

# Linux\_2

linux2

Training Clarusway

Pear Deck - July 17, 2023 at 9:46AM

## Part 1 - Summary

Use this space to summarize your thoughts on the lesson

## Part 2 - Responses

Slide 1



### Command Line Basics 1/2



Linux Essentials

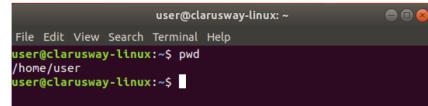
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Use this space to take notes:

## Slide 2

### Basic Shell Commands

`pwd` show current path  
(print working directory)



```
user@clarusway-linux: ~
File Edit View Search Terminal Help
user@clarusway-linux:~$ pwd
/home/user
user@clarusway-linux:~$
```

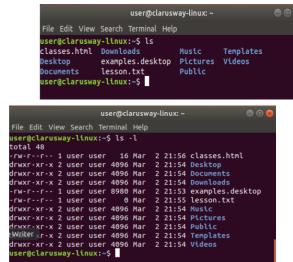
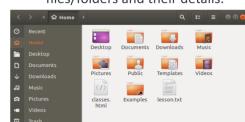
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## Slide 3

### Basic Shell Commands

`ls` lists directory contents  
`ls -l` lists directory contents with details  
`ls -a` lists directory contents with hidden folders and files  
`ls -al` lists folder contents with hidden files/folders and their details.



```
user@clarusway-linux: ~
File Edit View Search Terminal Help
user@clarusway-linux:~$ ls
classes.html Downloads Music Templates
desktop examples.desktop Pictures Videos
Documents lesson.txt Public
user@clarusway-linux:~$
```

```
user@clarusway-linux: ~
File Edit View Search Terminal Help
user@clarusway-linux:~$ ls -l
total 48
drwxr-xr-x 1 user user 16 Mar 2 21:56 classes.html
drwxr-xr-x 2 user user 4096 Mar 2 21:56 Desktop
drwxr-xr-x 2 user user 4096 Mar 2 21:56 Documents
drwxr-xr-x 2 user user 4096 Mar 2 21:56 Downloads
-rw-r--r-- 1 user user 9890 Mar 2 21:56 examples.desktop
-rw-r--r-- 3 user user 4096 Mar 2 21:56 lesson.txt
drwxr-xr-x 2 user user 4096 Mar 2 21:56 Pictures
drwxr-xr-x 2 user user 4096 Mar 2 21:56 Public
drwxr-xr-x 2 user user 4096 Mar 2 21:56 Templates
drwxr-xr-x 2 user user 4096 Mar 2 21:56 Videos
user@clarusway-linux:~$
```

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## Slide 4

### Basic Shell Commands

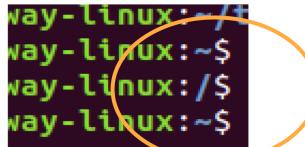
cd [dir] change (current) directory

cd .. change current directory  
to one level up

cd / change current directory  
to the root directory

cd ~ change current directory  
to the home directory

```
user@clarusway-linux: ~
File Edit View Search Terminal Help
user@clarusway-linux:~$ cd test
user@clarusway-linux:~/test$ cd ..
user@clarusway-linux:~/$ cd /
user@clarusway-linux:/$ cd ~
user@clarusway-linux:~$
```



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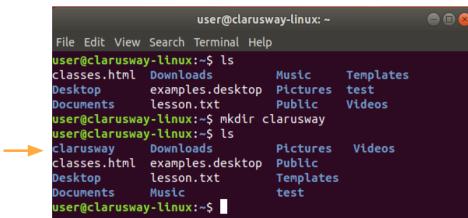
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## Slide 5

### Basic Shell Commands

mkdir [dir] (make directory) create a new directory

```
user@clarusway-linux: ~
File Edit View Search Terminal Help
user@clarusway-linux:~$ ls
classes.html Downloads Music Templates
Desktop examples.desktop Pictures test
Documents lesson.txt Public Videos
user@clarusway-linux:~$ mkdir clarusway
user@clarusway-linux:~$ ls
clarusway Downloads Pictures Videos
classes.html examples.desktop Public
Desktop lesson.txt Templates
Documents Music test
user@clarusway-linux:~$
```



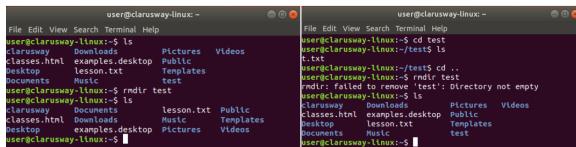
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## Slide 6

