

Introduction

This final project allows students flexibility in the specifics of the project. The expectation is that most students will do a form of the suggested project (see separate handout). This project involves implementing different adaptive routing protocols. Students who desire to do another type of project may also propose an alternative that deals with some aspect of computer networks.

Students are encouraged to work in two-person groups of your choosing, but individual projects are acceptable. You should select a partner who has similar goals for the project as yourself. Projects will be graded equally for all team members unless exceptional circumstances arise.

Regardless of the student's choice, the project has two due dates:

1. Proposal (Due: Wednesday, November 5, 2025 via email to Prof. Wills)

Each group will turn in a proposal (one or two pages in pdf format) defining the project and explaining the work to be done. If the group has chosen the standard project, then the proposal must fill in some of the design details for this project.

This proposal should clearly explain the final product and include a preliminary schedule and distribution of work. Proposals will be approved or disapproved (with possible comments) but not graded.

2. Final Project and Report (Due: Friday, December 12, 2025)

The final report should be a well-presented technical report discussing your project (in pdf format). If your project is primarily a programming effort, you should explain how the program works, give specific sample runs and analyze the results. The report should be 5-10 pages in length, although may be less if you do the standard project. If your project team is more than one person then the report should indicate what each person did on the project.

More details on the report format will be shared closer to the due date.

The alternative projects will be considered in terms of their required level of effort compared to the standard project. The following list gives examples of possible ideas for alternative projects. In proposing an alternative project, students must accept the responsibility for assuring that they have access to adequate resources and the proper background to complete the project:

1. Simulation of a three-layer communication abstraction focused on reliable data transfer protocol.
2. A computer program which is used as a tool to analyze some aspect of computer network performance making use of tools such as *wireshark* and *traceroute*.

3. Extend Project 2 allowing your Web client to use SSL in communicating with Web servers. Use your client to perform more extensive testing than what was done in the initial project.
4. Extend Project 3 via more extensive testing with systematic testing of on a range of LDNSs and ADNSs around the U.S. and the globe.
5. Investigate the support and use of HTTP versions by Internet servers as well as how Web clients learn of what versions are supported. This investigation should include the use of DNS as a means to discover HTTP support. See for example, <https://blog.cloudflare.com/speeding-up-https-and-http-3-negotiation-with-dns/>. It could also involve the use of a command-line Web client that supports QUIC (HTTP/3). Such clients are available.
6. A research paper that surveys a current issue in computer networks.

NOTE: If you do not have a viable idea for an alternative project please let Prof. Wills know ASAP.