Linux_Terminal_Commands_LinuxTV Videos   6/27/2021

BASICS & Warnings

NOTE For LibreWriter .odt
Size when viewing   Cntl+ Wheel
Size if it gets hidden   Alt+Space+R   Resize .odt

When removing, deleting, cleaning, upgrading, etc   **WATCH IT**

MY PHILOSOPHY
DO NOT RUN A TERMINAL COMMAND UNLESS YOU UNDERSTAND EXACTLY WHAT IT WILL DO! THAT IS WHY THE INTERNET IS THERE!
       e.g. ASK -"WHAT DOES rm command do?"
-BACKUP BEFORE CHANGING THINGS

KEYBOARD SHORT CUTS USING VIRTUAL BOX MAY REFER TO UBUNTU OR TO THE VBOX ITSELF OR TO THE WINDOWS HOST – WATCH IT!!
  (Win (super) + A for example opens win 10 Notifications NOT DASH)

Some References

Ubuntu Linux Unleashed Helmke   =UL   (Book)

Watching Linux Tv IS this the best Ubuntu yet
https://www.youtube.com/channel/UChkws8rD7PNNITF17q1wOCw

System & User Information   hostmanect, whoami, hostname

harman@harman-VirtualBox:~/Desktop$ hostnamectl
          Static hostname: harman-VirtualBox
             Icon name: computer-vm
               Chassis: vm
            Machine ID: 6cbc826fb3764ca8a02e443ddf499c4e
              Boot ID: f140a3755d11459498620f0490a89542
          Virtualization: oracle
         Operating System: Ubuntu 20.04.2 LTS
               Kernel: Linux 5.8.0-55-generic
          Architecture: x86-64
harman@harman-VirtualBox:~/Desktop$ whoami
          harman
harman@harman-VirtualBox:~$ echo "$HOSTNAME"
          harman-VirtualBox

General System Information -Version lsb_release, cpuinfo, uname,lsmod

The lsb_release utility displays LSB (Linux Standard Base) information about the Linux distribution
harman@harman-VirtualBox:~$ lsb_release -a
          No LSB modules are available.   (Ignore or download LSB module)
          Distributor ID: Ubuntu
          Description: Ubuntu 20.04.2 LTS
          Release: 20.04
          Codename: focal

harman@harman-VirtualBox:/proc$ cat /proc/cpuinfo   (UL PAGE 116)

          processor   : 0

          vendor_id   : GenuineIntel

          model name   : Intel(R) Core(TM) i9-9980HK CPU @ 2.40GHz

harman@harman-VirtualBox:~$ uname -r   (get name and information about current kernel)
5.8.0-55-generic   (Can delete earlier kernels for more disk space)

harman@harman-VirtualBox:~$ lsmod | grep vbox   (The lsmod command shows a list of the currently loaded kernel modules.)
          vboxsf   81920 1
          vboxvideo   36864 0
          vboxguest   364544 6 vboxsf
          ttm   102400 2 vmwgfx,vboxvideo
          drm_kms_helper   217088 2 vmwgfx,vboxvideo
          drm   552960 6 vmwgfx,drm_kms_helper,vboxvideo,ttm

Display Settings Virtual Box

SETTINGS - DISPLAY
1280 X 768   16:10   SCALE 100%   (SCALED IN VBOX MANAGER 200%)
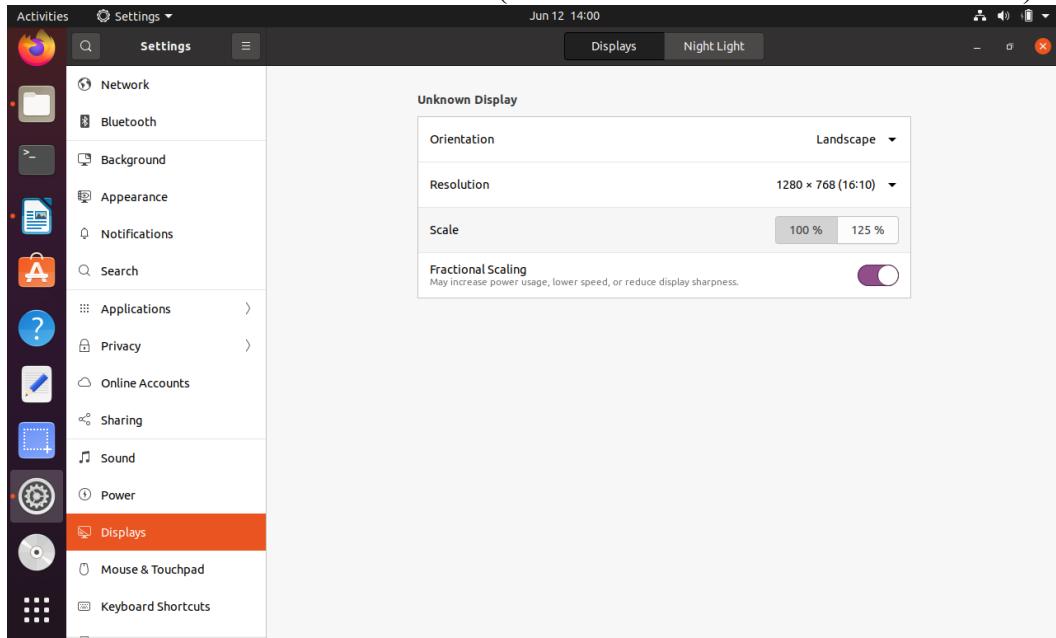
Basic Terminal commands

