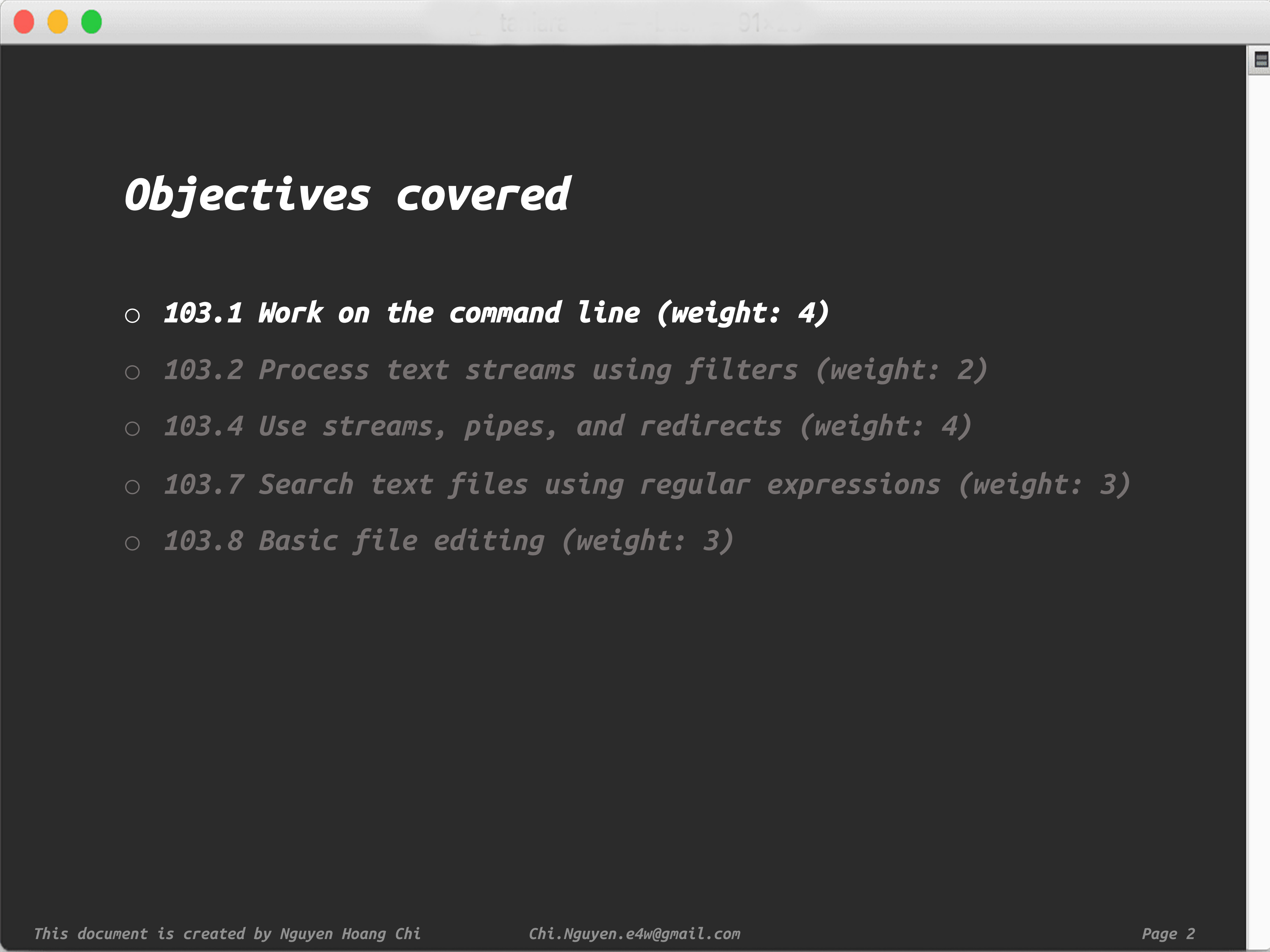
Lesson 2: Exploring Linux Command-Line tools

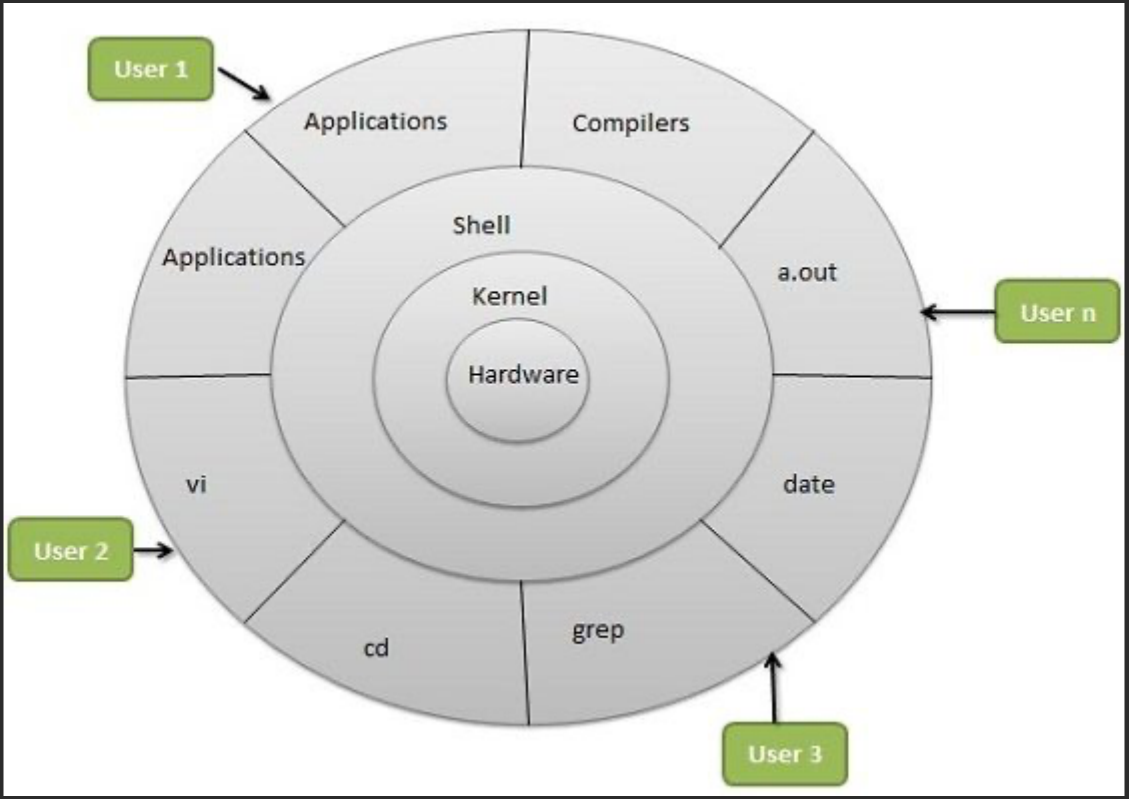


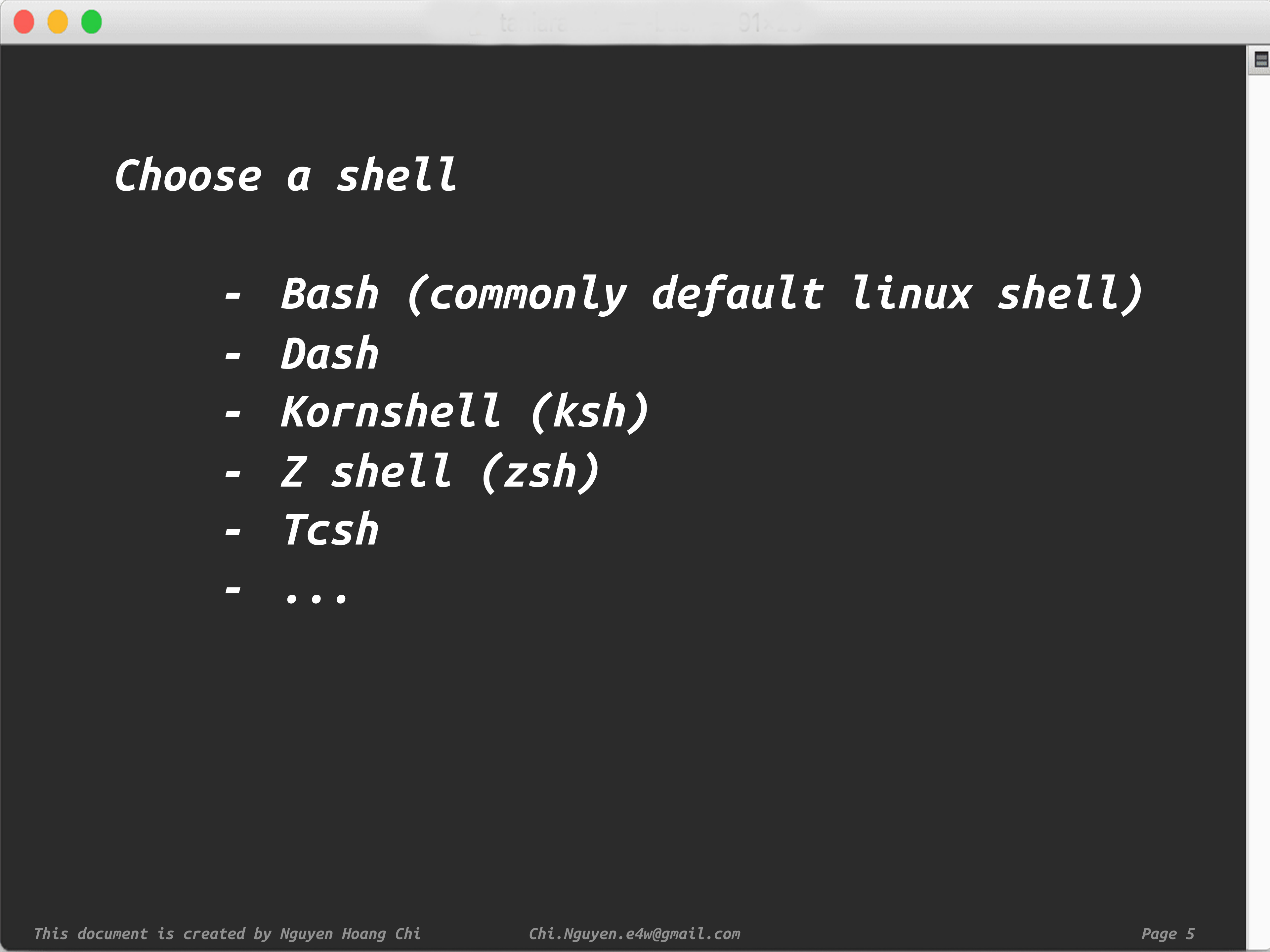
Objectives covered

- 103.1 Work on the command line (weight: 4)
- 103.2 Process text streams using filters (weight: 2)
- 103.4 Use streams, pipes, and redirects (weight: 4)
- 103.7 Search text files using regular expressions (weight: 3)
- 103.8 Basic file editing (weight: 3)

