

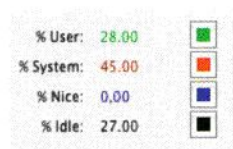
Top dog
Getting more information
 Terminal commands let you see all kinds of stats about the applications running on your computer. They'll also give you extra information that Activity Monitor won't.

Knowledge Base: Get your priorities straight
Speed things up
 Every process has a 'priority' that determines how much attention your Mac will pay to it. Normally, the priority is 0 – setting it from 1 to 20 will slow the process down. To make processes go faster, give them a negative priority (up to -20), but you'll need to use the 'sudo' command to do that.

Absolute power
Know what's what
 Every program running on your Mac has a process ID (pid). Once you know it, you have absolute power over it.

Knowledge Base: A sense of identity
Process those numbers
 As we've said, every process has a unique ID number ('pid'), and once you know it, you can issue commands to the process directly. Just to be confusing, however, Carbon programs have their own extra process IDs called process serial numbers (psn's). These numbers are different, so make sure you use the right ones!

The Activity Monitor
Signs of life
 Apple's Activity Monitor provides a user-friendly way to view all your processes. While it's easier to work with than Unix commands, it doesn't have the same capabilities.



Task: Take total control of your Unix processes
Difficulty: Expert
Time needed: As long as you need

Tutorial: Understand Unix processes

Every program you and OS X run is a Unix process. We're going to learn how to gain total control of processes, even ones you never knew were there!

Since its beginning, Unix has always been guided by one clear design principle: don't try to build one big program that does everything – build lots of small programs that can work together to do everything instead.

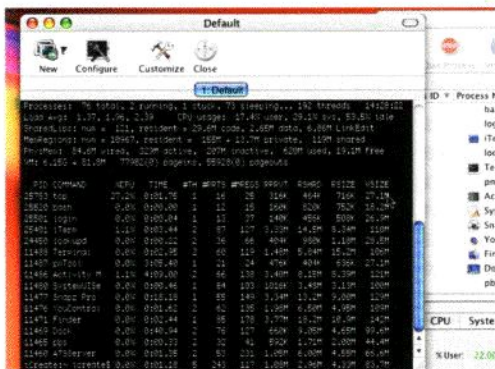
As a result OS X, with its Unix foundations, has always had more going on under the hood than was immediately obvious. The minute you start your Mac, all sorts of programs start running. Log in and more will launch so that you can copy and paste things, access your keychain and so on. Even something seemingly simple like your iDisk requires programs that work behind the scenes to synchronise it with .Mac and mount it on the Desktop.

Apple has done a lot to make managing Mac OS X as easy as possible. But that's meant removing some of the fine control Unix offers over running programs (aka 'processes'). While you can quit and force quit your own applications using the Finder and the Dock,

you can't even see most processes in the Dock or the Force Quit dialog box, and you certainly can't check on other users' applications. And while Apple has provided a program called Activity Monitor (in your Utilities folder) to add to the Finder's abilities, this can't re-prioritise processes, slowing or speeding them up; neither can it pause them while they're running. Fortunately, the commands to have complete control over every process on your Mac are still there and ready to use, and in this tutorial we're going to show you how to use them. Do note that most of them have plenty of options so check each command's 'man' entry to see what else you can do.

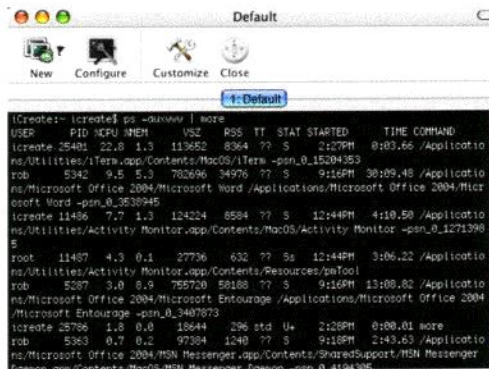
Following on from last issue's theme of Terminal-alternatives, we'll be using iTerm, available from <http://iterm.sourceforge.net>. It can do everything that Terminal can (it's prettier, too). And just like Safari, it supports tabs so you can save on screen space.

Step-by-step OS X Unix processes demystified



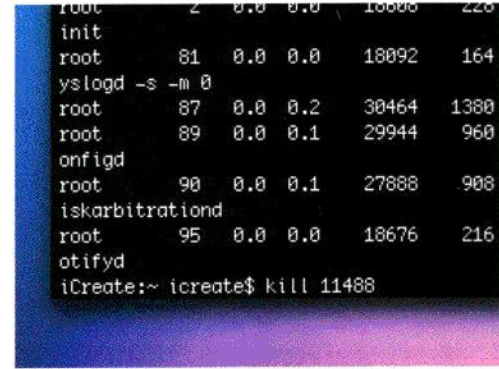
1: Top stuff

The 'top' command can provide details of your most active running processes. Unlike most Unix commands, it grabs the whole window until you press Control+C.