(UL PAGE 139)

Screen clear, Add tab

$ clear   Or New window in a tab   - click + in upper right of screen

History

harman@harman-VirtualBox:~$ history > history1.txt   (Create file with history of commands)

harman@harman-VirtualBox:~$ cat history1.txt

   1 whoami

   2 sudo adduser haarman vboxsf ………….   249 entries

harman@harman-VirtualBox:~$ less history1.txt   (37 on a page)

1 whoami

  2 sudo adduser haarman vboxsf

  3 sudo adduser harman vboxsf

  4 history

Script

$ man script (Show options for script – copy keyboard strokes)

 All you have to do is to run it: Not so easy to read.

$ script
Script started, output file is **typescript**

4

This is especially useful if you want to have a journal for yourself or as a way to document what you did for others.

If you don't like the name typescript or want to save your output file to a specific path, you can do so by supplying a path as the argument. For example: $ script ~/what_you_did_last_summer.log

This will record the input you type into your shell and the output you receive, and write both into the *what_you_did_last_summer.log* in your home directory.

harman@harman-VirtualBox:~$ script script_6_26_2021.txt

Script started, file is script_6_26_2021.txt

harman@harman-VirtualBox:~$ ls

Desktop   Music   script_6_26_2021   Templates

Documents Pictures   script_6_26_2021.txt   'TO_DO_FOXY 6_22_2021'

Downloads Public   snap   Videos

harman@harman-VirtualBox:~$ whoami

harman

harman@harman-VirtualBox:~$ exit

exit   Script done, file is script_6_26_2021.txt

harman@harman-VirtualBox:~$ gedit script_6_26_2021.txt

Script started on 2021-06-26 17:04:29-05:00 [TERM="xterm-256color" TTY="/dev/pts/0" COLUMNS="80" LINES="24"]

#]0;harman@harman-VirtualBox: ~##[01;32mharman@harman-VirtualBox#[00m:#[01;34m~#[00m$ ls

#[0m#[01;34mDesktop#[0m   #[01;34mMusic#[0m   script_6_26_2021   #[01;34mTemplates#[0m

#[01;34mDocuments#[0m #[01;34mPictures#[0m   script_6_26_2021.txt 'TO_DO_FOXY 6_22_2021'

#[01;34mDownloads#[0m #[01;34mPublic#[0m   #[01;34msnap#[0m   #[01;34mVideos#[0m

#]0;harman@harman-VirtualBox: ~##[01;32mharman@harman-VirtualBox#[00m:#[01;34m~#[00m$ whoami

harman

#]0;harman@harman-VirtualBox: ~##[01;32mharman@harman-VirtualBox#[00m:#[01;34m~#[00m$ exit

exit

Script done on 2021-06-26 17:04:44-05:00 [COMMAND_EXIT_CODE="0"]

Directory commands cd, pwd, mkdir

$ cd cd ~ (home)   cd .. (Up 1) cd – (Previous)   cd ../.. (2 levels up)   cd /   UL PAGE 145

harman@harman-VirtualBox:~$ cd Desktop/

    harman@harman-VirtualBox:~/Desktop$ cd /opt/ros

    harman@harman-VirtualBox:/opt/ros$ cd -

    /home/harman/Desktop

harman@harman-VirtualBox:~$ pwd (Print working directory)

    /home/harman

$ mkdir ubuntuIntro

$ cd ubuntuIntro/

harman@harman-VirtualBox:~/ubuntuIntro$

Listing Directory contents ls

$ ls -la   UL PAGE 118   Type, Link, owner, Group   Size   Last access   FileName

harman@harman-VirtualBox:~$ ls -la   (Use $ ls --help)

    total 1108

    drwxr-xr-x 19 harman harman   4096 Jun 15 11:48 .

    drwxr-xr-x 3 root   root   4096 Jun 9 23:00 ..

    -rw------- 1 harman harman   2145 Jun 15 12:46 .bash_history

    -rw-r--r-- 1 harman harman   220 Jun 9 23:00 .bash_logout

    -rw-r--r-- 1 harman harman   3771 Jun 12 17:51 .bashrc

    drwx------ 22 harman harman   4096 Jun 10 21:03 .cache

    drwx------ 17 harman harman   4096 Jun 12 15:23 .config …………..

