

SUMMARY OF LINUX SHELL COMMANDS

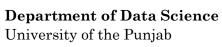
Internal commands: Part of shell (cd, exit, type, help, alias)

External Commands: Code resides on disk and executed after fork with exec (clear, 1s,

passwd, man)

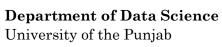
Basic Shell Commands

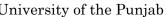
Command	Description
echo	Displays text on stdout -n don't append \n -e enables escape sequences -E disable interpretation of backslash escapes (default) -c don't produce any more output
help	Provides detail of internal commands
clear	Clears terminal screen.
exit	To close shell
type	Display information about command type (external/built-in)
logout	To close login shell. Login Shell: when we login, a particular shell starts execution known as login shell
bash	Bash shell
sh	Bowne shell
csh	C-Shell
kch	Korn Shell
tcsh	Tc-Shell
env	Display environment variables
pwd	Shows absolute address of present working directory
passwd	To change user password
man	To view manual pages of different external commands for better understanding. It has 9 sections. -k To search string in all available man pages
who	Shows who is logged in (can be multiple), it also displays "terminal name".
W	Show who is logged on and what they are doing.
whoami	Prints effective username (currently active)
users	Print the user names of users currently logged in to the current host
whatis	Displays command basic purpose (one line description)
whereis	Tells source, binary files and man page file location of external command
which	Gives path of binary file of external and internal command
history	Output the last part of the history list. history [-n]
info	Reads info document of external and internal command
column	Columnize input text -c Specify number of columns -w Specify columns width (1 to 2048)
ls	List directory contents. -a To view hidden files as well -A To view hidden files except '.' and '' -i Displays inode number -h Displays size in human readable forms in K, M, G instead of bytes -s Shows block count before name (in disk files are saved in blocks) -S Sort all the files and directory w.r.t their sizes and the first file is largest files in all -1 List one entry in a line -f List files without sorting as they are stored in directory (it also shows '.' & '' hidden files) -d List directories themselves not their contents -1 Displays files in long listing (7 columns) sorted by names -t Sort by modification time (latest first) -c Sort by status change time (latest first)





	-u Sort by access time (latest first)
11	Same as "ls -ls"
touch	Creates 1 or more empty files by touching (updating) modification and access timestamps. If file already exists it updates timestamps: -m For updating modification time only -a For updating access time only -b For updating status change time only
file	display type of file
local	used to declare a variable to be local to a bash function local [-OPTION] [name[=value]]
read	read a single line from stdin
set	sets shell variables
test	<pre>set [-OPTIONS] [arguments] Evaluate condition(s) or make execution of actions dependent on the evaluation of condition(s) test['condition']['condition']</pre>
	Evaluate arguments as an expression:
expr	expr `arguments`
cat	To view contents of a simple file on stdout -n To print line numbers as well -s To suppress repeated blank lines -b To number only non-empty lines (overrides -n)
tac	To view contents of file in reverse (last line 1st)
more	To view contents of large files one screen at a time. It also displays % of file displayed and we can't move back up in it. ENTER To move down line-by-line SPACE To move down one screen /str To search "str" in file. Press 'n' to find next Press 'N' to find previous
	To view contents of large files one page at a time but much better than
less	Navigation Arrow keys, Pgup, Pgdwn, ENTER, SPACE (acts as Pgdwn), HOME, END /str To search "str" in file.
	Press 'n' to find next Press 'N' to find previous g, G 'g' moves to start and 'G' moves to end "more".
head	Press 'n' to find next Press 'N' to find previous g, G 'g' moves to start and 'G' moves to end
head tail	Press 'n' to find next Press 'N' to find previous g, G 'g' moves to start and 'G' moves to end "more". Displays 1st ten lines -n To view 1st n lines Displays last ten lines -n To view last n lines -n To view last n lines -s Coutput appended data as the file grows -c specifies that we want to read n characters not lines
	Press 'n' to find next Press 'N' to find previous g, G 'g' moves to start and 'G' moves to end "more". Displays 1st ten lines -n To view 1st n lines Displays last ten lines -n To view last n lines -f Output appended data as the file grows -c specifies that we want to read n characters not lines User defined names for commands (arguments are also allowed in alias) alias cls="clear" #makes "cls" an alias for clear command alias #list all aliases
tail	Press 'n' to find next Press 'N' to find previous g, G 'g' moves to start and 'G' moves to end "more". Displays 1st ten lines -n To view 1st n lines Displays last ten lines -n To view last n lines -f Output appended data as the file grows -c specifies that we want to read n characters not lines User defined names for commands (arguments are also allowed in alias) alias cls="clear" #makes "cls" an alias for clear command
tail	Press 'n' to find next Press 'N' to find previous g, G 'g' moves to start and 'G' moves to end "more". Displays 1st ten lines n To view 1st n lines n To view last n lines f Output appended data as the file grows c specifies that we want to read n characters not lines User defined names for commands (arguments are also allowed in alias) alias cls="clear" #makes "cls" an alias for clear command alias #list all aliases To remove alias
tail alias unalias	Press 'n' to find next Press 'N' to find previous g, G 'g' moves to start and 'G' moves to end "more". Displays 1st ten lines -n To view 1st n lines Displays last ten lines -f Output appended data as the file grows -c specifies that we want to read n characters not lines User defined names for commands (arguments are also allowed in alias) alias cls="clear" #makes "cls" an alias for clear command alias #list all aliases To remove alias -a Remove all alias definitions To display calender -h Won't highlight current-datem Display the specified month yyyy Display a calendar for the specified year (e.g. cal 2017) -1 Displays only the current month3 Display the previous, current and next month. To display and change (only for root) date [day MON dd mm:hh:ss PKT]
tail alias unalias cal	Press 'n' to find next Press 'N' to find previous g, G 'g' moves to start and 'G' moves to end "more". Displays 1st ten lines -n To view 1st n lines Displays last ten lines -n To view last n lines -f Output appended data as the file grows -c specifies that we want to read n characters not lines User defined names for commands (arguments are also allowed in alias) alias cls="clear" #makes "cls" an alias for clear command alias #list all aliases To remove alias -a Remove all alias definitions To display calender -h Won't highlight current-date. -m Display the specified month yyyy Display a calendar for the specified year (e.g. cal 2017) -1 Displays only the current month. -3 Display the previous, current and next month.







