

ROHITH P

Section 1: Core Command Operations

```
rohitp@CertifiedLinuxBoy: ~/SysOpsLab/Archives
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

rohitp@CertifiedLinuxBoy: $ mkdir -p ~/SysOpsLab/Exercises/SessionA
rohitp@CertifiedLinuxBoy: $ mkdir -p ~/SysOpsLab/Archives
rohitp@CertifiedLinuxBoy: $ cd ~/SysOpsLab/Exercises/SessionA
rohitp@CertifiedLinuxBoy:~/SysOpsLab/Exercises/SessionA$ touch alpha.txt
rohitp@CertifiedLinuxBoy:~/SysOpsLab/Exercises/SessionA$ touch beta.txt
rohitp@CertifiedLinuxBoy:~/SysOpsLab/Exercises/SessionA$ touch gamma.txt
rohitp@CertifiedLinuxBoy:~/SysOpsLab/Exercises/SessionA$ mv alpha.txt ~/SysOpsLab/Archives/
rohitp@CertifiedLinuxBoy:~/SysOpsLab/Exercises/SessionA$ cp beta.txt ~/SysOpsLab/
rohitp@CertifiedLinuxBoy:~/SysOpsLab/Exercises/SessionA$ mv gamma.txt delta.txt
rohitp@CertifiedLinuxBoy:~/SysOpsLab/Exercises/SessionA$ cd ~/SysOpsLab/Archives
rohitp@CertifiedLinuxBoy:~/SysOpsLab/Archives$ ln ~/SysOpsLab/Exercises/SessionA/beta.txt betahardlink
rohitp@CertifiedLinuxBoy:~/SysOpsLab/Archives$ ln -s ~/SysOpsLab/Exercises/SessionA/beta.txt betasoftwarelink
rohitp@CertifiedLinuxBoy:~/SysOpsLab/Archives$ ls -li
total 0
1968454 -rw-rw-r-- 1 rohitp rohitp 0 Nov 27 18:09 alpha.txt
1968455 -rw-rw-r-- 2 rohitp rohitp 0 Nov 27 18:09 betahardlink
1968536 lrwxrwxrwx 1 rohitp rohitp 51 Nov 27 18:12 betasoftwarelink -> /home/rohitp/SysOpsLab/Exercises/SessionA/beta.txt
rohitp@CertifiedLinuxBoy:~/SysOpsLab/Archives$
```

SECTION 2: User, Group & Permission Management

```
rohitp@CertifiedLinuxBoy: $
rohitp@CertifiedLinuxBoy: $ touch private_log.txt
rohitp@CertifiedLinuxBoy: $ chmod 600 private_log.txt
rohitp@CertifiedLinuxBoy: $ sudo useradd newuser1
rohitp@CertifiedLinuxBoy: $ sudo passwd newuser1
New password:
Retype new password:
passwd: password updated successfully
rohitp@CertifiedLinuxBoy: $ sudo chown newuser1:newuser1 private_log.txt
rohitp@CertifiedLinuxBoy: $ sudo apt install acl
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
acl is already the newest version (2.3.2-1build1.1).
acl set to manually installed.
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
rohitp@CertifiedLinuxBoy: $ sudo setfacl -m u:newuser1:r private_log.txt
rohitp@CertifiedLinuxBoy: $ getfacl private_log.txt
# file: private_log.txt
# owner: newuser1
# group: newuser1
user::rw-
user:newuser1:r--
group::---
mask::r--
other::---

rohitp@CertifiedLinuxBoy: $
```

```

rohitp@CertifiedLinuxBoy:~$ pwd
/home/rohitp
rohitp@CertifiedLinuxBoy:~$ uptime
18:25:36 up 27 min, 1 user, load average: 0.54, 0.60, 0.63
rohitp@CertifiedLinuxBoy:~$ who
rohitp seat0      2025-11-27 23:31 (login screen)
rohitp  tty2      2025-11-27 23:31 (tty2)
rohitp@CertifiedLinuxBoy:~$ free -h
              total        used        free      shared  buff/cache   available
Mem:       13Gi       2.9Gi       8.0Gi      84Mi       2.4Gi      10Gi
Swap:      4.0Gi          0B       4.0Gi
rohitp@CertifiedLinuxBoy:~$ df -h
Filesystem      Size  Used Avail Use% Mounted on
tmpfs           1.4G  2.2M  1.4G  1% /run
/dev/nvme0n1p5  53G  9.7G  41G  20% /
tmpfs           6.8G     0  6.8G  0% /dev/shm
tmpfs           5.0M   12K  5.0M  1% /run/lock
efivarfs        148K  131K  13K  92% /sys/firmware/efi/efivars
/dev/nvme0n1p1  96M   53M   44M  56% /boot/efi
tmpfs           1.4G  136K  1.4G  1% /run/user/1000
rohitp@CertifiedLinuxBoy:~$ top -b -n1 | head -5
top - 18:26:19 up 28 min, 1 user, load average: 0.58, 0.61, 0.63
Tasks: 368 total, 1 running, 367 sleeping, 0 stopped, 0 zombie
%Cpu(s): 0.6 us, 0.6 sy, 0.0 ni, 98.9 id, 0.0 wa, 0.0 hi, 0.0 si, 0.0 st
MiB Mem : 13825.1 total, 8243.6 free, 2933.5 used, 2452.8 buff/cache
MiB Swap: 4096.0 total, 4096.0 free, 0.0 used. 10891.6 avail Mem
rohitp@CertifiedLinuxBoy:~$ top -b -n1 | head -10
top - 18:26:39 up 28 min, 1 user, load average: 0.48, 0.59, 0.63
Tasks: 368 total, 1 running, 367 sleeping, 0 stopped, 0 zombie
%Cpu(s): 0.6 us, 0.6 sy, 0.0 ni, 98.9 id, 0.0 wa, 0.0 hi, 0.0 si, 0.0 st
MiB Mem : 13825.1 total, 8242.7 free, 2934.4 used, 2452.8 buff/cache
MiB Swap: 4096.0 total, 4096.0 free, 0.0 used. 10890.7 avail Mem