(ls   -a, -h, -l, -s, --sort   UL PAGE 157)

harman@harman-VirtualBox:~$ ls -lahs

    total 1.1M

    4.0K drwxr-xr-x 19 harman harman 4.0K Jun 15 13:39 .

    4.0K drwxr-xr-x 3 root   root   4.0K Jun 9 23:00 ..

    4.0K -rw------- 1 harman harman 2.1K Jun 15 12:46 .bash_history

    4.0K -rw-r--r-- 1 harman harman 220 Jun 9 23:00 .bash_logout

    4.0K -rw-r--r-- 1 harman harman 3.7K Jun 12 17:51 .bashrc ……………..

($ ls -laR > ListContents.txt   To save listing of files, directories)

$ cd, ls, clear, cp, man, mv, pwd, mkdir, chmod, history   (UL PAGE 122-133)

Display File Contents cat, less, diff
cat (Pg 132) , less (Pg 152-154) ,

harman@harman-VirtualBox:~/Desktop$ cat TestOfTextFile.txt

    Test of text file   (Contents of file)

eg: cat <name> vs. less <name>   less is page by page

harman@D104-45931:~$ diff turtlesim1.py turtlesim2.py

1c1 < #!/usr/bin/env python turtlesim1.py

> #!/usr/bin/env python turtlesim2.py   32,34c32,34

< move_cmd.linear.x = 0.3# Modify this value to change speed

< # Turn at 0 radians/s

< move_cmd.angular.z = 0

>move_cmd.linear.x = 2.0 # Modify this value to change speed

>   # Turn at 1.8 radians/s

>   move_cmd.angular.z = 1.8

Command help, man (Manual), whatis, which

$ command - - help or $ command -h

man <name> UL PAGE 111 $ man man Help with Manual   UL PAGE 29

$ apropos $ apropos dmesg   >dmesg (1)   - print or control the kernel ring buffer UL PAGE 112

$ apropos man – Long list   eg: $ apropos apt-get   or $ man apt-get

          apt-get (8)   - APT package handling utility -- command-line interface

harman@harman-VirtualBox:~$ whatis ls

     ls (1)   - list directory contents

which mkdir   (UL PAGE 164)

 harman@harman-VirtualBox:~$ which mkdir   (Location & Command)

     /usr/bin/mkdir

Commands Running Programs

$ kill, killall, ps, top, watch   (UL PAGE 139 SUMMARY)

harman@harman-VirtualBox:~$ ps

```
       PID TTY          TIME CMD

  12619 pts/0    00:00:00 bash

  13533 pts/0    00:00:00 ps
```

Execute Files Source, chmod

#Test of Source with txt file   (TestOfSource.txt)

ls

date

time

-Result of execution of ls, date, time

harman@harman-VirtualBox:~/Desktop$ source TestOfSource.txt

      Foxy_Install_6_21_2021

      FOXY_Install_6_21_2021

      FoxyPlay_6_22_2021 ….

    TestOfSource.txt

     Turtlesim_ROS2_Play.odt

     Ubuntu_20_04_setup

     Sat 26 Jun 2021 02:04:57 PM CDT

MAKE A FILE EXECUTABLE chmod

chmod – Changes the access permissions of one or more files. Only users with permission or ownership of a file can change that file's permissions.

• **chmod 777** *filename* gives owner, group and others read, write and execute privileges   (+x option does this also)

chmod 755 *filename* gives owner read, write, execute privileges; group and others get read and execute privileges

$ gedit NewProgram.py (Create a simple program and then save.)

$ ls -la

    drwxrwxr-x 2 tlharmanphd tlharmanphd 4096 Aug 12 16:07 .

    drwxr-xr-x 76 tlharmanphd tlharmanphd 4096 Aug 12 15:45 ..

    -rw-rw-r-- 1 tlharmanphd tlharmanphd   73 Aug 12 16:00 NewerFile.txt

    -rw-rw-r-- 1 tlharmanphd tlharmanphd   69 Aug 12 16:07 NewProgram.py

(Note that NewProgram.py is not executable – no x)

$ chmod +x NewProgram.py

$ ls -l

       -rw-rw-r-- 1 tlharmanphd tlharmanphd 73 Aug 12 16:00 NewerFile.txt

       -rwxrwxr-x 1 tlharmanphd tlharmanphd 69 Aug 12 16:07 NewProgram.py

       (The NewProgram.py is now executable according to the file permissions.)

