on if Receiver got no error.



4. At the end when all of the frame successfully sent to the receiver end and Receiver sent ACK to the Transmitter.



Conclusion:

In this project we try to implement Stop and Wait data link protocol efficiently. For our memory limitation we used sample data segment very short bit. By implementing this project we could not sent data practically. For showing error in the data segment we forcefully substitute few bits of its original bit.

References:

1. Data and Computer Communication book by William Stallings

2.Wikipedia