### Basic Shell Commands

**rmdir [dir]** (remove directory) delete an empty directory



```
user@clarusway-linux:~$ ls
clarusway  Downloads  Pictures  Videos
classes.html  examples.desktop  Public
desktop  lesson.txt  Templates
Documents  Music  test
user@clarusway-linux:~$ rmdir test
user@clarusway-linux:~$ ls
clarusway  Documents  lesson.txt  Public
classes.html  Downloads  Music  Templates
desktop  examples.desktop  Pictures  Videos
Documents  Music  test
user@clarusway-linux:~$ user@clarusway-linux:~/test$ ls
lesson.txt
user@clarusway-linux:~/test$ cd ..
user@clarusway-linux:~$ rmdir test
rmdir: failed to remove 'test': Directory not empty
user@clarusway-linux:~$ ls
clarusway  Downloads  Pictures  Videos
classes.html  examples.desktop  Public
desktop  lesson.txt  Templates
Documents  Music  test
user@clarusway-linux:~$
```

! It works if the folder content is empty, otherwise it gives a warning.

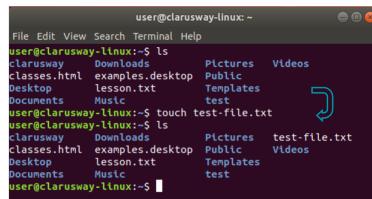
6

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## Slide 7

### Basic Shell Commands

**touch [filename]** create a file



```
user@clarusway-linux:~$ ls
clarusway  Downloads  Pictures  Videos
classes.html  examples.desktop  Public
desktop  lesson.txt  Templates
Documents  Music  test
user@clarusway-linux:~$ touch test-file.txt
user@clarusway-linux:~$ ls
clarusway  Downloads  Pictures  test-file.txt
classes.html  examples.desktop  Public  Videos
desktop  lesson.txt  Templates
Documents  Music  test
user@clarusway-linux:~$
```

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## Slide 8

### Basic Shell Commands



`mkdir dirname{1..10}`

`touch filename{a..z}`

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## Slide 9

### Case Sensitivity

Most of the common Linux file systems are case sensitive; this is something to keep in mind when creating files or directories and moving through directories.

A ≠ a



Lower-case and upper-case letters have different ASCII representation.

`touch newfile`  
`touch Newfile`  
Will create two different files.

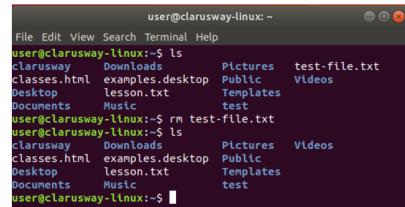
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## Slide 10

### Basic Shell Commands

**rm** (remove) delete a file



A screenshot of a terminal window titled "user@clarusway-linux: ~". The window shows the following command sequence:

```
user@clarusway-linux:~$ ls
clarusway  Downloads  Pictures  test-file.txt
classes.html examples.desktop  Public  Videos
Desktop    lesson.txt  Templates
Documents   Music      test

user@clarusway-linux:~$ rm test-file.txt
user@clarusway-linux:~$ ls
clarusway  Downloads  Pictures  Videos
classes.html examples.desktop  Public  Templates
Desktop    lesson.txt  Documents  Music
user@clarusway-linux:~$
```

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## Slide 11

### Basic Shell Commands

**rm -d** directoryname= rmdir directoryname  
**rm -r** directoryname  
**rm -f** Remove all files in the working directory.  
**rm -rf** rm will not prompt you for any reason before deleting them

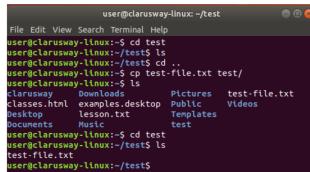
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## Slide 12

### Basic Shell Commands

**cp** copy a file to another location



```
user@clarusway-linux: ~/test
File Edit View Search Terminal Help
user@clarusway-linux:~$ cd test
user@clarusway-linux:~/test$ ls
user@clarusway-linux:~/test$ cd ..
user@clarusway-linux:~$ cp test-file.txt test/
user@clarusway-linux:~$ ls
classes.html examples.desktop Pictures test-file.txt
Desktop lesson.txt Public Videos
Documents Music test
user@clarusway-linux:~$ cd test
user@clarusway-linux:~/test$ ls
test-file.txt
user@clarusway-linux:~/test$
```