```

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
7779	rohitp	20	0	23168	5260	3212	R	8.3	0.0	0:00.02	top
1	root	20	0	23424	13660	9180	S	0.0	0.1	0:03.17	systemd
2	root	20	0	0	0	0	S	0.0	0.0	0:00.00	kthreadd

```

rohitp@CertifiedLinuxBoy:~$ uname -r
6.14.0-27-generic
rohitp@CertifiedLinuxBoy:~$
```

```

rohitp@CertifiedLinuxBoy:~$ {
    echo "Report of system information - $(date)"
    echo "PWD: $(pwd)"
    who
    uptime
    free -h
    df -h
    uname -r
} > sysinfo_report.txt
rohitp@CertifiedLinuxBoy:~$ █
rohitp@CertifiedLinuxBoy:~$ sudo useradd analyst1
rohitp@CertifiedLinuxBoy:~$ sudo groupadd datateam
rohitp@CertifiedLinuxBoy:~$ sudo usermod -aG datateam analyst1
rohitp@CertifiedLinuxBoy:~$ sudo mkdir /datahub
rohitp@CertifiedLinuxBoy:~$ sudo chgrp datateam /datahub
rohitp@CertifiedLinuxBoy:~$ sudo chmod 2770 /datahub
rohitp@CertifiedLinuxBoy:~$ id analyst1
uid=1003(analyst1) gid=1003(analyst1) groups=1003(analyst1),1004(datateam)
rohitp@CertifiedLinuxBoy:~$ groups analyst1
analyst1 : analyst1 datateam
rohitp@CertifiedLinuxBoy:~$ ls -ld /datahub
drwxrws--- 2 root datateam 4096 Nov 27 18:30 /datahub
rohitp@CertifiedLinuxBoy:~$
```

```

rohithp@CertifiedLinuxBoy:~$ mkdir ~/secure_vault
rohithp@CertifiedLinuxBoy:~$ chmod 700 ~/secure_vault
rohithp@CertifiedLinuxBoy:~$ sudo apt install auditd
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  libauparse0t64
Suggested packages:
  audispd-plugins
The following NEW packages will be installed:
  auditd libauparse0t64
0 upgraded, 2 newly installed, 0 to remove and 0 not upgraded.
Need to get 274 kB of archives.
After this operation, 893 kB of additional disk space will be used.
Do you want to continue? [Y/n] Y
Get:1 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 libauparse0t64 amd64 1:3.1.2-2.1build1.1 [58.9 kB]
Get:2 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 auditd amd64 1:3.1.2-2.1build1.1 [215 kB]
Fetched 274 kB in 2s (128 kB/s)
Selecting previously unselected package libauparse0t64:amd64.
(Reading database ... 150067 files and directories currently installed.)
Preparing to unpack .../libauparse0t64_1%3a3.1.2-2.1build1.1_amd64.deb ...
Adding 'diversion of /lib/x86_64-linux-gnu/libauparse.so.0 to /lib/x86_64-linux-gnu/libauparse.so.0.usr-is-merged by libaup...
Adding 'diversion of /lib/x86_64-linux-gnu/libauparse.so.0.0.0 to /lib/x86_64-linux-gnu/libauparse.so.0.0.0.usr-is-merged by
Unpacking libauparse0t64:amd64 (1:3.1.2-2.1build1.1) ...
Selecting previously unselected package auditd.
Preparing to unpack .../auditd_1%3a3.1.2-2.1build1.1_amd64.deb ...
Unpacking auditd (1:3.1.2-2.1build1.1) ...
Setting up libauparse0t64:amd64 (1:3.1.2-2.1build1.1) ...
Setting up auditd (1:3.1.2-2.1build1.1) ...
Created symlink /etc/systemd/system/multi-user.target.wants/auditd.service → /usr/lib/systemd/system/auditd.service.
Processing triggers for man-db (2.12.0-4build2) ...
Processing triggers for libc-bin (2.39-0ubuntu8.5) ...
rohithp@CertifiedLinuxBoy:~$ sudo systemctl enable --now auditd
Synchronizing state of auditd.service with SysV service script with /usr/lib/systemd/systemd-sysv-install.
Executing: /usr/lib/systemd/systemd-sysv-install enable auditd
rohithp@CertifiedLinuxBoy:~$ sudo auditctl -w ~/secure_vault -p war -k vaultwatch