Work on the command line

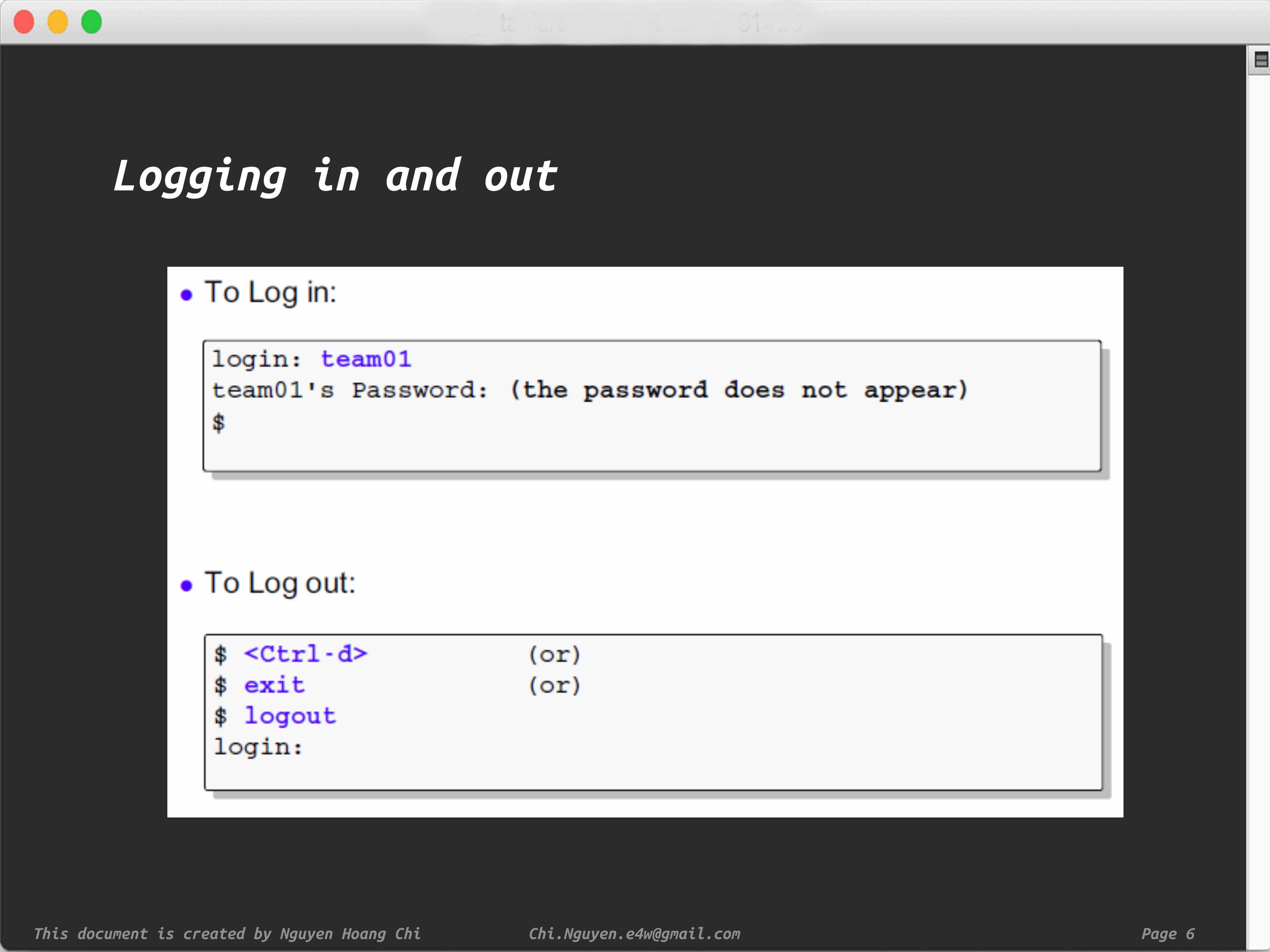
Linux Shell


User 1
Applications
Compilers
Applications
Shell
Kernel
a.out
User n
Hardware
vi
date
User 2
cd
grep
User 3



Choose a shell

- Bash (commonly default linux shell)
- Dash
- Kornshell (ksh)
- Z shell (zsh)
- Tcsh
- ...



Logging in and out

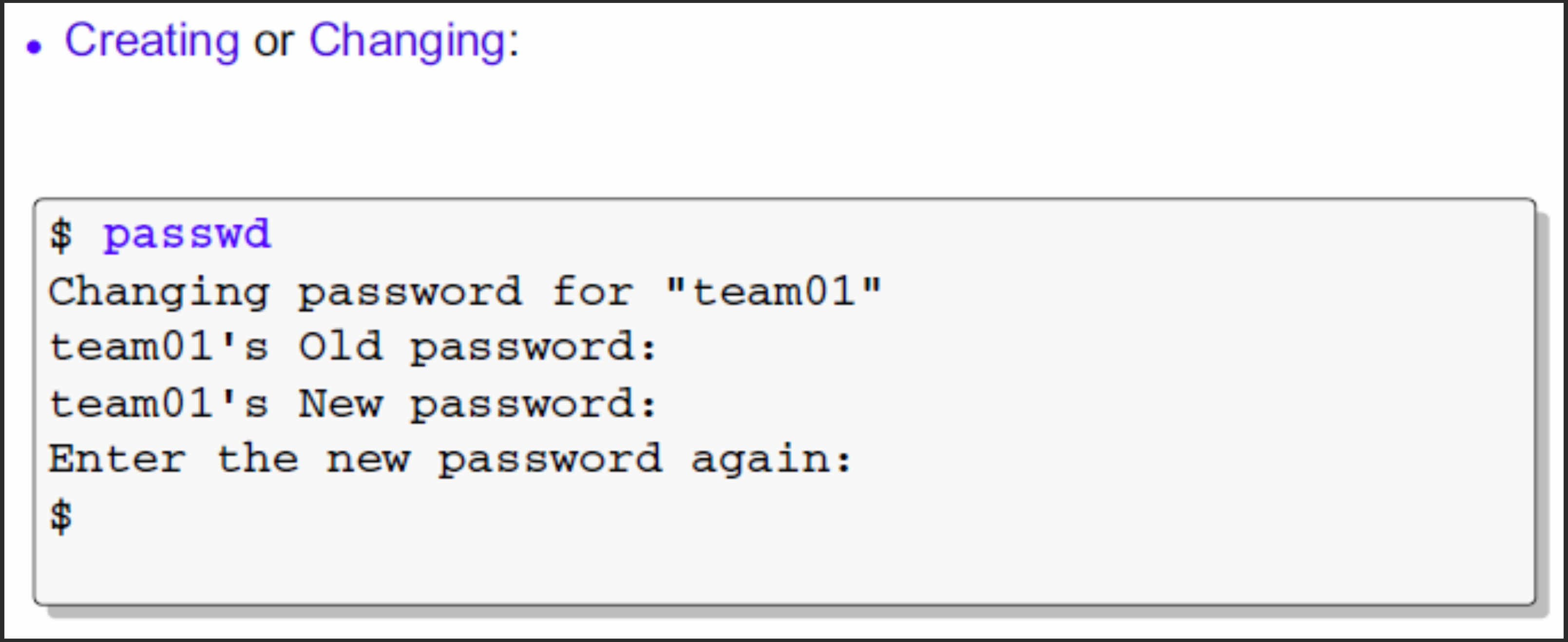
- To Log in:

```
login: team01
team01's Password: (the password does not appear)
$
```

- To Log out:

```
$ <Ctrl-d>            (or)
$ exit                (or)
$ logout
login:
```