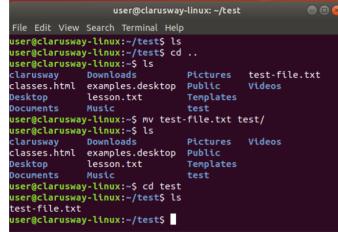
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### Basic Shell Commands

**mv** move a file to another location



```
user@clarusway-linux: ~/test
File Edit View Search Terminal Help
user@clarusway-linux:~/test$ ls
user@clarusway-linux:~/test$ cd ..
user@clarusway-linux:~$ ls
classes.html examples.desktop Pictures test-file.txt
Desktop lesson.txt Public Videos
Documents Music test
user@clarusway-linux:~$ mv test-file.txt test/
user@clarusway-linux:~$ ls
classes.html Downloads Pictures Videos
examples.desktop Public
lesson.txt Templates
Music test
user@clarusway-linux:~$ cd test
user@clarusway-linux:~/test$ ls
test-file.txt
user@clarusway-linux:~/test$
```

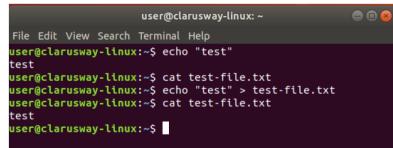
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## Slide 14

### Basic Shell Commands

```
echo      print message to screen  
echo > [file]  print message into a file  
            if the file doesn't exist it creates  
echo >> [file] adds to existing content
```



A screenshot of a terminal window titled "user@clarusway-linux: ~". The window shows the following commands being run:

```
File Edit View Search Terminal Help  
user@clarusway-linux:~$ echo "test"  
test  
user@clarusway-linux:~$ cat test-file.txt  
user@clarusway-linux:~$ echo "test" > test-file.txt  
user@clarusway-linux:~$ cat test-file.txt  
test  
user@clarusway-linux:~$
```

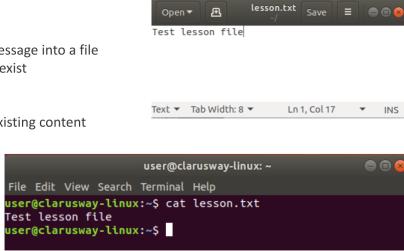
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## Slide 15

### Basic Shell Commands

```
cat  show file contents  
  
cat > [filename]  print message into a file  
                  if the file doesn't exist  
                  it creates  
  
cat >> [filename] adds to existing content
```



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### Simple Globbing

Globbing is primarily used to match patterns in filenames or text by using a wildcard character to create a pattern.

Character	Name	Function
?	Question mark	Match any single character
*	Asterisk	Match any number of character(s)
[]	Brackets	Match character from a range
^	Caret	Used to match starting character
\$	Dollar sign	Used to match ending character
{}	Curly brace	Used to match more than one pattern
	Pipe	Used for applying more than one condition

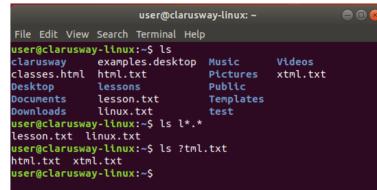
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### Multiple File/Directory Operations

- ? used for a single character
- \* used for multiple characters



```
user@clarusway-linux:~$ ls
clarusway examples desktop Music Videos
classes.html html.txt Pictures xhtml.txt
Desktop lessons Public Templates
Documents lesson.txt Templates
Downloads llinux.txt test
user@clarusway-linux:~$ ls t.*
lesson.txt llinux.txt
user@clarusway-linux:~$ ls ?ml.txt
html.txt xhtml.txt
user@clarusway-linux:~$
```

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Use this space to take notes:

## Basic SHELL Commands



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## Basic SHELL Commands

File Commands	System Info
<code>ls</code> - directory listing <code>ls -al</code> - formatted listing with hidden files	<code>date</code> - show the current date and time <code>cal</code> - show this month's calendar
<code>cd dir</code> - change directory to <code>dir</code>	<code>uptime</code> - show current uptime
<code>cd ..</code> - go up one directory	<code>who</code> - display who is logged in
<code>pwd</code> - show current directory	<code>whoami</code> - who you are logged in as
<code>mkdir dir</code> - create a directory <code>dir</code>	<code>finger user</code> - display information about user
<code>rm file</code> - delete file	<code>meminfo</code> - memory information
<code>rm -r dir</code> - delete directory <code>dir</code>	<code>cat /proc/cpuinfo</code> - cpu information
<code>rm -f file</code> - force remove <code>file</code>	<code>cat /proc/meminfo</code> - memory information
<code>mv file dir</code> - move file to directory <code>dir</code>	<code>more command</code> - more command for command
<code>cp file1 file2</code> - copy <code>file1</code> to <code>file2</code>	<code>df</code> - show disk usage
<code>cp -r dir1 dir2</code> - copy <code>dir1</code> to <code>dir2</code> ; create <code>dir2</code> if it doesn't exist	<code>free</code> - show memory and swap usage
<code>mv file1 file2</code> - rename or move <code>file1</code> to <code>file2</code>	<code>whereis app</code> - show possible locations of <code>app</code>
<code>ln -s file link</code> - symbolic link <code>link</code> to <code>file</code>	<code>which app</code> - show which <code>app</code> will be run by default
<code>touch file</code> - creates or update <code>file</code>	
<code>cat &gt; file</code> - places standard input into <code>file</code>	
<code>more file</code> - output the contents of <code>file</code>	
<code>head -n lines file</code> - output the first <code>n</code> lines of <code>file</code>	
<code>tail file</code> - output the last 10 lines of <code>file</code>	
<code>tail -f file</code> - output the contents of <code>file</code> as it grows, starting from the end	
Process Management	Compression
<code>ps</code> - display your currently active processes	<code>tar cf file.tar files</code> - create a tar named <code>file.tar</code> containing <code>files</code>
<code>top</code> - display all running processes	<code>xz file.tar</code> - extract files from <code>file.tar</code> <code>tar xf file.tar -C /path</code> - extract files from <code>file.tar</code> to <code>/path</code>

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### Task



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## Slide 21



### Command Line Basics 2/2



Linux Essentials

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## Slide 22



### Using the Command Line to Get Help

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### Table of Contents

- ▶ Man Pages
- ▶ Info Pages

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## Slide 24

### 1 Man Pages



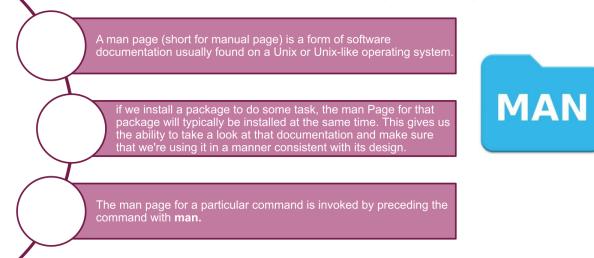
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### Man Pages

**man [command]**



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## Slide 26

### Man Pages

#### man ls

```
ls(1)                               User Commands                             ls(1)

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
'-C', '-M', or '-S' is specified.

Note that some of the long options are mandatory for short options too.

-a, --all          ignore entries starting with .
-n, --numeric     do not list implied . and ..
-l, --long         print the author of each file
-t, --time         print the time before printing them; e.g., '--block-size' prints sizes in units of 1,000,000
           bytes; see XFS format below
-L, --dereference  do not list implied entries ending with ~
-v, --version      with -t, also show file (time or last modification of file status information); with -L
           lists entries by column
--color[=NAME]     colorize the output; NAME can be 'always' (default if omitted), 'never', or 'auto'; more info below
-d, --directory   list directories only

SEE ALSO
ls(1), find(1), du(1), free(1), mount(8), sync(8), umount(8)
```

**NAME**  
Program or Function name(s)  
followed by descriptions of  
functionality.

**SYNOPSIS**  
A short overview of available  
options

**DESCRIPTION**  
Detailed information about  
arguments and options.

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### 2 Info Pages

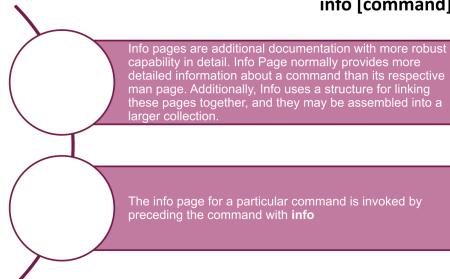
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### Info Pages

**info [command]**



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### Info Pages

**info echo**

```
echo: print invocation, or printing text
      * echo*: Print a line of text
      * echo*: Write each given STRING to standard output, with a space between them if there is more than one. Synopsis:
      echo [OPTION]... [STRING]...
      Due to shell aliases and built-in "echo" functions, using an
      unquoted "echo" interactively or in a script might not give the
      result you expect. Instead, use the -e option (i.e., "-env")
      to avoid interference from the shell. See also the "echo"
      entry in the "Bash Reference Manual". Also see "tac(1)".
      -n: Do not output the trailing newline.
      -e: Enable interpretation of the following backslash-escaped characters
          in each STRING:
          \a: alert (bell)
          \b: backspace
          \c: produce no further output
          \e: escape
          \f: form feed
          \n: newline
          \r: carriage return
      Info: Command-line Invocation, 18.2 (Sep 17 2012, 10:45:00)
      Copyright 2002 Free Software Foundation, Inc.
      License GPLv3+: GNU GPL version 3 or later
      This is free software: you are free to change it and/or redistribute
      it under the terms of the GNU General Public License version 3
      or later.
      There is NO WARRANTY, to the extent permitted by law.
```

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### Vim Editor

vim filename

- Vim is a powerful text editor used in CLI (command line interface).
- Vim is an editor to create or edit a text file.



