Linux Admin 1 :

1- Ps : to view processes

```
amr@home:~$ ps
    PID TTY          TIME CMD
   9810 pts/0    00:00:00 sh
   9963 pts/0    00:00:00 bash
  10130 pts/0    00:00:00 ps
```

2- Ps x : list of every process that we own

```
amr@home:~$ ps x
    PID TTY      STAT   TIME COMMAND
   9444 ?        Ss     0:00 /lib/systemd/systemd --user
   9446 ?        S      0:00 (sd-pam)
   9456 ?        Ssl    0:00 /usr/bin/pipewire
   9457 ?        Ssl    0:00 /usr/bin/pipewire-media-session
   9458 ?        Ssl    0:00 /usr/bin/pulseaudio --daemonize=no --log-target=journal
   9459 ?        Ss     0:00 /snap/snapd-desktop-integration/57/usr/bin/snapd-desktop-integration
   9469 ?        Ss     0:00 /usr/bin/dbus-daemon --session --address=systemd: --nofork --nopidfile --systemd-activation --syslog-only
   9473 ?        Ssl    0:00 /usr/libexec/gvfsd
   9483 ?        Sl     0:00 /usr/libexec/gvfsd-fuse /run/user/1002/gvfs -f
   9513 ?        Ssl    0:00 /usr/libexec/xdg-document-portal
   9516 ?        Ssl    0:00 /usr/libexec/xdg-permission-store
   9594 ?        SNsl   0:00 /usr/libexec/tracker-miner-fs-3
```

3- Ps aux : This set of options displays the processes belonging to every user

```
amr@home:~$ ps aux
USER       PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND
root         1  0.2  0.2 167296  9748 ?        Ss   10:35   0:02 /sbin/init splash
root         2  0.0  0.0      0     0 ?        S    10:35   0:00 [kthreadd]
root         3  0.0  0.0      0     0 ?        I<   10:35   0:00 [rcu_gp]
root         4  0.0  0.0      0     0 ?        I<   10:35   0:00 [rcu_par_gp]
root         5  0.0  0.0      0     0 ?        I<   10:35   0:00 [slub_flushwq]
root         6  0.0  0.0      0     0 ?        I<   10:35   0:00 [netns]
root         7  0.0  0.0      0     0 ?        I    10:35   0:00 [kworker/0:0-cgroup_destroy]
root         8  0.0  0.0      0     0 ?        I<   10:35   0:00 [kworker/0:0H-events_highpri]
root        10  0.0  0.0      0     0 ?        I<   10:35   0:00 [mm_percpu_wq]
root        11  0.0  0.0      0     0 ?        I    10:35   0:00 [rcu_tasks_kthread]
root        12  0.0  0.0      0     0 ?        I    10:35   0:00 [rcu_tasks_rude_kthread]
root        13  0.0  0.0      0     0 ?        I    10:35   0:00 [rcu_tasks_trace_kthread]
root        14  0.0  0.0      0     0 ?        S    10:35   0:00 [ksoftirqd/0]
root        15  0.0  0.0      0     0 ?        I    10:35   0:00 [rcu_preempt]
root        16  0.0  0.0      0     0 ?        S    10:35   0:00 [migration/0]
root        17  0.0  0.0      0     0 ?        S    10:35   0:00 [idle_inject/0]
root        19  0.0  0.0      0     0 ?        S    10:35   0:00 [cpuhp/0]
root        20  0.0  0.0      0     0 ?        S    10:35   0:00 [cpuhp/1]
root        21  0.0  0.0      0     0 ?        S    10:35   0:00 [idle_inject/1]
root        22  0.0  0.0      0     0 ?        S    10:35   0:00 [migration/1]
root        23  0.0  0.0      0     0 ?        S    10:35   0:00 [ksoftirqd/1]
root        24  0.0  0.0      0     0 ?        I    10:35   0:00 [kworker/1:0-events]
root        25  0.0  0.0      0     0 ?        I<   10:35   0:00 [kworker/1:0H-events_highpri]
root        26  0.0  0.0      0     0 ?        S    10:35   0:00 [cpuhp/2]
root        27  0.0  0.0      0     0 ?        S    10:35   0:00 [idle_inject/2]
root        28  0.0  0.0      0     0 ?        S    10:35   0:00 [migration/2]
root        29  0.0  0.0      0     0 ?        S    10:35   0:00 [ksoftirqd/2]
root        30  0.0  0.0      0     0 ?        I    10:35   0:00 [kworker/2:0-events]
root        31  0.0  0.0      0     0 ?        I<   10:35   0:00 [kworker/2:0H-events_highpri]
```