Find Things & Information GUI, find, locate, whereis
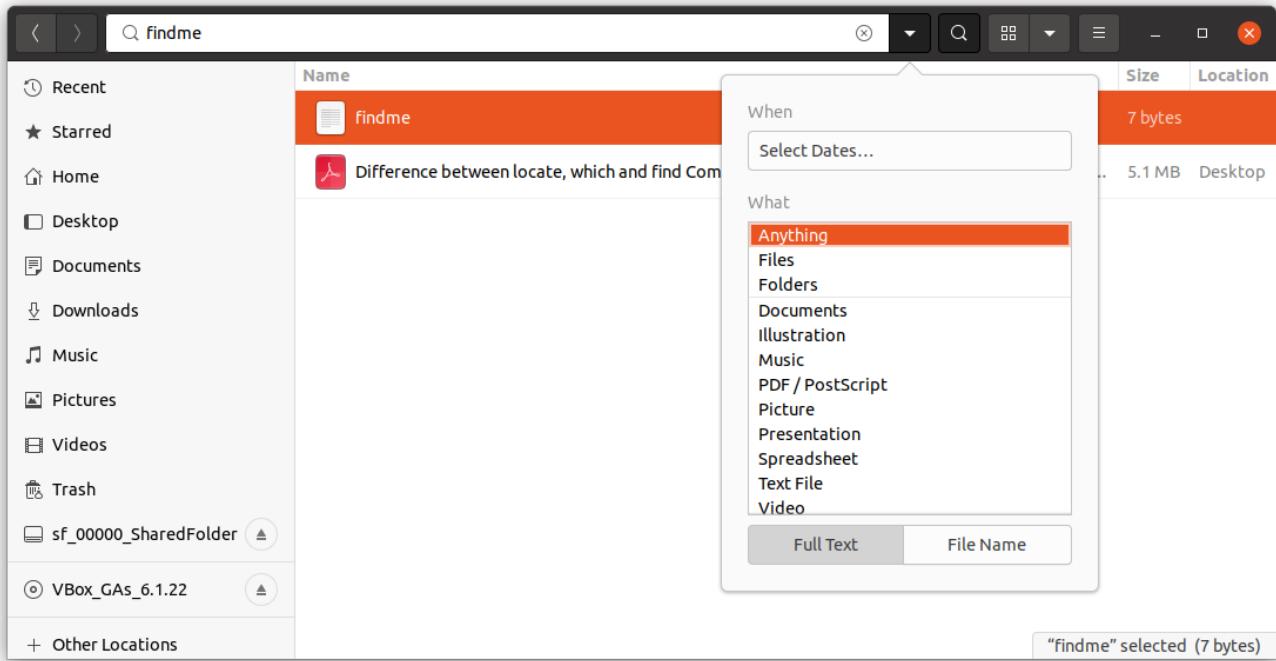
harman@harman-VirtualBox:~/Desktop$ find -name "*.txt"   (UL PAGE 149)

    ./TestOfTextFile.txt

locate   (Install if needed)
sudo apt install mlocate

harman@harman-VirtualBox:~$ locate findme

    /home/harman/findme

$ whereis eg: $ apropos whereis   whereis (1)- locate the binary, source, and manual page files for a command

 $ whereis synaptic

    synaptic: /usr/sbin/synaptic /usr/share/synaptic /usr/share/man/man8/synaptic.8.gz

Information
$ info <name>, cat, dir, dmesg, **grep**, info, ls, man, pwd, top, whereis, who, whoami
UL PAGE 139 SUMMARY

GREP
harman@harman-VirtualBox:~/Desktop$ grep " of text file" *

grep: Screenshots and screencasts_files: Is a directory

TestOfTextFile.txt:Test of text file

Reading Documents LibreWriter, gedit, nano, evince, LaTex

LibreOffice UL page 56-57

Alt+Space+R   Resize .odt

evince   harman@harman-VirtualBox:~/Desktop$ evince VboxKeys.pdf

LaTex   UL Page 60

Viewing GIMP

This is the official website of the GNU Image Manipulation Program (GIMP).

https://www.gimp.org/   (May need to install this)

Size free, df, du, meminfo, top, fdisk -I, GUI

```
$ free
          total          used      free        shared  buff/cache  available  (UL PAGE 115)
Mem:    12897140    1757796    8114704     50588    3024640   10766404
Swap:     459260       0     459260
```

```
$ df   x-special/nautilus-clipboard
copy
file:///home/harman/Desktop/df_%20from%202021-06-12%2014-09-04.png
```

```
harman@harman-VirtualBox: ~                    🔍  ☰  _  □  ✕

Codename:       focal
harman@harman-VirtualBox:~$ df
Filesystem           1K-blocks     Used Available Use% Mounted on
udev                   6418456        0   6418456   0% /dev
tmpfs                  1289716     1440   1288276   1% /run
/dev/sda5              9736500  7976432   1245764  87% /
tmpfs                  6448568        0   6448568   0% /dev/shm
tmpfs                     5120        4      5116   1% /run/lock
tmpfs                  6448568        0   6448568   0% /sys/fs/cgroup
/dev/loop0               56832    56832         0 100% /snap/core18/1988
/dev/loop2              224256   224256         0 100% /snap/gnome-3-34-1804/66
/dev/loop1               56832    56832         0 100% /snap/core18/2066
/dev/loop3              224256   224256         0 100% /snap/gnome-3-34-1804/72
/dev/loop4               52352    52352         0 100% /snap/snap-store/518
/dev/loop5               66432    66432         0 100% /snap/gtk-common-themes/1514
/dev/loop6               66688    66688         0 100% /snap/gtk-common-themes/1515
/dev/loop7               52224    52224         0 100% /snap/snap-store/542
/dev/loop8               32896    32896         0 100% /snap/snapd/12057
/dev/loop9               31872    31872         0 100% /snap/snapd/11036
/dev/sda1               523248        4    523244   1% /boot/efi
00000_SharedFolder 981750780 619754480 361996300  64% /media/sf_00000_SharedFolder
tmpfs                  1289712       52   1289660   1% /run/user/1000
/dev/sr0                 59590    59590         0 100% /media/harman/VBox_GAs_6.1.22
harman@harman-VirtualBox:~$
```