Password manipulation

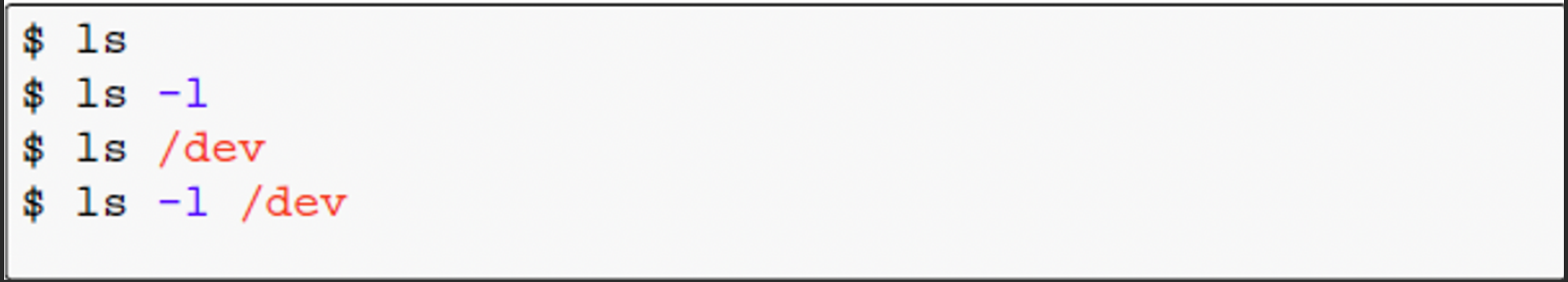


- Creating or Changing:

```
$ passwd
Changing password for "team01"
team01's Old password:
team01's New password:
Enter the new password again:
$
```

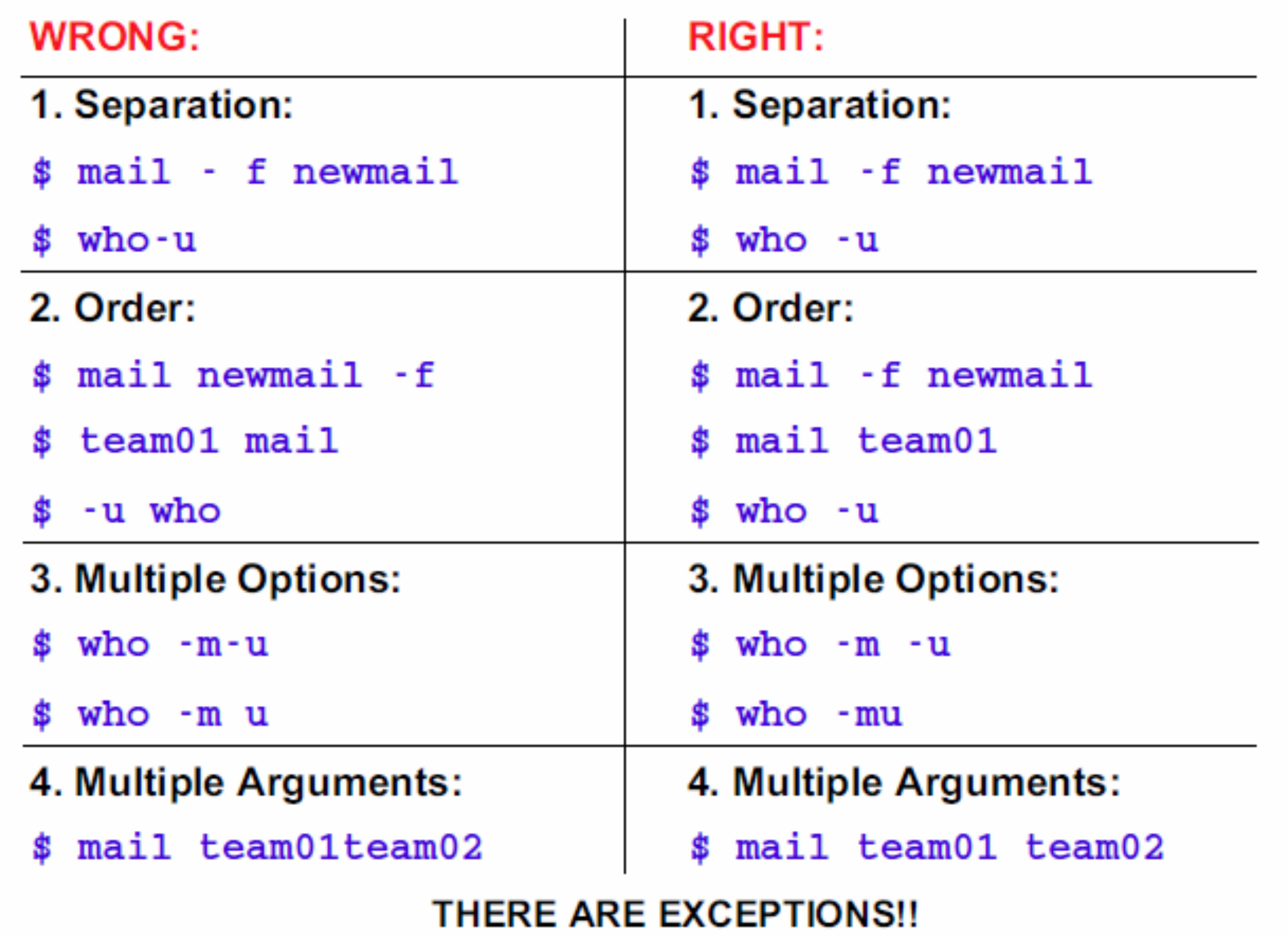
Command syntax:

Command [option] [argument]



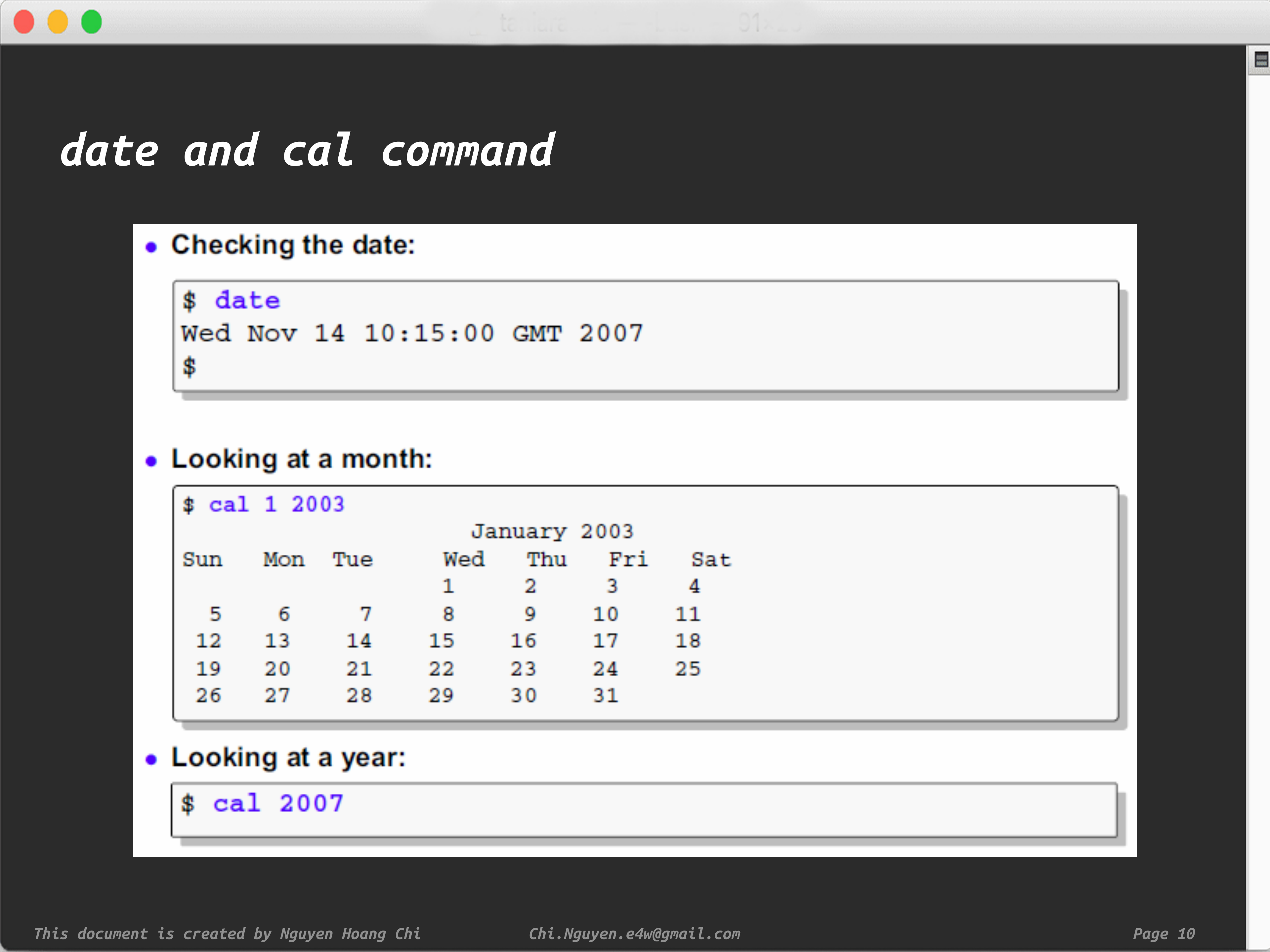
```
$ ls
$ ls -l
$ ls /dev
$ ls -l /dev
```

Command syntax:



WRONG:	RIGHT:
1. Separation:	**1. Separation:**
`$ mail - f newmail`	`$ mail -f newmail`
`$ who-u`	`$ who -u`
2. Order:	**2. Order:**
`$ mail newmail -f`	`$ mail -f newmail`
`$ team01 mail`	`$ mail team01`
`$ -u who`	`$ who -u`
3. Multiple Options:	**3. Multiple Options:**
`$ who -m-u`	`$ who -m -u`
`$ who -m u`	`$ who -mu`
4. Multiple Arguments:	**4. Multiple Arguments:**
`$ mail team01team02`	`$ mail team01 team02`

THERE ARE EXCEPTIONS!!