You cannot write text in command mode. To write text into a file, there is a dedicated insert mode. When you want to write something on a file, you must enter the insert mode.

When you start Vim, you are placed in Command mode. In this mode, you can move across the screen, delete text and copy text.



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### Vim Editor

Vim Command	Description
i	Enter insert mode
Esc	Enter command mode
x or Del	Delete a character
X	Delete character is backspace mode
u	Undo changes
Ctrl + r	Redo changes
yy	Copy a line
dd	Delete a line
p	Paste the content of the buffer
[l or gg	Move to the beginning of a file
] or G	Move to the end of a file
:%s/foo/bar/g	Search and replace all occurrences
Esc + :w	Save changes
Esc + :wq or Esc + ZZ	Save and quit Vim

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### Nano Editor

GNU nano is a small and friendly text editor.  
Besides basic text editing, nano offers features like:

- undo/redo
- syntax coloring
- interactive search-and-replace
- auto-indentation
- line numbers
- word completion
- file locking, backup files
- internationalization support.



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### Nano Editor

- Unlike vim, nano is a modeless editor, which means that you can start typing and editing the text immediately after opening the file.
- To open an existing file or to create a new file, type nano followed by the file name.

`nano filename`



Nano Command	Meaning
Ctrl G	Get Help
Ctrl X	Exit
Ctrl O	Write Out
Ctrl R	Read File
Ctrl W	Where Is
Ctrl \	Replace
Ctrl K	Cut Text
Ctrl U	Uncut Text
Ctrl J	Justify
Ctrl T	To Spell
Ctrl C	Cur Pos
Alt U	Undo
Alt E	Redo

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### 1 Files and Directories

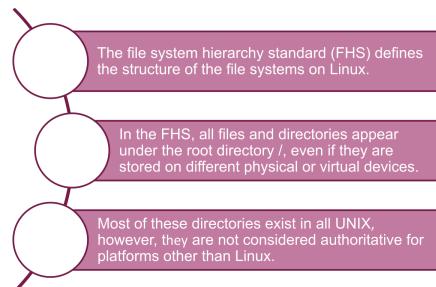
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### Files and Directories



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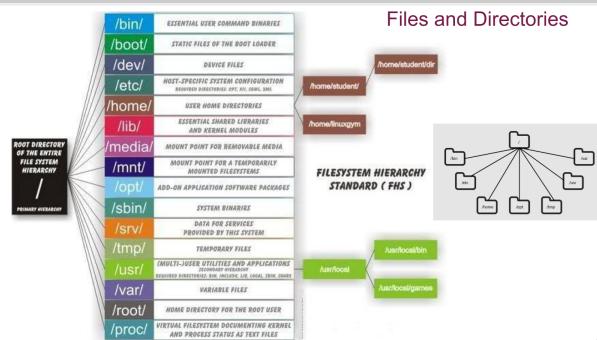
### Files and Directories

/root	: Home directory of the root user
/bin	: Essential command binaries
/boot	: Boot loader files
/dev	: Essential device files
/etc	: Host-specific configuration files
/home	: Users' home directories
/lib	: Libraries essential for the binaries
/mnt	: Temporarily mounted filesystems
/opt	: Optional application packages
/proc	: Contains information about system
/sbin	: Essential system binaries
/tmp	: Temporary files
/var	: Variable data files

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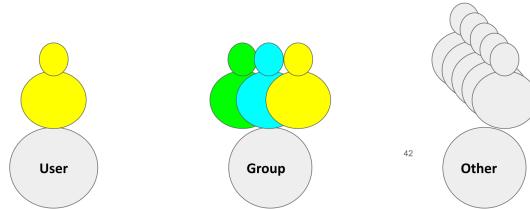
### 2 ➤ File Permission

