

IIT Bhubaneswar
School of Electrical Sciences
Computer Networks Lab (0-0-3)
Spring 2023

Lab Schedule: Tuesday (10AM-1PM)
Instructor: Debi Prosad Dogra (dpdogra@iitbbs.ac.in)
Lead Teaching Assistant: Saumya and Sravya

Assignment 2 (**Submission Deadline: 07-02-2023, 1:00 PM**)

Points: 100

[Unix/ Linux Programming]

Suppose you need to implement an error detection algorithm discussed in the class. This is done in the LLC sub-layer, which is a part of L2 layer of the protocol stack. Suppose a simple format of LLC packets is given below:

Start frame (8 bits)	Payload (64 Bytes)	CRC (4 Bytes)	Inter-packet Gap (2 Bytes)
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The CRC field will be used to send additional data to detect errors in the payload (if any) at the receiver end. Suppose, two processes in a single machine act as the sender and receiver [We will not use the socket interface now to implement it over the network]. The sender process creates the payload field randomly and makes the LLC layer packet as given above. However, there is a function that randomly introduces error in the payload field at a random position. At max, there can be two erroneous bits in the payload.

Implement the above scheme using Linux C programming. Both sender and receiver functions need to be implemented using different processes. Use inter process communication tools learned in the OS laboratory to implement send and receive functions. Based on the status of error, the receiver will send retransmission request to the sender until the packet is transmitted successfully. This is only possible when the random functions do not introduce any error in the message at the sender side. We assume the error is introduced by the communication channel. The error probability can be taken as input from the user, thus a higher error probability will lead to more number of retransmissions and vice-versa.

Submission Guidelines:

- 1) C source code
- 2) Readme file
- 3) Analysis results (graphs) by varying the error probability values.