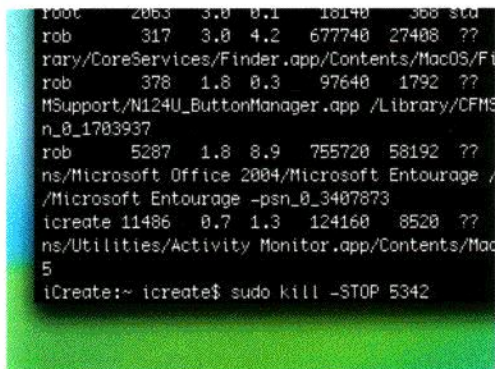
2: Everything and more

Use 'ps' to get a snapshot of your Mac's processes. You'll need to use at least the '-x' switch to get anything useful. Add 'a' to list every user's processes.



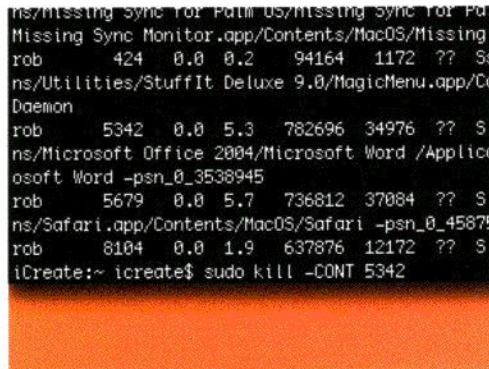
3: Going for the kill

Use 'kill' to send signals to processes if you know their ids (the second column from 'ps -ux'). Here, we're quitting Terminal.



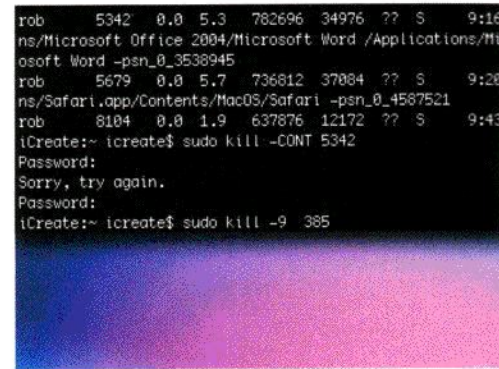
4: Pause for thought

Using 'kill -STOP' lets you pause a process. It will stay dormant until you log out, kill it or restart it. Here we're pausing someone else's Word so we need 'sudo'.



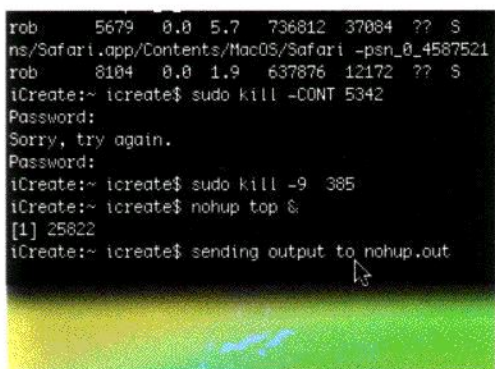
5: Get it on

Restart a paused process with 'kill -CONT' or 'kill -SIGCONT'. Again, you'll need to use 'sudo' to restore other people's processes.



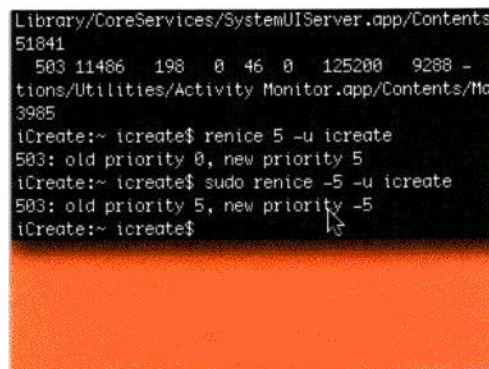
6: Extreme prejudice

If a process won't quit using just 'kill', use 'kill -9' or 'kill -KILL', which is the same as Force Quit. It usually works better and more quickly.



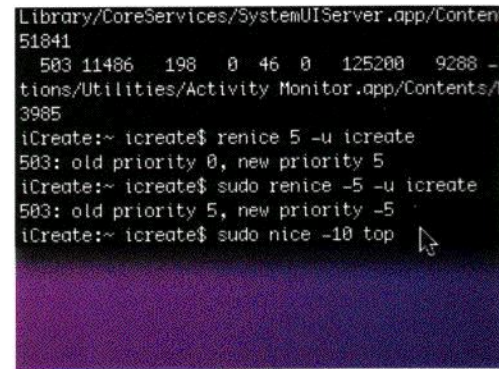
7: Armour plating

When you log out, your Mac sends a kill command to all your processes. If you ran any process using 'nohup', however, it will be immune and continue to run.



8: Play nice

Using 'renice' lets you make any process run more slowly by changing its priority. Using the 'g' or 'u' switches you can reprioritise all of a group's or user's processes.



9: Be nice

You can launch any process and give it a preset priority using the 'nice' command. The 'l' switch of the 'ps' command will show you the priorities of your processes.