4- Top : top processes on system and its like Task manager in windows aslo we can see Memory , CPU usage and also the PID for the processes, and users

```
amr@home:~$ top
top - 10:53:17 up 17 min,  2 users,  load average: 0.01, 0.74, 1.17
Tasks: 359 total,   1 running, 358 sleeping,   0 stopped,   0 zombie
%Cpu(s):  0.1 us,  0.1 sy,  0.0 ni, 97.2 id,  2.7 wa,  0.0 hi,  0.0 si,  0.0 st
MiB Mem :   3835.5 total,    218.8 free,   2771.1 used,    845.6 buff/cache
MiB Swap:   3990.0 total,   3989.5 free,      0.5 used.    731.4 avail Mem

    PID USER      PR  NI    VIRT    RES    SHR S  %CPU  %MEM     TIME+ COMMAND
  17374 amr       20   0   22116   3328   2316 R   0.7   0.1   0:00.06 top
    446 root       0 -20       0      0      0 S   0.3   0.0   0:00.49 z_wr_int
    521 root      20   0       0      0      0 S   0.3   0.0   0:00.43 txg_sync
      1 root      20   0  167296   9748   5520 S   0.0   0.2   0:02.20 systemd
      2 root      20   0       0      0      0 S   0.0   0.0   0:00.23 kthreadd
      3 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 rcu_gp
      4 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 rcu_par_gp
      5 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 slub_flushwq
      6 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 netns
      7 root      20   0       0      0      0 I   0.0   0.0   0:00.02 kworker/0:0-cgroup_destroy
      8 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 kworker/0:0H-events_highpri
     10 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 mm_percpu_wq
     11 root      20   0       0      0      0 I   0.0   0.0   0:00.00 rcu_tasks_kthread
     12 root      20   0       0      0      0 I   0.0   0.0   0:00.00 rcu_tasks_rude_kthread
     13 root      20   0       0      0      0 I   0.0   0.0   0:00.00 rcu_tasks_trace_kthread
     14 root      20   0       0      0      0 S   0.0   0.0   0:00.04 ksoftirqd/0
     15 root      20   0       0      0      0 I   0.0   0.0   0:00.64 rcu_preempt
     16 root      rt   0       0      0      0 S   0.0   0.0   0:00.01 migration/0
     17 root     -51   0       0      0      0 S   0.0   0.0   0:00.00 idle_inject/0
     19 root      20   0       0      0      0 S   0.0   0.0   0:00.00 cpuhp/0
     20 root      20   0       0      0      0 S   0.0   0.0   0:00.00 cpuhp/1
```

5- Xlogo : The xlogo program is a sample program supplied with the X Window System


```
amr@home:~$ xlogo
^C
```

6- Xlogo & : Putting A Process In The Background using "&"

```
amr@home:~$ xlogo &
[1] 17640
amr@home:~$ ps
    PID TTY          TIME CMD
   9810 pts/0    00:00:00 sh
   9963 pts/0    00:00:00 bash
  17640 pts/0    00:00:00 xlogo
  17641 pts/0    00:00:00 ps
amr@home:~$
```

7- Jobs : to see jobs running

```
amr@home:~$ jobs
[1]+  Running                 xlogo &
amr@home:~$
```

8- Fg %1 : The command fg followed by a percent sign "%" and the job number (called a *jobspec*) it displays what is running in job 1

```
amr@home:~$ fg %1
xlogo
```

9- Ctrl + z : to stop process without terminating it

```
amr@home:~$ xlogo
^Z
[1]+  Stopped                    xlogo
amr@home:~$ ▊
```

10- bg %1 : The command bg followed by a percent sign "%" and the job number to move the program to the background

```
amr@home:~$ bg %1
[1]+ xlogo &
```

11- Kill : The kill command is used to "kill" processes

```
amr@home:~$ xlogo &
[2] 17892
amr@home:~$ kill 17892
amr@home:~$ jobs
[1]-  Done                       xlogo
[2]+  Terminated                 xlogo
```

12- Kill -1 PID : to Hangup the process

```
amr@home:~$ xlogo &
[1] 18112
amr@home:~$ kill -1 18112
amr@home:~$ jobs
[1]+  Hangup                     xlogo
amr@home:~$ ▊
```

