

20221104_linux_system

- Installing windows subsystem for linux (wsl)
 - open `command prompt` as `administrator`
 - `wsl -- install`
 - restart the pc
-

Vim Installation

- open `ubuntu`
- type `which vim` to check whether `vim` is already installed or not.
- `sudo apt install vim-nox` - to install special version of vim

This package contains a version of vim compiled with support for scripting with Lua, Perl, Python 3, Ruby, and Tcl but no GUI

Basic Linux commands

1. whoami

- who am I logged in as - user name of currently logged in user.

```
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c$ whoami
gowthamunni
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c$ |
```

2. man

- get a manual or documentation on `commands`. like help.
manual on `whoami`
- `q` to get out of the page.

```
WHOAMI(1)                                User Commands                                WHOAMI(1)

NAME
    whoami - print effective userid

SYNOPSIS
    whoami [OPTION]...

DESCRIPTION
    Print the user name associated with the current effective user ID.  Same as id -un.

    --help display this help and exit

    --version
        output version information and exit

AUTHOR
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REPORTING BUGS
    GNU coreutils online help: <https://www.gnu.org/software/coreutils/>
    Report whoami translation bugs to <https://translationproject.org/team/>

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    This is free software: you are free to change and redistribute it.  There is NO WARRANTY, to the extent permitted by law.

SEE ALSO
    Full documentation at: <https://www.gnu.org/software/coreutils/whoami>
    or available locally via: info '(coreutils) whoami invocation'

GNU coreutils 8.30                        September 2019                        WHOAMI(1)
Manual page whoami(1) line 1/32 (END) (press h for help or q to quit)
```

3. clear or (ctrl + l)

- to clear the terminal

4. pwd

- your current working directory

```
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c$ pwd
/mnt/c
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c$ |
```

5. ls

- to list the directories or folders

```
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c$ ls
ls: cannot access 'DumpStack.log.tmp': Permission denied
ls: cannot access 'hiberfil.sys': Permission denied
ls: cannot access 'PageFile.sys': Permission denied
ls: cannot access 'swapfile.sys': Permission denied
$Recycle.Bin      DL classes      Intel          PageFile.sys      Recovery        bootTel.dat
'$WinREAgent'    'Documents and Settings'  'ML Theory'      PerfLogs          Resume         datasets
ASAP             DumpStack.log.tmp  'MLops - Notes'  'Personal Details'  'Slides - Dc'  hiberfil.sys
Aptitude         Edge Computing     'NVIDIA - Presentation Slides'  'Program Files'   'System Volume Information'  project
'Books On ML and DL'  'Gernoll'         'NVIDIA - Presentation Slides'  'Program Files (x86)'  Users          swapfile.sys
Certifications    'Gernoll'         'NVIDIA - Presentation Slides'  'Program Files (x86)'  Users          swapfile.sys
Certifications    'Gernoll'         'NVIDIA - Presentation Slides'  'Program Files (x86)'  Users          swapfile.sys
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c$ ls Personal Details
ls: cannot access 'Personal': No such file or directory
ls: cannot access 'Details': No such file or directory
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c$ ls 'Personal Details'
ApplicationFormDraftPrintForAll.pdf  'GOWTHAM SIGNATURE.jpg'  'Gowtham_Unni_T_Aadhar card.jpg'  'SSLC Certificate.pdf'
ConfirmationPage-223510414917.pdf    'GOWTHAM UNNI.jpg'       'Gowtham_Unni_T_PAN Card.jpg'      'Screenshot 2022-08-16 07.05.06.png'
'GOWTHAM (2).jpg'                    'GowthamInternshipLetterSigned.pdf'  'Graduation- Consolidated Grade Card.pdf'  'Windows 10'
'GOWTHAM IMG (2).jpg'                'Gowtham_Unni_T_AIIML ID Card.png'  'Plus Two Certificate.pdf'          scientific_assistant_ssc.pdf
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c$ ls 'Program Files'
7-Zip      Git      MSBuild      'Mozilla Firefox'      'Uninstall Information'  'Windows Photo Viewer'
Acer       'GoTrust ID Plugin'  'Microsoft Office'  'NVIDIA Corporation'  WinRAR                  'Windows Sidebar'
BraveSoftware  Google  'Microsoft Office 15'  'NVIDIA GPU Computing Toolkit'  'Windows Defender'      WindowsApps
CodeBlocks    Intel   'Microsoft Update Health Tools'  'Norton Security'          'Windows Mail'          WindowsPowerShell
'Common Files'  'Internet Explorer'  'Microsoft Visual Studio'  PCHealthCheck              'Windows Media Player'  desktop.ini
DriverSetupUtility  JetBrains  ModifiableWindowsApps  'Reference Assemblies'  'Windows NT'

gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c$ ls 'Program Files'/Acer
'Quick Access Service'  StopPSTL  'User Experience Improvement Program Service'
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c$ |
```

