

COSC 4P14

Laboratory 1

Due date: Same day of lab (11:55pm) or as defined by the TA

Delivery method: the student needs to delivery the assignment only through Sakai.

Delivery contents: a document with a description and codes (see [Submission instructions](#)).

Attention: check the [Late Assignment Policy](#).

Laboratory Overview

This laboratory is intended to introduce to Network programming at the Application layer. Thus, following a hands-on practice, the lab is composed of a series of exercises where students will analyze and implement programs using the socket API.

The TA will provide students with codes and instructions about how to complete the exercises. Also, the TA will inform about the expected layout of answers handled back.

Laboratory Details

The laboratory consists of answering/completing all the following list of items:

1. Students must build a socket-based client to connected with a socket-based server. Server binary/bit-code is provided.
 - 1.1. Students will have to run the server and then discover the port in which the server is expecting client contacts.
 - 1.2. Students will have to build a client can send a message to the server.
 - 1.3. Students need to use telnet to send a message to the server
 - 1.3.1. Students must modify the provided server code so that the server prints the received messages.
 - 1.3.2. Students need to use telnet to send a series of messages to the modified server during the same telnet session.
2. Students must modify the TCP server that is provided
 - 2.1. Students need to compile the provided TCP server and run it. They then need to contact the server through simultaneous accesses using telnet and a client (the one built earlier). What is the result of such simultaneous contacts?
 - 2.2. Students must modify the provided server to accept multiple simultaneous connections. Can it handle multiple clients now?
 - 2.3. Students have to modify both server and client to send messages back and forth. Client sends strings that an user enters through the standard input. Server replies to client's messages with all-uppercase answers and the port number of the client.
 - 2.4. Students then need to modify the client so that it sends a request to disconnect to server through a "quit" entered by the user. The server should terminate the connection with the client from its side.

Submission

Students will submit their answers through Sakai in the respective tab created for the laboratory. The deadline for the submission will be informed by the TA. Otherwise, the submission deadline is at the end of the respective laboratory session.

The submission for this assignment will consist of two parts:

1. A description file with answers/explanations to each exercise item. Include a note explaining your code: where it is, how to compile it, and how to run it.
2. The respective code addressing the answers.

Note that it is not the fault of the marker if they are unable to mark your assignment due to lack of clarity or detail in the descriptions. Also, make sure you submit a reasonable or common file format (pdf for the description file).

Marking Scheme

Marks will be awarded for completeness and demonstration of understanding of the material. It is important that you fully show your knowledge when providing solutions in a concise manner. Quality and conciseness of solutions are considered when awarding marks. Every code added to the originals should be well commented and explicitly indicated in the code files; lack of clarity may lead you to lose marks, so keep it simple and clear.

Late Assignment Policy

No late submission is allowed for laboratory submissions.

Plagiarism

Students are expected respect academic integrity and deliver evaluation materials that are only produced by themselves. Any copy of content, text or code, from other students, books, web, or any other source is not tolerated. If there is any indication that an activity contains any part copied from any source, a case will be open and brought to a plagiarism committee's attention. In case plagiarism is determined, the activity will be cancelled, and the author(s) will be subject to the university regulations.

For further information on this sensitive subject, please refer to the document below:

<https://brocku.ca/academic-integrity/>