date and cal command

- **Checking the date:**

```
$ date
Wed Nov 14 10:15:00 GMT 2007
$
```

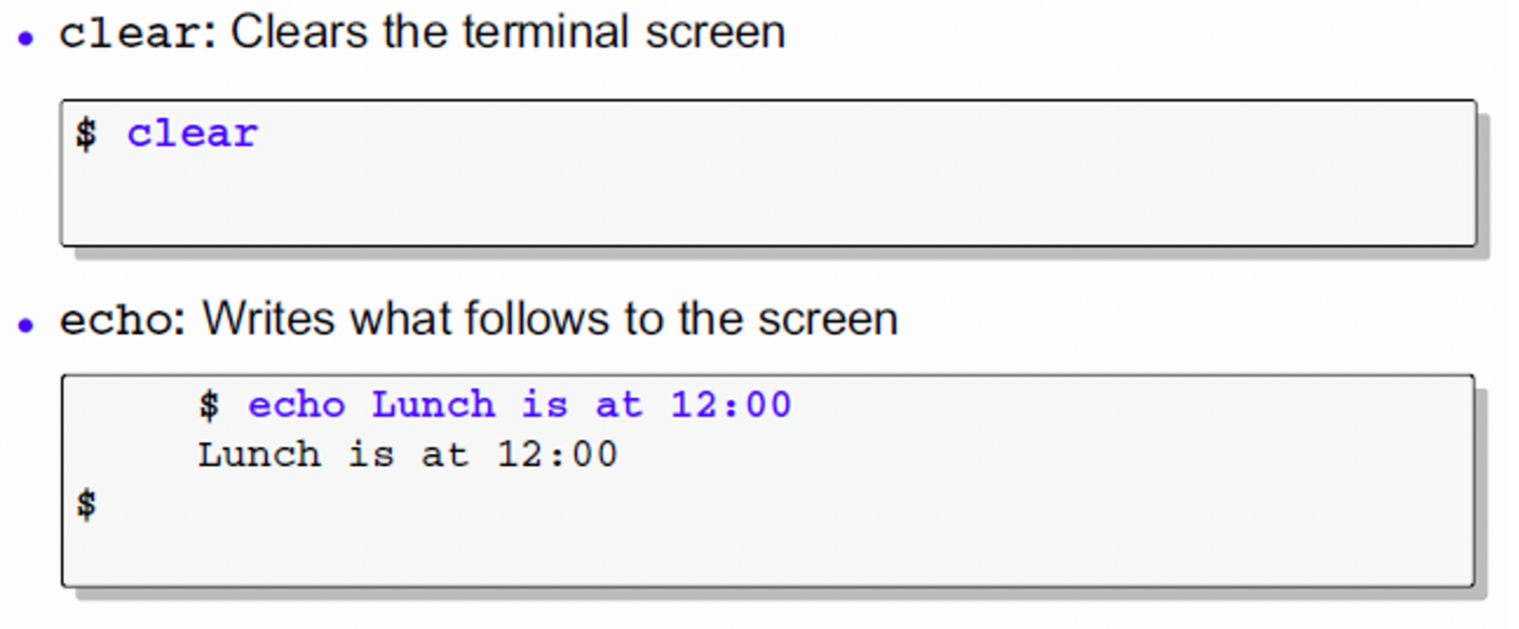
- **Looking at a month:**

```
$ cal 1 2003
                    January 2003
Sun    Mon   Tue      Wed    Thu    Fri    Sat
                        1      2      3      4
  5      6     7        8      9     10     11
 12     13    14       15     16     17     18
 19     20    21       22     23     24     25
 26     27    28       29     30     31
```

- **Looking at a year:**

```
$ cal 2007
```

clear and echo command

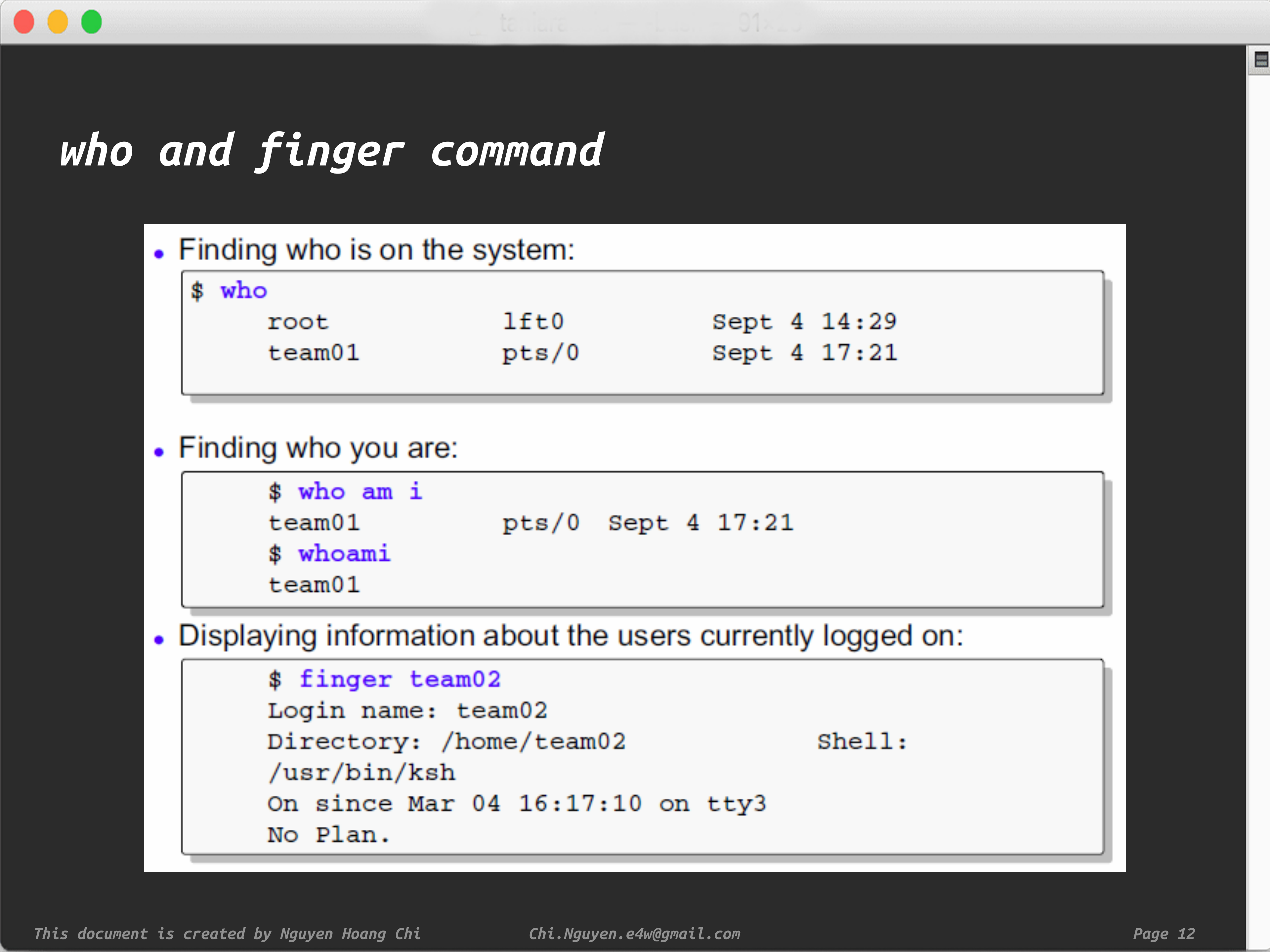


- clear: Clears the terminal screen

```
$ clear
```

- echo: Writes what follows to the screen

```
      $ echo Lunch is at 12:00
      Lunch is at 12:00
$
```



who and finger command

- Finding who is on the system:

```
$ who
      root            lft0           Sept 4 14:29
      team01          pts/0          Sept 4 17:21
```

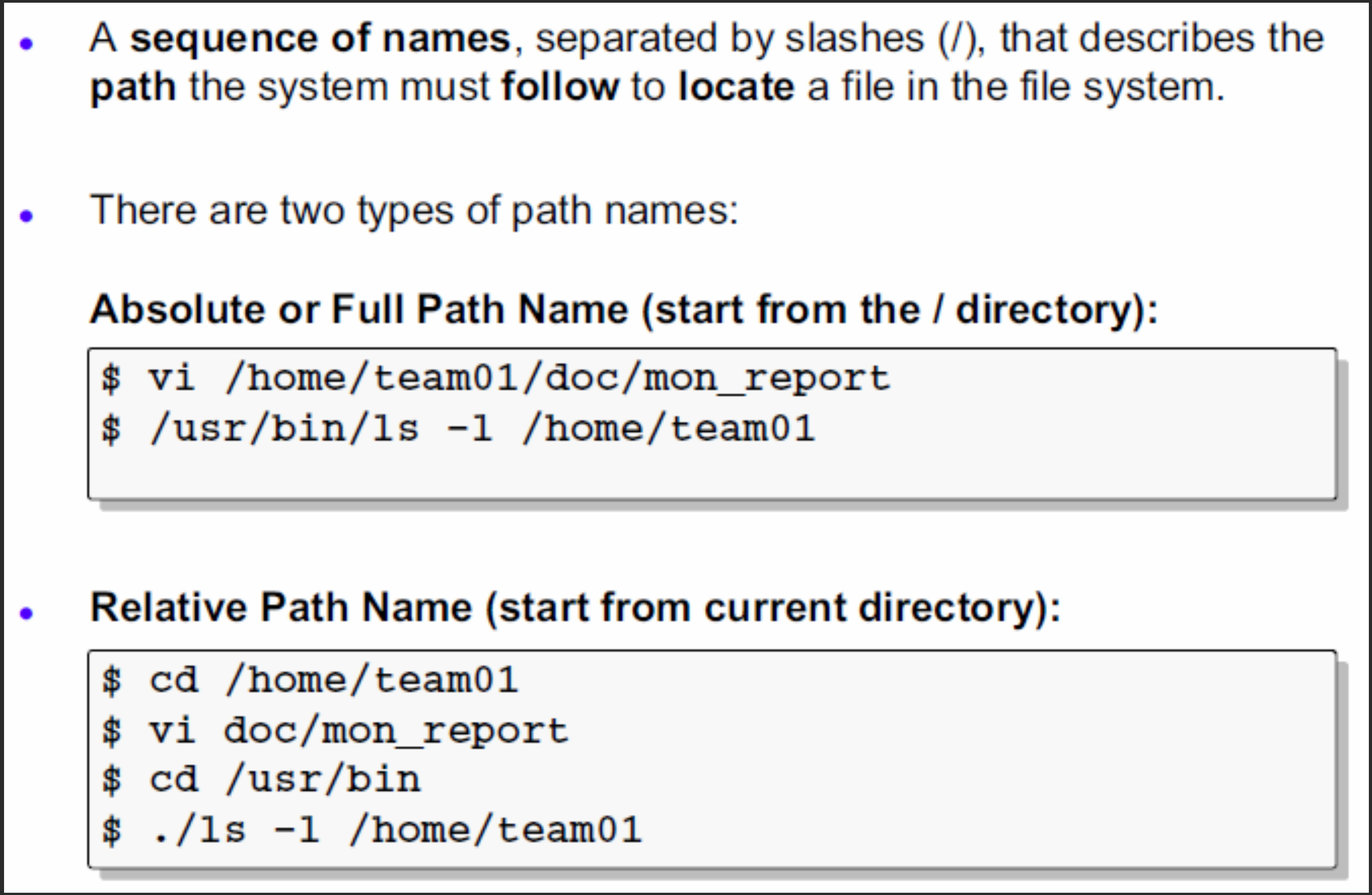
- Finding who you are:

```
      $ who am i
      team01          pts/0  Sept 4 17:21
      $ whoami
      team01
```