- `ls -l` : gives other details related to the folder.

```

gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c$ ls -l
ls: cannot access 'DumpStack.log.tmp': Permission denied
ls: cannot access 'hiberfil.sys': Permission denied
ls: cannot access 'PageFile.sys': Permission denied
ls: cannot access 'swapfile.sys': Permission denied
ls: 'System Volume Information': Permission denied
total 0
drwxrwxrwx 1 gowthamunni gowthamunni 512 Oct 16 2021 '$Recycle.Bin'
dr-xr-xr-x 1 gowthamunni gowthamunni 512 Oct 14 21:57 '$WinREAgent'
drwxrwxrwx 1 gowthamunni gowthamunni 512 Jan 30 2022 'ASAP'
drwxrwxrwx 1 gowthamunni gowthamunni 512 Jun 3 17:43 'Aptitude'
drwxrwxrwx 1 gowthamunni gowthamunni 512 Aug 13 15:57 'Books On ML and DL'
drwxrwxrwx 1 gowthamunni gowthamunni 512 May 30 12:34 'Certifications'
drwxrwxrwx 1 gowthamunni gowthamunni 512 Sep 2 12:19 'DL classes'
lrwxrwxrwx 1 gowthamunni gowthamunni 12 Oct 16 2021 'Documents and Settings' -> /mnt/c/Users
-???????? ? ? ? ? ? ? ? ? DumpStack.log.tmp
drwxrwxrwx 1 gowthamunni gowthamunni 512 Jun 16 22:26 'Edge Computing'
drwxrwxrwx 1 gowthamunni gowthamunni 512 Jul 13 12:09 'Gernolt'
drwxrwxrwx 1 gowthamunni gowthamunni 512 Aug 8 23:48 'Git'
drwxrwxrwx 1 gowthamunni gowthamunni 512 Nov 2 15:20 'Intel'
drwxrwxrwx 1 gowthamunni gowthamunni 512 Apr 9 2022 'ML Theory'
drwxrwxrwx 1 gowthamunni gowthamunni 512 May 17 18:09 'MLOps - Notes'
drwxrwxrwx 1 gowthamunni gowthamunni 512 Jun 22 14:57 'NVIDIA - Presentation Slides'
drwxrwxrwx 1 gowthamunni gowthamunni 512 Oct 16 2021 'OEM'
drwxrwxrwx 1 gowthamunni gowthamunni 512 Aug 10 07:45 'OneDriveTemp'
-???????? ? ? ? ? ? ? ? ? PageFile.sys
drwxrwxrwx 1 gowthamunni gowthamunni 512 Jun 5 2021 'PerfLogs'
drwxrwxrwx 1 gowthamunni gowthamunni 512 Oct 14 22:18 'Personal Details'

```

- `ls -a` : shows additional files and folders beginning with `.`

6. cd

- to change the current working directory

```

gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c$ help cd
cd: cd [-L|[-P [-e]] [-@]] [dir]
    Change the shell working directory.

Change the current directory to DIR.  The default DIR is the value of the
HOME shell variable.

The variable CDPATH defines the search path for the directory containing
DIR.  Alternative directory names in CDPATH are separated by a colon (:).
A null directory name is the same as the current directory.  If DIR begins
with a slash (/), then CDPATH is not used.

If the directory is not found, and the shell option 'cdable_vars' is set,
the word is assumed to be a variable name.  If that variable has a value,
its value is used for DIR.

Options:
  -L      force symbolic links to be followed: resolve symbolic
          links in DIR after processing instances of '..'
  -P      use the physical directory structure without following
          symbolic links: resolve symbolic links in DIR before
          processing instances of '..'
  -e      if the -P option is supplied, and the current working
          directory cannot be determined successfully, exit with
          a non-zero status
  -@      on systems that support it, present a file with extended
          attributes as a directory containing the file attributes

The default is to follow symbolic links, as if '-L' were specified.
'..' is processed by removing the immediately previous pathname component
back to a slash or the beginning of DIR.

Exit Status:
Returns 0 if the directory is changed, and if $PWD is set successfully when
-P is used; non-zero otherwise.
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c$

```

```

gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c$ cd project
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project$ ls
New folder      Quantization      onnx      onnx2Tensorflow      onnx2keras
Onnx2tf         VisionTransformer  onnx-tf-conversion  onnx2savedmodel     spatial-transformer-network
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project$ cd onnx-tf-conversion
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/onnx-tf-conversion$ ls
apps      core      docs      run_script  utils
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/onnx-tf-conversion$ cd docs
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/onnx-tf-conversion/docs$ ls
external_notes  notes      practice_codes
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/onnx-tf-conversion/docs$ cd notes
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/onnx-tf-conversion/docs/notes$ cd practice_codes/learn_python
-bash: cd: practice_codes/learn_python: No such file or directory
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/onnx-tf-conversion/docs/notes$ cd docs/practice_codes/learn_python
-bash: cd: docs/practice_codes/learn_python: No such file or directory
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/onnx-tf-conversion/docs/notes$ cd ../docs/practice_codes/learn_python
-bash: cd: ../docs/practice_codes/learn_python: No such file or directory
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/onnx-tf-conversion/docs/notes$ cd ../docs/practice_codes/learn_python
-bash: cd: ../docs/practice_codes/learn_python: No such file or directory
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/onnx-tf-conversion/docs/notes$ cd /mnt/c/project/onnx-tf-conversion/docs/practice_codes/learn_python
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/onnx-tf-conversion/docs/practice_codes/learn_python$ |

```

- `cd ~` - home directory.
- `cd /` - root directory.