harman@harman-VirtualBox:~$ du -h   UL PAGE 148

```
1.7M     ./Pictures
916K     ./.config/libreoffice/4/user/backup
16K      ./.config/libreoffice/4/user/basic/Standard
28K      ./.config/libreoffice/4/user/basic
1016K    ./.config/libreoffice/4/user/database/biblio
1.0M     ./.config/libreoffice/4/user/database
8.0K     ./.config/libreoffice/4/user/autotext
4.0K     ./.config/libreoffice/4/user/psprint
4.0K     ./.config/libreoffice/4/user/config/soffice.cfg/modules/swriter/popupmenu
4.0K     ./.config/libreoffice/4/user/config/soffice.cfg/modules/swriter/toolbar
4.0K
```

harman@harman-VirtualBox:/proc$ cat /proc/meminfo   (UL PAGE 115)

```
MemTotal:       12897144 kB
MemFree:        10323256 kB
MemAvailable:   11707544 kB
Buffers:           56196 kB
Cached: ………………….
```

GUI Disk Space

Show Applications   Disks or Disk Usage Analyzer (Visual indication of disk usage)

TOP$**   **$top   PID, User   ...   14
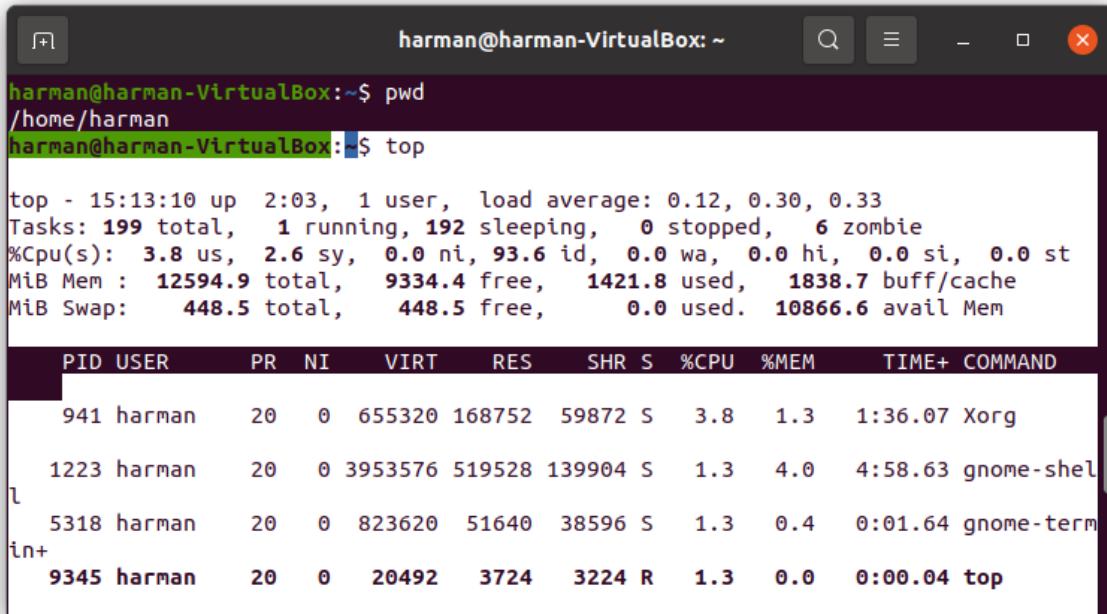
```
harman@harman-VirtualBox: ~

harman@harman-VirtualBox:~$ pwd
/home/harman
harman@harman-VirtualBox:~$ top

top - 15:13:10 up  2:03,  1 user,  load average: 0.12, 0.30, 0.33
Tasks: 199 total,   1 running, 192 sleeping,   0 stopped,   6 zombie
%Cpu(s):  3.8 us,  2.6 sy,  0.0 ni, 93.6 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
MiB Mem :  12594.9 total,   9334.4 free,   1421.8 used,   1838.7 buff/cache
MiB Swap:    448.5 total,    448.5 free,      0.0 used.  10866.6 avail Mem

    PID USER      PR  NI    VIRT    RES    SHR S  %CPU  %MEM     TIME+ COMMAND

    941 harman    20   0  655320 168752  59872 S   3.8   1.3   1:36.07 Xorg

   1223 harman    20   0 3953576 519528 139904 S   1.3   4.0   4:58.63 gnome-shel
l
   5318 harman    20   0  823620  51640  38596 S   1.3   0.4   0:01.64 gnome-term
in+
   9345 harman    20   0   20492   3724   3224 R   1.3   0.0   0:00.04 top
```

```
1256 harman   20   0 3832968 395884 134840 S   2.3   3.1   2:02.12 gnome-shell
 974 harman   20   0  628428 144060  61916 S   2.0   1.1   0:58.43 Xorg
2612 harman   20   0  829076  55676  40672 S   1.3   0.4   0:07.81 gnome-terminal-
1169 harman   20   0  163996   2732   2360 S   0.3   0.0   0:06.24 VBoxClient
1454 harman   20   0  354052  27984  17904 S   0.3   0.2   0:00.33 gsd-wacom
6402 harman   20   0   20516   3692   3164 R   0.3   0.0   0:00.04 top
```

