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Terminal Commands

Prerequisites to learn CLI

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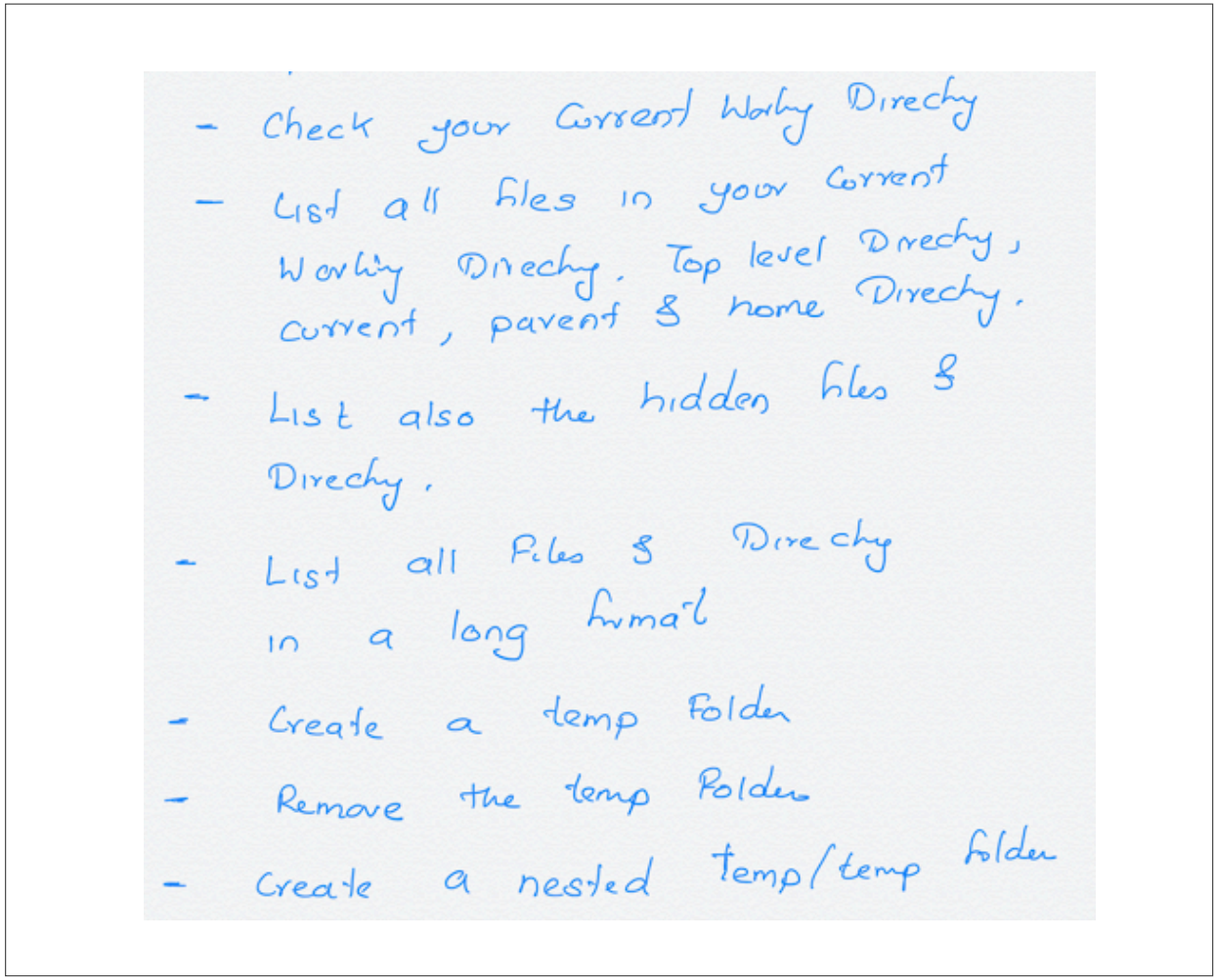
- CLI - Command Line Interface
- Check Git is Installed – **git --version**
- Check Java is installed ***java –version***
- Java Installation - https://exercism.io/tracks/java/installation#linux
- ***mkdir TerminalCommands***
- ***cd TerminalCommands/***
- Check git is installed - ***git --version***
- ***git clone https://github.com/edurekavivekh/linux-content.git***
- Change Dir to ***cd linux-content/*** and do ***ls***
- You will see linux_chit_sheet.pdf – for Linux Commands and linux_problem_sheet.pdf – to solve problems using linux commands



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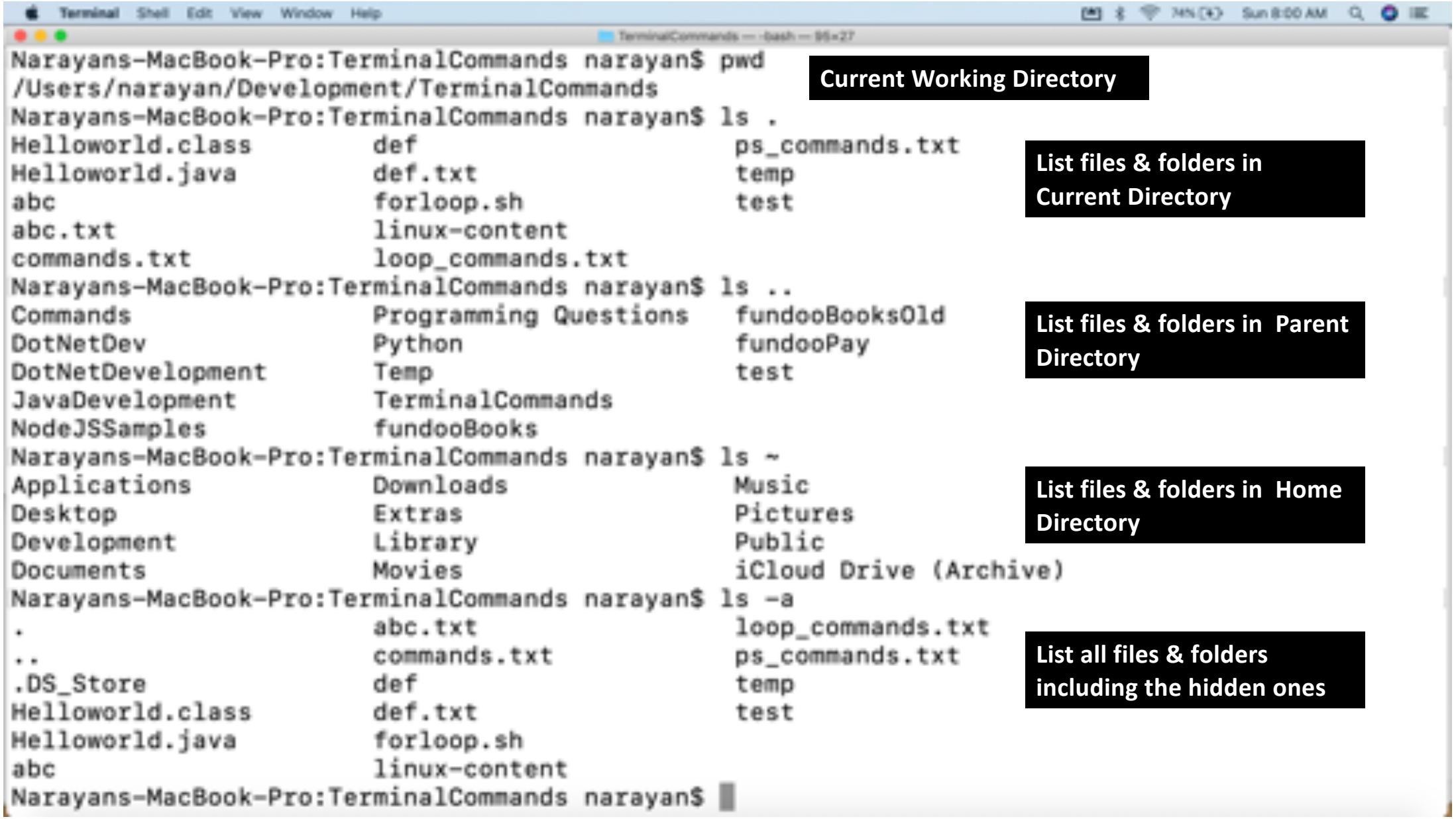
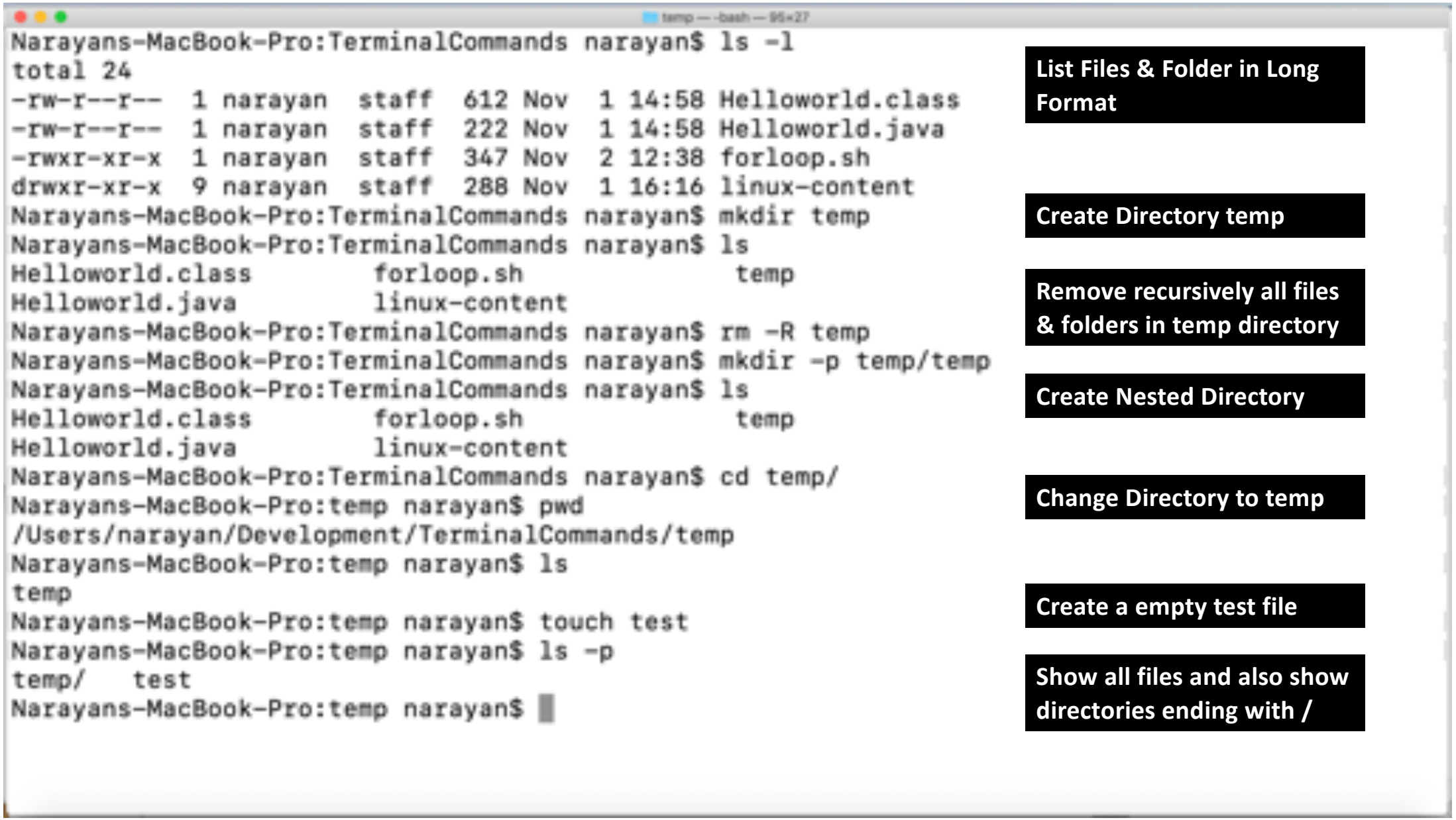
File & Directory Commands


