

Assignment 5: Congestion Control

Due date: Sunday, 27 April 2025 at 22:00

This is an individual assignment. You may discuss it with others, but your code and documentation must be written on your own. In particular, do not use automated code-generation tools such as ChatGPT or GitHub copilot.

This is a continuation of the development of a reliable transport protocol intended to offer a one-way, reliable and efficient stream communication system. For this assignment, you are required to extend the protocol by adding a congestion control mechanism. In particular, you must implement the Reno congestion control algorithm as explained in the course textbook (Section 3.7). Compared to the protocol implementation seen in class, we have included some hooks on some events to which your congestion control implementation should react. In particular, we have added the following function definitions:

- `cc_timeout`. It is called when a timeout event occurs.
- `cc_received_dup_ack`. It is called when you receive a duplicate acknowledgment.
- `cc_receive_acks`. It is called when you receive the acknowledgment for some segments.

Therefore, for this assignment, you will have to provide the implementation for these three functions following the Reno congestion control algorithm.

Submission Instructions

You must write your code in the `sender_x.c` source file provided within the source package available on iCorsi.

Submit those completed files through the iCorsi system. Do not submit other files. Add comments to your code to explain sections of the code that might not be clear. You must also add comments at the beginning of the source file to properly acknowledge any and all external sources of information you may have used, including code, suggestions, and comments from other students. If your implementation has limitations and errors you are aware of (and were unable to fix), then list those as well in the initial comments.

You may use an integrated development environment (IDE) of your choice. However, *do not submit any IDE-specific file*, such as project description files.