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File Permission  Ownership 



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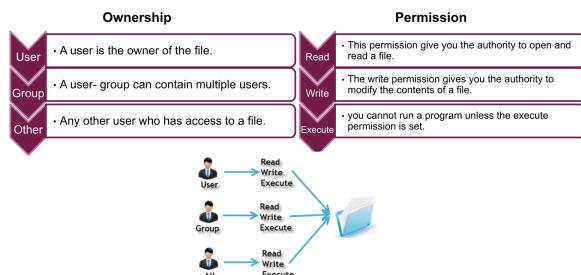
File Permission  Permissions 



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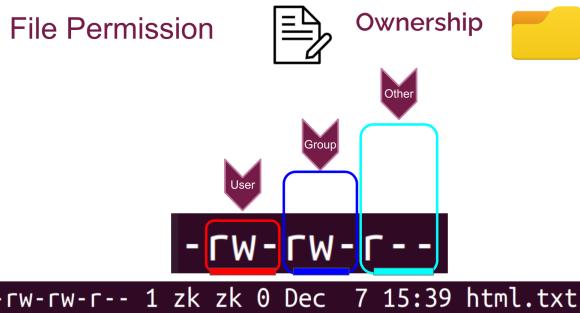
### File Permission



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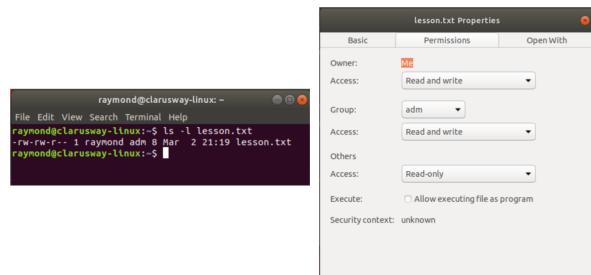
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### File Permission

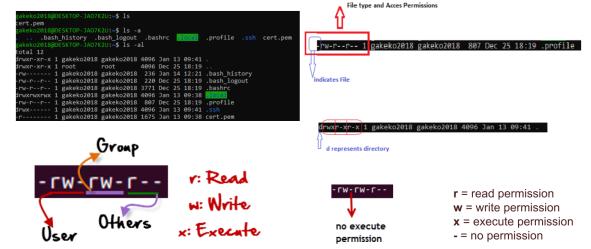


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### File Permission



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## Slide 48

### File Permission

#### Changing Permission with chmod Command

We can use the **chmod** command which stands for **change mode**. we can set permissions (read, write, execute) on a file/directory for the owner, group and the world.

```
chmod permissions filename  
chmod u=rwx,g=rx,o=r myfile
```

Symbol	Permission Type
---	No Permission
-x	Execute
-w-	Write
-wx	Execute+Write
r--	Read
r-x	Read+Execute
rw-	Read+Write
rwx	Read+Write+Execute

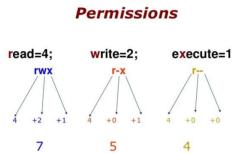
48

Use this space to take notes:

## Slide 49

### File Permission

```
root@DESKTOP-4QQ155L:~# ls -l  
total 0  
-rwxr--r-- 1 root root 0 Dec 29 17:53 file1  
root@DESKTOP-4QQ155L:~# chmod 754 file2  
root@DESKTOP-4QQ155L:~# ls -l  
-rwxr--r-- 1 root root 0 Dec 29 17:53 file2
```



**754** code says;  
•Owner can read, write and execute  
•User's group can read and execute  
•Other can only read

```
chmod u=rwx,g=rx,o=r myfile  
chmod 754 myfile
```



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Use this space to take notes:

## Slide 50

### File Permission

```
zk@ubuntu:~/ASSIGNMENT/Lessons/HTML$ ls -l
total 0
-rwx----- 1 zk zk 0 Dec  7 15:39 cas.txt
!r-----rwx--- 1 zk zk 0 Dec  7 15:39 html.txt
!-----rwx 1 zk zk 0 Dec  7 15:39 java.txt
-rwxrwxrwx 1 zk zk 0 Dec  7 17:10 js.js
-rwxrwx--x 1 zk zk 0 Dec  7 17:11 k.txt
-rw-r--r-- 1 zk zk 0 Dec  7 17:13 l.txt
```

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## Slide 51

### File Permission

File Type	- or d	r	w	x	r	w	x	r	w	x
		4	2	1	4	2	1	4	2	1
		7	7	7	7	7	7	7	7	7

764

Read + Write + Execute (rwx)

Read (r--)

Read + Write (rw-)

d	r	w	x	r	-	x	r	-	-	-
File type	read	write	exec	read	write	exec	read	write	exec	
(directory)	4	2	1	4	2	1	4	2	1	
	7			5			4			