Terminal Shell Edit View Window Help
Sun 8:00 AM
Narayans-MacBook-Pro:TerminalCommands narayan$ pwd
/Users/narayan/Development/TerminalCommands
Narayans-MacBook-Pro:TerminalCommands narayan$ ls .
Helloworld.class def ps_commands.txt
Helloworld.java def.txt temp
abc forloop.sh test
abc.txt linux-content
commands.txt loop_commands.txt
Narayans-MacBook-Pro:TerminalCommands narayan$ ls ..
Commands Programming Questions fundooBooksOld
DotNetDev Python fundooPay
DotNetDevelopment Temp test
JavaDevelopment TerminalCommands
NodeJSSamples fundooBooks
Narayans-MacBook-Pro:TerminalCommands narayan$ ls ~
Applications Downloads Music
Desktop Extras Pictures
Development Library Public
Documents Movies iCloud Drive (Archive)
Narayans-MacBook-Pro:TerminalCommands narayan$ ls -a
. abc.txt loop_commands.txt
.. commands.txt ps_commands.txt
.DS_Store def temp
Helloworld.class def.txt test
Helloworld.java forloop.sh
abc linux-content
Narayans-MacBook-Pro:TerminalCommands narayan$
Current Working Directory
List files & folders in Current Directory
List files & folders in Parent Directory
List files & folders in Home Directory
List all files & folders including the hidden ones


temp — -bash — 96×27
Narayans-MacBook-Pro:TerminalCommands narayan$ ls -l
total 24
-rw-r--r-- 1 narayan staff 612 Nov 1 14:58 Helloworld.class
-rw-r--r-- 1 narayan staff 222 Nov 1 14:58 Helloworld.java
-rwxr-xr-x 1 narayan staff 347 Nov 2 12:38 forloop.sh
drwxr-xr-x 9 narayan staff 288 Nov 1 16:16 linux-content
Narayans-MacBook-Pro:TerminalCommands narayan$ mkdir temp
Narayans-MacBook-Pro:TerminalCommands narayan$ ls
Helloworld.class   forloop.sh   temp
Helloworld.java   linux-content
Narayans-MacBook-Pro:TerminalCommands narayan$ rm -R temp
Narayans-MacBook-Pro:TerminalCommands narayan$ mkdir -p temp/temp
Narayans-MacBook-Pro:TerminalCommands narayan$ ls
Helloworld.class   forloop.sh   temp
Helloworld.java   linux-content
Narayans-MacBook-Pro:TerminalCommands narayan$ cd temp/
Narayans-MacBook-Pro:temp narayan$ pwd
/Users/narayan/Development/TerminalCommands/temp
Narayans-MacBook-Pro:temp narayan$ ls
temp
Narayans-MacBook-Pro:temp narayan$ touch test
Narayans-MacBook-Pro:temp narayan$ ls -p
temp/   test
Narayans-MacBook-Pro:temp narayan$
List Files & Folder in Long Format
Create Directory temp
Remove recursively all files & folders in temp directory
Create Nested Directory
Change Directory to temp
Create a empty test file
Show all files and also show directories ending with /