13- Kill –int PID : interrupt like "ctrl +c "

```
amr@home:~$ kill -int 18181
amr@home:~$
[1]+  Interrupt                  xlogo
```

14- Kill –l : to see all kills exits in system

```
amr@home:~$ kill -l
 1) SIGHUP       2) SIGINT       3) SIGQUIT      4) SIGILL       5) SIGTRAP
 6) SIGABRT      7) SIGBUS       8) SIGFPE       9) SIGKILL     10) SIGUSR1
11) SIGSEGV     12) SIGUSR2     13) SIGPIPE     14) SIGALRM     15) SIGTERM
16) SIGSTKFLT   17) SIGCHLD     18) SIGCONT     19) SIGSTOP     20) SIGTSTP
21) SIGTTIN     22) SIGTTOU     23) SIGURG      24) SIGXCPU     25) SIGXFSZ
26) SIGVTALRM   27) SIGPROF     28) SIGWINCH    29) SIGIO       30) SIGPWR
31) SIGSYS      34) SIGRTMIN    35) SIGRTMIN+1  36) SIGRTMIN+2  37) SIGRTMIN+3
38) SIGRTMIN+4  39) SIGRTMIN+5  40) SIGRTMIN+6  41) SIGRTMIN+7  42) SIGRTMIN+8
43) SIGRTMIN+9  44) SIGRTMIN+10 45) SIGRTMIN+11 46) SIGRTMIN+12 47) SIGRTMIN+13
48) SIGRTMIN+14 49) SIGRTMIN+15 50) SIGRTMAX-14 51) SIGRTMAX-13 52) SIGRTMAX-12
53) SIGRTMAX-11 54) SIGRTMAX-10 55) SIGRTMAX-9  56) SIGRTMAX-8  57) SIGRTMAX-7
58) SIGRTMAX-6  59) SIGRTMAX-5  60) SIGRTMAX-4  61) SIGRTMAX-3  62) SIGRTMAX-2
63) SIGRTMAX-1  64) SIGRTMAX
```

15- Killall xlogo : kill all processes with name xlogo

```
amr@home:~$ xlogo &
[1] 18270
amr@home:~$ xlogo &
[2] 18271
amr@home:~$ killall xlogo
amr@home:~$
[1]-  Terminated                 xlogo
[2]+  Terminated                 xlogo
amr@home:~$ █
```

16- Pstree : Outputs a process list arranged in a tree-like pattern showing the parent/child relationships between processes.

```
amr@home:~$ pstree
systemd─┬─ModemManager───2*[{ModemManager}]
        ├─NetworkManager───2*[{NetworkManager}]
        ├─accounts-daemon───2*[{accounts-daemon}]
        ├─acpid
        ├─anacron
        ├─avahi-daemon───avahi-daemon
        ├─colord───2*[{colord}]
        ├─containerd───8*[{containerd}]
        ├─cron
        ├─cups-browsed───2*[{cups-browsed}]
        ├─cupsd
        ├─dbus-daemon
        ├─dockerd───9*[{dockerd}]
        ├─fwupd───4*[{fwupd}]
        ├─gdm3─┬─gdm-session-wor─┬─gdm-x-session─┬─Xorg───5*[{Xorg}]
```

17- Vmstat : Outputs a snapshot of system resource usage including, memory ,swap and disk I/O.

```
amr@home:~$ vmstat 5
procs -----------memory---------- ---swap-- -----io---- -system-- ------cpu-----
 r  b   swpd   free   buff  cache   si   so    bi    bo   in   cs us sy id wa st
 1  0    524 226184  15564 859736    0    0    86    67   64  132  1  1 91  7  0
 0  0    524 225960  15564 859736    0    0     0     0   87  143  0  0 100  0  0
 0  0    524 225960  15564 859736    0    0     0     0   89  146  0  0 100  0  0
█
```

18- printenv : command will show both the shell and environment variables

```
SHELL=/bin/sh
LC_ADDRESS=ar_EG.UTF-8
LC_NAME=ar_EG.UTF-8
LC_MONETARY=ar_EG.UTF-8
PWD=/home/amr
LOGNAME=amr
XDG_SESSION_TYPE=tty
MOTD_SHOWN=pam
HOME=/home/amr
LC_PAPER=ar_EG.UTF-8
LANG=ar_EG.UTF-8
```