	To copy files/directories
	-p Preserve permissions while copying (by default permissions can
cp	change)
	-r For directories
	e.g: cp f1 f2 #f1 is source file and f2 is target-file
	To remove files/directories -f ignore non-existent files and arguments, never prompt
rm	-r For directories
- m	-i For confirmation prompt
	e.g: rm f1 f2 #will delete both f1 & f2
	To move files/directories
mv	-i For confirmation prompt
	e.g: mv f1 f2 #will move f1 to f2 (it is also used to rename file)
	To make directory file
mkdir	-m set file mode (as in chmod)
	-p no error if existing, make parent directories as needed
rmdir	To remove directory file
THIGHT	-p remove DIRECTORY and its ancestors; e.g., 'rmdir -p a/b/c' is similar to 'rmdir a/b/c a/b a'
	Gets input from stdin and output it on stdout after sorting
	-b Ignore leading blanks
	-r for reverse order
	-t for specifying delimiters (e.g.: -t";")
	-kn to sort by column n
sort	-n for numeric sort
	-c check for sorted input; do not sort
	<pre>-d Dictionary order -f fold lower case to upper case characters</pre>
	-i consider only printable characters
	-g compare according to general numerical value (general numeric sort)
length	a string operation to return the number of characters stored in a string
evince	To view PDF and other common document formats
	Run programs and summarize their system resource usage (shows runtime in
	seconds).
time	real Total execution time
time	<pre>real Total execution time user Time spent in user space</pre>
time	<pre>real Total execution time user Time spent in user space sys Time spent in kernel space</pre>
time lsb_release	<pre>real Total execution time user Time spent in user space sys Time spent in kernel space Shows basic OS Info.</pre>
	<pre>real Total execution time user Time spent in user space sys Time spent in kernel space</pre>
	<pre>real Total execution time user Time spent in user space sys Time spent in kernel space Shows basic OS Infoa Shows all OS details (must be used)</pre>
lsb_release	<pre>real Total execution time user Time spent in user space sys Time spent in kernel space Shows basic OS Infoa Shows all OS details (must be used) Prints OS name on stdout</pre>
lsb_release uname	<pre>real Total execution time user Time spent in user space sys Time spent in kernel space Shows basic OS Infoa Shows all OS details (must be used) Prints OS name on stdout -a Shows detailed OS info</pre>
lsb_release uname	<pre>real Total execution time user Time spent in user space sys Time spent in kernel space Shows basic OS Infoa Shows all OS details (must be used) Prints OS name on stdout -a Shows detailed OS info shows detailed CPU specs to reaf ELF files (.o and .out) -a shows all info</pre>
lsb_release uname lscpu	<pre>real Total execution time user Time spent in user space sys Time spent in kernel space Shows basic OS Info. -a Shows all OS details (must be used) Prints OS name on stdout -a Shows detailed OS info shows detailed CPU specs to reaf ELF files (.o and .out) -a shows all info -s shows symbol table (.symtab)</pre>
lsb_release uname	<pre>real Total execution time user Time spent in user space sys Time spent in kernel space Shows basic OS Info. -a Shows all OS details (must be used) Prints OS name on stdout -a Shows detailed OS info shows detailed CPU specs to reaf ELF files (.o and .out) -a shows all info -s shows symbol table (.symtab) -S shows section header</pre>
lsb_release uname lscpu	<pre>real Total execution time user Time spent in user space sys Time spent in kernel space Shows basic OS Info. -a Shows all OS details (must be used) Prints OS name on stdout -a Shows detailed OS info shows detailed CPU specs to reaf ELF files (.o and .out) -a shows all info -s shows symbol table (.symtab) -S shows section header -h shows ELF header</pre>
lsb_release uname lscpu readelf	<pre>real Total execution time user Time spent in user space sys Time spent in kernel space Shows basic OS Info. -a Shows all OS details (must be used) Prints OS name on stdout -a Shows detailed OS info shows detailed CPU specs to reaf ELF files (.o and .out) -a shows all info -s shows symbol table (.symtab) -S shows section header -h shows ELF header -1 shows program header</pre>
lsb_release uname lscpu readelf	<pre>real Total execution time user Time spent in user space sys Time spent in kernel space Shows basic OS Info. -a Shows all OS details (must be used) Prints OS name on stdout -a Shows detailed OS info shows detailed CPU specs to reaf ELF files (.o and .out) -a shows all info -s shows symbol table (.symtab) -S shows section header -h shows ELF header -1 shows program header Line printer prints the contents of specified files to printer</pre>
lsb_release uname lscpu readelf lpr bc	<pre>real Total execution time user Time spent in user space sys Time spent in kernel space Shows basic OS Info. -a Shows all OS details (must be used) Prints OS name on stdout -a Shows detailed OS info shows detailed CPU specs to reaf ELF files (.o and .out) -a shows all info -s shows symbol table (.symtab) -S shows section header -h shows ELF header -1 shows program header Line printer prints the contents of specified files to printer Command line calculator</pre>
lsb_release uname lscpu readelf	<pre>real Total execution time user Time spent in user space sys Time spent in kernel space Shows basic OS Info. -a Shows all OS details (must be used) Prints OS name on stdout -a Shows detailed OS info shows detailed CPU specs to reaf ELF files</pre>
lsb_release uname lscpu readelf lpr bc	<pre>real Total execution time user Time spent in user space sys Time spent in kernel space Shows basic OS Info. -a Shows all OS details (must be used) Prints OS name on stdout -a Shows detailed OS info shows detailed CPU specs to reaf ELF files (.o and .out) -a shows all info -s shows symbol table (.symtab) -S shows section header -h shows ELF header -1 shows program header Line printer prints the contents of specified files to printer Command line calculator</pre>
lsb_release uname lscpu readelf lpr bc	<pre>real Total execution time user Time spent in user space sys Time spent in kernel space Shows basic OS Info. -a Shows all OS details (must be used) Prints OS name on stdout -a Shows detailed OS info shows detailed CPU specs to reaf ELF files (.o and .out) -a shows all info -s shows symbol table (.symtab) -S shows section header -h shows ELF header -1 shows program header Line printer prints the contents of specified files to printer Command line calculator Make typescript of terminal session print number of lines, word, char counts for each file (Ctrl+D to quit)</pre>
lsb_release uname lscpu readelf lpr bc script	real Total execution time user Time spent in user space sys Time spent in kernel space Shows basic OS Infoa Shows all OS details (must be used) Prints OS name on stdout -a Shows detailed OS info shows detailed CPU specs to reaf ELF files (.o and .out) -a shows all info -s shows symbol table (.symtab) -S shows section header -h shows ELF header -l shows program header Line printer prints the contents of specified files to printer Command line calculator Make typescript of terminal session print number of lines, word, char counts for each file (Ctrl+D to quit) -l for lines only -w for words only -m for character count only