```

```

rohithp@CertifiedLinuxBoy: $ sudoausearch -k vaultwatch
-----
time->Thu Nov 27 18:33:17 2025
type=PROCTITLE msg=audit(1764248597.077:307): proctitle=617564697463746C002D77002F686F6D652F726F68697468702F7365637572655F7661756C74002D7
type=SYSCALL msg=audit(1764248597.077:307): arch=c000003e syscall=44 success=yes exit=1092 a0=4 a1=7ffffdd583580 a2=444 a3=0 items=0 ppid=
=0 fsuid=0 egid=0 sgid=0 fsgid=0 tty=pts1 ses=3 comm="auditctl" exe="/usr/sbin/auditctl" subj=unconfined key=(null)
type=CONFIG_CHANGE msg=audit(1764248597.077:307): auid=1000 ses=3 subj=unconfined op=add_rule key="vaultwatch" list=4 res=1
-----
time->Thu Nov 27 18:36:57 2025
type=PROCTITLE msg=audit(1764248817.609:327): proctitle=617564697463746C002D77002F686F6D652F726F68697468702F7365637572655F7661756C74002D7
type=SOCKADDR msg=audit(1764248817.609:327): saddr=10000000000000000000000000000000
type=SYSCALL msg=audit(1764248817.609:327): arch=c000003e syscall=44 success=yes exit=1092 a0=4 a1=7ffc8486e3d0 a2=444 a3=0 items=0 ppid=
=0 fsuid=0 egid=0 sgid=0 fsgid=0 tty=pts1 ses=3 comm="auditctl" exe="/usr/sbin/auditctl" subj=unconfined key=(null)
type=CONFIG_CHANGE msg=audit(1764248817.609:327): auid=1000 ses=3 subj=unconfined op=add_rule key="vaultwatch" list=4 res=0
-----
time->Thu Nov 27 18:38:57 2025
type=PROCTITLE msg=audit(1764248937.591:341): proctitle=617564697463746C002D77002F686F6D652F726F68697468702F7365637572655F7661756C74002D7
type=SOCKADDR msg=audit(1764248937.591:341): saddr=10000000000000000000000000000000
type=SYSCALL msg=audit(1764248937.591:341): arch=c000003e syscall=44 success=yes exit=1092 a0=4 a1=7ffe8d6518c0 a2=444 a3=0 items=0 ppid=
=0 fsuid=0 egid=0 sgid=0 fsgid=0 tty=pts1 ses=3 comm="auditctl" exe="/usr/sbin/auditctl" subj=unconfined key=(null)
type=CONFIG_CHANGE msg=audit(1764248937.591:341): auid=1000 ses=3 subj=unconfined op=add_rule key="vaultwatch" list=4 res=0
rohithp@CertifiedLinuxBoy: $ sudoausearch -k vaultwatch | grep accessed > audit_summary.txt