The top program provides a dynamic real-time view of a running system.

sudo fdisk -l
harman@harman-VirtualBox:~$ sudo fdisk -l
        [sudo] password for harman:
        Disk /dev/loop0: 55.48 MiB, 58159104 bytes, 113592 sectors
        Units: sectors of 1 * 512 = 512 bytes
        Sector size (logical/physical): 512 bytes / 512 bytes
        I/O size (minimum/optimal): 512 bytes / 512 bytes

        Disk /dev/loop1: 218.102 MiB, 229629952 bytes, 448496 sectors
        Units: sectors of 1 * 512 = 512 bytes
        Sector size (logical/physical): 512 bytes / 512 bytes
        I/O size (minimum/optimal): 512 bytes / 512 bytes

        Device   Boot Start   End Sectors Size Id Type
        /dev/sda1 *   2048 1046527 1044480 510M b W95 FAT32

```
/dev/sda2      1052670 20969471 19916802  9.5G  5 Extended
/dev/sda5      1052672 20969471 19916800  9.5G 83 Linux
```

Environment Variable Echo

$ echo ' Hello World' UL PAGE 148

Permissions & Users & Groups   users, groups, adduser

harman@harman-VirtualBox:~$ users

    harman

harman@harman-VirtualBox:~$ groups   (Added vboxsf for shred files)

    harman adm cdrom sudo dip plugdev lpadmin lxd sambashare vboxsf

$ ls -la   Show all about files

$ ls -la   UL PAGE 118   Type, Link, owner, Group   Size   Last access   FileName

harman@harman-VirtualBox:~$ ls -la

    total 1108

    drwxr-xr-x 19 harman harman   4096 Jun 15 11:48 ……..

harman@harman-VirtualBox:~$ ls -ld   UL PAGE 122

drwxr-xr-x 19 harman harman 4096 Jun 15 11:48 .
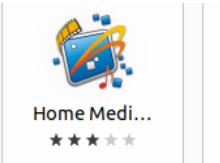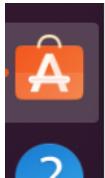
General Permission & User Commands& Make Executable:

$ chmod (UL 147) , chgrp, chown, getfacl,,

$ chmod -c (Show Changes)

Install Packages sudo apt-get   Advanced Package Tool

$ sudo apt-get update -y   or $ sudo apt update   UL PAGE 95-100 TABLE 9.1

$ sudo apt upgrade

$ sudo apt-get install -y evince

$ apt-cache search <Name>

Ubuntu Software in Favorites   Search for Packages and apps

Snappy Package Manager - UL Page 103, snap

harman@harman-VirtualBox:~$ snap

    The snap command lets you install, configure, refresh and remove snaps.

    Snaps are packages that work across many different Linux distributions,

    enabling secure delivery and operation of the latest apps and utilities.

    Usage: snap <command> [<options>...]

