

Basic Linux Commands

Experiment No.: 1

Date: 05/02/2019

Aim: Familiarization with basic Linux commands.

Command 1: man

Purpose of Command: Display the manual page of the given command.

Usage: man [COMMAND]

Sample Input and Output:

```
rwthik@Zeus ~
» man man
```

```
MAN(1)                                Manual pager utils                                MAN(1)

NAME
    man - an interface to the on-line reference manuals

SYNOPSIS
    man [-C file] [-d] [-D] [--warnings[=warnings]] [-R encoding] [-L locale] [-m sys-
    tem[,...]] [-M path] [-S list] [-e extension] [-i|-I] [--regex|--wildcard]
    [--names-only] [-a] [-u] [--no-subpages] [-P pager] [-r prompt] [-7] [-E encoding]
    [--no-hyphenation] [--no-justification] [-p string] [-t] [-T[device]] [-H[browser]]
    [-X[dpi]] [-Z] [[section] page[.section] ...] ...
    man -k [apropos options] regexp ...
    man -K [-w|-W] [-S list] [-i|-I] [--regex] [section] term ...
    man -f [whatis options] page ...
    man -l [-C file] [-d] [-D] [--warnings[=warnings]] [-R encoding] [-L locale] [-P
    pager] [-r prompt] [-7] [-E encoding] [-p string] [-t] [-T[device]] [-H[browser]]
    [-X[dpi]] [-Z] file ...
    man -w|-W [-C file] [-d] [-D] page ...
    man -c [-C file] [-d] [-D] page ...
    man [-?V]

DESCRIPTION
    man is the system's manual pager. Each page argument given to man is normally the
    name of a program, utility or function. The manual page associated with each of
    these arguments is then found and displayed. A section, if provided, will direct man
    to look only in that section of the manual. The default action is to search in all
    of the available sections following a pre-defined order ("1 n l 8 3 0 2 5 4 9 6 7" by
    default, unless overridden by the SECTION directive in /etc/man_db.conf), and to show
    only the first page found, even if page exists in several sections.

    The table below shows the section numbers of the manual followed by the types of
    pages they contain.
```

Command 2: ls

Purpose of Command: List the contents of the specified directory(The current directory, if no arguments are given.) Use -a flag to display all files, including hidden files. Use -l flag to display detailed information.

Usage: ls [PATH]

Sample Input and Output:

```
rwthik@Zeus ~
» ls
Android          dhvani19      my-st-build   Resume        Videos
AndroidStudioProjects  Documents    Pictures      startpage     wallpapers
archrice         Downloads    Programs      tedFront      web
Desktop          Music        Public        Templates
```

Command 3: cd

Purpose of Command: Switch to the specified directory(Switches to the home directory, if no arguments are given.)

Usage: cd [PATH]

Sample Input and Output:

```
rwthik@Zeus ~  
» cd Desktop  
rwthik@Zeus ~/Desktop  
»
```

Command 4: pwd

Purpose of Command: Prints the present working directory.

Usage: pwd

Sample Input and Output:

```
rwthik@Zeus FossLab/Test  
» pwd  
/home/rwthik/Desktop/FossLab/Test  
rwthik@Zeus FossLab/Test  
»
```

Command 5: echo

Purpose of Command: Print to the terminal.

Usage: echo [ARGS]

Sample Input and Output:

```
rwthik@Zeus FossLab/Test  
» echo "Hello, World!"  
Hello, World!  
rwthik@Zeus FossLab/Test  
»
```

Command 6: mkdir

Purpose of Command: Creates a directory with the given name. Use the -p flag to automatically create the required parent directories.

Usage: cd [NAME]

Sample Input and Output:

```
rwthik@Zeus Desktop/FossLab  
» ls  
Reports  
rwthik@Zeus Desktop/FossLab  
» mkdir Test  
rwthik@Zeus Desktop/FossLab  
» ls  
Reports Test  
rwthik@Zeus Desktop/FossLab  
»
```

Command 7: touch

Purpose of Command: Creates a file with the given name.

Usage: touch [FILENAME]

Sample Input and Output:

```
rwthik@Zeus FossLab/Test
» ls
rwthik@Zeus FossLab/Test
» touch file1.txt
rwthik@Zeus FossLab/Test
» ls
file1.txt
rwthik@Zeus FossLab/Test
»
```

Command 8: cp

Purpose of Command: Copy files and directories from one location to another.

Use the -r flag to copy directories.