```

SECTION 3: Networking and Connectivity

```
rohithp@CertifiedLinuxBoy:~$ ping -c 4 google.com > netcheck.txt
rohithp@CertifiedLinuxBoy:~$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host noprefixroute
        valid_lft forever preferred_lft forever
2: enp4s0: <NO-CARRIER,BROADCAST,MULTICAST,UP> mtu 1500 qdisc fq_codel state DOWN group default qlen 1000
    link/ether 5a:43:93:19:b8 brd ff:ff:ff:ff:ff:ff
3: wlp5s0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc noqueue state UP group default qlen 1000
    link/ether 74:97:79:b5:7f:0f brd ff:ff:ff:ff:ff:ff
    inet 192.168.0.101/24 brd 192.168.0.255 scope global dynamic noprefixroute wlp5s0
        valid_lft 4677sec preferred_lft 4677sec
    inet6 fe80::f530:b3b0:30fa:6f34/64 scope link noprefixroute
        valid_lft forever preferred_lft forever
rohithp@CertifiedLinuxBoy:~$ ip route
default via 192.168.0.1 dev wlp5s0 proto dhcp src 192.168.0.101 metric 600
192.168.0.0/24 dev wlp5s0 proto kernel scope link src 192.168.0.101 metric 600
rohithp@CertifiedLinuxBoy:~$ cat /etc/resolv.conf
# This is /run/systemd/resolve/stub-resolv.conf managed by man:systemd-resolved(8).
# Do not edit.
#
# This file might be symlinked as /etc/resolv.conf. If you're looking at
# /etc/resolv.conf and seeing this text, you have followed the symlink.
#
# This is a dynamic resolv.conf file for connecting local clients to the
# internal DNS stub resolver of systemd-resolved. This file lists all
# configured search domains.
#
# Run "resolvectl status" to see details about the uplink DNS servers
# currently in use.
#
# Third party programs should typically not access this file directly, but only
# through the symlink at /etc/resolv.conf. To manage man:resolv.conf(5) in a
# different way, replace this symlink by a static file or a different symlink.
#
# See man:systemd-resolved.service(8) for details about the supported modes of
# operation for /etc/resolv.conf.

nameserver 127.0.0.53
options edns0 trust-ad
search .
```

```
rohithp@CertifiedLinuxBoy:~$ ss -tuln
Netid      State      Recv-Q      Send-Q      Local Address:Port      Peer Address:Port      Process
udp        UNCONN     0            0           127.0.0.54:53          0.0.0.0:*                  0.0.0.0:*
udp        UNCONN     0            0           127.0.0.53%lo:53        0.0.0.0:*                  0.0.0.0:*
udp        UNCONN     0            0           0.0.0.0:34680           0.0.0.0:*
udp        UNCONN     0            0           0.0.0.0:5353           0.0.0.0:*
udp        UNCONN     0            0           0.0.0.0:54536           0.0.0.0:*
udp        UNCONN     0            0           [::]:49235             [::]:*
udp        UNCONN     0            0           [::]:5353              [::]:*
tcp        LISTEN     0            4096        127.0.0.1:631           0.0.0.0:*
tcp        LISTEN     0            4096        127.0.0.53%lo:53        0.0.0.0:*
tcp        LISTEN     0            4096        127.0.0.54:53           0.0.0.0:*
tcp        LISTEN     0            4096        [::1]:631              [::]:*
rohithp@CertifiedLinuxBoy:~$ ss -tuln | awk '/LISTEN/ {print $5}' > open_ports.txt
rohithp@CertifiedLinuxBoy:~$
```

SECTION 4: Shell Scripting and Automation

```
rohithp@CertifiedLinuxBoy:~$  
rohithp@CertifiedLinuxBoy:~$ nano file_inspector.sh  
rohithp@CertifiedLinuxBoy:~$ chmod +x file_inspector.sh  
rohithp@CertifiedLinuxBoy:~$ ./file_inspector.sh  
Enter the name of the file: anewfile.txt  
File created.  
rohithp@CertifiedLinuxBoy:~$
```

```
GNU nano 7.2                                         file_inspector.sh *  
echo -n "Enter the name of the file: "  
read fname  
if [ -f "$fname" ]; then  
    echo "File found."  
else  
    echo "File created."  
    touch "$fname"  
fi  
  
echo "$(date) - Checked: $fname" >> inspector_log.txt
```