File Management

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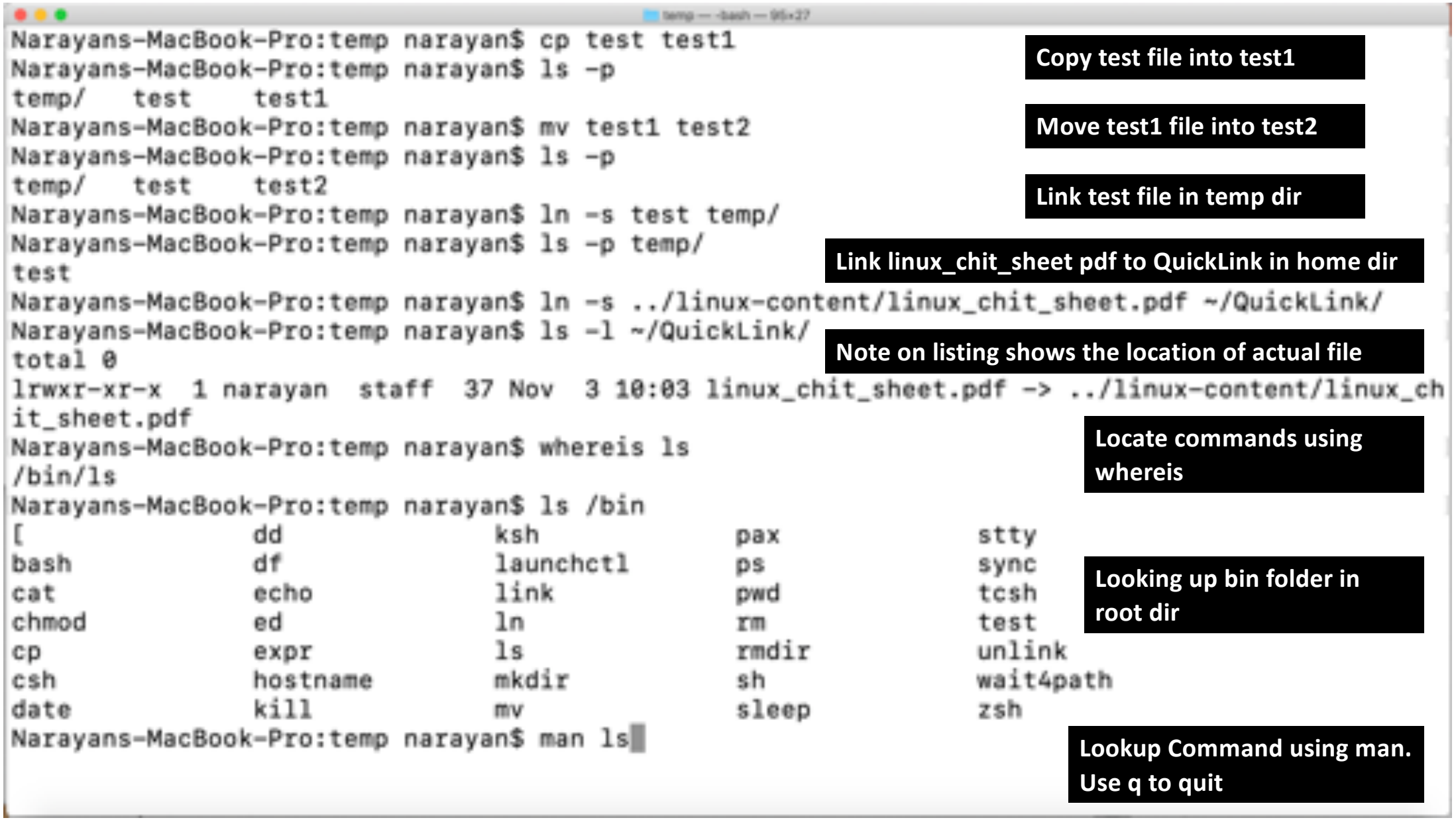
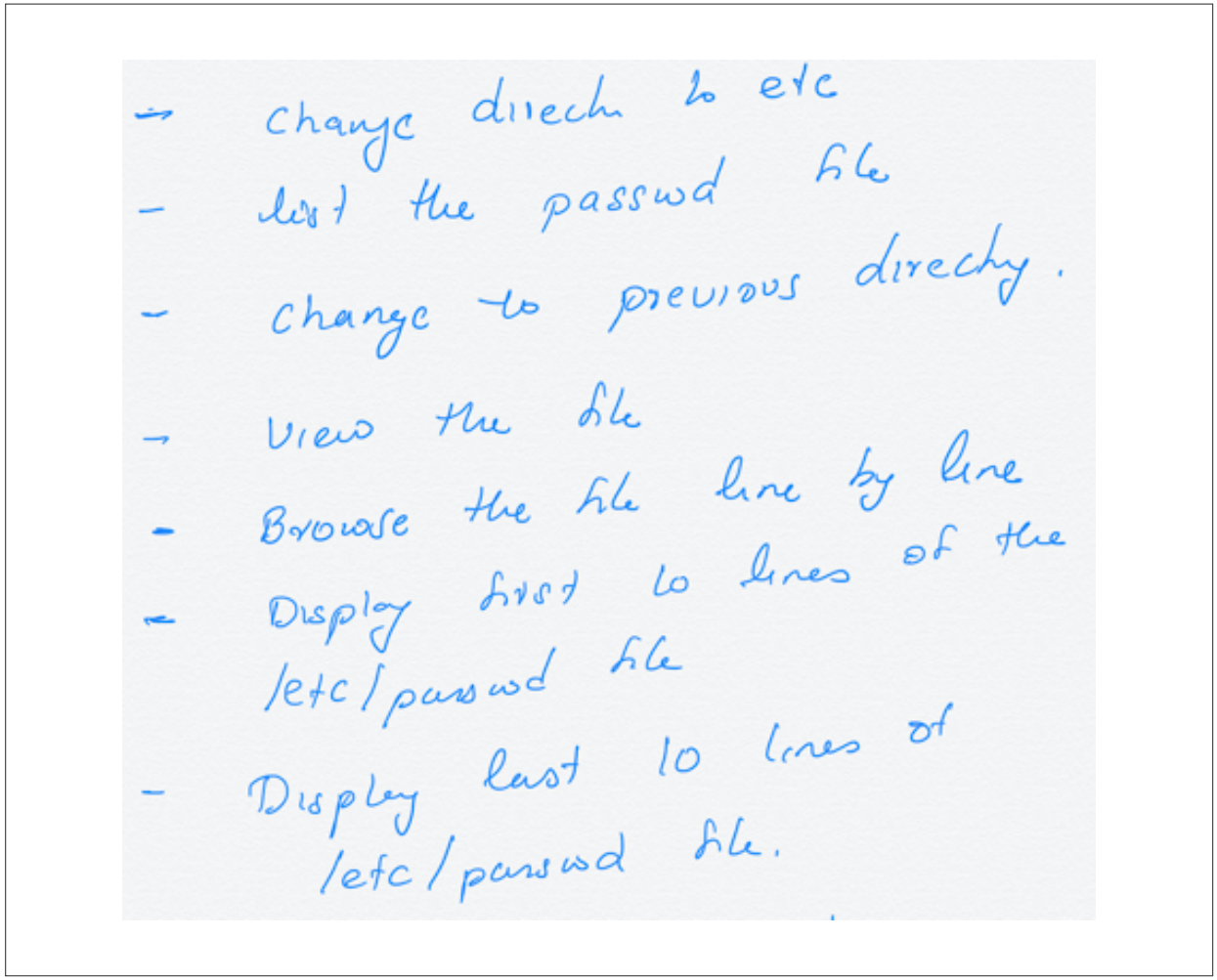
- Change directry to temp
- Create a empty test file.
- Copy test file into another test1 file
- move test1 file to test2 file.
- Create a link to the test file in your home dire.
- Chaye dir to home & remove the temp folder.
- man ls ⇒ to list all options
- whereis ls ⇒ find the location of the command


Narayans-MacBook-Pro:temp narayan$ cp test test1
Narayans-MacBook-Pro:temp narayan$ ls -p
temp/ test test1
Narayans-MacBook-Pro:temp narayan$ mv test1 test2
Narayans-MacBook-Pro:temp narayan$ ls -p
temp/ test test2
Narayans-MacBook-Pro:temp narayan$ ln -s test temp/
Narayans-MacBook-Pro:temp narayan$ ls -p temp/
test
Narayans-MacBook-Pro:temp narayan$ ln -s ../linux-content/linux_chit_sheet.pdf ~/QuickLink/
Narayans-MacBook-Pro:temp narayan$ ls -l ~/QuickLink/
total 0
lrwxr-xr-x 1 narayan staff 37 Nov 3 10:03 linux_chit_sheet.pdf -> ../linux-content/linux_ch
it_sheet.pdf
Narayans-MacBook-Pro:temp narayan$ whereis ls
/bin/ls
Narayans-MacBook-Pro:temp narayan$ ls /bin
[dd ksh pax stty
bash df launchctl ps sync
cat echo link pwd tcsh
chmod ed ln rm test
cp expr ls rmdir unlink
csh hostname mkdir sh wait4path
date kill mv sleep zsh
Narayans-MacBook-Pro:temp narayan$ man ls
Copy test file into test1
Move test1 file into test2
Link test file in temp dir
Link linux_chit_sheet pdf to QuickLink in home dir
Note on listing shows the location of actual file
Locate commands using whereis
Looking up bin folder in root dir
Lookup Command using man. Use q to quit

```
        the -P option.

-1      (The lowercase letter ``ell''.)  List in long format.  (See below.)  If
        the output is to a terminal, a total sum for all the file sizes is out-
        put on a line before the long listing.

-m      Stream output format; list files across the page, separated by commas.

-n      Display user and group IDs numerically, rather than converting to a user
        or group name in a long (-l) output.  This option turns on the -l
        option.

-O      Include the file flags in a long (-l) output.

-o      List in long format, but omit the group id.

-P      If argument is a symbolic link, list the link itself rather than the
        object the link references.  This option cancels the -H and -L options.

-p      Write a slash (`/') after each filename if that file is a directory.

-q      Force printing of non-graphic characters in file names as the character
        `?'; this is the default when output is to a terminal.

-R      Recursively list subdirectories encountered.

/-p
```

Searching for –p string in the man ls. Also use n and p to look for next & previous –p string



