Using Linux Commands

Lab 4

Checking system activity

- ps = process status
- To list running processes and monitoring system usage:

$ ps au

USER	PID	%CPU	%MEM	VSZ	RSS	TTY	STAT	START	TIME	COMMAND
root	2164	0.0	0.8	1908	1100	ttyp0	S	14:50	0:00	login - - jake
jake	2147	0.0	0.7	1836	1020	ttyp0	S	14:50	0:00	-bash
jake	2310	0.0	0.7	2592	912	ttyp0	R	18:22	0:00	ps au

- a : option tells ps to list the processes of all users on the system
- u : display user-oriented format.
  option tells ps to provide detailed information about each process

Checking system activity

- To stop any process by PID i.e. to kill process

```
$ kill  2310
```

- To stop all process except your shell

```
$ kill  0
```

Exiting the shell

- To exit the shell

```
$ exit
```

Getting Help with Using the Shell

- Use the ***help*** command (`help command`)
- Use the ***man command***
  - `man = manual`
  - `To reading a manual and return to the shell prompt within the open terminal ➔ press q`

Understanding file permission

- ***Why***
  - Keep users from accessing other users' private files
  - To protect important system files
- ***permissions bits***

rwx rwx rwx

Owner's| Group | Others

r = read **w = write** **x = execute**

$ ls –al							
-rw-rw-r--	1	chris	sales	1024	May 10	01:49	..
drwxr-xr-x	2	chris	sales	2204	May 18	21:30	.bash_history

Understanding file permission

For Files:

- "Read" means to be able to open and view the file
- "Write" means to overwrite or modify the file
- "eXecute" means to run the file as a binary
  files are executable only if they are programs and shell scripts, not useful for data files.

For Directories:

- "Read" means to be able to view the contents of the directory
- "Write" means to be able to create new files/directories or delete files/directories within the directory
- "eXecute" means to be able to "Change Directory" (cd) into the directory = permission to access the directory.

- **How to view the permission for a file or directory?**
  - **$ ls -al**

Understanding file permission

Default Permissions on Linux

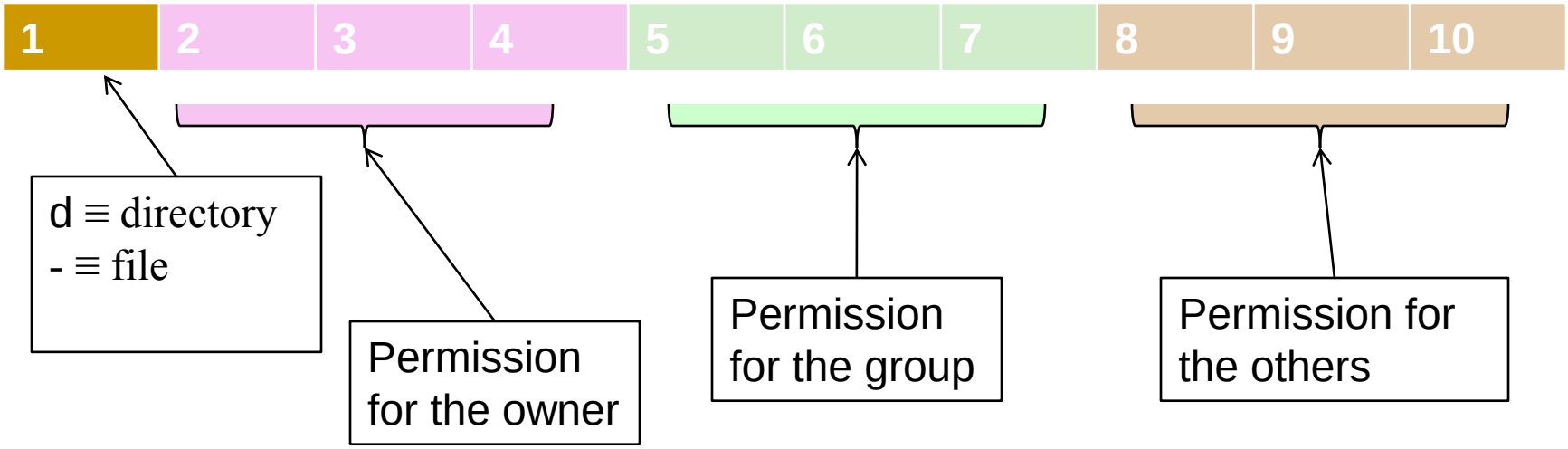
- In most Linux Distributions, When a new file is created, by default its permissions will set to:
  - **rw** by the owner of the file.
  - **r** by group members and others.