7. mkdir

- make directory.

```

gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c$ mkdir goodday
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c$ ls
ls: cannot access 'DumpStack.log.tmp': Permission denied
ls: cannot access 'hiberfil.sys': Permission denied
ls: cannot access 'PageFile.sys': Permission denied
ls: cannot access 'swapfile.sys': Permission denied
$WinCyclr Bin      ML classes      PerLog      PageFile.sys      Recovery      bootTel.dat
'$WinREAgent'     'Documents and Settings'  'ML Theory'      PerLogs      Resume      Datasets
ASAP              DumpStack.log.tmp      'MLOps - Notes'  'Personal Details'  'Slides - DL'  goodday
Aptitude          'Edge Computing'      'NVIDIA - Presentation Slides'  'Program Files'  'System Volume Information'  hiberfil.sys
'Books On ML and DL'  'sernoli'            'SEM'            'Program Files (x86)'  Users      'ssd1c1'
Certifications     git                 OneDriveIcons    'ProgramData'      Windows      swapfile.sys
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c$ cd 'P'
PerLogs/      Personal Details/      Program Files/      Program Files (x86)/      ProgramData/
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c$ mkdir 'Personal Details'/evening
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c$ cd 'Personal Details'/evening
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/Personal Details/evening$ ..
.: command not found
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/Personal Details/evening$ cd ..
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/Personal Details$ |

```

8. touch

- to create an empty file(with any extension).

```

gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/Personal Details$ ls
ApplicationFormDraftPrintForAll.pdf  'GOWTHAM UNNI.jpg'  'Graduation- Consolidated Grade Card.pdf'  blank
ConfirmationPage-223510414917.pdf    GowthamInternshipLetterSigned.pdf  'Plus Two Certificate.pdf'  evening
'GOWTHAM (2).jpg'                    'Gowtham_Unni_T_AIML ID Card.png'  'SSLC Certificate.pdf'      scientific_assistant_ssc.pdf
'GOWTHAM IMG (2).jpg'                'Gowtham_Unni_T_Aadhar card.jpg'    'Screenshot 2022-08-16 07.05.06.png'
'GOWTHAM SIGNATURE.jpg'              'Gowtham_Unni_T_PAN Card.jpg'        Windows 10
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/Personal Details$ touch pain.txt
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/Personal Details$ touch hehe.py
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/Personal Details$ ls
ApplicationFormDraftPrintForAll.pdf  'GOWTHAM UNNI.jpg'  'Graduation- Consolidated Grade Card.pdf'  blank
ConfirmationPage-223510414917.pdf    GowthamInternshipLetterSigned.pdf  'Plus Two Certificate.pdf'  evening
'GOWTHAM (2).jpg'                    'Gowtham_Unni_T_AIML ID Card.png'  'SSLC Certificate.pdf'      hehe.py
'GOWTHAM IMG (2).jpg'                'Gowtham_Unni_T_Aadhar card.jpg'    'Screenshot 2022-08-16 07.05.06.png'  pain.txt
'GOWTHAM SIGNATURE.jpg'              'Gowtham_Unni_T_PAN Card.jpg'        Windows 10      scientific_assistant_ssc.pdf
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/Personal Details$ |

```

9. rmdir

- remove empty directories.

10. rm command

- to remove files or directories.
 - `-v` - verbose (to show the log or result of command)
 - `-i` - `interactive` . asks users permission when removing the files or directories.
 - `-r` - `recursive` : to delete non - empty directories.

```

gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/New folder/codes/20221102/learnlinux$ ls
bed dwayne.txt night.txt rain
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/New folder/codes/20221102/learnlinux$ rm dwayne.txt
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/New folder/codes/20221102/learnlinux$ ls
bed night.txt rain
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/New folder/codes/20221102/learnlinux$ rm -v bed
removed 'bed'
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/New folder/codes/20221102/learnlinux$ cd ..
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/New folder/codes/20221102$ rm -i learnlinux
rm: cannot remove 'learnlinux': Is a directory
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/New folder/codes/20221102$ rm -ri learnlinux
rm: descend into directory 'learnlinux'? y
rm: remove regular empty file 'learnlinux/night.txt'? n
rm: remove regular empty file 'learnlinux/rain'? y
rm: remove directory 'learnlinux'? n
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/New folder/codes/20221102$ ls
learnlinux
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/New folder/codes/20221102$ ls learnlinux/
night.txt
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/New folder/codes/20221102$

```

11. xdg-open

- to open files or folders
- xdg-open night.txt or `xdg-open .`

```

NAME
    xdg-open - opens a file or URL in the user's preferred application

SYNOPSIS
    xdg-open {file | URL}

    xdg-open [--help | --manual | --version]

DESCRIPTION
    xdg-open opens a file or URL in the user's preferred application. If a URL is provided the URL will be opened
    in the user's preferred web browser. If a file is provided the file will be opened in the preferred
    application for files of that type. xdg-open supports file, ftp, http and https URLs.

    xdg-open is for use inside a desktop session only. It is not recommended to use xdg-open as root.