- Displaying information about the users currently logged on:

```
      $ finger team02
      Login name: team02
      Directory: /home/team02            Shell:
      /usr/bin/ksh
      On since Mar 04 16:17:10 on tty3
      No Plan.
```

Path name



- A **sequence of names**, separated by slashes (/), that describes the **path** the system must **follow** to **locate** a file in the file system.

- There are two types of path names:

  Absolute or Full Path Name (start from the / directory):

```
$ vi /home/team01/doc/mon_report
$ /usr/bin/ls -l /home/team01
```

- **Relative Path Name (start from current directory):**

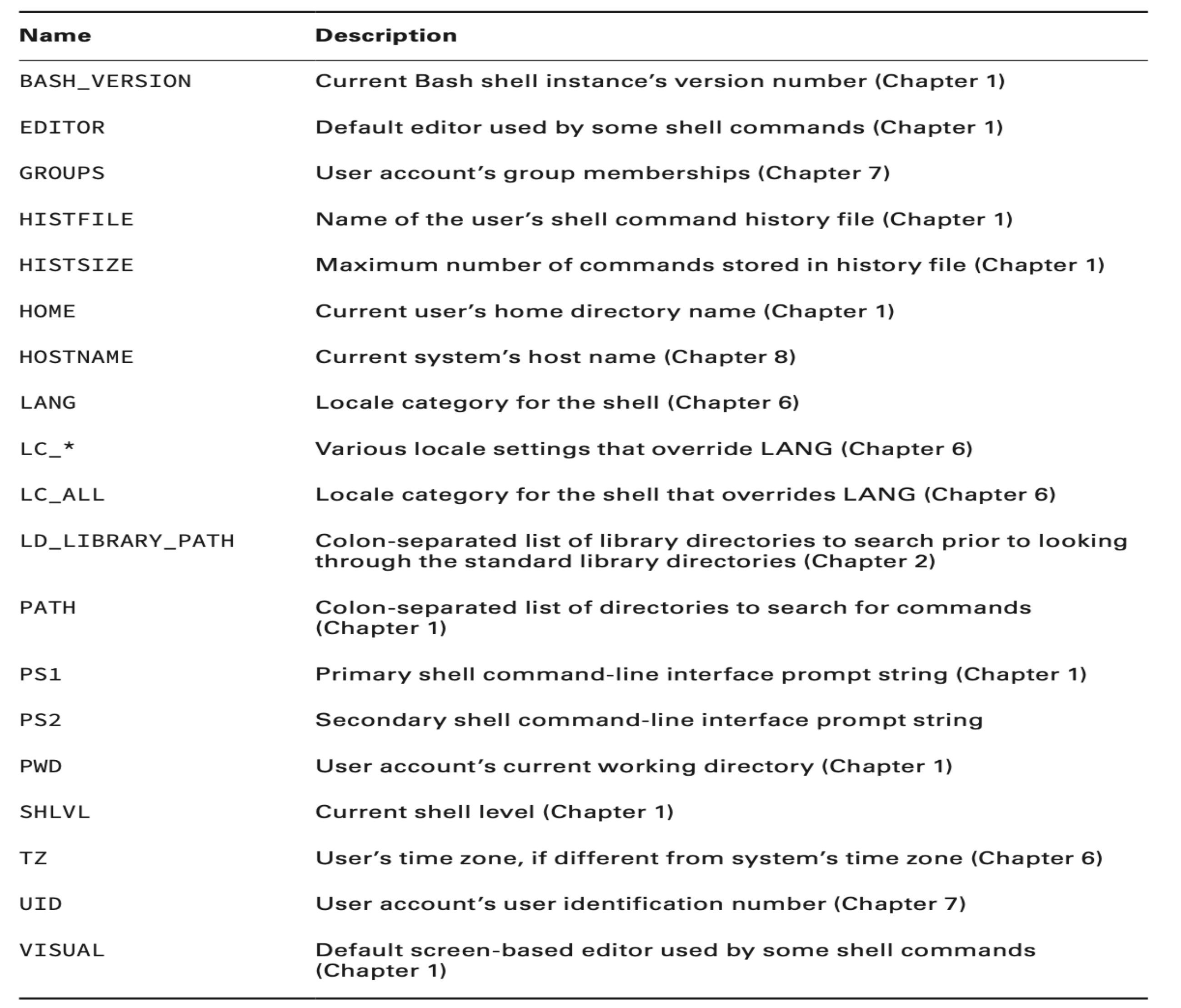
```
$ cd /home/team01
$ vi doc/mon_report
$ cd /usr/bin
$ ./ls -l /home/team01
```

Navigating directories commands:

pwd   ls cd

- *Absolute & Relative path*
- *cd shortcuts: “$HOME” “..” “~”   “-”*

Evironment variables:

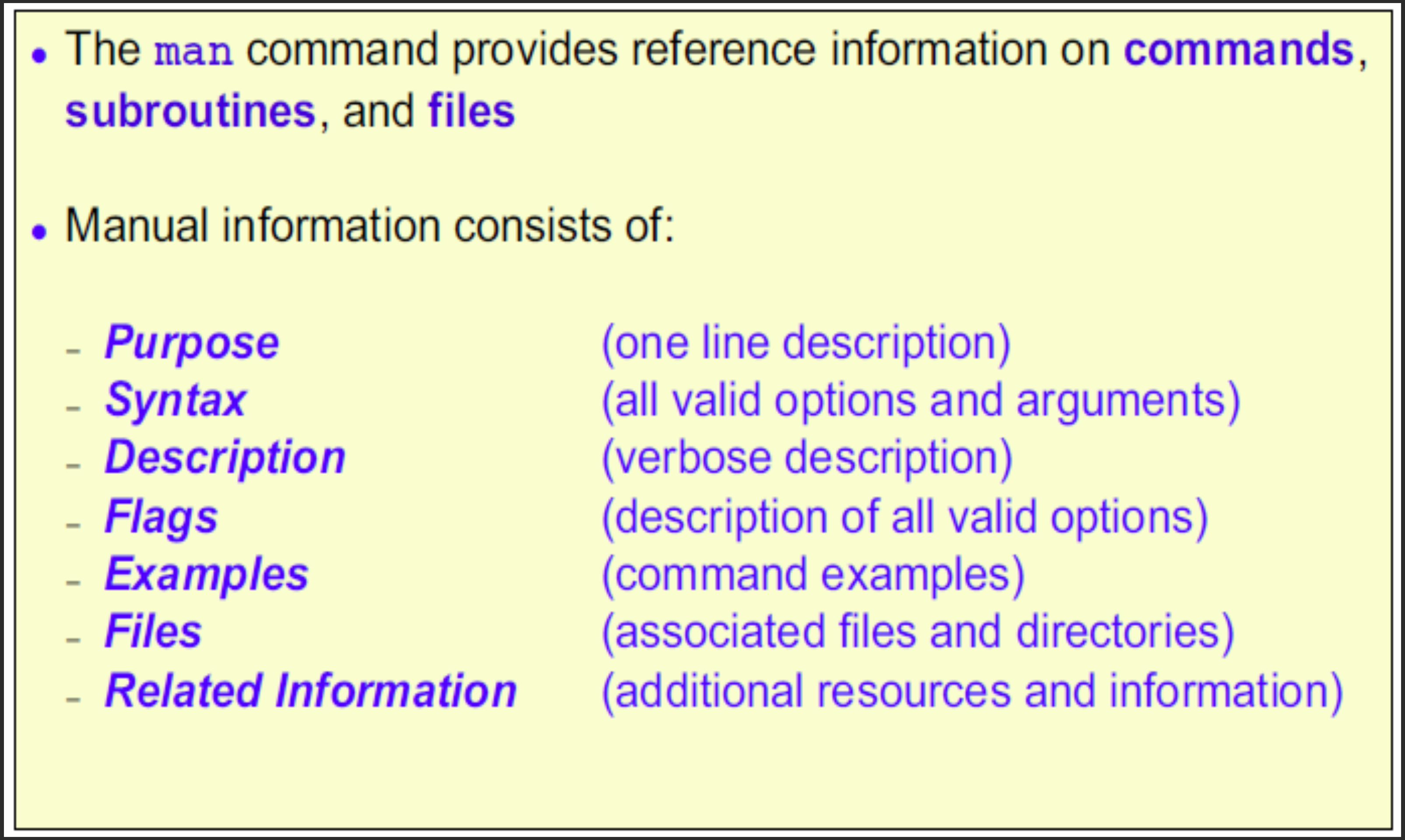


Name	Description
BASH_VERSION	Current Bash shell instance's version number (Chapter 1)
EDITOR	Default editor used by some shell commands (Chapter 1)
GROUPS	User account's group memberships (Chapter 7)
HISTFILE	Name of the user's shell command history file (Chapter 1)
HISTSIZE	Maximum number of commands stored in history file (Chapter 1)
HOME	Current user's home directory name (Chapter 1)
HOSTNAME	Current system's host name (Chapter 8)
LANG	Locale category for the shell (Chapter 6)
LC_*	Various locale settings that override LANG (Chapter 6)
LC_ALL	Locale category for the shell that overrides LANG (Chapter 6)
LD_LIBRARY_PATH	Colon-separated list of library directories to search prior to looking through the standard library directories (Chapter 2)
PATH	Colon-separated list of directories to search for commands (Chapter 1)
PS1	Primary shell command-line interface prompt string (Chapter 1)
PS2	Secondary shell command-line interface prompt string
PWD	User account's current working directory (Chapter 1)
SHLVL	Current shell level (Chapter 1)
TZ	User's time zone, if different from system's time zone (Chapter 6)
UID	User account's user identification number (Chapter 7)
VISUAL	Default screen-based editor used by some shell commands (Chapter 1)

Getting help on commands:

```
man (manual)
history
```

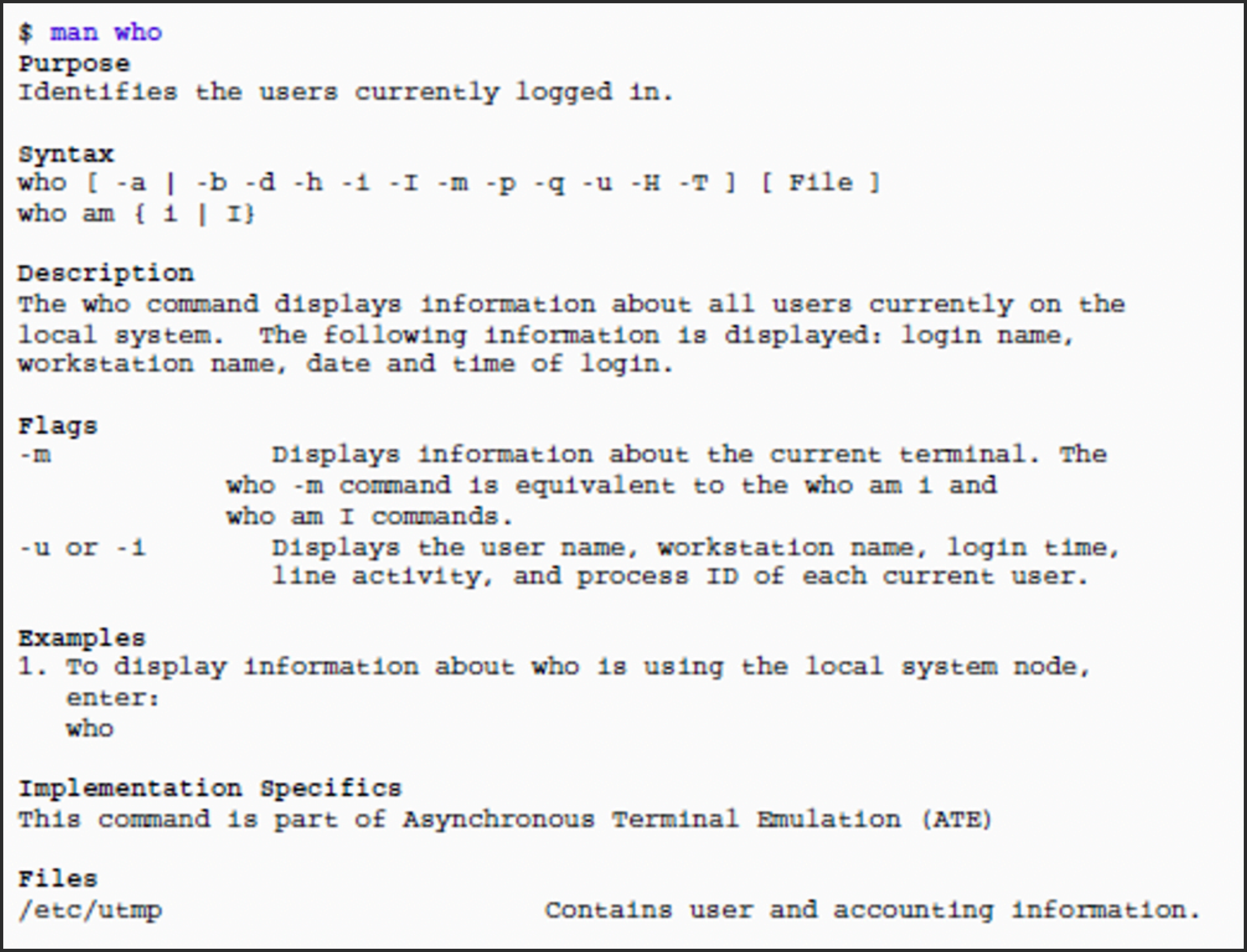
man command



- The `man` command provides reference information on **commands**, **subroutines**, and **files**
- Manual information consists of:

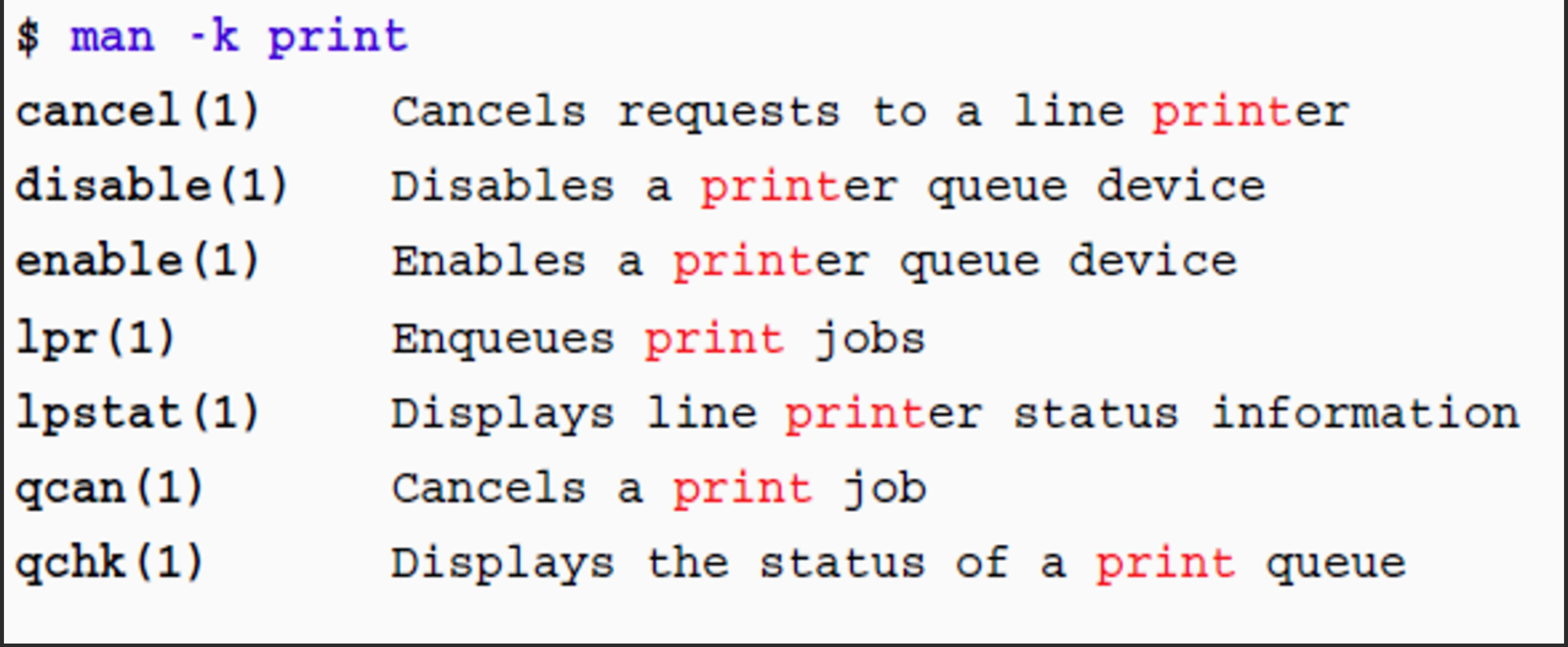
– ***Purpose***	(one line description)
– ***Syntax***	(all valid options and arguments)
– ***Description***	(verbose description)
– ***Flags***	(description of all valid options)
– ***Examples***	(command examples)
– ***Files***	(associated files and directories)
– ***Related Information***	(additional resources and information)

man command



```
$ man who
Purpose
Identifies the users currently logged in.

Syntax
who [ -a | -b -d -h -i -I -m -p -q -u -H -T ] [ File ]
who am { i | I}

Description
The who command displays information about all users currently on the
local system.  The following information is displayed: login name,
workstation name, date and time of login.

Flags
-m             Displays information about the current terminal. The
            who -m command is equivalent to the who am i and
            who am I commands.
-u or -i       Displays the user name, workstation name, login time,
               line activity, and process ID of each current user.

Examples
1. To display information about who is using the local system node,
   enter:
   who

Implementation Specifics
This command is part of Asynchronous Terminal Emulation (ATE)

Files
/etc/utmp                        Contains user and accounting information.
```

