
In this chapter:

- *Standard Input and Standard Output*
- *Pipes and Filters*

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Redirecting I/O

Many Unix programs read input (such as a file) and write output. In this chapter, we discuss Unix programs that handle their input and output in a standard way. This lets them work with each other.

This chapter generally *doesn't* apply to full-screen programs, such as the Pico editor, that take control of your whole terminal window. (The pager programs, **less**, **more**, and **pg**, *do* work together in this way.) It also doesn't apply to graphical programs, such as StarOffice or Netscape, that open their own windows on your screen.

Standard Input and Standard Output

What happens if you don't give a filename argument on a command line? Most programs will take their input from your keyboard instead (after you press the first RETURN to start the program running, that is). Your terminal keyboard is the program's *standard input*.

As a program runs, the results are usually displayed on your terminal screen. The terminal screen is the program's *standard output*.

So, by default, each of these programs takes its input from the standard input and sends the results to the standard output.

These two default cases of input/output (I/O) can be varied. This is called *I/O redirection*.

If a program doesn't normally read from files, but reads from its standard input, you can give a filename by using the < (less-than symbol) operator.