

system directory such as `/bin` or `/usr/bin`.) To make it easier to read the sorted listing, pipe the output through `less`:

```
$ ls -l | grep "Aug" | sort +4n | less
-rw-rw-r-- 1 carol doc      1605 Aug 23 07:35 macros
-rw-rw-r-- 1 john  doc      2488 Aug 15 10:51 intro
-rw-rw-rw- 1 john  doc      8515 Aug  6 15:30 ch07
-rw-rw-r-- 1 john  doc     14827 Aug  9 12:40 ch03
.
.
-rw-rw-rw- 1 john  doc     16867 Aug  6 15:56 ch05
:
```

`less` reads a screenful of text from the pipe (consisting of lines sorted by order of file size), then prints a colon (:) prompt. At the prompt, you can type a `less` command to move through the sorted text. `less` reads more text from the pipe and shows it to you, as well as saves a copy of what it has read, so you can go backwards to reread previous text if you want to. (The simpler pager programs `more` and `pg` generally can't back up while reading from a pipe.) When you're done seeing the sorted text, the `q` command quits `less`.

Exercise: redirecting input/output

In the following exercises you redirect output, create a simple pipe, and use filters to modify output.

Redirect output to a file.

Enter `who > users`

Email that file to yourself. (Replace `username` with your own username.)

Enter `mail username < users`

Sort output of a program.

Enter `who | sort`

Append sorted output to a file.

Enter `who | sort >> users`

Display output to screen.

Enter `less users` (or `more users` or `pg users`)

Display long output to screen.

Enter `ls -l /bin | less` (or `more` or `pg`)

Format and print a file with `pr`.

Enter `pr users | lp` or `pr users | lpr`