

BASICS of NWP & Practices at TSMS

An Introduction to Linux

(netCDF / GRIB2 / BUFR – CREX)

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Basic Linux Commands

- File Handling
- Text Processing
- System Administration
- Process Management
- Archival
- Network
- File Systems

Sources to learn commands??

- **Primary** – **man**(manual) pages.

man <command> - shows all information about the command
<command> --help - shows the available options
for that command

- **Secondary** – Books and Internet

File Handling commands

mkdir – make directories

Usage: mkdir [OPTION] DIRECTORY...
eg. mkdir prabhat

ls – list directory contents

Usage: ls [OPTION]... [FILE]...
eg. ls, ls -l, ls prabhat

cd – changes directories

Usage: cd [DIRECTORY]
eg. cd prabhat

File Handling(contd...)

pwd - print name of current working directory

Usage: pwd

vim – Vi Improved, a programmers text editor

Usage: vim [OPTION] [file]...

eg. vim file1.txt

File Handling(contd...)

cp – copy files and directories

Usage: cp [OPTION]... SOURCE DEST

eg. cp sample.txt sample_copy.txt

cp sample_copy.txt target_dir

mv – move (rename) files

Usage: mv [OPTION]... SOURCE DEST

eg. mv source.txt target_dir

mv old.txt new.txt

File Handling(contd...)

rm - remove files or directories

Usage: rm [OPTION]... FILE...

eg. rm file1.txt , rm -rf some_dir

find – search for files in a directory hierarchy

Usage: find [OPTION] [path] [pattern]

eg. find file1.txt, find -name file1.txt

history – prints recently used commands

Usage: history

Pattern

A Pattern is an expression that describes a set of strings which is used to give a concise description of a set, without having to list all elements.
eg. `ab*cd` matches anything that starts with `ab` and ends with `cd` etc.

`ls *.txt` – prints all text files

Text Processing

cat – concatenate files and print on the standard output

Usage: cat [OPTION] [FILE]...

eg. cat file1.txt file2.txt

cat -n file1.txt

echo – display a line of text

Usage: echo [OPTION] [string] ...

eg. echo I love India

echo \$HOME

Text Processing(contd...)

grep - print lines matching a pattern

Usage: grep [OPTION] PATTERN [FILE]...

eg. grep -i apple sample.txt

wc - print the number of newlines, words, and bytes in files

Usage: wc [OPTION]... [FILE]...

eg. wc file1.txt

wc -L file1.txt

sort – sort lines of text files

Usage: sort [OPTION]... [FILE]...

eg. sort file1.txt

sort -r file1.txt

Linux File Permissions

3 types of file permissions – read, write, execute

10 bit format from 'ls -l' command

1	2 3 4	5 6 7	8 9 10
file type	owner	group	others

eg. **drwxrw-r--** means owner has all three permissions, group has read and write, others have only read permission

read permission – 4, write – 2, execute -1

eg. **rw**xrw-r-- = 764

673 = rw-rwx-wx

System Administration

chmod – change file access permissions

Usage: chmod [OPTION] [MODE] [FILE]

eg. chmod 744 calculate.sh

chown – change file owner and group

Usage: chown [OPTION]... OWNER[:
[GROUP]] FILE...

eg. chown remo myfile.txt

System Administration (contd...)

su – change user ID or become superuser

Usage: su [OPTION] [LOGIN]

eg. su remo, su

passwd – update a user's authentication tokens(s)

Usage: passwd [OPTION]

eg. passwd

who – show who is logged on

Usage: who [OPTION]

eg. who , who -b , who -q

Process Management

ps – report a snapshot of the current processes

Usage: ps [OPTION]

eg. ps, ps -el

kill – to kill a process(using signal mechanism)

Usage: kill [OPTION] pid

eg. kill -9 2275

Archival

tar – to archive a file

Usage: tar [OPTION] DEST SOURCE

eg. Tar cvf /home/archive.tar /home/original

tar -xvf /home/archive.tar

zip – package and compress (archive) files

Usage: zip [OPTION] DEST SOURCE

eg. zip original.zip original

unzip – list, test and extract compressed files in a ZIP archive

Usage: unzip filename

eg. unzip original.zip



Network

ssh – SSH client (remote login program)

“ssh is a program for logging into a remote machine and for

executing commands on a remote machine”

Usage: ssh [options] [user]@hostname

eg. ssh -X guest@10.105.11.20

scp – secure copy (remote file copy program)

“scp copies files between hosts on a network”

Usage: scp [options] [[user]@host1:file1] [[user]@host2:file2]

eg. scp file1.txt guest@10.105.11.20:~/Desktop/

Process Management

bg – make a foreground process to run in background

Usage: type 'ctrl+z' and then 'bg <job id>'

fg –
to make background process as foreground process

Usage: fg [jobid]

jobs – displays the names and ids of background jobs

Usage: jobs

Editor commands

kate – KDE Advanced Text Editor

Usage: kate [options][file(s)]

eg. kate file1.txt file2.txt

gedit - A text Editor. Used to create and edit files

Usage: gedit [OPTION] [FILE]...

eg. Gedit

nedit - NEdit is a multi-purpose text editor

Shell Scripting

A shell script is a **script** written for the **shell**, or **command line interpreter**, of an **operating system**.

It is often considered a simple **domain-specific programming language**.

Typical operations performed by shell scripts include file manipulation, program execution, and printing text.

Shell Scripting

Step 1: Open the file using an editor (nedit, vi etc.)

```
nedit Firstshellscript.sh
```

Step 2: All shell scripts should begin with "#!/bin/bash" or whatever other shell you prefer.

Step 3: Write the code that you want to develop. Our first shell script will be the usual "Hello World" routine, which we'll place in a file called 'Firstshellscript.sh'.

```
#!/bin/sh  
echo "Hello World"
```

Step 4: The next step is to make the script executable by using the "chmod" command.

```
chmod 744 Firstshellscript.sh  
or  
chmod +x Firstshellscript.sh
```

Step 5: Execute the script.

```
bash$ ./Firstshellscript.sh  
Hello World
```



THANK YOU!...