lsb_release uname lscpu readelf lpr bc script	real Total execution time user Time spent in user space sys Time spent in kernel space Shows basic OS Info. -a Shows all OS details (must be used) Prints OS name on stdout -a Shows detailed OS info shows detailed CPU specs to reaf ELF files (.o and .out) -a shows all info -s shows symbol table (.symtab) -S shows section header -h shows ELF header -l shows program header Line printer prints the contents of specified files to printer Command line calculator Make typescript of terminal session print number of lines, word, char counts for each file (Ctrl+D to quit) -l for lines only -w for words only -m for character count only -b byte count
lsb_release uname lscpu readelf lpr bc script wc	real Total execution time user Time spent in user space sys Time spent in kernel space Shows basic OS Info. -a Shows all OS details (must be used) Prints OS name on stdout -a Shows detailed OS info shows detailed CPU specs to reaf ELF files (.o and .out) -a shows all info -s shows symbol table (.symtab) -S shows section header -h shows ELF header -l shows program header Line printer prints the contents of specified files to printer Command line calculator Make typescript of terminal session print number of lines, word, char counts for each file (Ctrl+D to quit) -l for lines only -w for words only -m for character count only -c byte count Display selected fields (-f for fields, -d"delimiter").
lsb_release uname lscpu readelf lpr bc script	real Total execution time user Time spent in user space sys Time spent in kernel space Shows basic OS Infoa Shows all OS details (must be used) Prints OS name on stdout -a Shows detailed OS info shows detailed CPU specs to reaf ELF files (.o and .out) -a shows all info -s shows symbol table (.symtab) -S shows section header -h shows program header Line printer prints the contents of specified files to printer Command line calculator Make typescript of terminal session print number of lines, word, char counts for each file (Ctrl+D to quit) -1 for lines only -w for words only -m for character count only -c byte count Display selected fields (-f for fields, -d"delimiter"). Default delimiter is TAB
lsb_release uname lscpu readelf lpr bc script wc	real Total execution time user Time spent in user space sys Time spent in kernel space Shows basic OS Infoa Shows all OS details (must be used) Prints OS name on stdout -a Shows detailed OS info shows detailed CPU specs to reaf ELF files (.o and .out) -a shows all info -s shows symbol table (.symtab) -S shows section header -h shows ELF header -1 shows program header Line printer prints the contents of specified files to printer Command line calculator Make typescript of terminal session print number of lines, word, char counts for each file (Ctrl+D to quit) -1 for lines only -w for words only -m for character count only -c byte count Display selected fields (-f for fields, -d"delimiter"). Default delimiter is TAB e.g: cut -d":" -f1-3,5 passwd (column 1,2,3,5)
lsb_release uname lscpu readelf lpr bc script wc	real Total execution time user Time spent in user space sys Time spent in kernel space Shows basic OS Infoa Shows all OS details (must be used) Prints OS name on stdout -a Shows detailed OS info shows detailed CPU specs to reaf ELF files (.o and .out) -a shows all info -s shows symbol table (.symtab) -S shows section header -h shows ELF header -1 shows program header Line printer prints the contents of specified files to printer Command line calculator Make typescript of terminal session print number of lines, word, char counts for each file (Ctrl+D to quit) -1 for lines only -w for words only -m for character count only -c byte count Display selected fields (-f for fields, -d"delimiter"). Default delimiter is TAB e.g: cut -d":" -f1-3,5 passwd (column 1,2,3,5) horiontally concatenate files (Seperated by TAB)
lsb_release uname lscpu readelf lpr bc script wc	real Total execution time user Time spent in user space sys Time spent in kernel space Shows basic OS Infoa Shows all OS details (must be used) Prints OS name on stdout -a Shows detailed OS info shows detailed CPU specs to reaf ELF files (.o and .out) -a shows all info -s shows symbol table (.symtab) -S shows section header -h shows ELF header -1 shows program header Line printer prints the contents of specified files to printer Command line calculator Make typescript of terminal session print number of lines, word, char counts for each file (Ctrl+D to quit) -1 for lines only -w for words only -m for character count only -c byte count Display selected fields (-f for fields, -d"delimiter"). Default delimiter is TAB e.g: cut -d":" -f1-3,5 passwd (column 1,2,3,5) horiontally concatenate files (Seperated by TAB) ("General Regular expression Processor") Print lines matching or not
lsb_release uname lscpu readelf lpr bc script wc	real Total execution time user Time spent in user space sys Time spent in kernel space Shows basic OS Infoa Shows all OS details (must be used) Prints OS name on stdout -a Shows detailed OS info shows detailed CPU specs to reaf ELF files (.o and .out) -a shows all info -s shows symbol table (.symtab) -S shows section header -h shows ELF header -1 shows program header Line printer prints the contents of specified files to printer Command line calculator Make typescript of terminal session print number of lines, word, char counts for each file (Ctrl+D to quit) -1 for lines only -w for words only -m for character count only -c byte count Display selected fields (-f for fields, -d"delimiter"). Default delimiter is TAB e.g: cut -d":" -f1-3,5 passwd (column 1,2,3,5) horiontally concatenate files (Seperated by TAB)
lsb_release uname lscpu readelf lpr bc script wc cut paste	real Total execution time user Time spent in user space sys Time spent in kernel space Shows basic OS Info. -a Shows all OS details (must be used) Prints OS name on stdout -a Shows detailed OS info shows detailed CPU specs to reaf ELF files (.o and .out) -a shows all info -s shows symbol table (.symtab) -S shows section header -h shows ELF header -l shows program header Line printer prints the contents of specified files to printer Command line calculator Make typescript of terminal session print number of lines, word, char counts for each file (Ctrl+D to quit) -l for lines only -w for words only -m for character count only -c byte count Display selected fields (-f for fields, -d"delimiter"). Default delimiter is TAB e.g: cut -d":" -f1-3,5 passwd (column 1,2,3,5) horiontally concatenate files (Seperated by TAB) ("General Regular expression Processor") Print lines matching or not matching a pattern.