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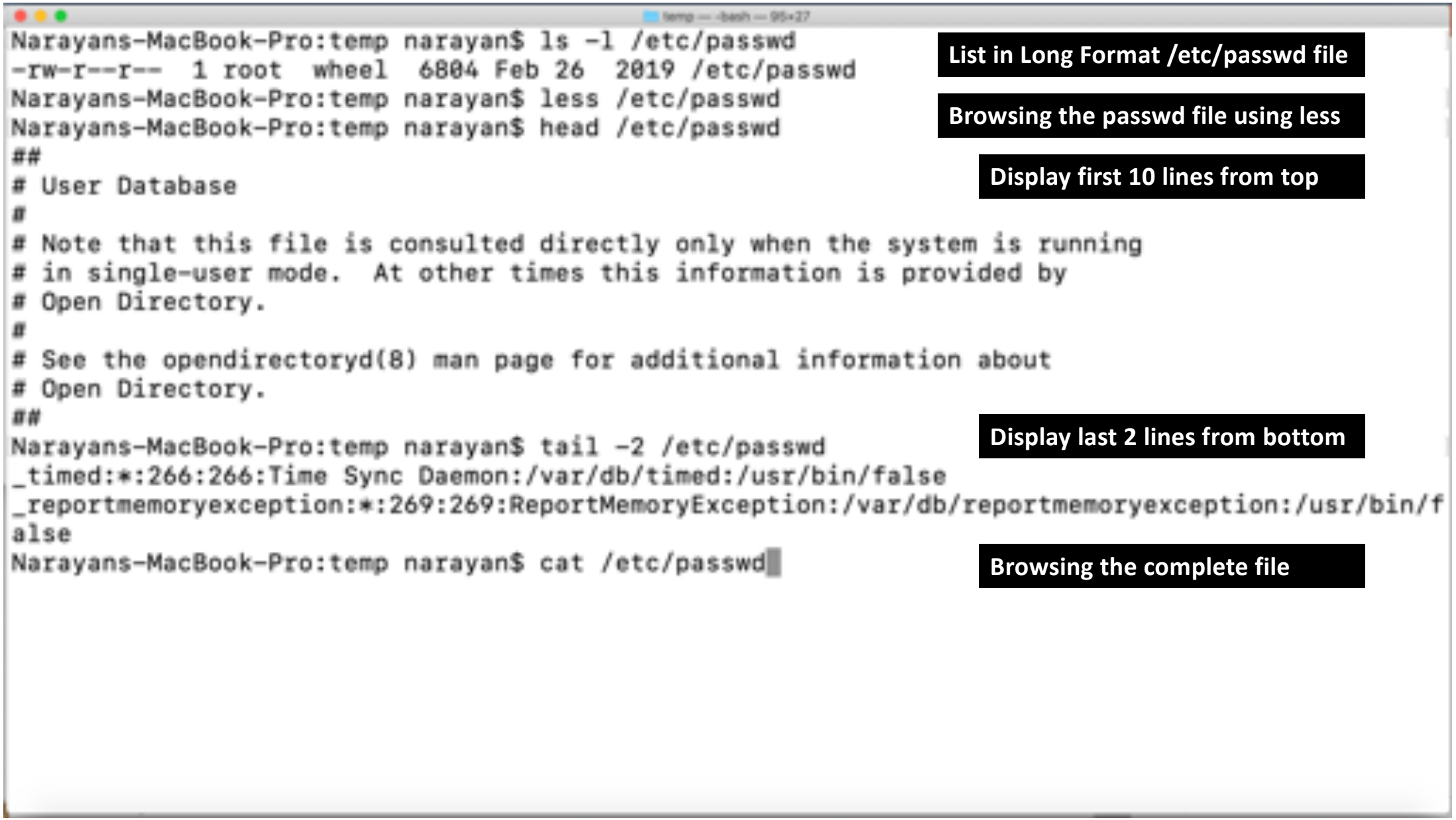
View & Browse Files


Narayans-MacBook-Pro:temp narayan$ ls -l /etc/passwd
-rw-r--r-- 1 root wheel 6804 Feb 26 2019 /etc/passwd
Narayans-MacBook-Pro:temp narayan$ less /etc/passwd
Narayans-MacBook-Pro:temp narayan$ head /etc/passwd
##
User Database
#
Note that this file is consulted directly only when the system is running
in single-user mode. At other times this information is provided by
Open Directory.
#
See the opendirectoryd(8) man page for additional information about
Open Directory.
##
Narayans-MacBook-Pro:temp narayan$ tail -2 /etc/passwd
_timed:*:266:266:Time Sync Daemon:/var/db/timed:/usr/bin/false
_reportmemoryexception:*:269:269:ReportMemoryException:/var/db/reportmemoryexception:/usr/bin/f
alse
Narayans-MacBook-Pro:temp narayan$ cat /etc/passwd
List in Long Format /etc/passwd file
Browsing the passwd file using less
Display first 10 lines from top
Display last 2 lines from bottom
Browsing the complete file