Usage: cp [SOURCE] [DESTINATION]

Sample Input and Output:

```
rwthik@Zeus FossLab/Test
» ls
file1.txt
rwthik@Zeus FossLab/Test
» cp ../../quotes.txt ./
rwthik@Zeus FossLab/Test
» ls
file1.txt quotes.txt
rwthik@Zeus FossLab/Test
»
```

Command 9: mv

Purpose of Command: Move files and directories.

Usage: mv [SOURCE] [DESTINATION]

Sample Input and Output:

```
rwthik@Zeus FossLab/Test
» ls
file1.txt quotes.txt
rwthik@Zeus FossLab/Test
» mv file1.txt ../
rwthik@Zeus FossLab/Test
» ls
quotes.txt
rwthik@Zeus FossLab/Test
»
```

Command 10: rm

Purpose of Command: Delete files and directories. Use the -r flag to delete directories.

Usage: rm [PATH]

Sample Input and Output:

```
rwthik@Zeus FossLab/Test
» ls
quotes.txt
rwthik@Zeus FossLab/Test
» rm quotes.txt
rwthik@Zeus FossLab/Test
» ls
rwthik@Zeus FossLab/Test
»
```

Command 11: tree

Purpose of Command: Displays the contents of a folder in tree structure.

Usage: tree [PATH]

Sample Input and Output:

```
rwthik@Zeus Desktop/FossLab
» tree .
.
├── Reports
│   ├── cat.png
│   ├── cd.png
│   ├── head.png
│   ├── ls.png
│   ├── man1.png
│   ├── man2.png
│   ├── mkdir.png
│   ├── Report1.aux
│   ├── Report1.log
│   ├── Report1.pdf
│   ├── Report1.synctex.gz
│   ├── Report1.tex
│   ├── tail.png
│   └── touch.png
└── Test
    └── file1.txt

2 directories, 15 files
rwthik@Zeus Desktop/FossLab
»
```

Command 12: cat

Purpose of Command: Prints the contents of the given files. Use the -n flag to display line numbers.

Usage: cat [FILE1] [FILE2] [FILE3] ...

Sample Input and Output:

```
rwithik@Zeus FossLab/Test
» cat file1.txt
"But every decision for something is also a decision against something" ~ The St
ranger, Dark

"One thing I've learned in all my years is that nothing ever works out just the
way you want it to." ~ The Oracle, Matrix Revolutions

"Your're a wizard, Harry" ~ Reubes Hagrid, HP: The Philosopher's Stone

"It does not do to dwell on dreams and forget to live" ~ Albus Dumbledore, HP: T
he Philosopher's Stone

"It takes a great deal of bravery to stand up to our enemies, but just as much t
o stand up to our friends." ~ Albus Dumbledore, HP: The Philosopher's Stone

"The truth, it is a beautiful and terrible thing, and should therefore be treate
d with great caution." ~ Albus Dumbledore, HP: The Philosopher's Stone

"It is our choices, Harry, that show what we truly are, far more than our abilit
ies" ~ Albus Dumbledore, HP: Chamber of Secrets

"I solemnly swear that I'm upto no good" ~ The Marauders, HP: The Prisoner of Az
kaban
```

Command 13: head

Purpose of Command: Prints the first few lines(10, by default) of the given file.

Use the -n flag to display more(or less) lines.

Usage: head [FILE]

Sample Input and Output:

```
rwithik@Zeus FossLab/Test
» head file1.txt
"But every decision for something is also a decision against something" ~ The St
ranger, Dark

"One thing I've learned in all my years is that nothing ever works out just the
way you want it to." ~ The Oracle, Matrix Revolutions

"Your're a wizard, Harry" ~ Reubes Hagrid, HP: The Philosopher's Stone

"It does not do to dwell on dreams and forget to live" ~ Albus Dumbledore, HP: T
he Philosopher's Stone

"It takes a great deal of bravery to stand up to our enemies, but just as much t
o stand up to our friends." ~ Albus Dumbledore, HP: The Philosopher's Stone

rwithik@Zeus FossLab/Test
»
```

Command 14: tail

Purpose of Command: Prints the last few lines(10, by default) of the given file.

Use the -n flag to display more(or less) lines.