	-c print count of lines matching/not matching (for -v)
	Report or omit consecutive repeated/duplicate lines.
unia	-c gives line count
uniq	-u for showing only unique lines
	-d for showing only duplicated lines
mesg	Permit or deny messages
	mesg [-y/-n]
	Split a file into multiple files. Output pieces of FILE to PREFIXaa, PREFIXab,; default size is 1000
	lines, and default PREFIX is 'x'. With no FILE, or when FILE is -, read
split	standard input.
	split [OPTION] [FILE [PREFIX]]
	-b SIZE put SIZE bytes per output file
	-C lines put at most SIZE bytes of records per output file
	For Comparison and Searching
	Compare 2 sorted files line by line
	1st column unique to File1
	2nd column unique to File2 3rd column COMMON in both
	STA COTAMIN CONTROL IN BOCH
comm	-1 suppress column 1 (lines unique to FILE1)
	-2 suppress column 2 (lines unique to FILE2)
	-3 suppress column 3 (lines that appear in both files)
	nocheck- do not check that the input is correctly sorted order
	Compare 2 files byte by byte and stops at first difference
cmp	-1 for not stopping on 1st difference (byte values are in octal)
-	Note: All remaining bytes will be different after 1st byte in files
	Compare files line by line
	e.g: diff f1 f2 #(I want to make f1 similar to f2)
	c change
	<pre>a append d delete</pre>
diff	<pre>is for 1st file</pre>
	> is for 2nd file
	= is for common lines (in both files)
	diff -c file1 file2 To save differences as a patch file to update 1st
	>new.patch file to match 2 nd file
locate	To find all location of files by specified name in DB (it don't search in
sudo updatedb	directory hierarchy) to update file DB used by "locate" (updated once per day implicitly)
sudo updatedo	search for files in directory hierarchy
	-name Finds by name
	-size Finds by file size (k=Kilobytes, M=Megabytes, G=Gigabytes)
	-atime access time
	-ctime status change time
	-mtime modification time type (f = normal files, d = directories, s = sockets, p = named pipes,
find	<pre>type (f = normal files, d = directories, s = sockets, p = named pipes, b=block, c=character, l=soft-link)</pre>
TING	EXAMPLES
	find ~ -mtime 1 Finds files that are modified 1 day ago
	find ~ -mmin 10 Finds files that are modified 10 min ago
	find . type f \mid wc -l \mid Find in the PWD, all the files whose type is
	regular file and give their count
	find / -perm /7000 for viewing all files with special 2>/dev/null permissions
	For Archiving
	Create tar file in PWD
tar cvf	(1st pass name for archive file then directories and files to archive)
tar tvf	To view .tar files not extract them
tar xvf	To extract .tar files in present working directory
tar xzf	To unzip and extract .tar files in present working directory
gzip	To zip files. Original file is replaced by zip file. (extension = .gz)