```

12. mv

1. to `move` and `rename` folders and files.
 1. to rename a the folder night just enter `mv night.txt NIGHT.txt`. And that's renamed.(-v for verbose)
 2. to rename the folder `mv learnlinux/ Learnlinux`.
 3. to move the files to a folder `mv night.txt rain learnlinux/`. It would identify the last one as the folder to be moved to.

```

gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/New folder/codes/20221102/learnlinux$ ls
night.txt
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/New folder/codes/20221102/learnlinux$ mkdir morning
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/New folder/codes/20221102/learnlinux$ mv night.txt evernight.txt
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/New folder/codes/20221102/learnlinux$ ls
evernight.txt morning
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/New folder/codes/20221102/learnlinux$ mv -v evernight.txt morning
renamed 'evernight.txt' -> 'morning/evernight.txt'
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/New folder/codes/20221102/learnlinux$ ls
morning
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/New folder/codes/20221102/learnlinux$ ls morning
evernight.txt
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/New folder/codes/20221102/learnlinux$ touch bird
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/New folder/codes/20221102/learnlinux$ |

```

13. cp

- to copy file or folder.
- `cp -r learnlinux Learlinux`

```
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/New folder/codes/20221102/learnlinux$ cp bird crow
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/New folder/codes/20221102/learnlinux$ ls
bird  crow  morning
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/New folder/codes/20221102/learnlinux$ cp crow morning/evernight.txt
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/New folder/codes/20221102/learnlinux$ ls morning/
evernight.txt
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/New folder/codes/20221102/learnlinux$ cp -r morning/ night
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/New folder/codes/20221102/learnlinux$ ls
bird  crow  morning  night
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/New folder/codes/20221102/learnlinux$ ls night/
evernight.txt
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/New folder/codes/20221102/learnlinux$ |
```

14. head

- outputs the first part of the file. By default it's set to 10. But the number of lines to be printed can be set using `-n` command.

15. tail

- similar to `head` but prints the end part of the file.

16. date

```
NAME
    date - print or set the system date and time

SYNOPSIS
    date [OPTION]... [+FORMAT]
    date [-u|--utc|--universal] [MMDDhhmm[[CC]YY][.ss]]

DESCRIPTION
    Display the current time in the given FORMAT, or set the system date.

    Mandatory arguments to long options are mandatory for short options too.
```

17. redirecting the output.

1. `>` : redirects the outputs to a file (like a text file). But this command would replace the current contents.
2. `>>` : this commands appends instead of overwriting.

```

gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/New folder/codes/20221102/learnlinux$ ls
bird bird.txt crow morning night
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/New folder/codes/20221102/learnlinux$ xdg-open bird.txt
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/New folder/codes/20221102/learnlinux$ man date > bird.txt
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/New folder/codes/20221102/learnlinux$ xdg-open bird.txt
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/New folder/codes/20221102/learnlinux$ head -n 20 bird.txt
DATE(1)
User Commands

NAME
    date - print or set the system date and time

SYNOPSIS
    date [OPTION]... [+FORMAT]
    date [-u|--utc|--universal] [MMDDhhmm[[CC]YY][.ss]]

DESCRIPTION
    Display the current time in the given FORMAT, or set the system date.

    Mandatory arguments to long options are mandatory for short options too.

    -d, --date=STRING
        display time described by STRING, not 'now'

    --debug
        annotate the parsed date, and warn about questionable usage to stderr

```

```

gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/New folder/codes/20221102/learnlinux$ date >> date.txt
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/New folder/codes/20221102/learnlinux$ date >> date.txt
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/New folder/codes/20221102/learnlinux$ date >> date.txt
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/New folder/codes/20221102/learnlinux$ date >> date.txt
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/New folder/codes/20221102/learnlinux$ date >> date.txt
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/New folder/codes/20221102/learnlinux$ head date.txt
Thu Nov  3 10:47:55 IST 2022
Thu Nov  3 10:47:56 IST 2022
Thu Nov  3 10:47:57 IST 2022
Thu Nov  3 10:47:58 IST 2022
Thu Nov  3 10:47:58 IST 2022
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/New folder/codes/20221102/learnlinux$ |

```

18. cat

- concatenates the files and prints it out. If enter a single file the it would just print everything in it.
- `cat` along with `redirection` has plenty of possibilities.

```

gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/New folder/codes/20221102/learnlinux$ cat bird bird.txt > crow
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/New folder/codes/20221102/learnlinux$ head crow
bird
bird.txt
crow
date.txt
morning
night
now
crow
peacock
hen