Show Applications > Synaptic UL PAGE -94

File	Edit	Package	Settings	Help		

Reload **Mark All Upgrades** **Apply**

All	S	Package	Installed Version	Latest Version	De
Installed	🟩⊙	accountsservice	0.6.55-0ubuntu12~	0.6.55-0ubuntu12~	que
Installed (manual)	🟩⊙	acl	2.2.53-6	2.2.53-6	acc
Not installed	🟩⊙	acpi-support	0.143	0.143	scr
	🟩⊙	acpid	1:2.0.32-1ubuntu1	1:2.0.32-1ubuntu1	Ad
	🟩⊙	adduser	3.118ubuntu2	3.118ubuntu2	ad
	🟩⊙	adwaita-icon-theme	3.36.1-2ubuntu0.2(	3.36.1-2ubuntu0.2(	de
	🟩⊙	aisleriot	1:3.22.9-1	1:3.22.9-1	GN
	🟩⊙	alsa-base	1.0.25+dfsg-0ubun	1.0.25+dfsg-0ubun	AL!
	🟩⊙	alsa-topology-conf	1.2.2-1	1.2.2-1	AL!
	🟩⊙	alsa-ucm-conf	1.2.2-1ubuntu0.7	1.2.2-1ubuntu0.7	AL!
	🟩⊙	alsa-utils	1.2.2-1ubuntu2.1	1.2.2-1ubuntu2.1	Uti
	🟩⊙	amd64-microcode	3.20191218.1ubun	3.20191218.1ubun	Pro
	🟩⊙	anacron	2.3-29	2.3-29	cro

DPKG

https://man7.org/linux/man-pages/man1/dpkg.1.html

harman@harman-VirtualBox:~$ dpkg -l   (A cast of thousands – really!)

aptitude terminal-based package manager

 aptitude is a package manager with a number of useful feature (Need to install)

https://www.thegeekstuff.com/2014/08/aptitude-command/

Compiling and Build From Source UL Page 100-102

System Logs /var/log/syslog

harman@harman-VirtualBox:~$ cd /var/log

harman@harman-VirtualBox:/var/log$ ls

alternatives.log dmesg   hp   syslog.3.gz

apt   dmesg.0   installer   ubuntu-advantage.log

auth.log   dmesg.1.gz   journal   unattended-upgrades

boot.log   dmesg.2.gz   kern.log   vboxadd-install.log

boot.log.1   dmesg.3.gz   lastlog   vboxadd-setup.log

boot.log.2	dmesg.4.gz	openvpn	vboxadd-setup.log.1
boot.log.3	dpkg.log	private	vboxadd-setup.log.2
bootstrap.log	faillog	speech-dispatcher	vboxadd-setup.log.3
btmp	fontconfig.log	syslog	vboxadd-setup.log.4
cups	gdm3	syslog.1	vboxadd-uninstall.log
dist-upgrade	gpu-manager.log	syslog.2.gz	wtmp

dmesg – Tons of system data   UL Page 21

harman@harman-VirtualBox:/var/log$ dmesg   or dmesg > dmesg.txy

zless <name>.gz   Read compressed file

harman@harman-VirtualBox:/var/log$ zless dmesg.1.gz

System Directories dir, ls -la, tree, GUI

harman@harman-VirtualBox:~$ dir
Desktop   Downloads How\ to\ install\ Tweak\ Tool\ on\ Ubuntu\ 20.04\ .pdf newfile.save Public
Templates   Videos
Documents findme   Music

 cd /usr; ls   **X server   UL PAGE33-39**
        bin games include lib lib32 lib64 libexec libx32 local sbin share src

harman@harman-VirtualBox:/var$ ls -la   UL Page 117
total 56
drwxr-xr-x 14 root root   4096 Feb 9 12:56 .
drwxr-xr-x 20 root root   4096 Jun 9 22:59 ..
drwxr-xr-x 2 root root   4096 Jun 14 16:16 backups
drwxr-xr-x 17 root root   4096 Jun 10 19:48 cache ………….
drwxrwsr-x 2 root mail   4096 Feb 9 12:47 mail

tree (Tree loaded to Ubuntu)

https://www.cyberciti.biz/faq/linux-show-directory-structure-command-line/

arman@harman-VirtualBox:~$ tree /opt/ros/foxy -L 1   (Level 1)

        /opt/ros/foxy

        ├── bin

        ├── cmake

        ├── include

        ├── lib

        ├── local_setup.bash

```
├── local_setup.sh

├── _local_setup_util.py

├── local_setup.zsh

├── opt

├── setup.bash

├── setup.sh

├── setup.zsh

├── share

├── src

└── tools        8 directories, 7 files
```

