COMP2330/3015 Data Communications and Networking

Course Project, 2014-15

Submission Deadline: **23:00PM, April 20, 2015**
Demo: **April 21-24, 2015**

Project Description:

In this project, you are required to design and develop a file sharing application. This application includes a **server program** and a **client program**, and has the following **basic** functions:

A user (**Alice**), can choose to share some of her local computer files with her friends through the Internet using the **server program**, by putting those files into a specific directory. **Alice** can set a password to control the access to these files. Without providing the correct password, other people are not allowed to access these shared files.

If a friend of **Alice,** say **Bob**, knows the password set by **Alice**, then **Bob** is able to use the **client program** to connect to **Alice**'s computer to (1) browse the file names and file sizes of those shared files; (2) select some files to download to Bob's local computer.

Important Remarks:

- You can choose Java, C, or C++ programming languages.
- Discussion with classmates is encouraged.
- Plagiarism is strictly prohibited.

Project Marking Schemes:

This project accounts for 10% of the final COMP2330 score.
Full mark of the project is 100.
The project will be marked based on the following THREE parts:

Part 1. Project design report (20 marks)

The design report should include at least:

- A general description about the functions supported by your application
- The detailed application protocol for your file sharing application
    - Remark: Firstly, you need to design a set of "user commands", e.g., how to connect to a server, how to set the password at the server side, how to input the password at the client side, how to browse the files, how to download a file, how to quit the program, etc. Secondly, the protocol may include a mapping between "user commands" and "internal commands". For example, the user can input a command "**get music1.mp3**" from

keyboard to download the file "music1.mp3". Your program may convert the command "**get**" into an "internal command" such as "**004**". The reason is that "user command" is used by users and it should be easy to memorize, but it usually has a variant length. "Internal command" is used by computers, so it can be a simple code that has a fixed length, e.g., 3 characters. Using fixed length internal commands can result in an easier implementation: it is always easier to receive a string of characters if you know the length in advance.

- The flow chart and/or pseudo code of the client program and server program

Write your design report using Microsoft Word. A normal design report should be about three to four A4 pages.

Part 2. Implementation of basic functions (60 marks)

- Password function: 10 marks
- File browsing function (file names and file sizes): 20 marks
- File downloading function: 30 marks
- If your program has some **bug(s)**, up to 10 marks will be deducted.
- If your **programming style** is not good, up to 10 marks will be deducted.

Part 3. Implementation of additional functions (20 marks)

Each of the followings will count for 10 marks, depending on the quality of your implementation. But you can get at most 20 marks for this part.

- Support of directory operations, i.e., browsing a directory and downloading the whole directory.
- Support of multiple-user downloading, i.e., Alice's shared files can be downloaded by several friends simultaneously.
- Support of multithread downloading, i.e., Bob can download several files from Alice's computer concurrently, each file using a different thread.
- Any other innovative ideas.

Submission Instruction

Phase 1: Submit the Project Design Report and source codes through BU eLearning system no late than **23:00PM**, **April-20-2015.**

Phase 2: Demo your project. The demo will be arranged during **Apr 21-24, 2015.**

Project Demo Instruction

- Project demo is mandatory. The demo includes
    - Executing the source codes submitted by you;
    - Demo the major functions of your application; and
    - Q&A.

- If you cannot explain your own source code correctly, you may get zero mark on Part 2 & 3, even if your program runs successfully.