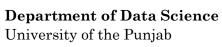


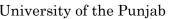
	Note: We can zip tar files to obtain "tar balls" (.tar.gz), commonly used
	for software distribution
gunzip	To unzip files
IPC	
	it reads from stdin and writes to stdout and file(s)
tee	It takes all arguments as output file
	It doesn't take any input file without input redirection
mkfifo	it creates named pipes (only)
	• it can create named pipes (p).
	block special file (b) and
mknod	• character special file (c)
	mknod -m 0666 file_name type maj min
	type=b,c,p (block,character,pipe)



Vim Editor

Command	Description
sudo apt-get	To install vim editor
install vim	
vimtutor	For detailed vim lessons
vim +	For opening file in append mode (cursor at last line)
vim +n	Cursor at start of line-n
vim +/string	Cursor on line with 1st occurence of "string"
ESC	Command mode
ESC+:	Last-line mode
q	To quit vim
i	Start typing before current character
I	Start typing from beginning of current line
а	Start typing after current character
A	Start typing from end of current line
0	Open new line below current line
0	Open new line above current line
h	To move cursor left
L	To move cursor right
K	To move cursor up
j	To move cursor down
gg	To goto 1st line
GG	To goto last line
End, \$	Moves to end of current line
Home, 0	Moves to start of current line
Shift+G	To put prompt at the end of document
u	For undo
Ctrl+r	For redo
ESC+[/,?]	Then write string to search. / For forward search ? For backward search n Find next N For finding in opposite direction
dw	For deleting a word
[n]dd	For deleting a line
[n]yy	For copying line
[n]p	For pasting n times below current line
[n]P	For pasting n times above current line
!	In last-line mode after command to override warning
:wq	in last-line mode to "save & quit"
:w!	to "save" and override warning
<pre>:w [filename]</pre>	To "save as"
:q!	To quit
:e!	To undo changes since last save
:[n]	To move to nth line
:\$	To move to end of the file
:n1,n2[d,y]	To delete or copy a range of lines. (d= delete, y=copy) :3,6d delete lines 3-6 :3,\$y copy from lines 3-end :9,15y copy lines 9-15
:1,\$ s/search/replace	It will replace only one occurrence in each line of "search" with "replace"







:1,\$ s/search/replace/g	It will replace all occurrences in each line of "search" with "replace"		
:set number	To display line numbers		
:set nonumber	To remove line numbers		
:!command	To execute shell command in last-line mode inside vim editor (will execute only 1 command)		
:sh	This will open new bash process to execute commands		
	For Multi-Filing		
:n	To move to next file		
: N	To move to previous file		
vim -o filenames	It will open files in multiple horizontal windows		
vim -O filenames	It will open files in multiple vertical windows		
Ctrl+ww	To move onto next file (if pressed in last file then moves to 1st)		



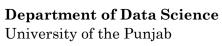
File Management

Command	Description
lsattr	View extended file attributes
chattr	Change extended file attributes chattr +/-[attr] file
ln	For creating linkss For soft-links
tty	Display the name of terminal you are using
xterm	to launch ptmx terminal
stty	To change and print terminal line settings. stty attribute value -a
	File Permissions Management
chown	Change user owner chown: group file (for changing grp owner using chown)
chgrp	Change group owner
chmod	For changing permissions If we write "chmod +r" r will be assigned to u/g/o
umask	To view/change umask -S To view complement of umask in symbolic way
getfacl	Foreach file, getfacl displays the file name, owner, the group, and the Access Control List (ACL). If a directory has a default ACL, getfacl also displays the default ACL.
setfacl	Sets file ACL -m add entry -x remove entry -b clear acl and delete all entries -d add default entry -R add recursive entry



