



Royal University of Bhutan

LESSON – 9

WORKING WITH TEXT FILE

Learning Outcomes

- Use essential tools / commands with text file content
- List file contents with different commands
- Manage files and Analyze Text with grep command

USING COMMON TEXT FILES –RELATED TOOLS

- Essential tools for Managing Text File contents:

Command	Explanation
less	Opens the text file in a pager
cat	Dumps the contents of the text file on the screen
head	Shows the first 10 lines (by default)
tail	Shows the last 10 lines
cut	Filter specific columns or characters from a text file
sort	Sorts contents of a text file
wc	Counts the number of lines, words, and characters in a file
grep	To search input text of matching pattern

USING COMMON TEXT FILES –RELATED TOOLS

- Doing more with **less** command:

- Example:

- `cst@cst:~$ less /etc/passwd`

Compare **cat /etc/passwd**

One more example: **ps aux | less**

Applying Basic Less skills: **G** to go to last line, **/<text>** to look for the text, **q** to quit less, Press **<space bar>** to display next page content, Arrows keys to move up and down.

`cst@cst:~$ more /etc/passwd`

USING COMMON TEXT FILES –RELATED TOOLS

- Showing File Content with cat:

- **Usage:**

- `cst@cst:~$ cat /etc/passwd`

The cat command can also create a file:

- `cst@cst:~$ cat > output`

This is a file created using a cat command
<Ctrl+D>

- `cst@cst:~$ cat output`

This is a file created using a cat command

Showing First line or Last Lines of a file with head and tail:

- Default display 10 lines

- **Example:**

```
cst@cst:~$ head /etc/passwd
```

- root:x:0:0:root:/root:/bin/bash
- daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin
- bin:x:2:2:bin:/bin:/usr/sbin/nologin
- sys:x:3:3:sys:/dev:/usr/sbin/nologin
- sync:x:4:65534:sync:/bin:/bin/sync
- games:x:5:60:games:/usr/games:/usr/sbin/nologin
- man:x:6:12:man:/var/cache/man:/usr/sbin/nologin
- lp:x:7:7:lp:/var/spool/lpd:/usr/sbin/nologin
- mail:x:8:8:mail:/var/mail:/usr/sbin/nologin
- news:x:9:9:news:/var/spool/news:/usr/sbin/nologin

```
cst@cst:~$ tail /etc/passwd
```

- sshd:x:106:65534:./run/sshd:/usr/sbin/nologin
- syslog:x:107:113:./home/syslog:/usr/sbin/nologin
- uidd:x:108:114:./run/uid:/usr/sbin/nologin
- tcpdump:x:109:115:./nonexistent:/usr/sbin/nologin
- tss:x:110:116:TPM software stack,.,./var/lib/tpm:/bin/false
- landscape:x:111:117:./var/lib/landscape:/usr/sbin/nologin
- fwupd-refresh:x:112:118:fwupd-refresh user,.,./run/systemd:/usr/sbin/nologin
- usbmux:x:113:46:usbmux daemon,.,./var/lib/usbmux:/usr/sbin/nologin
- cst:x:1000:1000:cst:/home/cst:/bin/bash
- lxd:x:999:100:./var/snap/lxd/common/lxd:/bin/false

commands:

head & tail

Showing file content:

- **head/tail** to display 'N' lines

Example:

```
#head -n 3 /etc/passwd
```

```
root:x:0:0:root:/root:/bin/bash  
bin:x:1:1:bin:/bin:/sbin/nologin  
daemon:x:2:2:daemon:/sbin:/sbin/nologin
```

```
#head -3 /etc/passwd
```

```
root:x:0:0:root:/root:/bin/bash  
bin:x:1:1:bin:/bin:/sbin/nologin  
daemon:x:2:2:daemon:/sbin:/sbin/nologin
```

```
#tail -3 /etc/passwd
```

```
u1:x:1002:1002::/home/u1:/bin/bash  
u2:x:1003:1003::/home/u2:/bin/bash  
rpcuser:x:29:29:RPC Service  
User:/var/lib/nfs:/sbin/nologin
```

commands:

head & tail

Showing file content:

- cat/head/tail to display custom lines

Learn Specific command:

<https://explainshell.com/>

Example:

```
#cat /etc/passwd | tail -n +2
bin:x:1:1:bin:/bin:/sbin/nologin
daemon:x:2:2:daemon:/sbin:/sbin/nologin ...
u1:x:1002:1002::/home/u1:/bin/bash
u2:x:1003:1003::/home/u2:/bin/bash
rpcuser:x:29:29:RPC Service
User:/var/lib/nfs:/sbin/nologin
```

```
#cat /etc/passwd | wc -l
48
```

```
#cat /etc/passwd | tail -n +2 | wc -l
47
```


ACTIVITY I

Using basic head and tail operation

1. Display last lines of the file `/var/log/messages` using `tail -f` command
2. Show first 3 lines of `/etc/passwd` file
3. Show last 3 lines of `/etc/passwd` file
4. Show only line number 5 of the `/etc/passwd`

USING COMMON TEXT FILES –RELATED TOOLS

- cut to remove section from each line of file:
 - **Usage:**
 - Create a text file with dzongkhag names:
 - `cst@cst:~$ cut -c 2,5,7 dzongkhag.txt`
 - `cst@cst:~$ cut -c -5, dzongkhag.txt`
 - `cst@cst:~$ cut -d " " -f 1 dzongkhag.txt`
 - `cst@cst:~$ cat dzongkhag | cut -d ' ' -f 1 | sort -r`

USING COMMON TEXT FILES –RELATED TOOLS

- Sorting file content with sort:
 - **Usage:**
 - `cst@cst:~$ sort /etc/passwd`
 - `cst@cst:~$ cut -f1 -d: /etc/passwd | sort`
 - `cst@cst:~$ cut -f3 -d: /etc/passwd | sort -n`
 - `cst@cst:~$ cut -f3 -d: /etc/passwd | sort -r`
 - `cst@cst:~$ cut -f3 -d: /etc/passwd | sort -u`

The sort options `-r` (is to reverse), `-n` (numeric), `-k`(column), `-t` (field separator)

USING COMMON TEXT FILES –RELATED TOOLS

- Use of uniq:
 - The uniq command is similar to sort –u command:
 - `cst@cst:~$ cut -f 1 dzongkhag`
 - `cst@cst:~$ cut -f 1 dzongkhag | uniq`
 - `cst@cst:~$ cut -f 1 dzongkhag | sort | uniq`

USING COMMON TEXT FILES –RELATED TOOLS

- Counting lines, words, and character with **wc**:

- Usage:

- `cst@cst:~$ ps aux | wc`
 - `cst@cst:~$ #ps aux | wc -l`
 - `cst@cst:~$ ps aux | wc -w`
 - `cst@cst:~$ #ps aux | wc -c`
 - l - Prints the number of lines,
 - w – prints the number of words,
 - c – Displays the count of bytes

ACTIVITY II

Using cut, sort and wc

1. Print the sorted order of UID and GID from the /etc/passwd file
2. Count to total and actual number of files in /etc/
3. Print only IP address from /etc/hosts file and assign line number
4. Make directory Data in user home directory and create subdirectory as vowelfiles in Data directory.
5. Copy all files start with letter a,e,i,o,u from /etc/ directory to vowelfiles
6. Display and count the files in /etc/ directory which has the number in the filename.

USING COMMON TEXT FILES –RELATED TOOLS

- Using grep to Analyze Text:
 - The grep searches its input text and prints the lines that match the pattern
 - **Options:** -c (count matching lines), -v (to print nonmatching), -l(lowercase), -i(ignore case), -w(perfect search)
 - `cst@cst:~$ cat /etc/passwd | grep "root"`
 - --List all line containing word "root" - -
 - `cst@cst:~$ # cat /etc/passwd | grep -E "root|jiwan"`
 - `cst@cst:~$ cat /etc/passwd | grep "^u"`
 - `cst@cst:~$ # cat /etc/passwd | grep "h$"`
 - Note: ^u - for starting line with character 'u', h\$ - ending lines with character 'h'

Summary

- A good administrator use filtering commands a lot.
- Commands such as cat, head, tail, less, grep, and so on