Usage: tail [FILE]

Sample Input and Output:

```
rwithik@Zeus FossLab/Test
» tail file1.txt

"It's okay to feel lost and not have reasons." ~ Mairia Rose, Full Metal Alchemi
st

"Greed may not be good, but it's not so bad either. You humans think greed is ju
st for money or power, but everyone wants something they can't have." ~ Greed, F
ull Metal Alchemist

"You see, I'm sure we can change, because we're weak. And because we die. We hav
e to fight in order to live, and that is what will make us strong." ~ Trisha Elr
ic, Full Metal Alchemist

"It's a cruel and random world. And yet the chaos is also beautiful." ~ Dante, F
ull Metal Alchemist

"It's a sad truth that the ones closest to us are the ones capable of causing th
e most pain." ~ Rumplestiltskin, Once Upon a Time
rwithik@Zeus FossLab/Test
»
```

Command 15: less

Purpose of Command: Prints the contents of a file, one screen at a time.

Usage: less [FILE]

Sample Input and Output:

```
o stand up to our friends." ~ Albus Dumbledore, HP: The Philosopher's Stone

"The truth, it is a beautiful and terrible thing, and should therefore be treat
ed with great caution." ~ Albus Dumbledore, HP: The Philosopher's Stone

"It is our choices, Harry, that show what we truly are, far more than our abilit
ies" ~ Albus Dumbledore, HP: Chamber of Secrets

"I solemnly swear that I'm upto no good" ~ The Marauders, HP: The Prisoner of Az
kaban

"I am what I am an' I'm not ashamed. 'Never be ashamed,' my ol' dad used ter say
, 'there's some who'll hold it against you, but they're not worth botherin' with
,'" ~ Reubes Hagrid, HP: Goblet of Fire

"If you want to know what a man's like, take a good look at how he treats his in
feriors, not his equals" ~ Sirius Black, HP: Goblet of Fire

"Have a biscuit, Potter" ~ Minerva McGonnagal, HP: Order of the Pheonix

"After all this time?"
"Always," said Snape ~ HP: The Deathly Hallows
:
```

Command 16: chmod

Purpose of Command: Change the permissions of a file or directory.

Usage: chmod [PERMISSIONS] [PATH]

Sample Input and Output:

```
rwithik@Zeus FossLab/Test
» l
total 16K
drwxr-xr-x 2 rwithik rwithik 4.0K Feb  7 12:06 .
drwxr-xr-x 4 rwithik rwithik 4.0K Feb  7 12:06 ..
-rw-r--r-- 1 rwithik rwithik 7.9K Feb  7 11:59 file1.txt
rwithik@Zeus FossLab/Test
» chmod 777 file1.txt
rwithik@Zeus FossLab/Test
» l
total 16K
drwxr-xr-x 2 rwithik rwithik 4.0K Feb  7 12:06 .
drwxr-xr-x 4 rwithik rwithik 4.0K Feb  7 12:06 ..
-rwxrwxrwx 1 rwithik rwithik 7.9K Feb  7 11:59 file1.txt
rwithik@Zeus FossLab/Test
»
```

Linux Commands for Operations

Experiment No.: 2

Date: 05/02/2019

Aim: Familiarization with Linux Commands for Operations.

Operation 1: Redirection

Purpose: Redirect the output of one command to another file, or stream.

Usage: [COMMAND1] > [COMMAND2]

[COMMAND1] >> [COMMAND2]

Sample Input and Output:

```
rwthik@Zeus FossLab/Test
» cat file1.txt

rwthik@Zeus FossLab/Test
» echo "Hello, World\!" >> file1.txt
rwthik@Zeus FossLab/Test
» cat file1.txt

Hello, World!
rwthik@Zeus FossLab/Test
»
```

Operation 2: Piping

Purpose: Give the output of one command to another command.

Usage: [COMMAND1] | [COMMAND2]

Sample Input and Output:

```
rwthik@Zeus FossLab/Test
» cat file1.txt
abcd
efg
ijklmn
abcdef
abcd
efghi
efg
efghi
xzy
wxyz
xyz
rwthik@Zeus FossLab/Test
» cat file1.txt | sort
abcd
abcd
abcdef
efg
efg
efghi
efghi
ijklmn
wxyz
xyz
xzy
rwthik@Zeus FossLab/Test
»
```


Operation 3: sort

Purpose: Sort the output. Use the -r flag to sort it in reverse order.

Usage: [COMMAND] | sort

Sample Input and Output:

```
rwthik@Zeus FossLab/Test
» cat file1.txt
abcd
efg
ijklmn
abcdef
abcd
efghi
efg
efghi
xzy
wxyz
xyz
rwthik@Zeus FossLab/Test
» cat file1.txt | sort
abcd
abcd
abcdef
efg
efg
efghi
efghi
ijklmn
wxyz
xyz
xzy
rwthik@Zeus FossLab/Test
»
```

Operation 4: uniq

Purpose: Excludes adjacent identical lines from the input.