19- set |less : will display both the shell and environment variables, as well as any defined shell functions. Unlike printenv, its output is courteously sorted in alphabetical order:

```
BASH=/usr/bin/bash
BASHOPTS=checkwinsize:cmdhist:complete_fullquote:expand_aliases:extglob:extquote:force_fignore:globasciiranges:histappend:interactive_com
ments:progcomp:promptvars:sourcepath
BASH_ALIASES=()
BASH_ARGC=([0]="0")
BASH_ARGV=()
BASH_CMDS=()
BASH_COMPLETION_VERSINFO=([0]="2" [1]="11")
BASH_LINENO=()
BASH_REMATCH=()
BASH_SOURCE=()
BASH_VERSINFO=([0]="5" [1]="1" [2]="16" [3]="1" [4]="release" [5]="x86_64-pc-linux-gnu")
BASH_VERSION='5.1.16(1)-release'
COLUMNS=137
COMP_WORDBREAKS=$' \t\n"\'>≤;|&(:'
DBUS_SESSION_BUS_ADDRESS=unix:path=/run/user/1002/bus
DIRSTACK=()
DISPLAY=localhost:10.0
EUID=1002
GROUPS=()
HISTCONTROL=ignoreboth
HISTFILE=/home/amr/.bash_history
HISTFILESIZE=2000
```

20-

```
amr@home:~$ amr=" it's Amr"
amr@home:~$ echo $amr
it's Amr
amr@home:~$ amr="Hello"$amr
amr@home:~$ echo $amr
Hello it's Amr
amr@home:~$
```

21- Nano file : to show file in GNU nano

```
  GNU nano 6.2                                                          ls.txt
[
aa-enabled
aa-exec
aa-features-abi
aconnect
acpi_listen
activate-global-python-argcomplete3
acyclic
add-apt-repository
addpart
addr2line
airscan-discover
alsabat
```

22- apt-get update

apt-cache search search_string

Finding A Package In A Repository

```
amr@home:~$ sudo apt-get update
[sudo] password for amr:
                                        http://security.ubuntu.com/ubuntu jammy-security InRelease [110 kB] 1:جلب
Hit:2 https://dl.google.com/linux/chrome/deb stable InRelease
                                        http://apt.insync.io/ubuntu jammy InRelease [5,535 B] 3:جلب
Hit:4 http://eg.archive.ubuntu.com/ubuntu jammy InRelease
Hit:6 https://download.docker.com/linux/ubuntu jammy InRelease
Hit:7 https://apt.releases.hashicorp.com jammy InRelease
                                        http://eg.archive.ubuntu.com/ubuntu jammy-updates InRelease [119 kB] 8:جلب
Hit:5 https://packages.cloud.google.com/apt kubernetes-xenial InRelease
                                        http://eg.archive.ubuntu.com/ubuntu jammy-backports InRelease [108 kB] 9:جلب
                                                    جلب 342 ك في 2s (220 k ب/ث)
                                                    قراءة قوائم الحزم... تمّ%
amr@home:~$ apt-cache search search_string
amr@home:~$
```