Process Management

Command	Description
	Lists currently running jobs and their status
jobs	-1 lists process IDs in addition to the normal information
	-p lists process IDs only
fg [pid] fg %Jid	To move a background process to foreground
bg [pid] bg %Jid	List background jobs or move a process to bg
	<pre>Send a signal to a job. (default SIGTERM) kill [-s sigspec -n signum -sigspec] pid jobspec</pre>
kill	-n sig SIG is a signal number
	-1 list the signal names; if arguments follow `-l' they are assumed to be signal numbers for which names should be listed
	Report a snapshot of current process (4 columns)
	-A or -ax to show all running process
na	-u List processes by user (displays 11 columns)
ps	[username] -1 displays 14 columns (long listing)
	Select all processes except both session and
	-a processes not associated with a terminal.
	Shows detail process real-time info of top-20 processes, like task
	manager. Interactive, continuously (refreshes after every 3sec).
	Press: h for help
top	<pre>n to display only [n] processes (0=unlimited)</pre>
	u to display processes of particular user
	s to change refresh time
	<pre>k to send signal (it 1st asks for PID then signal number/name)</pre>
	Displays amount of free and used memory in the system (6 columns)
	-k in KB (default) -m in MB
free	-b in bytes
	-g in GB
	in tera
	tera
vmstat	displays info about virtual memory (6 groups, 17 columns)
uptime	It shows system time, uptime, number of logged in users, load average for last 1,5 and 15 minutes respectively.
watch	Executes a program periodically, showing output in full screen (refreshes every 2sec)
halt	To halt the system.
	To run a command with specific NICE(-20 -> 19) value.
nice	Only root can use negative nice values.
	-n add integer N to the niceness (default 10)
	Alter priority of running processes. renice [-n] priority [-g -p -u] identifier -n Specify the scheduling priority to be used for the
	process, process group, or user. When used, it must be the
renice	first argument.
	 -g Interpret the succeeding arguments as process group IDs. -p Interpret the succeeding arguments as process IDs (the
	default).





	-u Interpret the succeeding arguments as usernames or UIDs. The following command would change the priority of the processes
	with PIDs 987 and 32, plus all processes owned by the users daemon
	and root: renice +1 987 -u daemon root -p 32
	Query and set per-process CPU Scheduling parameters
	sudo apt-get install schedtool
	-r lists scheduling policies
	• N: SCHED_NORMAL (prio_min 0, prio_max 0)
	• F: SCHED_FIFO (prio_min 1, prio_max 99)
	• R: SCHED RR (prio min 1, prio max 99)
	B: SCHED BATCH (prio min 0, prio max 0)
	• I: SCHED ISO (policy not implemented)
	• D: SCHED IDLEPRIO (prio min 0, prio max 0)
	-n For changing nice value
schedtool	-p for changing Static Priority
	-a for changing affinity value
	-e to execute command with different scheduling parameters
	• schedtool PID
	• schedtool -[POLICY Letter] PID
	• schedtool -a [affinity in HEX] PID
	e.g: schedtool -a 0x1 3199 (0x1,0x2,0x4,0x8,)
	• schedtool -n [NICE Val] PID
	• schedtool -p [Static PRI] PID #for -R -F
	• For -R -F Static Priority should be mentioned with Policy and in sudo mode



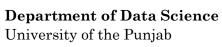
User Management

Command	Description
visudo	used to edit /etc/sudoers file
adduser	More interactive and recommended (sudo adduser user1)
useradd	<pre>It is low-level command to add user. And we need to give some extra info as well. Its minimum requirements are: -m to make directory of that user -d To specify directory path (/home/username)</pre>
deluser	User we want to delete should be logged out. It don't deletes user HOME Dir
userdel	Low level also deletes HOME directory and files. -r to delete home dir and associated files as well of this user. sudo userdel -r user1
usermod	To modify user info. e.g.: usermod -a -G gp2 user1 (makes user1 member of gp2) • If we don't use -a then it will not append new user but overwrite it (that is all previous group members will be removed) -c to change personal info column value sudo usermod -c "Personel Info" user2 -s to change default user shell sudo usermod -s /bin/sh user2 -l to change username sudo usermod -l user007 user2 (new name 1st) -d to change Home Directory -L to lock user (this user can't log in) -U to unlock locked user -g to change primary group -G to change secondary group -a, Add the user to the supplementary group(s). Use only append with the -G
groupadd	To add new group. (sudo groupadd gp1)
groupmod	To modify groupn is used for changing group name.
groupdel	To delete group. (sudo groupdel name)
chage	Used to change password expiry info of a user (sudo chage user2). -1 to view just password setting of particular user
chsh	Used to change default user shell
chfn	Used to change user personal info
finger	shows user info in detail (may have to install it manually)
id	it displays ID (UID) and primary GIDs and groups you belong to gid=primary group, groups = Secondary group
su	 (switch user) We can use it to login using any username if we know its password (e.g: su -root) Using '-' will also give you the target user environment. You will find yourself in the target user HOME Directory and his default login shell



