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CS122 Software Final Project Proposal (01/26/2016)

The goal of our project is to create an automated system for downloading course material from the BlackBoard Chalk website to a local directory. With a little foresight and internet access, this program will allow students to take a complete set of up-to-date information about their classwork wherever they take their computer. As minimal effort would be needed to obtain recent document updates and class notes, we believe this functionality would be particularly useful for students who are planning on leaving an area with internet access to make progress on their coursework (e.g. a plane or car ride). The program will start by prompting the user to input their login information to access the relevant Chalk site, subsequently running the commands to update and collect course material. Exploiting the current Chalk notification features, our functionality goals could include the following:

- Downloading new/updated assignments and readings uploaded by professors and TAs
- Downloading notes, announcements and other "non-file" material
- Plotting grade data over the course of the quarter and projecting final grades based on syllabus data, if available, and quarter performance

Additionally, we are interested in the possibility of using directory.uchicago.edu along with the list of students in the course to return useful contact and demographic information about the professors, TAs, and students in the course:

- Contact information for professors and TAs (i.e. office location, CNet Address) is available through the directory. This information could be compiled and output for convenient reference.
- A distribution of the majors of the students in a given course could be created using the course list and the directory. For example, if you have a question about a physics problem and want to ask a physics major in your course, you could consult the list output by this program to find someone to ask. This distribution could also be useful to professors aiming to steer their teaching toward prevalent majors in their sections.

The filtering and notification features will be taken directly from Chalk, ensuring no duplicate or unwanted files. In terms of non-file material, we will either generate text files that contain the relevant information, or produce pop-up windows that will indicate recent updates. Compiling contact information for peers, professors, and TAs will involve extracting names from the Chalk site and cross-referencing them with names on the directory.uchicago.edu page, as stated above. Lastly, when grades are updated on Chalk, the program will plot grade data over time as well as project final grades. Accurate final grade projection will be contingent upon a syllabus having been uploaded by the professor. We will rely heavily on the use of the matplotlib library or a similar library to generate graphs of grades and class demographics, using some sort of "Student" data structure.

Schedule outline:

- We will need to finish our crawler by the end of week 6. This will include the recognition of new files and class notes, and our directory scraper.
- By the end of week 8, we will implement our main features—downloading files and plotting grade data.
- Past week 8, we will focus on graphical representation of information from the directory.

"New data structures/algorithms/programming technologies": parsing syllabus .pdfs with a python package, downloading files to a local directory, representing course demographics using matplotlib or another data representation library.