23- apt-get update
apt-get install emacs

Installing A Package From A Repository

```
amr@home:~$ sudo apt-get update
Hit:1 http://eg.archive.ubuntu.com/ubuntu jammy InRelease
                                                    http://security.ubuntu.com/ubuntu jammy-security InRelease [110 kB] 2:جلب
                                                    http://eg.archive.ubuntu.com/ubuntu jammy-updates InRelease [119 kB] 3:جلب
Hit:4 https://dl.google.com/linux/chrome/deb stable InRelease
Hit:5 https://download.docker.com/linux/ubuntu jammy InRelease
                                                    http://apt.insync.io/ubuntu jammy InRelease [5,535 B] 7:جلب
Hit:8 https://apt.releases.hashicorp.com jammy InRelease
                                                    http://eg.archive.ubuntu.com/ubuntu jammy-backports InRelease [108 kB] 9:جلب
Hit:6 https://packages.cloud.google.com/apt kubernetes-xenial InRelease
                                                    جلب 342 kب في 1s (344 kب/ث)
                                                    قراءة قوائم الحزم ... تمّ%
amr@home:~$ apt-get install emacs
E: Could not open lock file /var/lib/dpkg/lock-frontend - open (13: Permission denied)
E: Unable to acquire the dpkg frontend lock (/var/lib/dpkg/lock-frontend), are you root?
amr@home:~$ sudo apt-get install emacs
                                                    قراءة قوائم الحزم ... تمّ0%
Building dependency tree ... تمّ%
Reading state information ... تمّ
The following package was automatically installed and is no longer required:
  libllvm13
Use 'sudo apt autoremove' to remove it.
The following additional packages will be installed:
  emacs-bin-common emacs-common emacs-el emacs-gtk libm17n-0 libotf1 m17n-db
                                                    الحزم المقترحة:
  mailutils emacs-common-non-dfsg m17n-docs gawk
                                                    سيتم تثبيت الحزم الجديدة التالية:
  emacs emacs-bin-common emacs-common emacs-el emacs-gtk libm17n-0 libotf1 m17n-db
                                                    0 سيتم ترقيتها، 8 مثبتة حديثاً، 0 لا زالتها و 116 لم يتم ترقيتها.
                                                    بحاجة إلى جلب 36.4 Mب من الأرشيف.
After this operation, 117 MB of additional disk space will be used.
                                                    هل تريد الاستمرار؟ [Y/n] y
                          http://eg.archive.ubuntu.com/ubuntu jammy/universe amd64 emacs-common all 1:27.1+1-3ubuntu5 [14.6 MB] 1:جلب
                          http://eg.archive.ubuntu.com/ubuntu jammy/universe amd64 emacs-bin-common amd64 1:27.1+1-3ubuntu5 [133 kB] 2:جلب
                          http://eg.archive.ubuntu.com/ubuntu jammy/main amd64 m17n-db all 1.8.0-3 [1,215 kB] 3:جلب
                          http://eg.archive.ubuntu.com/ubuntu jammy/main amd64 libotf1 amd64 0.9.16-3build1 [49.7 kB] 4:جلب
                          http://eg.archive.ubuntu.com/ubuntu jammy/main amd64 libm17n-0 amd64 1.8.0-4 [267 kB] 5:جلب
```

24- apt-get remove emacs

Removing A Package

```
amr@home:~$ sudo apt-get remove emacs
                                                    قراءة قوائم الحزم ... تمّ0%
Building dependency tree ... تمّ%
Reading state information ... تمّ
The following packages were automatically installed and are no longer required:
  emacs-bin-common emacs-common emacs-el emacs-gtk libllvm13 libm17n-0 libotf1 m17n-db
Use 'sudo apt autoremove' to remove them.
                                                    سيتم إزالة الحزم التالية:
  emacs
                                                    0 سيتم ترقيتها، 0 مثبتة حديثاً، 1 لا زالتها و 116 لم يتم ترقيتها.
After this operation, 78.8 kB disk space will be freed.
                                                    هل تريد الاستمرار؟ [Y/n] y
(Reading database ... 264574 files and directories currently installed.)
Removing emacs (1:27.1+1-3ubuntu5) ...
```

25- sudo apt-get update

sudo apt-get upgrade

Updating Packages From A Repository

```
amr@home:~$ sudo apt-get update
Hit:1 http://eg.archive.ubuntu.com/ubuntu jammy InRelease
                                                    http://security.ubuntu.com/ubuntu jammy-security InRelease [110 kB] جلب:2
                                                    http://eg.archive.ubuntu.com/ubuntu jammy-updates InRelease [119 kB] جلب:3
Hit:4 https://dl.google.com/linux/chrome/deb stable InRelease
Hit:5 https://download.docker.com/linux/ubuntu jammy InRelease
Hit:6 https://apt.releases.hashicorp.com jammy InRelease
                                                    http://apt.insync.io/ubuntu jammy InRelease [5,535 B] جلب:7
                                                    http://eg.archive.ubuntu.com/ubuntu jammy-backports InRelease [108 kB] جلب:9
Hit:8 https://packages.cloud.google.com/apt kubernetes-xenial InRelease
                                                    جلب 342 ك في 1s (340 k ك/ث)
                                                    قراءة قوائم الحزم ... تمّ%
                                                    قراءة قوائم الحزم ... تمّ%0
amr@home:~$ sudo apt-get upgrade

Building dependency tree ... تمّ%
Reading state information ... تمّ
                                                    حساب الترقية ... تمّ%
The following packages were automatically installed and are no longer required:
  emacs-bin-common emacs-common emacs-el emacs-gtk libllvm13 libm17n-0 libotf1 m17n-db
Use 'sudo apt autoremove' to remove them.
                                                    سيتم الإبقاء على الحزم التالية:
  gnome-settings-daemon gnome-settings-daemon-common grub-efi-amd64-bin grub-efi-amd64-signed libpulse-mainloop-glib0 libpulse0
  libpulsedsp pulseaudio pulseaudio-module-bluetooth pulseaudio-utils shim-signed
                                                    ستتم ترقية الحزم التالية:
  alsa-ucm-conf apparmor base-files bind9-dnsutils bind9-host bind9-libs containerd.io dnsmasq-base docker-buildx-plugin docker-ce
  docker-ce-cli docker-ce-rootless-extras docker-compose-plugin evince evince-common firmware-sof-signed fonts-noto-color-emoji
  fonts-opensymbol fwupd-signed gir1.2-pango-1.0 gnome-initial-setup google-chrome-stable isc-dhcp-client isc-dhcp-common kubectl
  language-pack-ar language-pack-ar-base language-pack-en language-pack-en-base language-pack-gnome-ar language-pack-gnome-ar-base
  language-pack-gnome-en language-pack-gnome-en-base libapparmor1 libevdocument3-4 libevview3-3 libfprint-2-2 libldap-2.5-0
  libldap-common libmbim-glib4 libmbim-proxy libmm-glib0 libnetplan0 libpango-1.0-0 libpangocairo-1.0-0 libpangoft2-1.0-0
  libpangoxft-1.0-0 libqmi-glib5 libqmi-proxy libreoffice-base-core libreoffice-calc libreoffice-common libreoffice-core
  libreoffice-draw libreoffice-gnome libreoffice-gtk3 libreoffice-help-common libreoffice-help-en-gb libreoffice-help-en-us
  libreoffice-impress libreoffice-l10n-ar libreoffice-l10n-en-gb libreoffice-l10n-en-za libreoffice-math libreoffice-ogltrans
```