Pipe & Grep Commands

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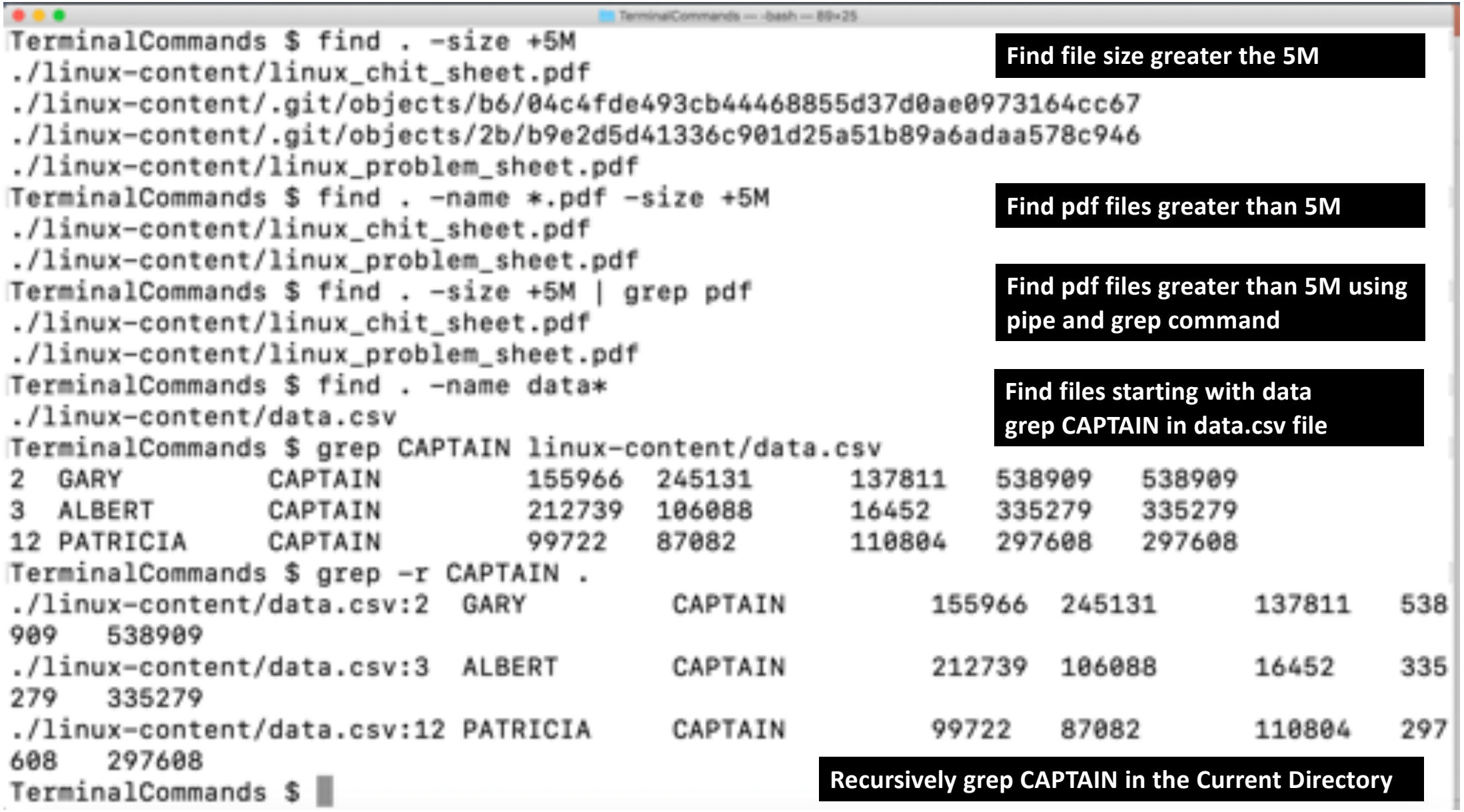
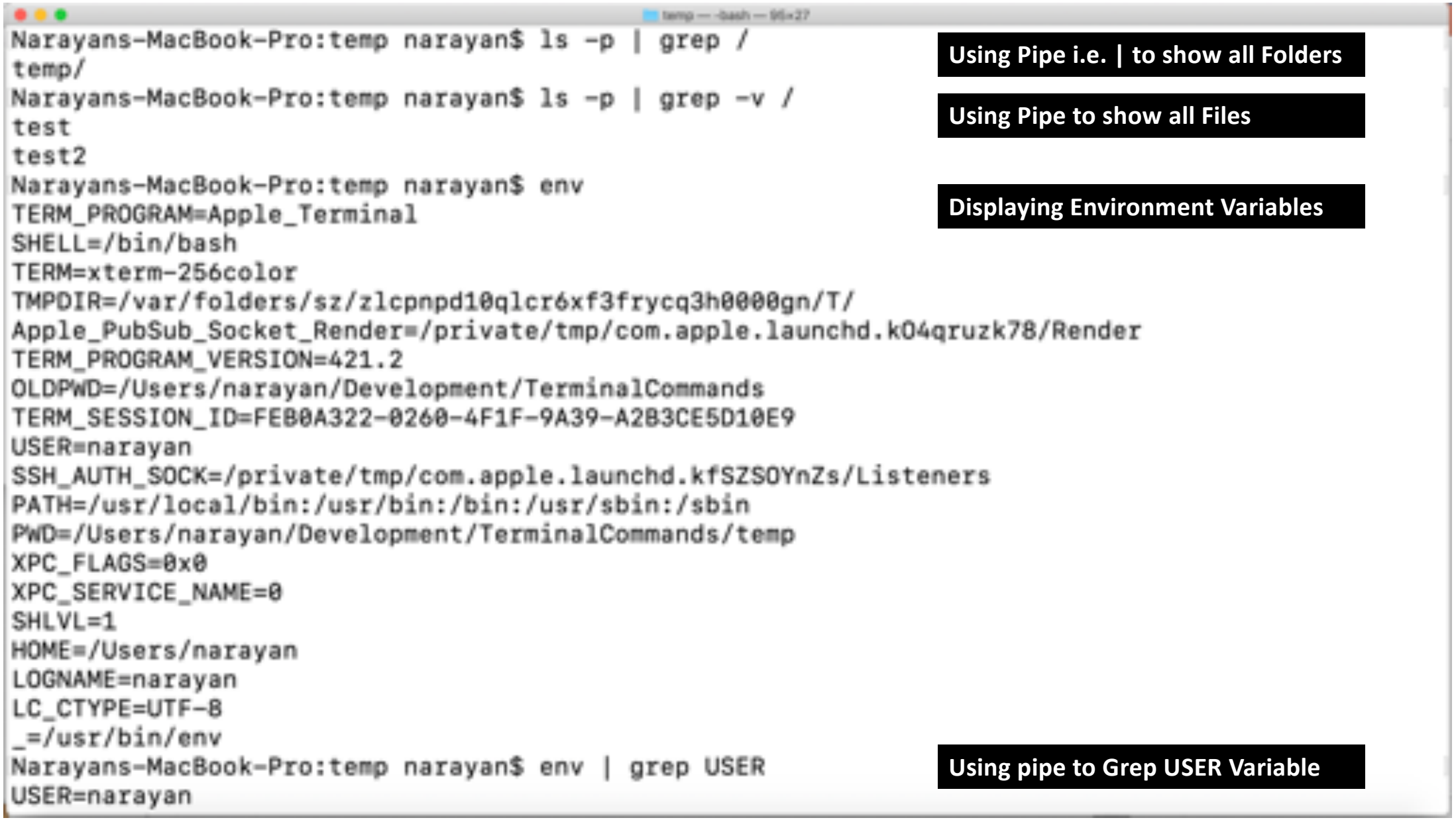
- cmd1 | cmd2
  stdout of cmd1 to cmd2
- find all directories in the current working directy.
- find passwd file in /etc/
- find all files in the /etc/ directy


TerminalCommands $ find . -size +5M
./linux-content/linux_chit_sheet.pdf
./linux-content/.git/objects/b6/04c4fde493cb44468855d37d0ae0973164cc67
./linux-content/.git/objects/2b/b9e2d5d41336c901d25a51b89a6adaa578c946
./linux-content/linux_problem_sheet.pdf
TerminalCommands $ find . -name *.pdf -size +5M
./linux-content/linux_chit_sheet.pdf
./linux-content/linux_problem_sheet.pdf
TerminalCommands $ find . -size +5M | grep pdf
./linux-content/linux_chit_sheet.pdf
./linux-content/linux_problem_sheet.pdf
TerminalCommands $ find . -name data*
./linux-content/data.csv
TerminalCommands $ grep CAPTAIN linux-content/data.csv
2 GARY CAPTAIN 155966 245131 137811 538909 538909
3 ALBERT CAPTAIN 212739 106088 16452 335279 335279
12 PATRICIA CAPTAIN 99722 87082 110804 297608 297608
TerminalCommands $ grep -r CAPTAIN .
./linux-content/data.csv:2 GARY CAPTAIN 155966 245131 137811 538
909 538909
./linux-content/data.csv:3 ALBERT CAPTAIN 212739 106088 16452 335
279 335279
./linux-content/data.csv:12 PATRICIA CAPTAIN 99722 87082 110804 297
608 297608
TerminalCommands $
Find file size greater the 5M
Find pdf files greater than 5M
Find pdf files greater than 5M using pipe and grep command
Find files starting with data grep CAPTAIN in data.csv file
Recursively grep CAPTAIN in the Current Directory


Narayans-MacBook-Pro:temp narayan$ ls -p | grep /
temp/
Narayans-MacBook-Pro:temp narayan$ ls -p | grep -v /
test
test2
Narayans-MacBook-Pro:temp narayan$ env
TERM_PROGRAM=Apple_Terminal
SHELL=/bin/bash
TERM=xterm-256color
TMPDIR=/var/folders/sz/zlcpnpd10qlcr6xf3frycq3h0000gn/T/
Apple_PubSub_Socket_Render=/private/tmp/com.apple.launchd.kO4qruzk78/Render
TERM_PROGRAM_VERSION=421.2
OLDPWD=/Users/narayan/Development/TerminalCommands
TERM_SESSION_ID=FE80A322-0260-4F1F-9A39-A2B3CE5D10E9
USER=narayan
SSH_AUTH_SOCK=/private/tmp/com.apple.launchd.kfSZSOYnZs/Listeners
PATH=/usr/local/bin:/usr/bin:/bin:/usr/sbin:/sbin
PWD=/Users/narayan/Development/TerminalCommands/temp
XPC_FLAGS=0x0
XPC_SERVICE_NAME=0
SHLVL=1
HOME=/Users/narayan
LOGNAME=narayan
LC_CTYPE=UTF-8
_=/usr/bin/env
Narayans-MacBook-Pro:temp narayan$ env | grep USER
USER=narayan
Using Pipe i.e. | to show all Folders
Using Pipe to show all Files
Displaying Environment Variables
Using pipe to Grep USER Variable