rw- r-- r--

- Default permission for an new directory:
  - **rwx** by the owner of the directory
  - **rx** by group members and others.

rwx r-x r-x

Understanding file permission



- if the permission field is - ➔ the permission is not given.

Understanding file permission

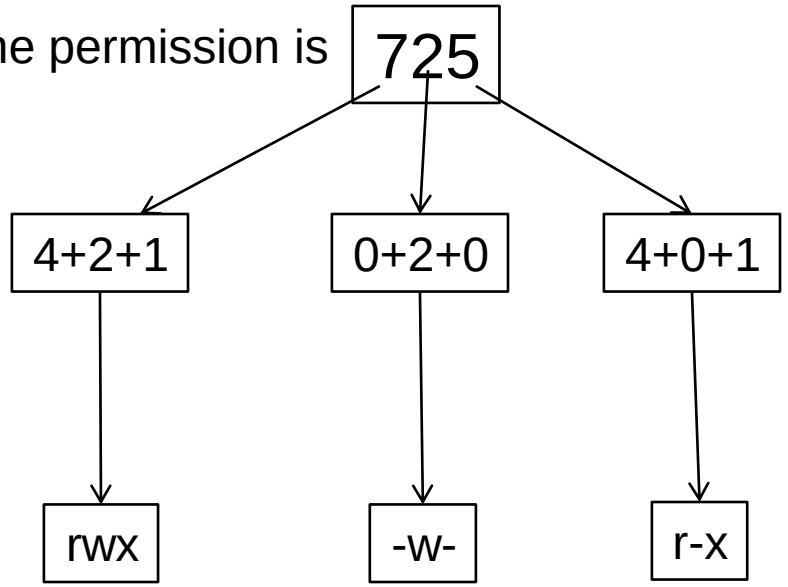
- Only the **owner** of a file can change its permission.
- How to set file permission?
  - Use the command **chmod**(**ch**ange file **mod**e bits).

- **chmod** has two notations:
  - Numeric(octal) notation.
  - Symbolic notation.

Change permission on a file - numeric

- the file permissions aren't represented by characters. Instead, they are represented by a three-digit octal number.
- **4** = read (r)
  2 = write (w)
  1 = execute (x)
  0 = no permission (-)

If the permission is



Octal#	(421)	Binary	permission
0	0+0+0	000	---
1	0+0+1	001	--x
2	0+2+0	010	-w-
3	0+2+1	011	-wx
4	4+0+0	100	r--
5	4+0+1	101	r-x
6	4+2+0	110	rw-
7	4+2+1	111	rwx

Change permission on a file - symbolic

- Permissions are represented by characters rwx

chmod	who	+	permission	filename
		-		

- This gives "**who**" the specified **permissions** for a given **filename.**
- The "who" is a list of letters re going to be giving permissions to. These may be specified in any order.

u	The **u**ser who owns the file (this means "you.")
g	The **g**roup the file belongs to.
o	The **o**ther users not in the file's group.
a	**a**ll of the above (an abbreviation for ugo)

- + ➔ add the selected permission.
- - ➔ remove the selected permission.

Change permission on a file

r = 4 w = 2 x = 1

$ chmod 777 file-name → **rwxrwxrwx**

$ chmod 755 file-name → **rwxr-xr-x**

owner(u) group(g) other(o) all(a) **rwxrwxrwx**

$ chmod a-w file-name → **r-xr-xr-x**

$ chmod go-rwx file-name → **rwx------**

owner(u) group(g) other(o) all(a) **---------**

$ chmod u+rw file-name → **rw-------**