26- dpkg –list : Listing Installed Packages

```
amr@home:~$ dpkg --list
Desired=Unknown/Install/Remove/Purge/Hold
| Status=Not/Inst/Conf-files/Unpacked/halF-conf/Half-inst/trig-aWait/Trig-pend
|/ Err?=(none)/Reinst-required (Status,Err: uppercase=bad)
||/ Name                     Version                        Architecture Description
+++-========================-==============================-============-=====================================
ii  accountsservice          22.07.5-2ubuntu1.3             amd64        query and manipulate user account in
ii  acl                      2.3.1-1                        amd64        access control list - utilities
ii  acpi-support             0.144                          amd64        scripts for handling many ACPI events
ii  acpid                    1:2.0.33-1ubuntu1              amd64        Advanced Configuration and Power Int
ii  adduser                  3.118ubuntu5                   all          add and remove users and groups
ii  adwaita-icon-theme       41.0-1ubuntu1                  all          default icon theme of GNOME (small s
ii  aisleriot                1:3.22.22-1                    amd64        GNOME solitaire card game collection
ii  alsa-base                1.0.25+dfsg-0ubuntu7           all          ALSA driver configuration files
ii  alsa-topology-conf       1.2.5.1-2                      all          ALSA topology configuration files
ii  alsa-ucm-conf            1.2.6.3-1ubuntu1.4             all          ALSA Use Case Manager configuration
ii  alsa-utils               1.2.6-1ubuntu1                 amd64        Utilities for configuring and using
ii  amd64-microcode          3.20191218.1ubuntu2            amd64        Processor microcode firmware for AMD
ii  anacron                  2.3-31ubuntu2                  amd64        cron-like program that doesn't go by
ii  ansible                  2.10.7+merged+base+2.10.8+dfsg-1 all        Configuration management, deployment
ii  apg                      2.2.3.dfsg.1-5build2           amd64        Automated Password Generator - Stand
ii  apparmor                 3.0.4-2ubuntu2.2               amd64        user-space parser utility for AppArm
ii  apport                   2.20.11-0ubuntu82.3            all          automatically generate crash reports
ii  apport-gtk               2.20.11-0ubuntu82.3            all          GTK+ frontend for the apport crash r
ii  apport-symptoms          0.24                           all          symptom scripts for apport
ii  appstream                0.15.2-2                       amd64        Software component metadata manageme
ii  apt                      2.4.8                          amd64        commandline package manager
ii  apt-config-icons         0.15.2-2                       all          APT configuration snippet to enable
ii  apt-config-icons-hidpi   0.15.2-2                       all          APT configuration snippet to enable
ii  apt-transport-https      2.4.8                          all          transitional package for https suppo
ii  apt-utils                2.4.8                          amd64        package management related utility p
ii  aptdaemon                1.1.1+bzr982-0ubuntu39         all          transaction based package management
ii  aptdaemon-data           1.1.1+bzr982-0ubuntu39         all          data files for clients
ii  apturl                   0.5.2ubuntu22                  amd64        install packages using the apt proto
ii  apturl-common            0.5.2ubuntu22                  amd64        install packages using the apt proto
ii  aspell                   0.60.8-4build1                 amd64        GNU Aspell spell-checker
```

