Bash - The Basics

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Overview

Terminals and Shells

Terminal emulators - *"A program that emulates a video terminal within some other display architecture"* - en.wikipedia.org/wiki/Terminal_emulator

Examples on OS X:

- ▶ Terminal (preinstalled)
- ▶ iTerm 2 - iterm2.com
- ▶ Terminator

Terminals run shells e.g. Bash, Zsh, Ksh, fish

Terminals and Shells

Bash - **"GNU Bourne-Again SHell"**

GNU - *"A Unix-like operating system. That means it is a collection of many programs: applications, libraries, developer tools, even games"* - gnu.org

Bourne SHell - The Bourne shell (sh). Developed by Stephen Bourne at Bell Labs in 1977 for Version 7 Unix - en.wikipedia.org/wiki/Bourne_shell

We can use shells like Bash to run programs

Commonly used programs

```
man, ls, cat, cp, mv, rm, rmdir, mkdir, chmod, ln,
sudo, !, echo, pwd, diff, history, find, ssh, scp,
less, grep
```

Open your terminal emulator...

man

man - format and display the on-line manual pages

```
$ man ls
```

pwd and ls

pwd - return working directory name ls - list directory contents

```
$ pwd
$ ls
$ ls -al
```

cat and less

cat - concatenate and print files
less - read files

```
$ cat README.md
$ less README.md
```

mv and copy

`mv` - move files
`cp` - copy files

```
$ mv source target
$ cp source target
```

rm, rmdir, mkdir

```
rm - remove directory entries
rmdir - remove directories
mkdir - make directories

$ rm file
$ rmdir directory
$ mkdir directory
```

sudo

sudo - execute a command as another user (or, "Shut Up and DO")

```
$ touch /etc/foo.txt
$ sudo touch /etc/foo.txt
$ rm /etc/foo.txt
$ sudo rm /etc/foo.txt
```

ssh and scp

ssh - OpenSSH SSH client (remote login program)
scp - secure copy (remote file copy program)

```
$ ssh root@<remote ip address>
$ ssh -i /path/to/key/file root@<remote ip address>

$ scp root@<remote ip address> /path/on/local/machine/
$ scp /path/on/local/machine/hello.txt \
root@<remote ip address>:/path/on/remote/machine
```

history

history - a special type of command (shell builtin) ("*Shell builtin commands are commands that can be executed within the running shell's process*" - `man history`)

```
$ history
```

grep

grep - file pattern searcher

```
$ grep needle haystack
$ grep -n needle haystack
$ grep Needle haystack
$ grep -i Needle haystack
$ grep -r needle haystacks
```

Pipes

Using all these simple programs together can be extremely powerful

Trivial example: Using `history` and `grep` together

```
$ history | grep ls
```