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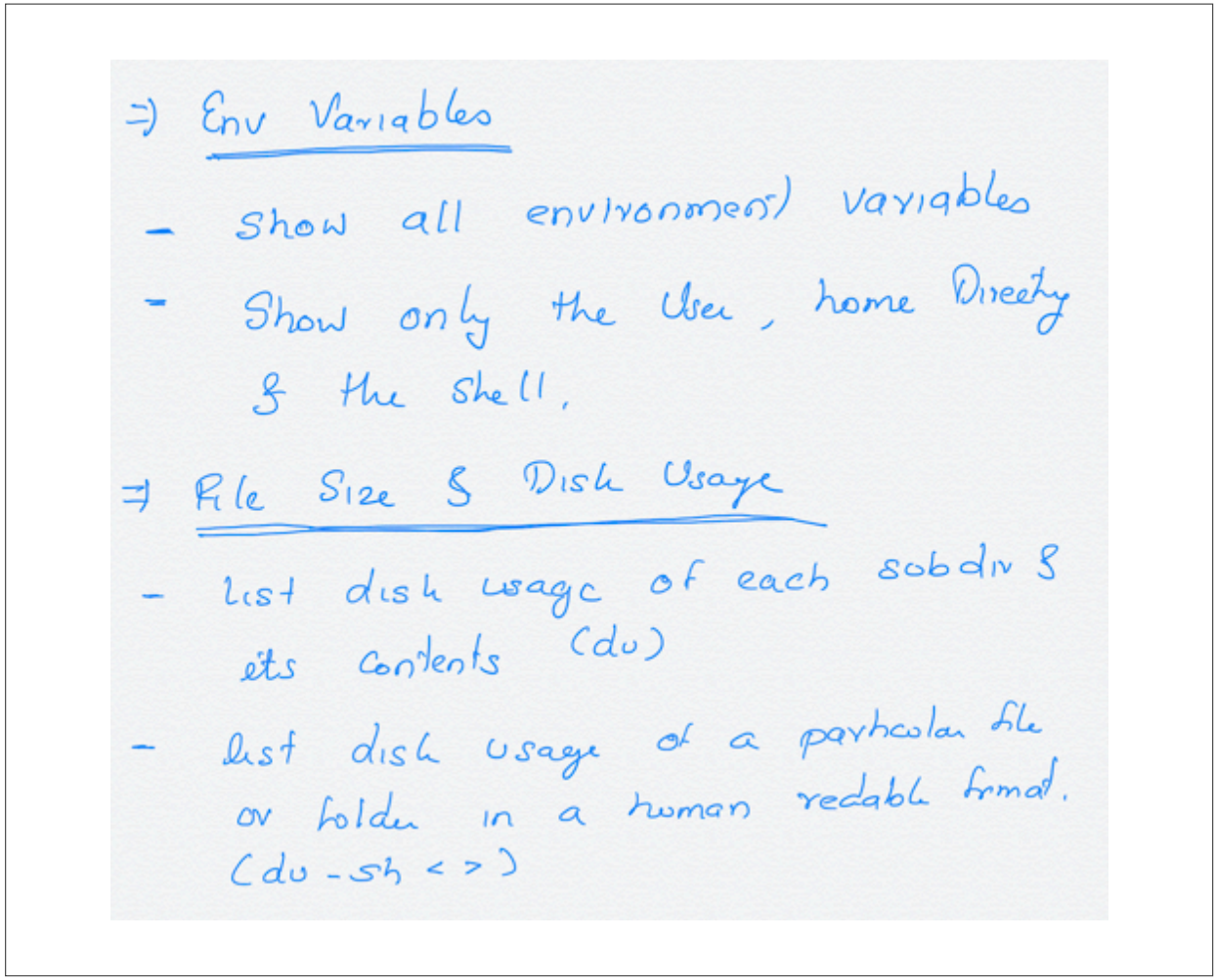
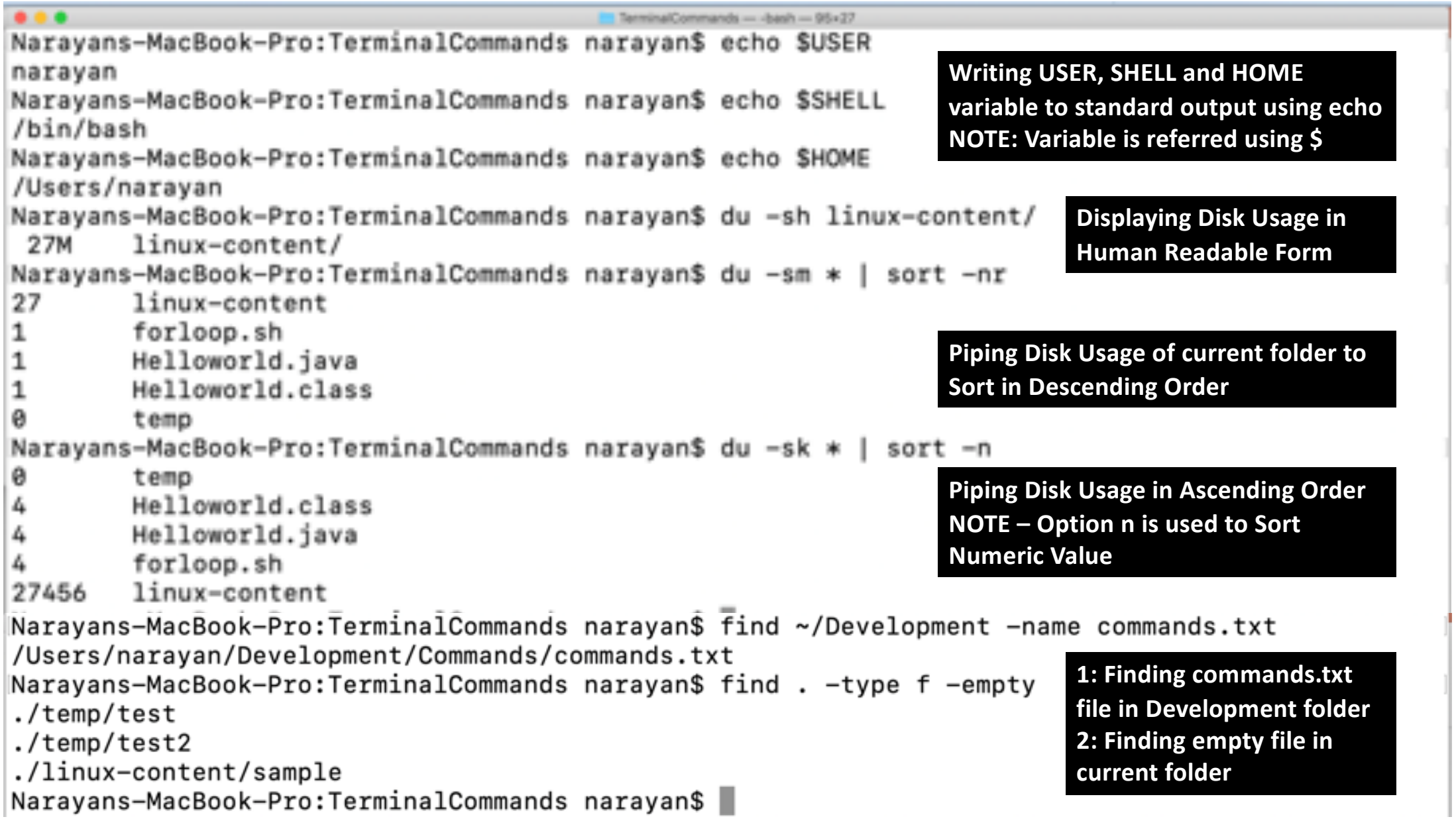


Env Variables & Disk Usage


Narayans-MacBook-Pro:TerminalCommands narayan$ echo $USER
narayan
Narayans-MacBook-Pro:TerminalCommands narayan$ echo $SHELL
/bin/bash
Narayans-MacBook-Pro:TerminalCommands narayan$ echo $HOME
/Users/narayan
Narayans-MacBook-Pro:TerminalCommands narayan$ du -sh linux-content/
27M linux-content/
Narayans-MacBook-Pro:TerminalCommands narayan$ du -sm * | sort -nr
27 linux-content
1 forloop.sh
1 Helloworld.java
1 Helloworld.class
0 temp
Narayans-MacBook-Pro:TerminalCommands narayan$ du -sk * | sort -n
0 temp
4 Helloworld.class
4 Helloworld.java
4 forloop.sh
27456 linux-content
Narayans-MacBook-Pro:TerminalCommands narayan$ find ~/Development -name commands.txt
/Users/narayan/Development/Commands/commands.txt
Narayans-MacBook-Pro:TerminalCommands narayan$ find . -type f -empty
./temp/test
./temp/test2
./linux-content/sample
Narayans-MacBook-Pro:TerminalCommands narayan$
Writing USER, SHELL and HOME variable to standard output using echo
NOTE: Variable is referred using $
Displaying Disk Usage in Human Readable Form
Piping Disk Usage of current folder to Sort in Descending Order
Piping Disk Usage in Ascending Order
NOTE – Option n is used to Sort Numeric Value
1: Finding commands.txt file in Development folder
2: Finding empty file in current folder

Process Management

- Use nano editor to create a Helloworld java program.
- The Helloworld java program would print hello world every minute in an infinite loop
- Display the current running processes
- Display realtime the top processes.
- Identify the java process & kill it.
- Start the Helloworld program in the Background
- Display the Background jobs
- Bring the most recent background job to foreground