```

19. piping

- `ls -l | wc` - listed directories to word count.
- to send outputs of one command to another command.
- Pipes are unidirectional i.e data flows from left to right through the pipeline.

```

gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c$ ls -l | wc
ls: cannot access 'DumpStack.log.tmp': Permission denied
ls: cannot access 'hiberfil.sys': Permission denied
ls: cannot access 'PageFile.sys': Permission denied
ls: cannot access 'swapfile.sys': Permission denied
ls: 'System Volume Information': Permission denied
    37      342    2412
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c$ |

```

20. wc

- prints the word count
- `-l` - line count
- `-c` - bytes count
- `-m` - character count

```

gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/Linux/codes/20221104$ ls -l | wc
    5      38    289
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/Linux/codes/20221104$ |

```

- First term is the number of lines.
- Second term is number of characters
- Third term is `bytes`.

21. sort

- sort lines of text files

22. uniq

- print unique lines (omit repeated ones).

23. grep

- to search for patterns with in a file. if a file is not given then if recursive (-r) then searches through all files in working directory and nonrecursive searches read standard input.

```

NAME
    grep, egrep, fgrep, rgrep - print lines that match patterns

SYNOPSIS
    grep [OPTION...] PATTERNS [FILE...]
    grep [OPTION...] -e PATTERNS ... [FILE...]
    grep [OPTION...] -f PATTERN_FILE ... [FILE...]

DESCRIPTION
    grep searches for PATTERNS in each FILE. PATTERNS is one or more patterns separated by newline characters, and grep prints each line that matches a pattern. Typically PATTERNS should be quoted when grep is used in a shell command.

    A FILE of "-" stands for standard input. If no FILE is given, recursive searches examine the working directory, and nonrecursive searches read standard input.

    In addition, the variant programs egrep, fgrep and rgrep are the same as grep -E, grep -F, and grep -r, respectively. These variants are deprecated, but are provided for backward compatibility.

```

Options Description

`-c` : This prints only a count of the lines that match a pattern

- h : Display the matched lines, but do not display the filenames.
- i : Ignores, case for matching
- l : Displays list of a filenames only.
- n : Display the matched lines and their line numbers.
- v : This prints out all the lines that do not matches the pattern
- e exp : Specifies expression with this option. Can use multiple times.
- f file : Takes patterns from file, one per line.
- E : Treats pattern as an extended regular expression (ERE). search for more than one expression.
- w : Match whole word
- o : Print only the matched parts of a matching line, with each such part on a separate output line.
- A n : Prints searched line and nlines after the result.
- B n : Prints searched line and n line before the result.
- C n : Prints searched line and n lines after before the result.

```
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/Linux/codes/20221103$ grep -r "pain"
lordofmysteries.txt:How painful!
lordofmysteries.txt:A gaudy and dazzling dreamworld filled with murmurs instantly shattered. The sound asleep Zhou Mingrui felt an abnormal throbbing pain i
n his head as though someone had ruthlessly lashed at him with a pole again and again. No, it was more like a sharp object pierced right through his temples
followed by a twist!
lordofmysteries.txt:And it's really painful!
lordofmysteries.txt:Throbbing pain inundated Zhou Mingrui, allowing him to slowly accumulate immaterial strength until he was finally able to move his back
and open his eyes. He finally broke free from his reverie.
lordofmysteries.txt:This... Zhou Mingrui felt inexplicably horrified as he stood up abruptly. However, before his feet fully straightened, his brain protested
with throbbing pain. It made him temporarily lose his strength as he fell uncontrollably. His buttocks slammed heavily onto the burly wood chair.
lordofmysteries.txt:The pain did little. Zhou Mingrui stood up again by propping himself up. He turned around in a fluster as he began to size up the enviro
nment he was in.
lordofmysteries.txt:At the same time, the throbbing pain in his head continued. Although it had weakened a little, it continued incessantly.
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/Linux/codes/20221103$ grep -rc "pain"
harrypotter.txt:0
lordofmysteries.txt:7
lordofmysteries.txt:0
```

- `^` : to find lines that start with that particular string add `^` in the beginning.
- `$` : to find lines that ends with that string add `$` to the end.

24. [tee](#)

- reads the standard file print the output and copies the output to new file.

NAME

tee - read from standard input and write to standard output and files

SYNOPSIS

tee [OPTION]... [FILE]...

DESCRIPTION

Copy standard input to each FILE, and also to standard output.