Usage: [COMMAND1] | uniq

Sample Input and Output:

```
efghi
efg
efghi
xzy
wxyz
xyz
rwthik@Zeus FossLab/Test
» cat file1.txt | sort
abcd
abcd
abcdef
efg
efg
efghi
efghi
ijklmn
wxyz
xyz
xzy
rwthik@Zeus FossLab/Test
» cat file1.txt | sort | uniq
abcd
abcdef
efg
efghi
ijklmn
wxyz
xyz
xzy
rwthik@Zeus FossLab/Test
»
```

Operation 5: Job Control- Display

Purpose: Display the jobs in the background

Usage: jobs

Sample Input and Output:

```
rwthik@Zeus ~  
» jobs  
[1] - suspended  cmatrix  
[2] + suspended  tty-clock  
rwthik@Zeus ~  
»
```

Operation 6: Job Control- Kill

Purpose: Kill the specifies job.

Usage: kill [PID]

killall [NAME]

Sample Input and Output:

```
rwthik@Zeus FossLab/Test  
» kill 24003
```

Operation 7: ps

Purpose: Display the active processes in the current shell session.

Usage: ps

Sample Input and Output:

```
rwthik@Zeus ~  
» ps  
  PID TTY          TIME CMD  
23573 pts/0    00:00:00 zsh  
23659 pts/0    00:00:00 ps  
rwthik@Zeus ~  
»
```

Advanced Linux Commands

Experiment No.: 3

Date: 05/02/2019

Aim: Familiarization with Advanced Linux Commands.

Command 1: curl

Purpose: Send and receive data from and to a server.

Usage: curl [URLs]

Sample Input and Output:

```
rwthik@Zeus ~
» curl localhost:8080
<html>
  <head>
    <title>Test form</title>
  </head>
  <body>
    <form action="/submit" method="post">
      First Name: <input name="fname" type="text"><br>
      Last Name: <input name="lname" type="text"><br>
      <input type="submit">
    </form>
  </body>
</html>
rwthik@Zeus ~
»
```

Command 2: wget

Purpose:

Usage: wget [URLs]

Sample Input and Output:

```
rwthik@Zeus ~
» wget localhost:8080
--2019-02-08 14:18:37-- http://localhost:8080/
Resolving localhost (localhost)... ::1, 127.0.0.1
Connecting to localhost (localhost)|::1|:8080... connected.
HTTP request sent, awaiting response... 200 OK
Length: 257 [text/html]
Saving to: 'index.html'

index.html      100%[=====]      257  --.-KB/s   in 0s

2019-02-08 14:18:37 (11.5 MB/s) - 'index.html' saved [257/257]

rwthik@Zeus ~
»
```

Command 3: ftp

Purpose: Remote file transfer with File Transfer Protocol.

Usage: ftp [IP or DOMAIN]

Sample Input and Output:

```
rwthik@Zeus ~
» ftp localhost:8080

```

Command 4: ssh

Purpose: Program for logging into a remote machine and for executing commands on it over a network.

Usage: ssh [username@domain]

Sample Input and Output:

```
rwthik@Zeus ~  
» ssh bandit0@bandit.labs.overthewire.org  
bandit0@bandit.labs.overthewire.org's password: █
```

Command 5: grep

Purpose: Searches for the given pattern in the given files. Use the -e flag for regex support.

Usage: grep [PATTERN] [FILE]

[COMMAND] | grep [PATTERN]

Sample Input and Output:

```
rwthik@Zeus ~/Desktop  
» ls  
FossilLab presentations quotes.txt script sites.txt  
rwthik@Zeus ~/Desktop  
» cat quotes.txt | grep "Dumbledore"  
"It does not do to dwell on dreams and forget to live" ~ Albus Dumbledore, HP: The P  
hilosopher's Stone  
"It takes a great deal of bravery to stand up to our enemies, but just as much to st  
and up to our friends." ~ Albus Dumbledore, HP: The Philosopher's Stone  
"The truth, it is a beautiful and terrible thing, and should therefore be treated wi  
th great caution." ~ Albus Dumbledore, HP: The Philosopher's Stone  
"It is our choices, Harry, that show what we truly are, far more than our abilities"  
~ Albus Dumbledore, HP: Chamber of Secrets  
"Of course it is happening inside your head, Harry, but why on earth should that mea  
n it is not real?" ~ Albus Dumbledore, HP: The Deathly Hallows  
rwthik@Zeus ~/Desktop  
» █
```