

Welcome to CISC-235

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INTRODUCES a practical problem that illustrates several of the issues and themes that we will address in this course.

The Boring Stuff

WE STARTED WITH a bunch of mandatory announcements and administrative details about the course. All the information is on the pages on this site.

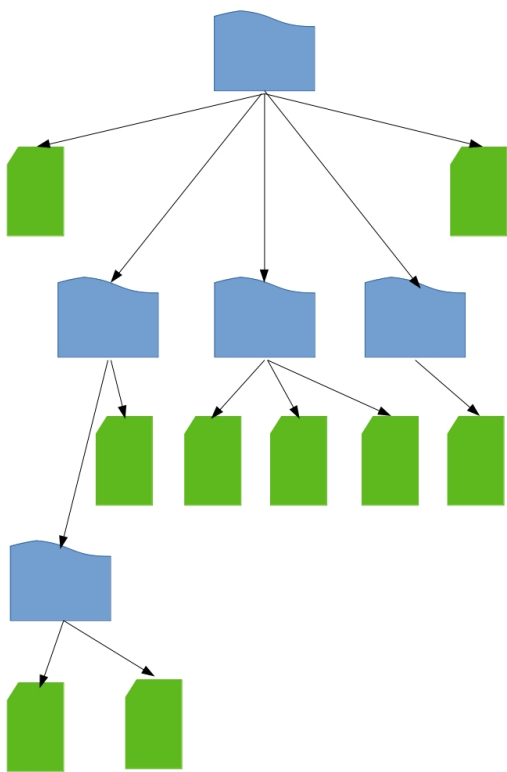
The Interesting Stuff

SUPPOSE WE ARE DESIGNING a file system with the following properties:

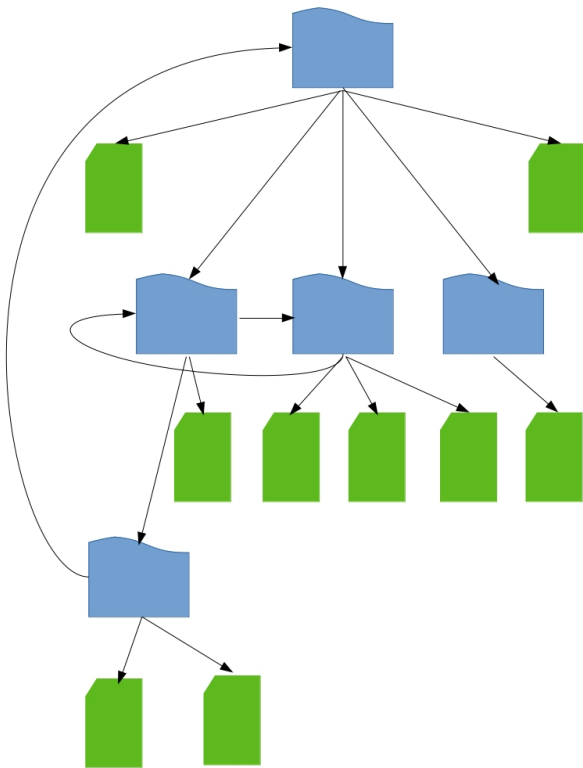
- ~~~~~ The system contains two type of objects: folders and files
- ~~~~~ Folders contain any number of files, and any number of links to other folders
- ~~~~~ Files are simple data files (no links to other files or folders)
- ~~~~~ No file can be contained in more than one folder

The task: choose an implementation for this file system that will make it possible to start in a folder and find all the files reachable from that folder that contain a particular keyword.

The figure on the next page shows the sort of hierarchical file system that we are all familiar with.



But the given rules of the file system allow for much more complex structures. For example, there is no restriction on the folders that can be linked to ... so a folder can link back to one of its siblings, or to an ancestor ... or even to itself. So the desired file system might look like this:



This makes the search problem more difficult. In a strictly hierarchical system, we can just explore all the links from the starting folder until we reach the lowest level. But with sideways and upwards links there is a danger of getting caught in a loop. Our search algorithm will need to be more sophisticated.

But before we get down to the job of designing a solution, there is something crucial to realize: we need more information!

Just off the top of my head, here are a few questions we need to ask:

- ❑ Is the file system static, or subject to frequent changes?
- ❑ How big is the file system predicted to become?
- ❑ Are the files stored on an internal storage device or are they stored remotely?
- ❑ Are some keywords more frequently searched for than others?

Knowing the answers to these (and probably other) questions, even if the answer is "we don't know", will help us choose an appropriate solution.

One of the goals of this course is to help you learn what questions to ask, and how to make good decisions based on the information you have.