Disk/Memory Management

Command	Description
Disk Formatting	
man fs	Man page for all commonly used file-systems and their
man is	characteristics.
	to build filesystem (format partitions)
	• its use is deprecated now there are commands for each FS
	like mkfs.ext, mkfs.ext2 etc.
mkfs	mkfs. <fs_name></fs_name>
	There should not be any data on partition we want to
	format if there is take its backup
	To mount a partition.
mount	mount -t type device /dir
	<pre>mount /dev/sda3 /opt (mounts /dev/sda3 to /opt)</pre>
	To unmount a partition. (umount /dev/sda3)
	Lists info about all available block devices (sda, sr0)
	• It shows 7-columns by default
	 To view only selected columns, use -o then enter names of
lsblk	columns (, seperated)
	lsblk /dev/sda (List info about /dev/sda
	only.)
	lsblk -o name,type,fstype,parttype,size,mode /dev/sda FS Architecture
e2label	Changes label on ext2/ext3/ext4 file systems. e2label /dev/sda3 "anas3" To assign label
eziabei	e2label /dev/sda3 "" To unassign label
	Shows super block info in detail:
tune2fs	tune2fs -1 /dev/sda1
	Lists all i-node block info of a file or device e.g.: inode,
	permissions, times, size, owners etc.
stat	stat filename/device
	stat /etc/passwd
	<pre>stat -f /dev/sda1 (-f shows info about device e.g: /dev/sda1)</pre>
	(Disk free) Displays amount of diskspace available on
	partition/FS
	df -i devices
df	If no devices are mentioned then list info for all active
	partitions.
	-i shows info about inodes
	(Disk usage) Displays how much space a particular file or
du	<pre>directory has occupiedh shows size in human readable form K, M, G</pre>
au	du ~ Recursively shows sizes of all files, dir, sub-dirs
	inside ~
1 6	(List of opened files) System Wide File Table
lsof	<pre>lsof -p PID</pre>
	• Identify process using files or sockets.
	Used to list PIDs and usernames of processes using a specific
fuser	file
	-u To show username as well
	fuser -u /etc/passwd
Disk Partitioning	





	mall the termal about the progence and numbering of an diet		
partx	Tell the kernel about the presence and numbering of on-disk partitions		
parcx	partxshow /dev/sda (List all partitions on Disk)		
dd	Copy a file, converting and formatting according to the operands. dd if=/dev/sda bs=512 count=1 (Shows contents of zero sector but not human readable) It will read file /dev/sda and (if=/dev/sda) reads just 512 bytes and (bs=512) read once and show them (count=1)		
hexdump	 The hexdump utility is a filter which displays the specified files, or the standard input, if no files are specified, in a user specified format. Makes content of dd readable. -C Display the input offset in hexadecimal, followed by sixteen space-separated, two column, hexadecimal bytes, followed by the same sixteen bytes in %_p format enclosed in `` '' characters. dd if=/dev/sda bs=512 count=1 hexdump -C (Shows zero sector in readable HEX format) 		
fdisk	Manipulate disk partition table (interactive program) -1 shows info about all the block devices and their partitions • fdisk -1 /dev/sda (shows info about sda only) • fdisk -version (to check fdisk version) • To run fdisk use "fdisk /dev/sda" as root/sudo m For help. p Displays partition table d To delete partition n To create new partition p=primary, e=extended then write partition digit (1-4) 1st sector (use default) last sector or size (we should use size in human form by proceding with +) e.g: +2G (default for last partition is all remaining disk space) q quit without saving changes w write table to disk and make changes permanent (use it carefully)		