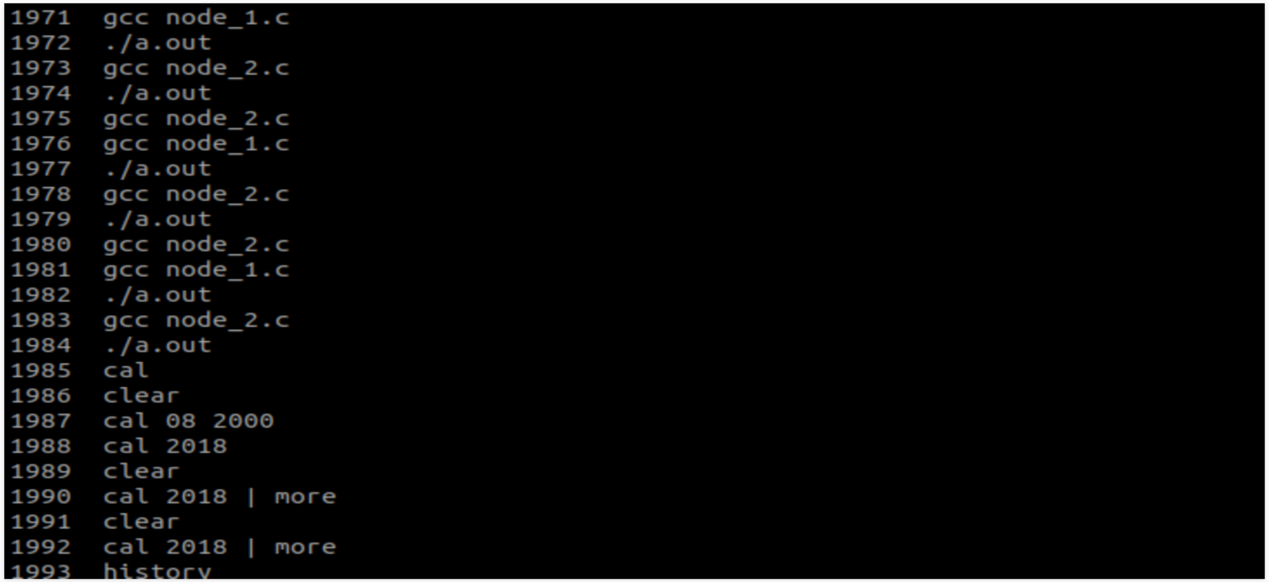
man command



```
$ man -k print
cancel(1)     Cancels requests to a line printer
disable(1)    Disables a printer queue device
enable(1)     Enables a printer queue device
lpr(1)        Enqueues print jobs
lpstat(1)     Displays line printer status information
qcan(1)       Cancels a print job
qchk(1)       Displays the status of a print queue
```

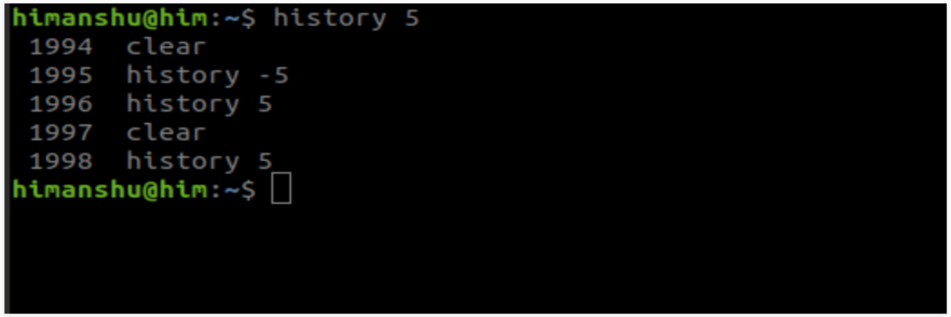
history command

```
$ history
```



```
1971  gcc node_1.c
1972  ./a.out
1973  gcc node_2.c
1974  ./a.out
1975  gcc node_2.c
1976  gcc node_1.c
1977  ./a.out
1978  gcc node_2.c
1979  ./a.out
1980  gcc node_2.c
1981  gcc node_1.c
1982  ./a.out
1983  gcc node_2.c
1984  ./a.out
1985  cal
1986  clear
1987  cal 08 2000
1988  cal 2018
1989  clear
1990  cal 2018 | more
1991  clear
1992  cal 2018 | more
1993  history
```

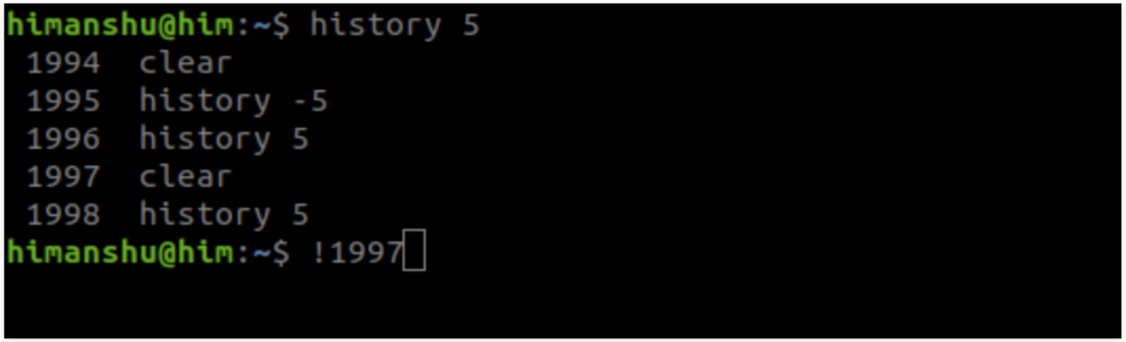
```
$ history 5
```



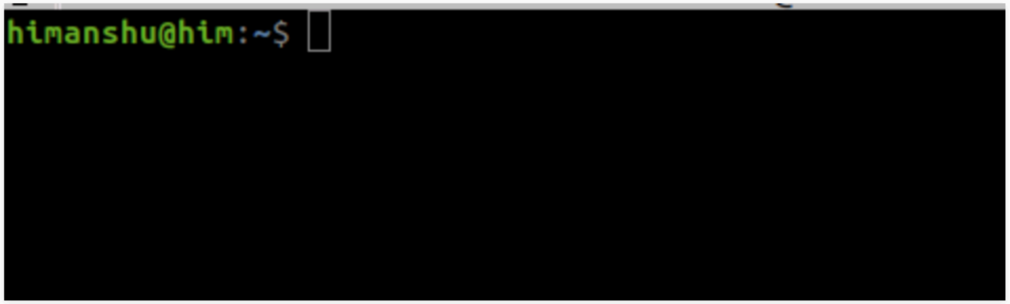
```
himanshu@him:~$ history 5
 1994  clear
 1995  history -5
 1996  history 5
 1997  clear
 1998  history 5
himanshu@him:~$ 
```

history command

```
$ !1997
```



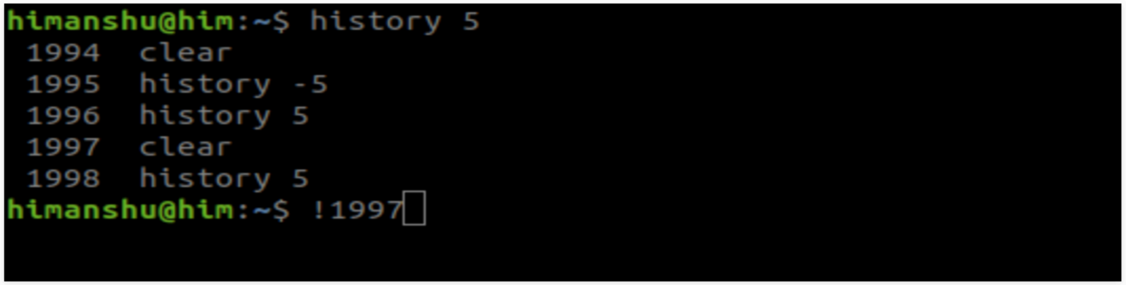
```
himanshu@him:~$ history 5
 1994  clear
 1995  history -5
 1996  history 5
 1997  clear
 1998  history 5
himanshu@him:~$ !1997
```