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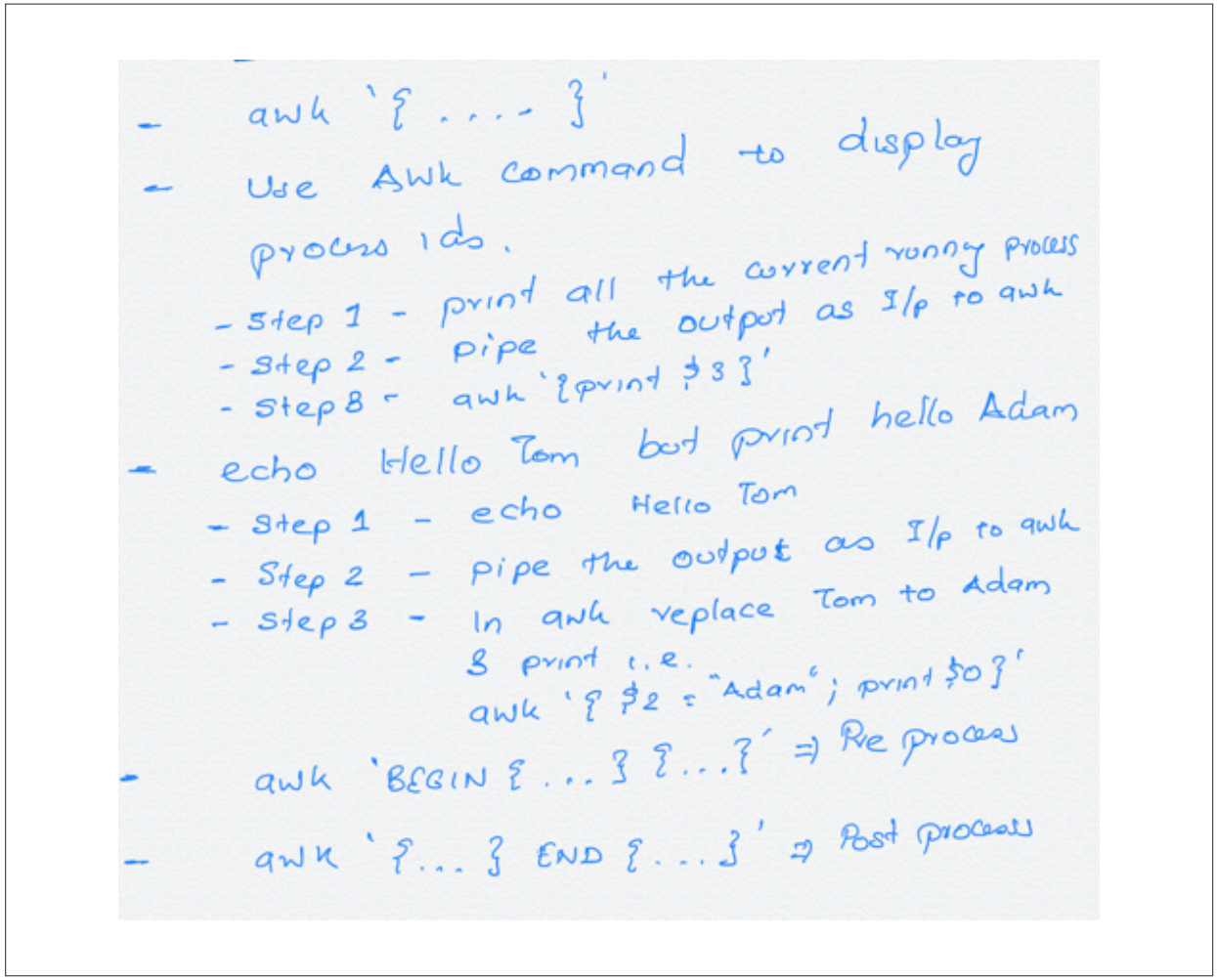
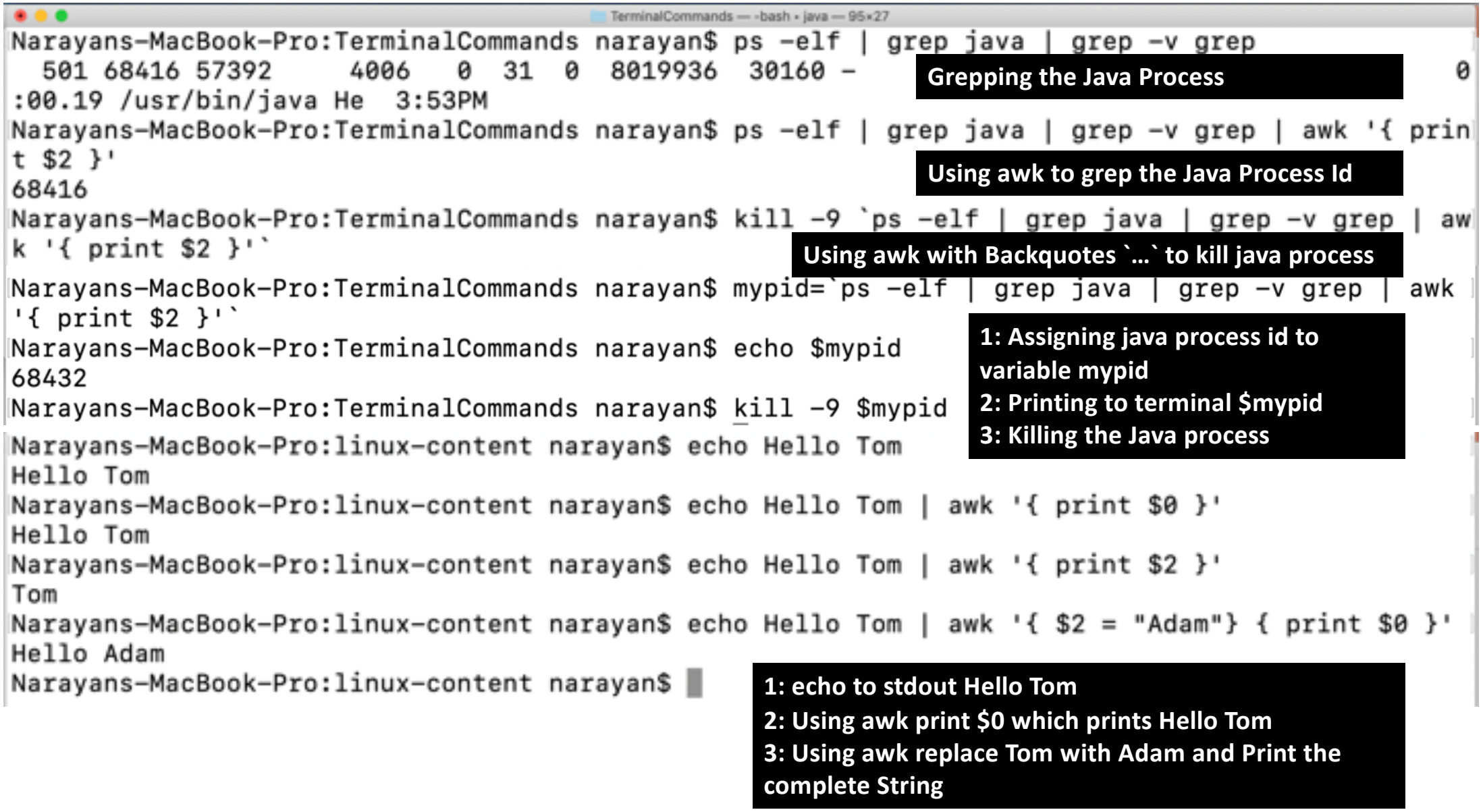
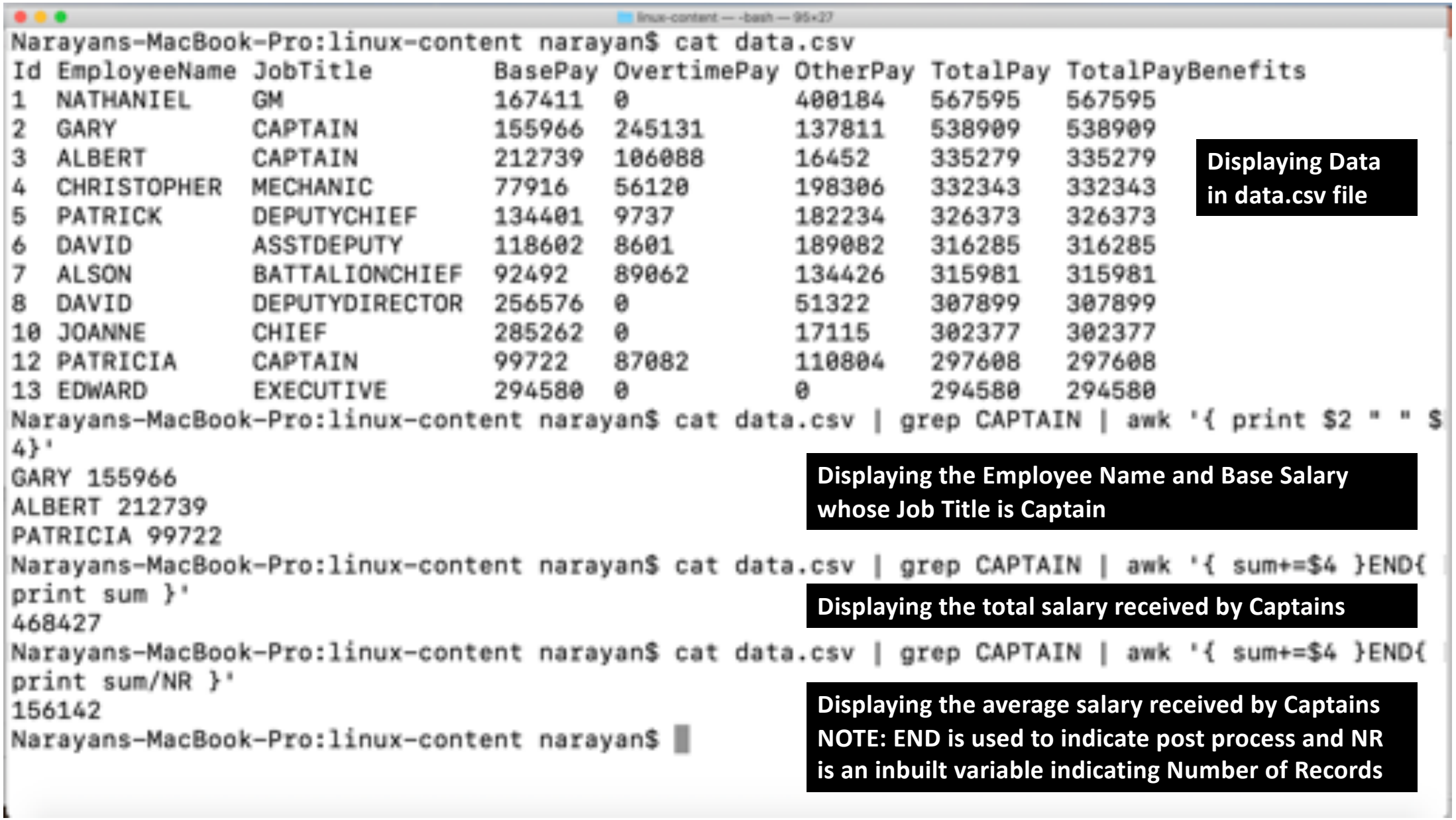
Narayans-MacBook-Pro:TerminalCommands narayan$ nano -T 3 Helloworld.java
Narayans-MacBook-Pro:TerminalCommands narayan$ javac Helloworld.java
Narayans-MacBook-Pro:TerminalCommands narayan$ ls -l
total 24
-rw-r--r-- 1 narayan staff 612 Nov 3 15:06 Helloworld.class
-rw-r--r-- 1 narayan staff 224 Nov 3 15:06 Helloworld.java
-rwxr-xr-x 1 narayan staff 347 Nov 2 12:38 forloop.sh
drwxr-xr-x 9 narayan staff 288 Nov 1 16:16 linux-content
drwxr-xr-x 5 narayan staff 160 Nov 3 10:02 temp
Narayans-MacBook-Pro:TerminalCommands narayan$ java Helloworld &
[1] 68193
Narayans-MacBook-Pro:TerminalCommands narayan$ Hello world
Narayans-MacBook-Pro:TerminalCommands narayan$ ps -elf | grep java | grep -v grep
501 68193 57392 4006 0 31 0 8030176 30076 -
:00.16 /usr/bin/java He 3:06PM
Narayans-MacBook-Pro:TerminalCommands narayan$ jobs
[1]+ Running java Helloworld &
Narayans-MacBook-Pro:TerminalCommands narayan$ fg %1
java Helloworld
^Z
[1]+ Stopped java Helloworld
Narayans-MacBook-Pro:TerminalCommands narayan$ bg %1
[1]+ java Helloworld &
Narayans-MacBook-Pro:TerminalCommands narayan$ jobs
[1]+ Running java Helloworld &
Narayans-MacBook-Pro:TerminalCommands narayan$ killall java
1: Using nano editor to create Helloworld.java
2: NOTE: option T 3 for tabspace of 3
3: Compiling Java Program
Running the java program in Background using &
Grepping the Java Process
Viewing the Jobs running in Background
Bringing the Job to the Foreground
Stopping the Job using ^Z
Starting the Job to the Foreground
Killing the Job


