IT 1100 : Introduction to Operating Systems
Chapter 17 Searching for Files

Don't forget the Finding Things Exercises in Canvas.

Textbook Time

There are a lot more options for `find` in the book than we will use. So don't feel overwhelmed. Just focus on the power that `find` has.

Commands

- `locate` - find files by name. The locate command references an index compiled the night before, so the searches are very fast. The locate program performs a rapid database search of pathnames, and then outputs every name that matches a given substring.
  - The file has to be in the *database* in order for it to be found
  - example: `locate bin/zip`, can combine with grep to restrict rows shown
- The locate database is created by another program named updatedb. Usually, it is run periodically as a cron jobonce per day, if you create a file, it won't be detected by the `locate` command until this command has run.

Commands (find)

- `find` - search for files with a specific criteria. More powerful but more complex than `locate`. The search is done real time, so searches may take longer.
  - More examples:
  - `find ~ -type f -name "*.JPG" -size +1M | wc -l` #find by size, name
  - Can find by user, last modified time, permissions, more...

Commands (find)

- With find, you can also execute a particular action on the found file like so:
  - `find ~ -type f -name 'foo*' -ok ls -l '{}' ';'` or
  - `find ~ -name 'foo*' -exec rm -rf {} \;`

Commands (xargs)

- `xargs` - The xargs command in UNIX is a command line utility for building an execution pipeline from standard input. What does this mean??
  - What if you want to search through a bunch of files for a string
  - `find . | xargs grep 'someline'` vs. `find . | grep 'someline'`
  - Compare these two
  - `find ./foo -type f -name "*.txt" -exec rm {} \;`
  - `find ./foo -type f -name "*.txt" | xargs rm`
- `touch` - change file times or create new file
- `stat` - display file status

Examples

- `locate /etc/res` # will list files and directories in the /etc directory that start with res
- `find /etc -type f` # lists only files in the /etc directory that start with res

- `find /etc/res* -type d` # lists only directories in the /etc directory that start with res
- `find ~ -type f -name "*.jpg" -size +1M` # lists only files that end in .jpg and are greater than 1 MB in size
- `find ~ -type f -name "*.jpg" -size +1M | xargs ls -l` # xargs takes the output of the find command and lists it in an `ls -l` format