System Programming Commands

Command		Description
		lity will determine automatically which pieces of a large to be recompiled, and issue the commands to recompile
	ciiom.	make [OPTION] [TARGET]
make	- f T	o specify name of makefile to search for
		tell make to print out what it would have done w/o
	a	ctually doing it
		ells make to keep going when an error is found, rather
		nan stopping as soon as the first problem is detected.
	_	rogram creates, modifies, and extracts from archives. An
		single file holding a collection of other files.
		-rcs libmymath.a myadd.o mysub.o mydiv.o mymul.o
	- r C	reate a new archive
		ar -r libfirst.a file1.o file2.o
	- q A	opend an object file to an existing archive.
	• ,	ar -q libfirst.a file3.o
	- d d	elete object modules from an existing archive
ar		ar -d libfirst.a file2.o
	- x e:	xtract object modules in your PWD
	- t d	<pre>ar -x /usr/lib/libm.a isplay table of contents of an archive</pre>
	- c	ar -t /usr/lib/libm.a
	-c W	ithout it if an archive is not already existing then a
		arning will be displayed.
		o maintain files in particular order w.r.t to functions
		o avoid errors
ranlib	ranlib utility generates an index to the contents of an archive and stores it in the archive.	
ldd	List dynamic dependencies displays the shared libraries that an executable (or a shared library) requires to run.	
ldconfig	Conf igure d	ynamic linker run time bindings. Creates necessary links recent shared library verions
objdump	This command can be used to obtain various information, including disassembled binary machine code from an executable file, compiled object or shared library. -d To disassemble	
	-	l lists the set of symbols def ined within an object
nm		executable program
objcopy		nslate object files.
addr2line		resses into file names and line numbers
~~~=====	GNU Compiler	
	-o	Specify the name of executable file (default a.out)
	-save-temps	
	-E	Perform preprocessing only and generate file with .i
		extension
	-s	Generate Assembly code with .s extension for the
gcc		specific processor
	-c	Suppress linking phase and keep object files with .o extension
	-static	To force static linking
	-lxxx	All libraries except std I/O, need to be explicitly linked with -l option.



	-Lpath By default, linker looks for libraries in	
	/usr/lib/x86_64/ and /lib/ directories. If	you want to
	link libraries located somewhere else, use	-L option
	- <b>Ipath</b> By default, preprocessor first searches for	r include
	files in directory containing the source fa	-
	the directory named with -I option to gcc,	and finally
	in /usr/include/ or /usr/include/c++/4.1.1	
	GNU Compiler	
	we can also specify exe file with it to load it at star	tup, then we
gdb	won't have to use <u>file</u> command	
	-tui to open gdb in ncurses-interface mode (defa	ault 2
	<pre>panels {code,command})</pre>	
ulimit -c	To generate core file in case of abnormal termina	tion.
unlimited	gdb -q ex2 core	



# **GDB Debugger Commands**

Comman	Description
d	
file	To load program in GDB
attach	to load already running program in gdb using PID
run	to execute loaded program
info	to view contents of memory registers
registers	
info all-	to view contents of all memory registers
registers	
info	to view all current gdb session inferiors (loaded programs)
inferiors	• inferior is used by GDB to manage all loaded programs. Each
	inferior has a number assigned to it.
add-inferior	to add new inferior (load another program)  add-inferior -exec a.out
info break	to view all breakpoints in focused inferior
list	to view source code inside GDB (it also displays line number)
	to get help inside gdb
	o It shows 12 classes of commands
	<pre>arif@arif:-/gdb\$ gdb -q (gdb) help</pre>
	List of classes of commands:
	Filliones, estimo transcrimo (carectamo transcrimo)
	aliases Aliases of other commands
	breakpoints Making program stop at certain points data Examining data
	files Specifying and examining files
help	internals Maintenance commands
	obscure Obscure features running Running the program
	stack Examining the stack
	status Status inquiries
	support Support facilities
	tracepoints Tracing of program execution without stopping the program user-defined User-defined commands
	o <b>help all:</b> to view all commands in qdb
	o help command: to view info about a gdb command
	o help class: to view commands inside a gdb commands class
disassemble	used to dump assembly of specified function in AT&T format
backtrace	used to get info about function stack frames (FSF
6:	It completes execution of current function, returns value to parent
finish	function and stop there after copying address of next instruction from
layout-split	FSF to rip. to view an addition assembly code panel in -tui interface mode of gdb
Breakpoint	
break	break command is used to set breakpoint break 10 sets breakpoint at line-10
DIEGN	<b>Break main</b> sets breakpoint at line-to
	executes only next instruction (of HLL code) and if that instruction
next/n	contain function call it will also execute that function code
/ENTER	implicitly
continue/c	executes program till end or next breakpoint
ni/si	moves to next instruction of assembly code
disable	to disable a breakpoint temporarily by specifying its number disable 2 #disables breakpoint with number-2



print	to view contents of a variable during execution (at breakpoint)  print /x i #displays value in HEX  print /o i #displays value in Octal  print /t i #displays value in Binary  print i #displays value in datatype format	
whatis	to view datatype of variable	
set	<pre>to change variable value at breakpoint. It has 2 syntax:     set (i=10)     set variable i=10     set \$rax=9  #to change register values precede name with \$</pre>	



## **Commonly used Git Commands**

Command	Description	
git init	Initializes local git repository in PWD	
git clone <link/>	For cloning remote repository for the 1st time	
git pull <link/>	Used after clone	
git remote rm name	Removes remote repository named "name"	
<pre>git remote add name <link/></pre>	Adds remote repository named "name"	
git push origin master	Pushes master branch to remote repository origin	
git branch <name></name>	Creates new branch named "name"	
git branch -1	List all branches	
git checkout <branch></branch>	Switches to specified branch	
git checkout -b <name></name>	Creates new bracnch and switches to it	
<pre>git branch -m <old> <new></new></old></pre>	Rename a branch	
git branch -d <branch></branch>	Deletes a branch	
git branch -D <branch></branch>	Delete a branch with unmerged changes	
git push origin <branch_nam< th=""><th>me&gt; Pushes specified branch to remote repository origin</th></branch_nam<>	me> Pushes specified branch to remote repository origin	
For COMPARISON	<ul> <li>git diff <file>  # with staging index</file></li> <li>git diff HEAD <file>  # with local repo</file></li> <li>git diffsatged <file>  # cmp file in staging index with local repo</file></li> <li>git diff <b1> <b2>  # cmp t2o branches</b2></b1></li> </ul>	
PATCHING	<ul> <li>diff -c file1 file2 &gt;new.patch</li> <li>the differences are identified such that the first file could be modified to make it match the second file</li> <li>patch -i new.patch</li> <li>in dir of file1 to change this to file2</li> </ul>	
Config Files	<ul><li>System: /etc/gitconfig</li><li>User: ~/.gitconfig</li><li>Project: ProjectDir/.git/config</li></ul>	
HEAD	<ul> <li>./.git/HEAD (tell branch)</li> <li>./.git/refs/heads/master (master=branch)</li> <li>.git/refs/remotes/origin/master (remote master HEAD)</li> </ul>	
Excluding files	<ul><li>Project Level: .git/info/exclude</li><li>Directory Level: ./.gitignore</li></ul>	