

Operating Systems Lab

UCS303P

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Some Basic Commands

- `date`: display date and time
- `cal`: display calender
- `tput clear` : clears the screen
- `who`: who are the users?
- `ps`: viewing processes

ls command Options

- **ls:** displays the list of file names.
- **Syntax:** `ls [options] [file | dir]`
- **ls options:**
- **ls -a :** List all files including the hidden files starting with ' . '.
- **ls -color:** colored list
- **ls -d:** list directories - with ' */'
- **ls -F:** add one char of */=>@ | to enteries

ls command Options

- `ls -i`: list file's inode index number
- `ls -l`: list with long format - show permissions
- `ls -la`: list long format including hidden files
- `ls -lh`: list long format with readable file size
- `ls -ls`: list with long format with file size
- `ls -r`: list in reverse order
- `ls -R`: list recursively directory tree

ls Command Options

- `ls -s`: list file size
- `ls -S`: sort by file size
- `ls -t`: sort by time & date
- `ls -X`: sort by extension name
- And many more

Directing output of a command

- **> symbol:** storing information in files
- e.g. `ls > list` (Output of `ls` command is stored in `list`)
- `cat` : display content of a file e.g. `cat list`
- `wc`: Count number of lines (words and characters) in a file

e.g. `wc list`

Outputs no of lines, words and characters in `list`

cat command

- Used to display content of text files and to combine several files to one file
- **Syntax:** `cat [options] file1 [file2...]`
- **Options:**
 - `cat -b`: add line numbers to non blank lines
 - `cat -n`: add line numbers to all lines
 - `cat -s`: squeeze blank lines to one line
 - `cat -E`: show \$ at the end of line
 - `cat -T`: show ^I instead of tabs

Feeding output of one command to another

- | symbol (pipe) is used to connect two commands to create a pipeline
- e.g. `ls|wc`
- Output of `ls` will be used as input for `wc`

Programming with the Shell

- `x=5` : assign a value to a variable
- `echo $x` : evaluate value of a variable (here x)
- Various looping and conditional statements are also supported.

Signing off

- exit : to quit a session
- Or we can use Ctrl+d

Locating Commands

- All the commands are in lower case and are case sensitive
- The commands are essentially the files containing programs mainly written in C
- Files are stored in directories
- E.g ls command is a file stored in /bin
- **type** command is used to know location of an executable program
- e.g. **type date**

PATH and SHELL Variables

- The sequence of directories that the shell searches to look for a command is specified in its own PATH variable.
- `echo $PATH`
- There are 6 directories in colon separated list
- The shell searches this list in the sequence when a command is given.
- If a command is not in these 6 directories then same can be executed by typing its complete path.
- SHELL variable holds the directory path for the shell in use

Combining commands

- UNIX allows us to specify more than one command in the command line.
- Each command has to be separated by ‘;’
- e.g. `wc note; ls -l note`
- e.g. `(wc note; ls note) >newlist`

echo and echo-e

- echo command is used to display line of text/ string that are passed as an argument
- Syntax: **echo [option] [string]**
- **echo -e**: enables the interpretation of backslash escapes or escape sequences(\b, \c, \n,\t etc.)
- **\b**: removes all the spaces in between text
- **\c** : suppress trailing new line with backspace interpreter '-e' to continue without emitting new line.
- **\n**: creates new line
- **\t**: creates horizontal tab spaces and many more

cal command

- **cal:** display calender
- Syntax: `cal [[month] year]`
- **Options:**
 - `cal -m month:`
Specify a month to display
 - `cal -j:` Display julian dates(days one-based, numbered from January 1)
 - `cal -y:` display current year calender
 - `cal -3:` Display last month, this month, and next month

date command

- Displays system date and time
- **Options:**
 - -u: Displays time in GMT/UTC time zone
 - -date or -d: Displays given date string in format of date
 - -s or --set option: to set date and time
 - -f or --file : Used to display the date string present at each line of file in date and tie format
 - -r: To display last modified timestamp of a date file
- **Format Specifiers:**
 - +%m : month; +%h : month name
 - Similarly for d; y; H,M and S; D; T

man and help

- man: Command used to display the user manual or documentation of any command that we can run on the terminal.
- e.g. `man ls`
- help: Option to display information or brief summary of built-in commands
- e.g. `ls --help`

Using escape sequence

- `\b`: removes all the spaces in between text
- `\c` : suppress trailing new line with backspace interpreter `'-e'` to continue without emitting new line.
- `\n`: creates new line
- `\t`: creates horizontal tab spaces
- And many more

printf

- Alternate to echo
- Like echo exist as external command
- Only bash shell has built-in printf
- It also accepts all the escape sequences used by echo, but unlike echo, it doesn't automatically insert a newline unless `\n` is used explicitly.
- Also uses formatted strings in the same way the C language function of the same uses them
- e.g. `printf "My current shell is %s\n" $SHELL`

Some useful commands

- [Ctrl+h] or [Delete] : The erase character
- [Ctrl+u] : The line kill character
- [Ctrl+c] or [Delete] : The interrupt character
- [Ctrl+d] : The eof character, terminates login session or program that expects input from keyboard
- [Ctrl+s] : Stops scrolling and lock keyboard
- [Ctrl+q] : Resumes scrolling and unlocks keyboard
- [Ctrl+j] or [Ctrl+m]: Alternate to [Enter]
- [Ctrl+z]: Suspends process, use fg to resume job

