CSCI 4220 Assignment 4

syncr: File Sync Utility

Due Date: Wednesday, May 3rd, 11:59:59 PM

Your task for this team-based (max. 2) assignment is to implement a file syncing utility similar in (reduced) functionality to rsync. Your team must implement both the server and client portions of this simplified protocol. While most of the clients have been simple, in this case the bulk of the logic will likely be in your client; the server plays a largely passive role.

The commands that both parties must support are `contents`, `query`, `get`, and `put`. `contents` will request the contents of the `.4220_file_list.txt` (if it exists) be sent from the server to the client. `query` will be called in the event that two files exist on both the server and client but their MD5 hashes differ; this call is required to determine which file is newer (using `stat()` and `mtime`). `get` is required in the event the server has the more recently modified file while `put` is required in the event the client has the more recently modified file.

All file names should be limited to 255 characters in length and only include upper/lower case letters, numbers, periods, dashes, and underscores. On the server, your program should call `mkdtemp()` to create a temporary (and initially empty) directory. The file `.4220_file_list.txt` will be populated over time as clients connect and upload files. Should the MD5 hash of two files differ, the most recently modified file should be selected and copied in full to the out-of-date party.

The format of each line in your should `.4220_file_list.txt` file should be the hash, four spaces, then file name like so:

```
b468ef8dfcc96cc15de74496447d7b45    Assignment4.pdf
d41d8cd98f00b204e9800998ecf8427e    foo.txt
```

Add `server` to the command-line to run your code in the server configuration. The `client` option implies that this should be run in the client configuration. Running in the client configuration implicitly uses the current directory. The second argument should be the port number. Multiple simultaneous clients will not be tested.

Please include a README.txt file which should include your name, the name of your partner, and any helpful remarks for the grader.

Please make sure to get started early!

Sample output given below:

```
./syncr server 12345
[server] Detected different & newer file: Assignment4.pdf
[server] Downloading Assignment4.pdf: a833e3c92bb5c1f03db8d9f771a2e1a2

./syncr client 12345
[client] Detected different & newer file: foobar.txt
[client] Downloading foobar.txt: d41d8cd98f00b204e9800998ecf8427e
```