^G Help ^O Write Out ^W Where Is ^K Cut ^T Execute ^C Location M-U Undo
^X Exit ^R Read File ^\ Replace ^U Paste ^J Justify ^I Go To Line M-E Redo
M-A Set Mark M-G Copy M-Q To Bracket M-Q Pre
M-Q Where Was M-W Next

```
rohithp@CertifiedLinuxBoy:~$ nano resource_tracker.sh  
rohithp@CertifiedLinuxBoy:~$ chmod +x resource_tracker.sh  
rohithp@CertifiedLinuxBoy:~$ pwd  
/home/rohithp  
rohithp@CertifiedLinuxBoy:~$ crontab -e  
crontab: installing new crontab
```

```

GNU nano 7.2
/tmp/crontab.0

# Edit this file to introduce tasks to be run by cron.

#
# Each task to run has to be defined through a single line
# indicating with different fields when the task will be run
# and what command to run for the task
#
# To define the time you can provide concrete values for
# minute (m), hour (h), day of month (dom), month (mon),
# and day of week (dow) or use '*' in these fields (for 'any').
#
# Notice that tasks will be started based on the cron's system
# daemon's notion of time and timezones.
#
# Output of the crontab jobs (including errors) is sent through
# email to the user the crontab file belongs to (unless redirected).
#
# For example, you can run a backup of all your user accounts
# at 5 a.m every week with:
# 0 5 * * 1 tar -zcf /var/backups/home.tgz /home/
#
# For more information see the manual pages of crontab(5) and cron(8)
#
# m h dom mon dow   command
*/30 * * * * /home/rohit/resource_tracker.sh

```

SECTION 5: Software and Process Management

```

root@CertifiedLinuxBoy: ~
rohitp@CertifiedLinuxBoy:~$ sudo apt update
[sudo] password for rohitp:
Hit:1 http://security.ubuntu.com/ubuntu noble-security InRelease
Hit:2 http://archive.ubuntu.com/ubuntu noble InRelease
Get:3 http://archive.ubuntu.com/ubuntu noble-updates InRelease [126 kB]
Hit:4 http://archive.ubuntu.com/ubuntu noble-backports InRelease
Fetched 126 kB in 7s (18.4 kB/s)
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
195 packages can be upgraded. Run 'apt list --upgradable' to see them.
rohitp@CertifiedLinuxBoy:~$ sudo apt upgrade -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Calculating upgrade... Done
The following package was automatically installed and is no longer required:
 libllvm19
Use 'sudo apt autoremove' to remove it.
The following NEW packages will be installed:
 libllvm20 linux-headers-6.14.0-36-generic linux-hwe-6.14-headers-6.14.0-36 linux-hwe-6.14-tools-6.14.0-36 linux-image-6.14.0-36-generic linux-mod
The following packages will be upgraded:
 bind9-dnsutils bind9-host bind9-libs bluez bluez-cups bluez-obexd cloud-init coreutils cups cups-bsd cups-client cups-common cups-core-drivers cu
cups-filters-core-drivers cups-ipp-utils cups-ppdc cups-server-common dconf-cli dconf-gsettings-backend dconf-service distro-info-data dpkg firmw
ghostscript gir1.2-gdm-1.0 gir1.2-gtk-4.0 gir1.2-javascriptcoregtk-4.1 gir1.2-javascriptcoregtk-6.0 gir1.2-nm-1.0 gir1.2-packagekitlib-1.0 gir1.
gnome-control-center gnome-control-center-data gnome-control-center-faces gnome-remote-desktop gnome-shell gnome-shell-common gnome-shell-extensi
gstreamer1.0-alsa gstreamer1.0-glib gstreamer1.0-packagekit gstreamer1.0-plugins-base gstreamer1.0-plugins-base-apps gstreamer1.0-plugins-good gstr
libbluetooth3 libbc-bin libbc-dev-bin libbc-devtools libbc6 libbc6-dbg libbc6-dev libcupsc2t64 libcupsfilters2-common libcupsfilters2t64 libcupsimaged2t
libdrm-common libdrm-intel1 libdrm-nouveau2 libdrm-radeon1 libdrm2 libegl-mesa0 libfwupd2 libgbm1 libgl1-mesa-dri libglx-mesa0 libgs-com
libgstreamer-gl1.0-0 libgstreamer-plugins-base1.0-0 libgstreamer-plugins-good1.0-0 libgtk-4-1 libgtk-4-1 libgtk-4-common libgtk-4-media-gstrea
libipa-hbac@t64 libjavascriptcoregtk-4.1-0 libjavascriptcoregtk-6.0-1 libldb2 libmalcontent-0-0 libnautilus-extension4 libnm0 libnss-sss libnss-s
libpackagekit-glib2-18 libpam-modules-bin libpam-runtime libpam-sss libpam-systemd libpan0g libpoppler-cpp0t64 libpoppler-glib8t64
libpython3.12-minimal libpython3.12-stdlib libpython3.12t64 libsmclient0 libsqlite3-0 libssh-4 libssl3t64 libsss-certmap0 libsss-idmap0 libsss-r
libsystemd0 libtiff6 libudev1 libudisks2-0 libwebkit2gtk-4.1-0 libwebkitgtk-6.0-4 libwireplumber-0.4-0 libxatracker2 libxml2 linux-f
linux-headers-generic-hwe-24.04 linux-image-generic-hwe-24.04 linux-libc-dev linux-tools-common locales mesa-libgalium mesa-vulkan-drivers nauti
network-manager-config-connectivity-ubuntu openssh-client openssl openvpn packagekit packagekit-tools poppler-utils powermgmt-base python3 python
python3-software-properties python3-ssh python3.12 python3.12-minimal samba-libs snapd software-properties-common software-properties-gtk sssd ss
sssd-ipa sssd-krb5 sssd-krb5-common sssd-ldap sssd-proxy systemd systemd-dev systemd-hwe-hwdb systemd-oomd systemd-resolved systemd-sysv systemd-
ubuntu-drivers-common ubuntu-pro-client ubuntu-pro-client-l10n udev udisks2 vim-common vim-tiny wirelumbar wacomuplicant xdn_dbus-proxy_xcever

