

Homework #5

✓ **Due date: 11:59pm, 12/16 (Sat)**

1. Implement a directory upload program (100points)

- Both client and server must be implemented.
- Desired tasks in client and server
 - ✓ The client is responsible for uploading all files and directories located in the directory specified through a command line argument.
 - ✓ The client concurrently uploads each file by employing threads. This homework does not permit sequential uploading.
 - ✓ Upon receiving these files, the server creates a directory with the name provided by the client and stores the received files in that directory. The server must handle multiple clients simultaneously.
 - ✓ The server responds with a success message for each file received. Upon receiving the success message from the server, the client prints out a result message, as illustrated in Example #1.
 - ✓ If the client stops the file upload by pressing 'CTRL+C' buttons, the file upload is terminated, and a cancellation messages is transmitted to the server. Upon receipt of this message, the server eliminates the incomplete upload file, while the complete file persists in the designated directory. For the printed messages, please refer to Example#2 below.
- Example #1: Client uploads directory 'hw'.

Client
\$/dirup_client 203.252.112.26 9000 hw [hw/aaa.c] Upload completed! ... 3234bytes [hw/include/111.h] Upload completed! ... 2453bytes [hw/include/222.h] Upload completed! ... 12344 bytes [hw/bbb] Upload completed! ... 13423bytes [hw/ccc] Upload completed! ... 2134234bytes [hw/lib/ddd.a] Upload completed! ... 2045345 bytes 6/6 files has been uploaded! ...
Server
\$/dirup_server 9000 [hw/aaa.c] Received from 203.252.112.25 ... 3234bytes [hw/include/111.h] Received from 203.252.112.25 ... 2453bytes [hw/include/222.h] Received from 203.252.112.25 ... 12344 bytes [hw/bbb] Received from 203.252.112.25 ... 13423bytes [hw/ccc] Received from 203.252.112.25 ... 2134234bytes [hw/lib/ddd.a] Received from 203.252.112.25 ... 2045345 bytes The client (203.252.112.25) has completed the upload of 6/6 files! ...

- Example #2: Client presses 'CTRL+C' during the file upload.

Client
<pre> \$./dirup_client 203.252.112.26 9000 hw [hw/aaa.c] Upload completed! ... 3234bytes [hw/include/111.h] Upload completed! ... 2453bytes CTRL+C pressed! [hw/bbb] Upload canceled! [hw/ccc] Upload canceled! [hw/include/222.h] Upload canceled! [hw/lib/ddd.a] Upload canceled! 2/6 files has been uploaded! ... </pre>
Server
<pre> \$./dirup_server 9000 [hw/aaa.c] Received from 203.252.112.25 ... 3234bytes [hw/include/111.h] Received from 203.252.112.25 ... 2453bytes File upload cancellation message is received from 203.252.112.25. ... </pre>

- Implement a Makefile to compile both client and server programs.
- Submit the screen capture of the program results as a PDF file (screenshot.pdf).
- **Submission:** compress the following files into **zip** file and upload it to LMS.
 - ✓ **dirup_client.c:** Client program
 - ✓ **dirup_server.c:** Server program
 - ✓ **Makefile:** for compilation of both client and server
 - ✓ **screenshot.pdf:** screen capture of program results
 - ✓ etc: files required to compile and execute your programs