- a, --append
append to the given FILES, do not overwrite
- i, --ignore-interrupts
ignore interrupt signals

`-p` diagnose errors writing to non pipes

`--output-error[=MODE]`
set behavior on write error. See MODE below

`--help` display this help and exit

`--version`
output version information and exit

```
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/Linux/codes/20221103$ ls -l | tee noon.txt
total 20
-rwxrwxrwx 1 gowthamunni gowthamunni 1702 Nov  3 11:43 harrypotter.txt
-rwxrwxrwx 1 gowthamunni gowthamunni 9801 Nov  3 11:45 lordofmysteries.txt
-rwxrwxrwx 1 gowthamunni gowthamunni 1608 Nov  3 11:44 lordofrings.txt
-rwxrwxrwx 1 gowthamunni gowthamunni   0 Nov  3 13:56 noon.txt
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/Linux/codes/20221103$ ls
harrypotter.txt lordofmysteries.txt lordofrings.txt noon.txt
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/Linux/codes/20221103$ cat noon.txt
total 20
-rwxrwxrwx 1 gowthamunni gowthamunni 1702 Nov  3 11:43 harrypotter.txt
-rwxrwxrwx 1 gowthamunni gowthamunni 9801 Nov  3 11:45 lordofmysteries.txt
-rwxrwxrwx 1 gowthamunni gowthamunni 1608 Nov  3 11:44 lordofrings.txt
-rwxrwxrwx 1 gowthamunni gowthamunni   0 Nov  3 13:56 noon.txt
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/Linux/codes/20221103$ |
```

- `2>&1` to append the error message to a file.

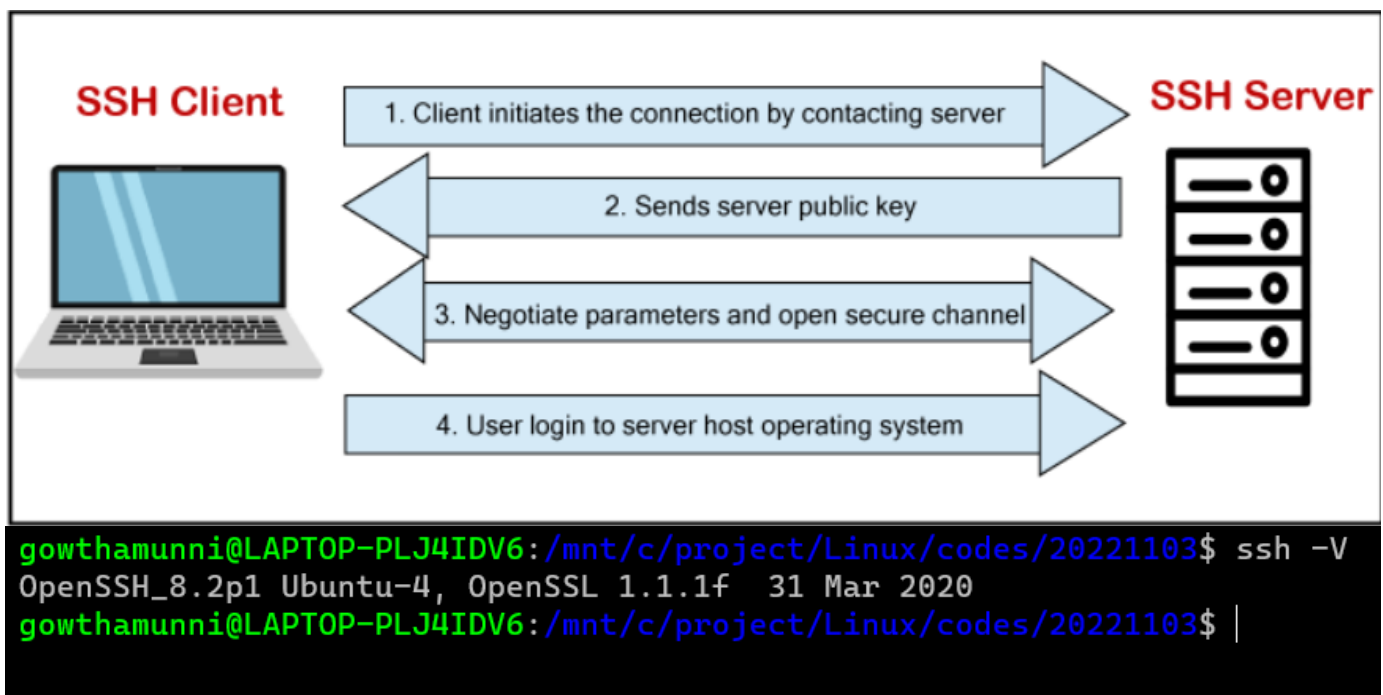
```
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/Linux/codes/20221103$ ls tansan 2>&1 | tee tacos
ls: cannot access 'tansan': No such file or directory
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/Linux/codes/20221103$ cat tacos
ls: cannot access 'tansan': No such file or directory
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/Linux/codes/20221103$ |
```

25. [ssh](#)

- `Secure Shell` or `secure socket shell`.