27- dpkg --status emacs : Determining If A Package Is Installed

```
amr@home:~$ dpkg --status emacs
dpkg-query: package 'emacs' is not installed and no information is available
Use dpkg --info (= dpkg-deb --info) to examine archive files.
amr@home:~$
```

28- apt-cache show emacs : Displaying Info About An Installed Package

```
amr@home:~$ apt-cache show emacs
Package: emacs
Architecture: all
Version: 1:27.1+1-3ubuntu5
Priority: optional
Section: universe/editors
Origin: Ubuntu
Maintainer: Ubuntu Developers <ubuntu-devel-discuss@lists.ubuntu.com>
Original-Maintainer: Rob Browning <rlb@defaultvalue.org>
Bugs: https://bugs.launchpad.net/ubuntu/+filebug
Installed-Size: 77
Depends: emacs-gtk ( ≥ 1:27.1) | emacs-lucid ( ≥ 1:27.1) | emacs-nox ( ≥ 1:27.1)
Filename: pool/universe/e/emacs/emacs_27.1+1-3ubuntu5_all.deb
Size: 13284
MD5sum: 72cdaf6570f1d8a0a2973eeb9f517872
SHA1: 507b22697d96cbfc001020e085f0c4f804a6dcf1
SHA256: 1e186c5436d9d83de73d6deabc4f63229f373ccaa30fa10a22b1e39f1f7036c6
SHA512: 415d6bf24bc031f3fc7b2d6dd1009bfb7959ce92eef843ecbbf0b4a1cdd44a3d8678a5902323798982b3b2fe30aaf8d66cf8ef556ee31082a2fc58d0459d18d1
Homepage: https://www.gnu.org/software/emacs/
Description-en: GNU Emacs editor (metapackage)
 GNU Emacs is the extensible self-documenting text editor.
 This is a metapackage that will always depend on the latest
 recommended Emacs variant (currently emacs-gtk).
Description-md5: f991b22b712b84422dc583d29a7b2171
```

29- mount : The mount command is used to mount file systems. Entering the command without arguments will display a list of the file systems currently mounted

```
amr@home:~$ mount
sysfs on /sys type sysfs (rw,nosuid,nodev,noexec,relatime)
proc on /proc type proc (rw,nosuid,nodev,noexec,relatime)
udev on /dev type devtmpfs (rw,nosuid,relatime,size=1894592k,nr_inodes=473648,mode=755,inode64)
devpts on /dev/pts type devpts (rw,nosuid,noexec,relatime,gid=5,mode=620,ptmxmode=000)
tmpfs on /run type tmpfs (rw,nosuid,nodev,noexec,relatime,size=392752k,mode=755,inode64)
/dev/mapper/keystore-rpool on /run/keystore/rpool type ext4 (rw,relatime,stripe=2)
rpool/ROOT/ubuntu_w9v4aw on / type zfs (rw,relatime,xattr,posixacl)
securityfs on /sys/kernel/security type securityfs (rw,nosuid,nodev,noexec,relatime)
tmpfs on /dev/shm type tmpfs (rw,nosuid,nodev,inode64)
tmpfs on /run/lock type tmpfs (rw,nosuid,nodev,noexec,relatime,size=5120k,inode64)
cgroup2 on /sys/fs/cgroup type cgroup2 (rw,nosuid,nodev,noexec,relatime,nsdelegate,memory_recursiveprot)
pstore on /sys/fs/pstore type pstore (rw,nosuid,nodev,noexec,relatime)
bpf on /sys/fs/bpf type bpf (rw,nosuid,nodev,noexec,relatime,mode=700)
systemd-1 on /proc/sys/fs/binfmt_misc type autofs (rw,relatime,fd=29,pgrp=1,timeout=0,minproto=5,maxproto=5,direct,pipe_ino=25145)
mqueue on /dev/mqueue type mqueue (rw,nosuid,nodev,noexec,relatime)
debugfs on /sys/kernel/debug type debugfs (rw,nosuid,nodev,noexec,relatime)
hugetlbfs on /dev/hugepages type hugetlbfs (rw,relatime,pagesize=2M)
tracefs on /sys/kernel/tracing type tracefs (rw,nosuid,nodev,noexec,relatime)
fusectl on /sys/fs/fuse/connections type fusectl (rw,nosuid,nodev,noexec,relatime)
configfs on /sys/kernel/config type configfs (rw,nosuid,nodev,noexec,relatime)
```

