ITL355: Computer Networks Lab
Semester Project Submission 3

May 27, 2025

Project: Develop a network simulator implementing entire protocol stack.

Note: This is an open-ended assignment where you're free to choose any programming language, input/output representation, formats, etc., but all these should be specified in a proper **specification document** which should be **regularly** updated with each submission. **Maximum group of three (3) students allowed.**

Submission 3 objective: Implement Transport and Application layer functionalities.

- **Minimum deliverables:** Your simulator should be at least capable of
  - Assigning port no.'s to various processes, both well-known and ephemeral port no.'s and enable process-process communication
  - Implement at least *one* sliding wndow flow control protocol at the transport layer (Go Back N or Selective repeat). You can also resuse it from Layer 2 functionality (Submission 1) for the transport layer data unit (TCP datagram or UDP segment)
  - Implement at least *two* application layer services

  Note that the applications can be developed as a separate applet/program or pre-existing applications can also be used, but these need to be called from your simulator when communication is being done. Applications like Telnet, FTP, SSH clients are already available for most programming languages. You can use them, however any such source should be properly cited in your report.
- **Test cases:** Using your chosen application layer services you need to demonstrate working of entire protocol stack i.e., encapsulation of data as well as the functionalities of all layers.

Possible add ons: You can make add ons like implementing all known flow control protocols, performing congestion control, implementing more application

layer services and many more *depending on where your creative thinking and coding capability can reach.*

Submission deadline: 15 June 2025 via Gradescope.