The ssh command consists of three different types of components:

- ssh command: It instructs the machine to create a secure encrypted connection with the host system.
- User name: User name is the name of the Linux user, which is being accessed by the host machine.
- Host: A host is a machine that is being accessed by the user, such as a computer or a router. A domain name or an IP address also refers as Host



- so in this device the `OpenSSH` is preinstalled (it comes with latest ubuntu).
- `synatx`
 - `ssh [option] [user]@[server_address]`
 - the server address can be either the address of the remote host which you wish to connect or it can be the IP address of your remote host.
- `connection refused.`

```

gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/Linux/codes/20221104$ sudo apt-get install openssh-server ii
Reading package lists... Done
Building dependency tree
Reading state information... Done
ii is already the newest version (1.8-2).
openssh-server is already the newest version (1:8.2p1-4ubuntu0.5).
0 upgraded, 0 newly installed, 0 to remove and 285 not upgraded.
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/Linux/codes/20221104$ ssh localhost
ssh: connect to host localhost port 22: Connection refused
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/Linux/codes/20221104$ |
  
```

26. [scp](#)

- `secure copy protocol` - copy files from host to client and vice versa.
- `syntax`
 - `scp [OPTIONS] [[user@]src_host:]file1 [[user@]dest_host:]file2`
 - .eg: `scp test.txt userbravo@destination:/location2` if we have a file named `test.txt`, to copy it to the server. (userbravo is the username and `destination:` then location (location to which it's copied to)). This is the case for local host to remote server.
 - `scp file <remote_username>@<IPorHost>:<PathToFile> <LocalFileLocation>` - remote to local.
 - eg: `scp linuxcheatsheet lary@192.168.1.100: .` - linuxcheatsheet is the file in remote server. `.` points to current directory.

27. [rsync](#)

rsync or remote synchronization is a software utility for Unix-Like systems that efficiently sync files and directories between two hosts or machines.

Rsync is famous for its delta-transfer algorithm, in which it copies only the differences between the source files present in the local-host and the existing files in the destination or the remote host.

```
rsync local-file user@remote-host:remote-file
```

28. [awk](#)

pattern scanning and processing language

- it's used for processing the textfiles (standard outs).

Syntax: `awk options 'selection _criteria {action }' input-file > output-file`

awk can be used to find, separate and write the contents of file. Search the contents (if it's a table or consider the stdout of date then we can use) prints out the contents based on some `selection criteria`.

- what ever you want to search (the string , maybe a name, maybe salary ,maybe some files that starts with some particular character) it's typed inside `/ /`. check the link on geeksforgeeks docs for example.

use cases

1. `awk '{print}' night.txt` : prints out whatever it's in `night.txt` . Here `print` is the action and note that the `selection criteria` is with in single quotes.

```
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project$ ls -l | awk '/Aug/ {print}'
drwxrwxrwx 1 gowthamunni gowthamunni 512 Aug 18 16:05 Quantization
drwxrwxrwx 1 gowthamunni gowthamunni 512 Aug 18 22:17 VisionTransformer
drwxrwxrwx 1 gowthamunni gowthamunni 512 Aug 10 10:18 onnx
drwxrwxrwx 1 gowthamunni gowthamunni 512 Aug 18 12:27 onnx-tf-conversion
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project$ ls -l | awk '/Aug/ {print}' | wc
 4      36      279
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project$ ls -l | awk '/Aug/ {print $6}'
Aug
Aug
Aug
Aug
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project$ ls -l | awk '/Aug/ {print $6}'|wc
 4      4      16
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project$ ls -l | awk '/Aug/ {print $6}'|wc -l
4
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/Linux/codes/20221103$ awk '/Mr/ {print}' harrypotter.txt
Potters. Mrs. Potter was Mrs. Dursley's sister, but they hadn't met
for several years; in fact, Mrs. Dursley pretended she didn't have a
When Mr. and Mrs. Dursley woke up on the dull, gray Tuesday
suggest that strange and mysterious things would soon be happening all over the country. Mr. Dursley hummed as he picked
out his
most boring tie for work, and Mrs. Dursley gossiped away happily
At half past eight, Mr. Dursley picked up his briefcase, pecked
Mrs. Dursley on the cheek, and tried to kiss Dudley good-bye but
his cereal at the walls. "Little tyke," chortled Mr. Dursley as he left
of something peculiar - a cat reading a map. For a second, Mr.
```

[Reference to geeksforgeeks](#)

bashrc and vimrc

1) .bashrc

```
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/Linux/codes/20221103$ cat .bashrc
cat: .bashrc: No such file or directory
gowthamunni@LAPTOP-PLJ4IDV6:/mnt/c/project/Linux/codes/20221103$ cd ~
gowthamunni@LAPTOP-PLJ4IDV6:~$ ls -a
.  .bash_history  .bashrc  .landscape  .profile  .sudo_as_admin_successful
.. .bash_logout  .config  .motd_shown  .ssh      .viminfo
gowthamunni@LAPTOP-PLJ4IDV6:~$ cat .bashrc
# ~/.bashrc: executed by bash(1) for non-login shells.
# see /usr/share/doc/bash/examples/startup-files (in the package bash-doc)
# for examples

# If not running interactively, don't do anything
case $- in
    *i*) ;;
    *) return;;
esac

# don't put duplicate lines or lines starting with space in the history.
# See bash(1) for more options
HISTCONTROL=ignoreboth

# append to the history file, don't overwrite it
```

- it's a script file that's executed when a user logs in. It's a hidden file so it won't be visible unless we use `ls -a` to show hidden files.
- so `.bashrc` comes into play only if we are running interactive session.
- open it in vim (`xdg-open .bashrc`) then you can edit and customize terminal.