30- ls /dev

```
amr@home:~$ ls /dev
autofs          fb0        kmsg      loop23      mem       sda2          tty10  tty28  tty45  tty62      ttyS20  udmabuf   vcsa6
block           fd         kvm       loop24      mqueue    sda3          tty11  tty29  tty46  tty63      ttyS21  uhid      vcsu
bsg             full       log       loop25      mtd0      sda4          tty12  tty3   tty47  tty7       ttyS22  uinput    vcsu1
btrfs-control   fuse       loop0     loop26      mtd0ro    sda5          tty13  tty30  tty48  tty8       ttyS23  urandom   vcsu2
bus             hpet       loop1     loop27      net       sdb           tty14  tty31  tty49  tty9       ttyS24  userio    vcsu3
cdrom           hugepages  loop10    loop28      null      sg0           tty15  tty32  tty5   ttyprintk  ttyS25  v4l       vcsu4
char            hwrng      loop11    loop29      nvram     sg1           tty16  tty33  tty50  ttyS0      ttyS26  vcs       vcsu5
console         i2c-0      loop12    loop3       port      sg2           tty17  tty34  tty51  ttyS1      ttyS27  vcs1      vcsu6
core            i2c-1      loop13    loop4       ppp       shm           tty18  tty35  tty52  ttyS10     ttyS28  vcs2      vfio
cpu             i2c-2      loop14    loop5       psaux     snapshot      tty19  tty36  tty53  ttyS11     ttyS29  vcs3      vga_arbiter
cpu_dma_latency i2c-3      loop15    loop6       ptmx      snd           tty2   tty37  tty54  ttyS12     ttyS3   vcs4      vhci
cuse            i2c-4      loop16    loop7       pts       sr0           tty20  tty38  tty55  ttyS13     ttyS30  vcs5      vhost-net
disk            i2c-5      loop17    loop8       random    stderr        tty21  tty39  tty56  ttyS14     ttyS31  vcs6      vhost-vsock
dm-0            i2c-6      loop18    loop9       rfkill    stdin         tty22  tty4   tty57  ttyS15     ttyS4   vcsa      video0
dm-1            i2c-7      loop19    loop-control  rpool   stdout        tty23  tty40  tty58  ttyS16     ttyS5   vcsa1     video1
dma_heap        i2c-8      loop2     mapper      rtc       toshiba_acpi  tty24  tty41  tty59  ttyS17     ttyS6   vcsa2     zd0
dri             i2c-9      loop20    mcelog      rtc0      tty           tty25  tty42  tty6   ttyS18     ttyS7   vcsa3     zero
drm_dp_aux0     initctl    loop21    media0      sda       tty0          tty26  tty43  tty60  ttyS19     ttyS8   vcsa4     zfs
ecryptfs        input      loop22    mei0        sda1      tty1          tty27  tty44  tty61  ttyS2      ttyS9   vcsa5     zvol
```

31- sudo mkdir /mnt/flash
sudo mount /dev/sdb1 /mnt/flash
df
/dev/sdb1 15560 0 15560 0% /mnt/flash

32- **sudo umount /dev/sdb1**
   sudo fdisk /dev/sdb
   sudo mkfs -t ext3 /dev/sdb1

```
amr@home:~$ sudo mkfs -t ext3 /dev/sda1
[sudo] password for amr:
mke2fs 1.46.5 (30-Dec-2021)

Filesystem too small for a journal
Creating filesystem with 256 4k blocks and 128 inodes

Allocating group tables: done
Writing inode tables: done
Writing superblocks and filesystem accounting information: done
```

33- **sudo mkfs -t vfat /dev/sda1**

```
amr@home:~$ sudo mkfs -t vfat /dev/sda1
mkfs.fat 4.2 (2021-01-31)
```

34- **sudo fsck /dev/sda1**

```
amr@home:~$ sudo fsck /dev/sda1
fsck from util-linux 2.37.2
fsck.fat 4.2 (2021-01-31)
/dev/sda1: 0 files, 0/494 clusters
amr@home:~$
```