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Administrivia

- Reminder: Homework 6 due Monday after break.
- Solution for Homework 3 on Web.

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Minute Essay From Last Lecture

- Next few lectures should cover some requests.
- Several requests for more about shell basics, shell scripts, text editors. One for more about \LaTeX . We'll do that. Specific requests? Send me mail.
- Shells other than `bash`? Maybe. Or this could be a project idea — how to do things we discussed for `bash` in another shell.
- Non-Linux? Maybe. Remember that department has a publicly-accessible cluster of Mac OS X machines. `Pandora01` is the most stable right now. Log in and try stuff!

Mail on Unix Systems

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- Full discussion beyond the scope of this course; we'll talk about some basics / things of interest to end users.
- Two main categories of programs involved:
 - MTA ("mail transport agent") — program that delivers mail. Choice made by sysadmin. A well-known one is `sendmail`.
 - MUA ("mail user agent") — program users use to read mail, send mail, etc. Many choices. Some have ability to send mail directly; others turn over outgoing mail to another program (e.g., `sendmail`).

Mail Delivery

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- Normally, mail gets delivered to the system "mail spool". (For `@cs.trinity.edu` addresses, on Sol.)
- To forward mail elsewhere, create a text file `.forward` in your home directory. In it put the forwarding address(es). If one of them is `\username`, one copy goes to regular mail spool. Can also use this to put mail in a file.
- Can also use `procmail` (more later) to redirect incoming mail.

Reading and Sending Mail

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- Lots of programs you can use to read mail (MUAs). Most allow reading from different sources:
 - System mail spool. (For us, that's on Sol, which doesn't accept regular logins.)
 - Another file (e.g., file in home directory).
 - Server that provides POP3 or IMAP access.
- MUAs also, of course, allow sending mail. Some have built-in support for outgoing mail, usually (?) via SMTP ("Simple Mail Transport Protocol"). Others turn over outbound mail to system MTA, e.g., `sendmail`. Not a concern on lab machines, but may be if using mail on your own machine.

Sending Mail from the Command Line

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- Simplest / most primitive program for sending (and reading) mail is `mail`. Pretty reasonable for sending pre-composed text-only messages. Example:

```
echo "this is a test" | mail -s "test" bmassing@cs.trinity.edu
```
- What about attachments? `mail` doesn't really "do" MIME. Workarounds:
 - Encode files to attach with `shar`. Recipient pipes message body through `unshar`.
 - Encode files to attach with `uuencode`. Recipient pipes message body through `uudecode`.
- Other text-mode MUAs (e.g., `mutt` and `pine`) are also "scriptable" and understand MIME. Example:

```
echo "here is my file" | mutt -a somefile -s "my file" bmassing@cs.trinity.edu.
```

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Filtering Mail with `procmail`

- `procmail` can be used for many kinds of “filtering” operations on mail. Selected messages can be saved (to files), forwarded, automatically replied to, or passed to other programs.
- On many Unix systems, you make this happen via a `.forward` file. On some Linux systems (including Fedora Core), it happens automatically if you have a file `.procmailrc` in your home directory.
- Syntax for `.procmailrc` can be intimidating, but `man` pages for `procmail`, `procmailrc`, and `procmailex` have examples that can help.
- One use of `procmail` is to run all incoming mail through a spam-filtering program, such as `spamassassin` (installed on Sol).

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Retrieving Mail with `fetchmail`

- `fetchmail` is designed to — fetch mail, and turn it over to local MTA for delivery. Can retrieve mail from different sources using different protocols (POP3, IMAP, etc.). Very flexible/configurable.
- Could use this on your own machine to retrieve mail from Sol (and/or other servers), or on lab machines to retrieve mail from other servers. (Probably won't work well to transfer mail from Sol to lab machine.)
- (Historical/cultural aside: A widely-read essay related to open-source software, “The Cathedral and the Bazaar” by Eric Raymond, was based in part on his experiences with `fetchmail`.)

MUAs and Other Mail-Related Programs

- Many text-based MUAs: I use `mutt`; Dr. Howland uses `pine`; others include `mail` and `elm`.
- GUI-based MUAs include Thunderbird, Evolution, Mail (OS X).
- Also programs to provide Web access to mail — e.g., `squirrelmail` (installed on Sol, “CS Web Mail” on department home page).

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Minute Essay

- What programs have you used to read mail? What do you like/dislike about each?

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