The `.bashrc` file is a script file that's executed when a user logs in. The file itself contains a series of configurations for the terminal session. This includes setting up or enabling: coloring, completion, shell history, command aliases, and more.

```
# ~/.bashrc: executed by bash(1) for non-login shells.
# see /usr/share/doc/bash/examples/startup-files (in the package bash-doc)
# for examples

# If not running interactively, don't do anything
case $- in
    *i*) ;;
    *) return;;
esac

# don't put duplicate lines or lines starting with space in the history.
# See bash(1) for more options
HISTCONTROL=ignoreboth

# append to the history file, don't overwrite it
shopt -s histappend

# for setting history length see HISTSIZE and HISTFILESIZE in bash(1)
HISTSIZE=1000
HISTFILESIZE=2000

# check the window size after each command and, if necessary,
# update the values of LINES and COLUMNS.
shopt -s checkwinsize

# If set, the pattern "*" used in a pathname expansion context will
# match all files and zero or more directories and subdirectories.
#shopt -s globstar

# make less more friendly for non-text input files, see lesspipe(1)
[ -x /usr/bin/lesspipe ] && eval "$(SHELL=/bin/sh lesspipe)"
```

1,1

Top

1.1.

Aliases are different names for the same command. Consider them as shortcuts to a longer form command. The `.bashrc` file already has a set of predefined aliases.

```
# enable color support of ls and also add handy aliases
if [ -x /usr/bin/dircolors ]; then
    test -r ~/.dircolors && eval "$(dircolors -b ~/.dircolors)" || eval "$(dircolors -b)"
    alias ls='ls --color=auto'
    #alias dir='dir --color=auto'
    #alias vdir='vdir --color=auto'

    alias grep='grep --color=auto'
    alias fgrep='fgrep --color=auto'
    alias egrep='egrep --color=auto'
fi

# colored GCC warnings and errors
#export GCC_COLORS='error=01;31:warning=01;35:note=01;36:caret=01;32:locus=01:quote=01'

# some more ls aliases
alias ll='ls -alF'
alias la='ls -A'
alias l='ls -CF'

# Add an "alert" alias for long running commands. Use like so:
# sleep 10; alert
alias alert='notify-send --urgency=low -i "${[ $? = 0 ]} && echo terminal || echo error)" "${history|tail -n1|sed -e '\''s/^\s*[0-9]\+\s*//;s/[\;\&]\s*alert$/\n\''}'"
```

1.2.

```
# uncomment for a colored prompt, if the terminal has the capability; turned
# off by default to not distract the user: the focus in a terminal window
# should be on the output of commands, not on the prompt
force_color_prompt=yes

if [ -n "$force_color_prompt" ]; then
    if [ -x /usr/bin/tput ] && tput setaf 1 >&/dev/null; then
        # We have color support; assume it's compliant with Ecma-48
        # (ISO/IEC-6429). (Lack of such support is extremely rare, and such
        # a case would tend to support setf rather than setaf.)
        color_prompt=yes
    else
        color_prompt=
    fi
fi

if [ "$color_prompt" = yes ]; then
    PS1='${debian_chroot:+($debian_chroot)}\[\033[01;32m\]\u@\h\[\033[00m\]:\[\033[01;34m\]\w\[\033[00m\]\$ '
else
    PS1='${debian_chroot:+($debian_chroot)}\u@\h:\w\$ '
fi
```

1.3. user title

```
# If this is an xterm set the title to user@host:dir
case "$TERM" in
xterm*|rxvt*)
    PS1="\[\e]0;${debian_chroot:+($debian_chroot)}\u@\h: \w\a\]$PS1"
    ;;
*)
    ;;
esac
```

Note:

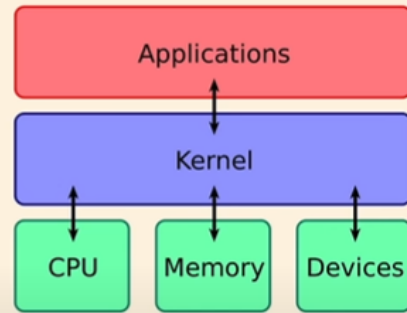
- terminal -> settings -> ubuntu -> change starting directory.



The Linux Kernel

Another developer, Linus Torvalds, was working on creating his own kernel known as Linux. The kernel is the part of an OS that facilitates interactions between hardware and software.

At the time, many GNU "pieces" were complete, but it lacked a kernel. Torvalds combined his kernel with the existing GNU components to create a full operating system.



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