TerminalCommands — nano -T 3 Helloworld.java — 95×27
GNU nano 2.0.6 File: Helloworld.java
public class Helloworld {
public static void main(String args[]){
while(true){
System.out.println("Hello world");
try{
Thread.sleep(60000);
}catch(Exception ex){
System.out.println(ex);
}
}
}
}
[Read 15 lines]
^G Get Help ^O WriteOut ^R Read File ^Y Prev Page ^K Cut Text ^C Cur Pos
^X Exit ^J Justify ^W Where Is ^V Next Page ^U UnCut Text ^T To Spell



AWK Commands


TerminalCommands — -bash • java — 95×27
Narayans-MacBook-Pro:TerminalCommands narayan$ ps -elf | grep java | grep -v grep
501 68416 57392 4006 0 31 0 8019936 30160 -
:00.19 /usr/bin/java He 3:53PM
Grepping the Java Process
Narayans-MacBook-Pro:TerminalCommands narayan$ ps -elf | grep java | grep -v grep | awk '{ print $2 }'
68416
Using awk to grep the Java Process Id
Narayans-MacBook-Pro:TerminalCommands narayan$ kill -9 `ps -elf | grep java | grep -v grep | awk '{ print $2 }'`
Using awk with Backquotes `...` to kill java process
Narayans-MacBook-Pro:TerminalCommands narayan$ mypid=`ps -elf | grep java | grep -v grep | awk '{ print $2 }'`
Narayans-MacBook-Pro:TerminalCommands narayan$ echo $mypid
68432
Narayans-MacBook-Pro:TerminalCommands narayan$ kill -9 $mypid
1: Assigning java process id to variable mypid
2: Printing to terminal $mypid
3: Killing the Java process
Narayans-MacBook-Pro:linux-content narayan$ echo Hello Tom
Hello Tom
Narayans-MacBook-Pro:linux-content narayan$ echo Hello Tom | awk '{ print $0 }'
Hello Tom
Narayans-MacBook-Pro:linux-content narayan$ echo Hello Tom | awk '{ print $2 }'
Tom
Narayans-MacBook-Pro:linux-content narayan$ echo Hello Tom | awk '{ $2 = "Adam"} { print $0 }'
Hello Adam
Narayans-MacBook-Pro:linux-content narayan$
1: echo to stdout Hello Tom
2: Using awk print $0 which prints Hello Tom
3: Using awk replace Tom with Adam and Print the complete String


linux-content — -bash — 95×27
Narayans-MacBook-Pro:linux-content narayan$ cat data.csv
Id EmployeeName JobTitle BasePay OvertimePay OtherPay TotalPay TotalPayBenefits
1 NATHANIEL GM 167411 0 400184 567595 567595
2 GARY CAPTAIN 155966 245131 137811 538909 538909
3 ALBERT CAPTAIN 212739 106088 16452 335279 335279
4 CHRISTOPHER MECHANIC 77916 56120 198306 332343 332343
5 PATRICK DEPUTYCHIEF 134401 9737 182234 326373 326373
6 DAVID ASSTDEPUTY 118602 8601 189082 316285 316285
7 ALSON BATTALIONCHIEF 92492 89062 134426 315981 315981
8 DAVID DEPUTYDIRECTOR 256576 0 51322 307899 307899
10 JOANNE CHIEF 285262 0 17115 302377 302377
12 PATRICIA CAPTAIN 99722 87082 110804 297608 297608
13 EDWARD EXECUTIVE 294580 0 0 294580 294580
Displaying Data in data.csv file
Narayans-MacBook-Pro:linux-content narayan$ cat data.csv | grep CAPTAIN | awk '{ print $2 " " $4}'
GARY 155966
ALBERT 212739
PATRICIA 99722
Displaying the Employee Name and Base Salary whose Job Title is Captain
Narayans-MacBook-Pro:linux-content narayan$ cat data.csv | grep CAPTAIN | awk '{ sum+=$4 }END{ print sum }'
468427
Displaying the total salary received by Captains
Narayans-MacBook-Pro:linux-content narayan$ cat data.csv | grep CAPTAIN | awk '{ sum+=$4 }END{ print sum/NR }'
156142
Displaying the average salary received by Captains
NOTE: END is used to indicate post process and NR is an inbuilt variable indicating Number of Records
Narayans-MacBook-Pro:linux-content narayan$

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Thank you