Use this space to take notes:

## Slide 52

### Your Response

## Slide 52

## Your Response

Set permissions of myfile.txt to;

- ▶ owner : full access
- group : read and execute
- others : no access

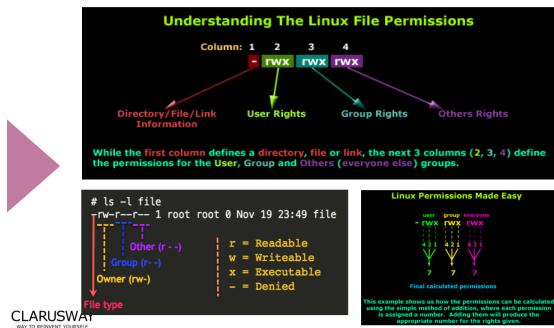


SWAY  
Students, write your response!

Peer Deck Interactive Slide  
Do not refresh this slide

Use this space to take notes:

## Slide 53



Use this space to take notes:

## Slide 54

File Attributes	Meaning
- rwx-----	A regular file that is readable, writable, and executable by the file's owner. No one else has any access.
- rw-----	A regular file that is readable and writable by the file's owner. No one else has any access.
- rwxr--r--	A regular file that is readable and writable by the file's owner. Members of the file's owner group may read the file. The file is world-readable.
- rwxr-xr-x	A regular file that is readable, writable, and executable by the file's owner. The file may be read and executed by everybody else.
- rwx-rw----	A regular file that is readable and writable by the file's owner and members of the file's group owner only.
lrwxrwxrwx	A symbolic link. All symbolic links have "dummy" permissions. The real permissions are kept with the actual file pointed to by the symbolic link.
drwxrwxrwx	A directory. The owner and the members of the owner group may enter the directory and create, rename and remove files within the directory.
drwxr-x---	A directory. The owner may enter the directory and create, rename, and delete files within the directory. Members of the owner group may enter the directory but cannot create, delete, or rename files.

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## Slide 55

Octal	Binary	File Mode
0	000	- - -
1	001	- - x
2	010	- w -
3	011	- wx
4	100	r - -
5	101	r - x
6	110	r w -
7	111	rwx

By using three octal digits, we can set the file mode for the owner, group owner, and world.

55

Use this space to take notes:

## User Operations

CLARUSWAY  
WAY TO REINVENT YOURSELF

Use this space to take notes:

### Basic Shell Commands

<b>whoami</b>	current user
<b>hostname</b>	shows the system hostname
<b>hostname -i</b>	show the IP address of the system



```
robert@robert-virtual-machine:~$ users
robert
robert@robert-virtual-machine:~$ hostname
robert@robert-virtual-machine:~$ hostname -i
127.0.1.1
robert@robert-virtual-machine:~$
```

57

Use this space to take notes:

## Slide 58

### User Operations

**id**

Linux is used to find out user and group names and numeric ID's (UID or group ID) of the current user or any other user in the server.

**id**

returns the current user and groups without any parameters

**id [username]**

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## Slide 59

### User Operations

**su**

It is used to change the user account.

**sudo [command]**

It is used to run commands as root (the most authorized user).  
It may ask for a password.

**sudo adduser [username]**

adduser or useradd commands are used to create a user.

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## Slide 60

### User Operations

**sudo userdel [username]**  
it will just delete the user

**sudo userdel -r [username]**  
The r parameter is used to delete the user with their files.

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Use this space to take notes:

## Slide 61

### Users

**passwd [username]**  
changes password

**cat /etc/passwd**  
The user list is in the /etc/passwd file.  
File content can be seen with cat command

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Use this space to take notes:

## Slide 62

### User Operations

**sudo groupadd [username]**  
Creates a group

**groups**  
Lists groups

**sudo usermod -a -G [group] [username]**  
assigns the user to a group

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Use this space to take notes:

## Slide 63

### Users

**groups [username]**  
Lists the groups that the user is a member of.

**sudo groupdel [username]**  
Deletes the group

**cat /etc/group**  
The user list is in the /etc/group file.  
File content can be seen with cat command

63

Use this space to take notes:



## Ping & SSH Command

CLARUSWAY  
WAY TO REINVENT YOURSELF

Use this space to take notes:

### Ping Command



Ping or Packet Internet Groper is a network administration utility used to check the connectivity status between a source and a destination device.