harman@harman-VirtualBox:~$ tree /opt/ros/foxy -L 2   460 directories, 423 files

FILES GUI
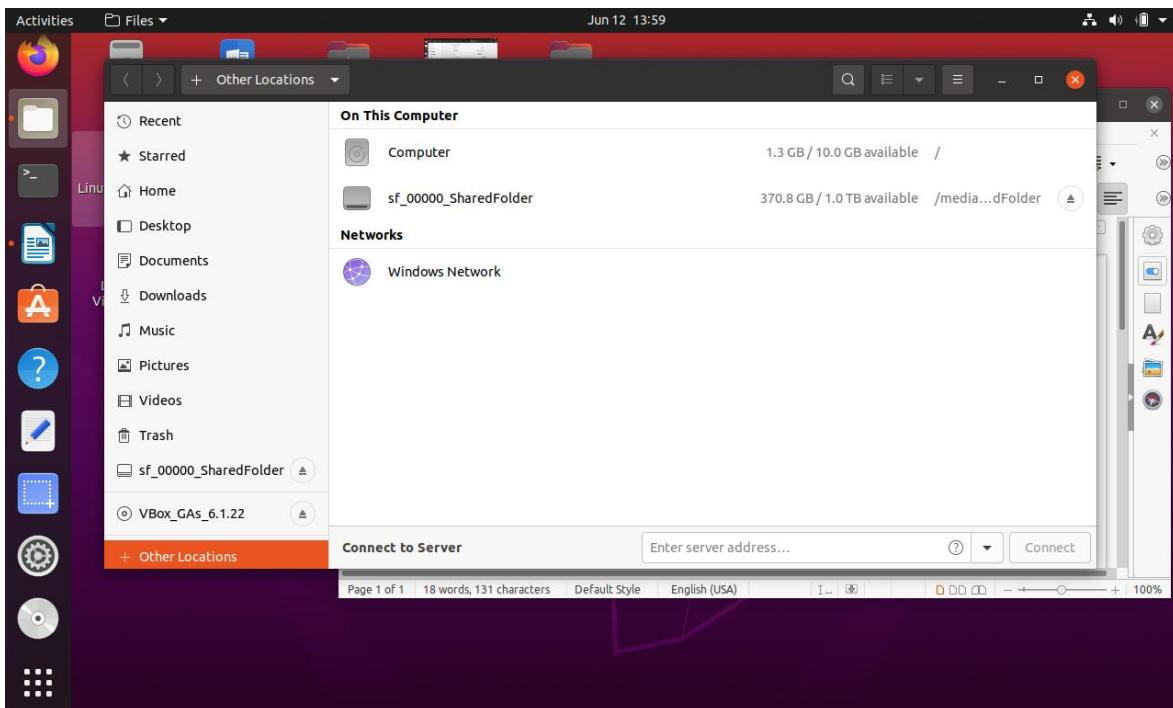
file:///home/harman/Desktop/Files_%202021-06-12%2013-59-18.png

Directory Structure

Directory	Content
bin	Essential command binaries
boot	Static files of the boot loader
dev	Device files
etc	Host-specific system configuration
home	User home directories
lib	Essential shared libraries and kernel modules
media	Contains mount points for replaceable media
mnt	Mount point for mounting a file system temporarily
proc	Virtual directory for system information
root	Home directory for the root user
run	Run-time variable data
sbin	Essential system binaries
sys	Virtual directory for system information
tmp	Temporary files
usr	Secondary hierarchy
var	Variable data
srv	Data for services provided by the system
opt	Add-on application software packages

Hardware Devices

$ sudo lshw,

harman@harman-VirtualBox:~$ sudo lsusb

Bus 001 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub

Bus 002 Device 002: ID 80ee:0021 VirtualBox USB Tablet

Bus 002 Device 001: ID 1d6b:0001 Linux Foundation 1.1 root hub

PRINTER   OFFICEJET 4630   10.0.0.223   KAREN'S PRINTER

x-special/nautilus-clipboard
copy
file:///home/harman/Desktop/pwd_top_2021-06-12%2015-16-26.png

Network Stuff ping, ifconfig,

harman@harman-VirtualBox:~$ ping rice.edu   (May need to load $sudo apt install iputils-ping)

PING rice.edu (128.42.207.44) 56(84) bytes of data.

64 bytes from 128.42.207.44 (128.42.207.44): icmp_seq=1 ttl=242 time=18.5 ms

64 bytes from 128.42.207.44 (128.42.207.44): icmp_seq=2 ttl=242 time=17.0 ms

64 bytes from 128.42.207.44 (128.42.207.44): icmp_seq=3 ttl=242 time=17.3 ms

--- rice.edu ping statistics --- 6 packets transmitted, 6 received, 0% packet loss, time 5031ms

harman@harman-VirtualBox:~$ ping uhcl.edu

PING uhcl.edu (129.7.80.131) 56(84) bytes of data.

64 bytes from www.uhcl.edu (129.7.80.131): icmp_seq=1 ttl=47 time=32.8 ms

64 bytes from www.uhcl.edu (129.7.80.131): icmp_seq=2 ttl=47 time=28.7 ms

harman@harman-VirtualBox:~$ ifconfig
enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
        inet 10.0.2.15 netmask 255.255.255.0 broadcast 10.0.2.255   …………………...

VARIOUS BASH, ENVIRONMENT, DOT,

A Complete Guide To The Bash Environment Variables

https://www.shell-tips.com/bash/environment-variables/

How And When To Use The Dot Command In Bash?

https://www.shell-tips.com/bash/source-dot-command/

The **dot command** (.), aka *full stop* or *period*, is a command used to evaluate commands in the current execution context. In Bash, the `source` command is synonym to the **dot command** (.) and you can also pass parameters to the command, beware, this deviate from the POSIX specification.