

Chapter 02

Using the Shell

What is a Command?

- A program executed on the command line.
- Sources of commands include:
 - Internal (built-in shell) commands
 - External commands stored in binary files
 - Aliases
 - Functions
 - Scripts

Aliases

- An *alias* can be used to map longer commands to shorter key sequences.
- To determine what aliases are set on the current shell use the `alias` command.
- New aliases can be created using the following format:

```
alias name=command
```

- Aliases created this way only persist while the shell is open. Once the shell is closed, the new aliases are lost.

Basic Command Syntax

- Command syntax:

```
command [options...] [arguments...]
```

- Commands, options and arguments are all case-sensitive.
- To execute a command, the first step is to type the name of the command.

```
sysadmin@localhost:~$ ls  
Desktop Documents Downloads Music Pictures Public Templates Videos
```

Specifying Arguments

- Typically, *arguments* follow options.

```
command [options] [arguments]
```

- Arguments can be file or directory names.
- Some commands *require* arguments (i.e. the `touch` and `cp` commands).
- If an argument contains special (non-alphanumeric) characters, use single quotes ‘ ’ around the argument.

Specifying Options

- *Options* can be used with commands to expand or modify the way a command behaves.

```
command [options] [arguments]
```

- *Short options* are specified with a hyphen – followed by a single character (ie `-a`).
- *Long options* for commands are preceded by a double hyphen `--` (i.e. `--all`).
- The *lone double hyphen -- option* can be used to indicate the end of all options for the command.
- BSD style options do not use hyphens, just a single character (i.e. `a`)

Display System Information

- The `uname` command displays useful system information.
- There are many options available for the `uname` command. For example:
 - `-a, --all` - displays all information about the system
 - `-s, --kernel-name` - displays Kernel name
 - `-n, --node-name` - displays network node name
 - `-r, --kernel-release` - displays Kernel release
 - `-v, --kernel-version` - displays Kernel version

Current Directory

- The `pwd` command displays the current working directory.

```
sysadmin@localhost:~$ pwd  
/home/sysadmin  
sysadmin@localhost:~$ cd Documents/  
sysadmin@localhost:~/Documents$ pwd  
/home/sysadmin/Documents
```

Command Information

- The `type` command displays information about a command type.

```
sysadmin@localhost:~$ type -a ls
ls is aliased to `ls --color=auto'
ls is /bin/ls
```

- This command is helpful for getting information about commands, the `-a` option will return all locations the files reside on the system.
- The `which` command searches for the location of a command in the system by searching the `PATH` variable.

Command Completion

- The Bash shell provides the ability to complete commands and their arguments automatically.
- Type a few characters of a command (or its file name argument) and then press the **Tab** key twice, this will provide a list of files that match.

```
sysadmin@localhost:~$ ca
cal          capsh        cat          cautious-launcher
calendar    captoinfo    catchsegv
caller      case catman
```

Getting Help

- The `man` command will display documentation for commands:

```
sysadmin@localhost:~$ man pwd
```

- You can control the man page display by using *movement commands* such as:
 - Space bar = Go down one page
 - b = Go up one page
 - 1G = Go to beginning of man page
 - G = Go to end of man page
 - h = display help screen
 - /*term* [Enter] = Search for *term*

Sections Within Man Pages

- The format of each man page is broken into sub-sections:
 - NAME = Brief description.
 - SYNOPSIS = How command is executed.
 - DESCRIPTION = Provides a more detailed description of the command.
 - OPTIONS = The options for the command.
 - FILES = Which files are used for the command.
 - AUTHOR= Provides the name of the person who created the man page and (sometimes) how to contact the person.

Sections Within Man Pages

- REPORTING BUGS = Provides details on how to report problems with the command.
- COPYRIGHT = Provides basic copyright information.
- SEE ALSO = Other resources for additional information.

NAME

ls - list directory contents

SYNOPSIS

ls [OPTION]... [FILE]...

DESCRIPTION

List information about the FILEs (the current directory by default). Sort entries alphabetically if none of **-cftuvSUX** nor **--sort** is specified.

-a, --all

do not ignore entries starting with .

-A, --almost-all

do not list implied . and ..

Output Omitted...

AUTHOR

Written by Richard M. Stallman and David MacKenzie.

REPORTING BUGS

GNU coreutils online help: <<http://www.gnu.org/software/coreutils/>>

Report ls translation bugs to <http://translationproject.org/team/>

COPYRIGHT

Copyright (C) 2017 Free Software Foundation, Inc. License GPLv3+: GNU
GPL version 3 or later <<http://gnu.org/licenses/gpl.html>>.

This is free software: you are free to change and redistribute it.

There is NO WARRANTY, to the extent permitted by law.

SEE ALSO

Full documentation at: <<http://www.gnu.org/software/coreutils/ls>>
or available locally via: info '(coreutils) ls invocation'

Searching by Name or Keyword

- To return all man pages that match a *name*:

```
man -f name
```

```
sysadmin@localhost:~$ man -f passwd
```

- To return all man pages that match a *keyword*:

```
man -k keyword
```

```
sysadmin@localhost:~$ man -k password
```