ping host-name/IP

```
ping 54.93.34.220
PING 54.93.34.220 (54.93.34.220) 56(84) bytes of data.
64 bytes from 54.93.34.220: icmp_seq=1 ttl=243 time=60.6 ms
64 bytes from 54.93.34.220: icmp_seq=2 ttl=243 time=60.6 ms
64 bytes from 54.93.34.220: icmp_seq=3 ttl=243 time=62.4 ms
64 bytes from 54.93.34.220: icmp_seq=4 ttl=243 time=67.6 ms
64 bytes from 54.93.34.220: icmp_seq=5 ttl=243 time=62.7 ms
64 bytes from 54.93.34.220: icmp_seq=6 ttl=243 time=62.6 ms
64 bytes from 54.93.34.220: icmp_seq=7 ttl=243 time=62.6 ms
64 bytes from 54.93.34.220: icmp_seq=8 ttl=243 time=62.6 ms
64 bytes from 54.93.34.220: icmp_seq=9 ttl=243 time=72.0 ms
```

65

Use this space to take notes:

## Slide 66

### Ping Command

The ping command is one of the most used utilities for troubleshooting, testing, and diagnosing network connectivity issues.

Ping works by sending one or more ICMP (Internet Control Message Protocol) Echo Request packages to a specified destination IP on the network and waits for a reply. When the destination receives the package, it will respond back with an ICMP echo reply.

With the ping command, you can determine whether a remote destination IP is active or inactive. You can also find the round-trip delay in communicating with the destination and check whether there is a packet loss.

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Use this space to take notes:

## Slide 67

### Ping Command

The ping command resolves the domain name into an IP address and starts sending ICMP packages to the destination IP. If the destination IP is reachable it will respond back and the ping command prints a line that includes the following fields:

- The number of data bytes. The default is 56, which translates into 64 ICMP data bytes - 64 bytes
- The IP address of the destination - from ...
- The ICMP sequence number for each packet. icmp\_seq=1
- The Time to Live - ttl=53
- The ping time, measured in milliseconds which is the round trip time for the packet to reach the host, and for the response to return to the sender - time=41.4 ms

By default, the interval between sending a new packet is one second.

The ping command will continue to send ICMP packages to the Destination IP address until it receives an interrupt. To stop the command, just hit the Ctrl+C key combination.

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Use this space to take notes:

## Slide 68

### Ping Command

```
$ ping clarusway.com
Pinging clarusway.com [54.164.151.235] with 32 bytes of data:
Reply From 54.164.151.235: bytes=32 time=132ms TTL=237
Reply From 54.164.151.235: bytes=32 time=130ms TTL=237
Reply From 54.164.151.235: bytes=32 time=130ms TTL=237
Reply From 54.164.151.235: bytes=32 time=130ms TTL=237
Ping statistics for 54.164.151.235:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 130ms, Maximum = 132ms, Average = 130ms

$ ping www.google.com
Pinging www.google.com [172.217.169.132] with 32 bytes of data:
Reply From 172.217.169.132: bytes=32 time=116ms TTL=116
Reply From 172.217.169.132: bytes=32 time=18ms TTL=116
Reply From 172.217.169.132: bytes=32 time=18ms TTL=116
Ping statistics for 172.217.169.132:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 18ms, Maximum = 19ms, Average = 18ms
```

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Use this space to take notes:

## Slide 69

### Ping Command

```
$ ping 54.164.151.235
Pinging 54.164.151.235 with 32 bytes of data:
Reply from 54.164.151.235: bytes=32 time=13ms TTL=237
Reply from 54.164.151.235: bytes=32 time=13ms TTL=237
Reply from 54.164.151.235: bytes=32 time=130ms TTL=237
Reply from 54.164.151.235: bytes=32 time=130ms TTL=237
Ping statistics for 54.164.151.235:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 130ms, Maximum = 131ms, Average = 130ms
```

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Use this space to take notes:

## Slide 70

### SSH Command



\* ssh stands for "Secure Shell".  
\* It is a protocol used to securely connect to a remote server/system.

```
ssh user@host(IP/Domain_name)
ssh -i cert.pem ec2-user@54.93.34.220
The authenticity of host '54.93.34.220 (54.93.34.220)' can't be established.
ECDSA key fingerprint is SHA256:1CuH3J1gts2UkaosBn0DSGfGPHQ98yP9oGjvEo.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '54.93.34.220' (ec2-user) to the list of known hosts.
[...]
Amazon Linux 2 AMI
https://aws.amazon.com/amazon-linux-2/
2 package(s) needed for security, out of 13 available
Would you like to apply all updates.
[ec2-user@ip-172-31-35-15 ~]
```

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Use this space to take notes:

## Slide 71

**THANKS!**  
**Any questions?**

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