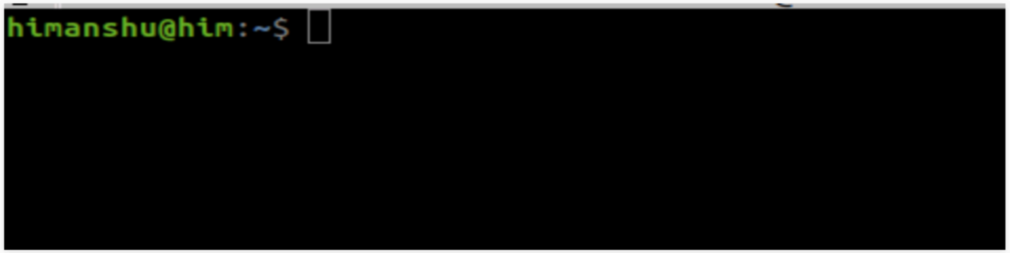
```
himanshu@him:~$ 
```

history command

```
$ !1997
```

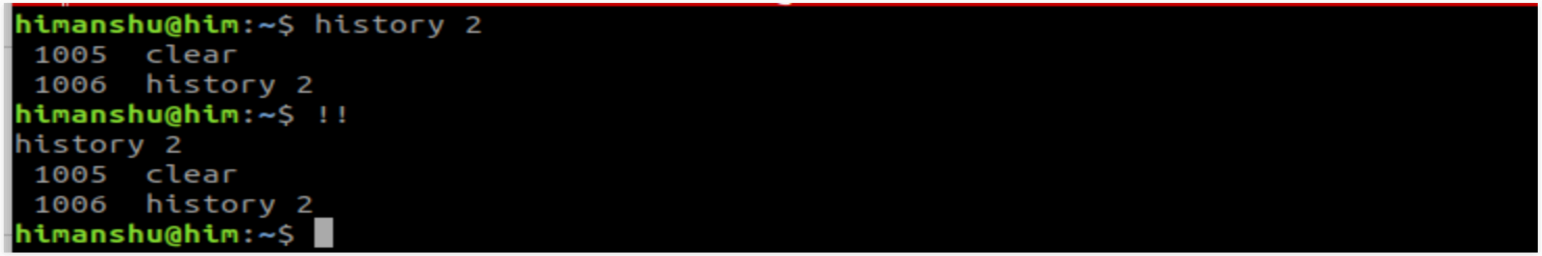


```
himanshu@him:~$ history 5
 1994  clear
 1995  history -5
 1996  history 5
 1997  clear
 1998  history 5
himanshu@him:~$ !1997
```



```
himanshu@him:~$ 
```

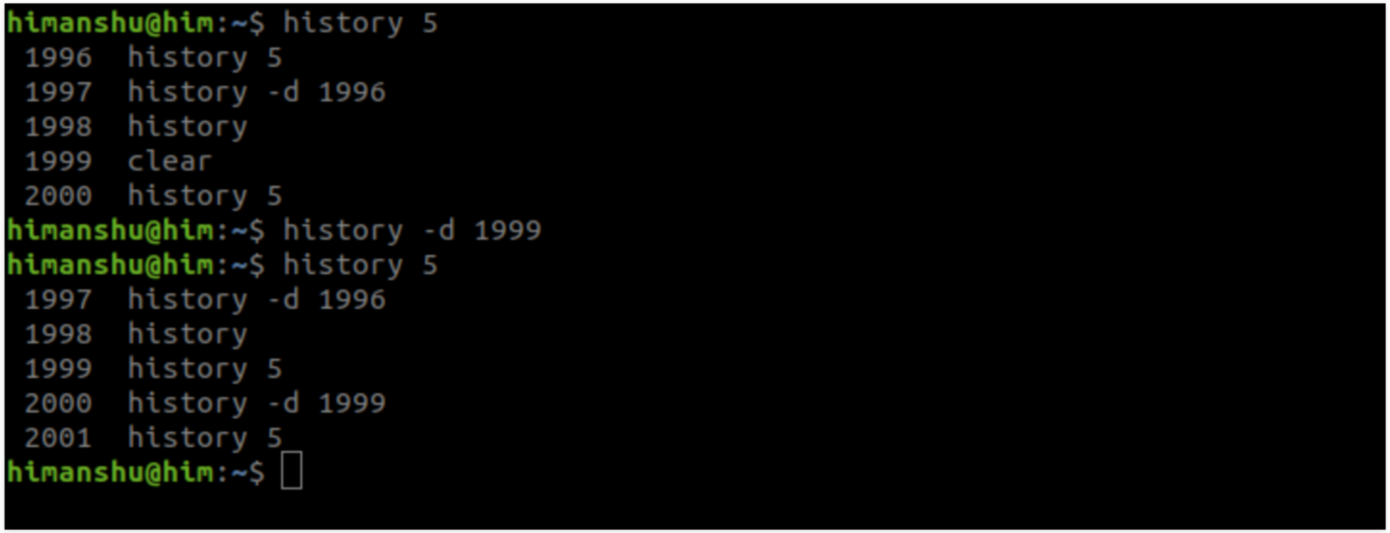
```
!!
```



```
himanshu@him:~$ history 2
 1005  clear
 1006  history 2
himanshu@him:~$ !!
history 2
 1005  clear
 1006  history 2
himanshu@him:~$ 
```

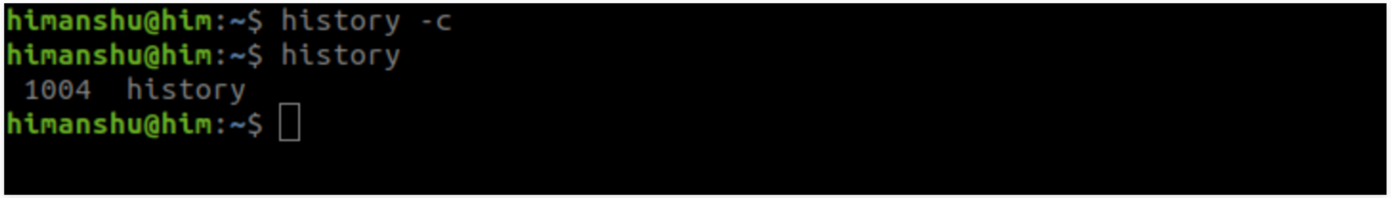
history command

```
history -d 1996
```



```
himanshu@him:~$ history 5
 1996  history 5
 1997  history -d 1996
 1998  history
 1999  clear
 2000  history 5
himanshu@him:~$ history -d 1999
himanshu@him:~$ history 5
 1997  history -d 1996
 1998  history
 1999  history 5
 2000  history -d 1999
 2001  history 5
himanshu@him:~$
```

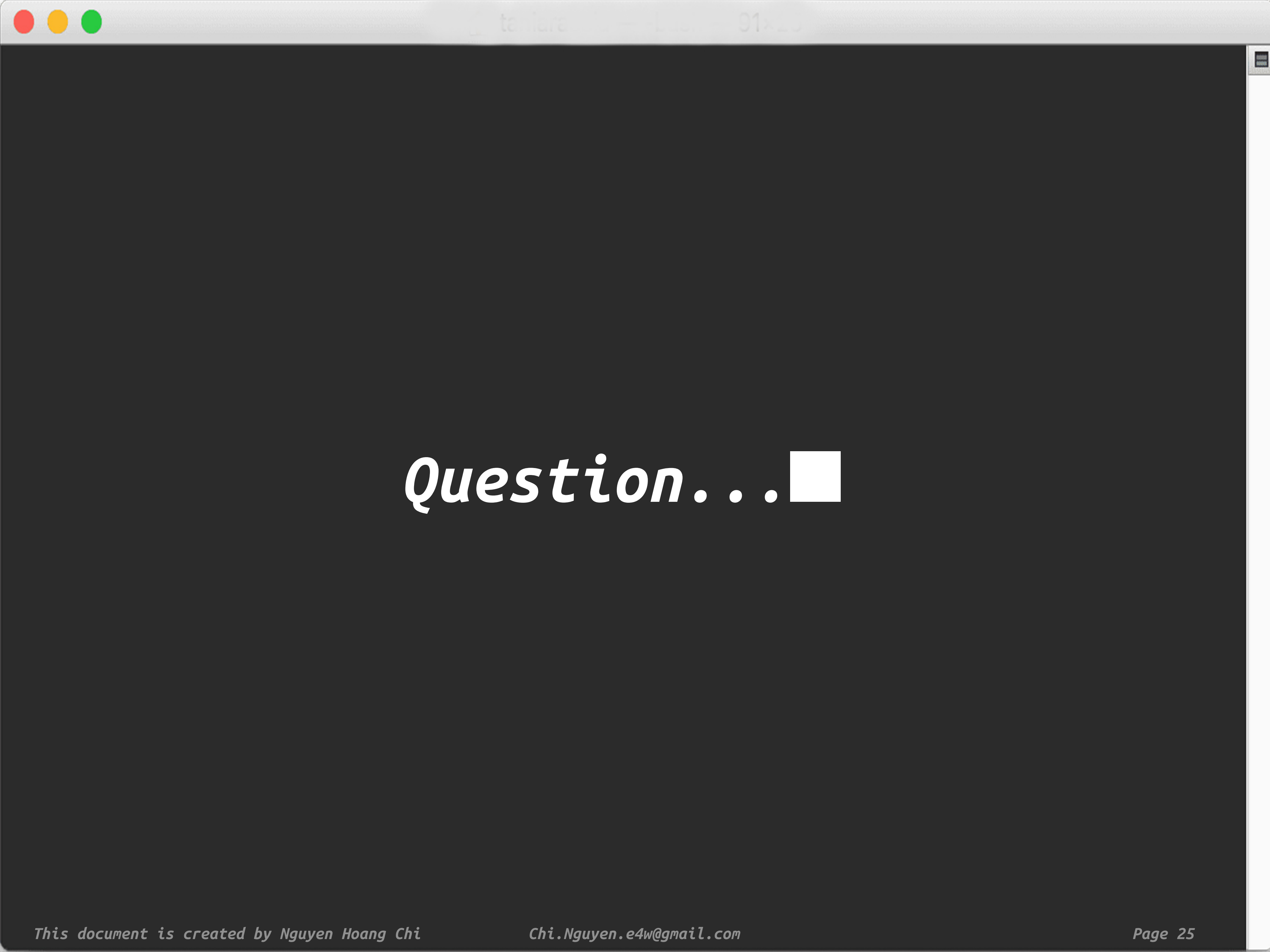
```
history -c
```



```
himanshu@him:~$ history -c
himanshu@him:~$ history
 1004  history
himanshu@him:~$
```

Time for labs

Execise 1: Exploring Linux Command-line tools - Part 1



Question...