

kill (terminate a process)

The *kill* command terminates a process. Call it like this:

```
kill PID
```

The argument *PID* is the process ID of the program you want to terminate. You can display processes' ID numbers by running [→ps](#). *kill* has a cousin that lets you terminate programs by name. It's called *pkill* and is invoked like so:

```
pkill PATTERN
```

This will kill all processes whose name matches the regular expression *PATTERN*. For example, *pkill fire* will kill *firefox*, *firestarter* etc. Be careful with this command. Before executing it, you should check which processes match *PATTERN* by running *pgrep -l PATTERN* (see the section on [→ps](#)).

Saying that *kill* terminates processes is a simplification. The underlying mechanism is that *kill* sends *signals* to processes. By default, *kill* sends the signal 15, named SIGTERM, which kindly asks a process to terminate itself. There are many more signals. Sometimes a process won't terminate itself on receiving SIGTERM due to a malfunction. In that case, you can send it the signal 9, named SIGKILL, like this:

```
kill -9 PID
```

This is a harsh way of terminating a process that deserves the name "killing". It terminates the process abruptly without giving it the opportunity to do clean-up work, so it should only be used when the process doesn't respond to SIGTERM.

Signals are ubiquitous in Linux. Remember the keyboard shortcuts Ctrl-c (terminate a process) and Ctrl-z (pause a process) from [Chapter 1](#)? They send the signals SIGINT and SIGTSTP respectively. If you want to learn more about signals, run [→man 7 signal](#), but note that the important signals have been covered in this section. In 99% of all cases you'll use *kill* to send SIGTERM (*kill*'s default action) or SIGKILL (*kill -9*).

The command *xkill* specializes in killing graphical programs. When you run it, your mouse pointer will turn into a cross hair or skull and crossbones. Click on any window to terminate the underlying application. *xkill* works differently from *kill*. It does not send signals but tells the X server, which manages graphical programs, to close the connection to a client program.