```

```

done
Processing triggers for libc-bin (2.39-0ubuntu8.6) ...
rohit@CertifiedLinuxBoy:~$ sudo apt install curl
[sudo] password for rohit:
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following package was automatically installed and is no longer required:
  liblvm19
Use 'sudo apt autoremove' to remove it.
The following NEW packages will be installed:
  curl
0 upgraded, 1 newly installed, 0 to remove and 0 not upgraded.
Need to get 226 kB of archives.
After this operation, 534 kB of additional disk space will be used.
Get:1 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 curl amd64 8.5.0-2ubuntu10.6 [226 kB]
Fetched 226 kB in 1s (159 kB/s)
Selecting previously unselected package curl.
(Reading database ... 189792 files and directories currently installed.)
Preparing to unpack .../curl_8.5.0-2ubuntu10.6_amd64.deb ...
Unpacking curl (8.5.0-2ubuntu10.6) ...
Setting up curl (8.5.0-2ubuntu10.6) ...
Processing triggers for man-db (2.12.0-4build2) ...
rohit@CertifiedLinuxBoy:~$ dpkg -l > pkg_list.txt
rohit@CertifiedLinuxBoy:~$ dpkg-query -Wf '${Installed-Size}\t${Package}\n' | sort -n | tail -5 > large_packages.txt
rohit@CertifiedLinuxBoy:~$ 

```

USER	PID	%CPU	%MEM	VSZ	RSS	TTY	STAT	START	TIME	COMMAND
root	1	0.1	0.1	23348	14564	?	Ss	17:58	0:12	/usr/lib/systemd/system --deserialize=80 splash
root	2	0.0	0.0	0	0	?	S	17:58	0:00	[kthreadd]
root	3	0.0	0.0	0	0	?	S	17:58	0:00	[pool_workqueue_release]
root	4	0.0	0.0	0	0	?	I<	17:58	0:00	[kworker/R-rcu_gp]
root	5	0.0	0.0	0	0	?	I<	17:58	0:00	[kworker/R-sync_wq]
root	6	0.0	0.0	0	0	?	I<	17:58	0:00	[kworker/R-kvfree_rcu_reclaim]
root	7	0.0	0.0	0	0	?	I<	17:58	0:00	[kworker/R-slub_flushwq]
root	8	0.0	0.0	0	0	?	I<	17:58	0:00	[kworker/R-netns]
root	10	0.0	0.0	0	0	?	I	17:58	0:00	[kworker/0:1-events]
root	11	0.0	0.0	0	0	?	I<	17:58	0:00	[kworker/0:0H-events_highpri]
root	13	0.0	0.0	0	0	?	I<	17:58	0:00	[kworker/R-mm_percpu_wq]
root	14	0.0	0.0	0	0	?	I	17:58	0:00	[rcu_tasks_kthread]
root	15	0.0	0.0	0	0	?	I	17:58	0:00	[rcu_tasks_rude_kthread]
root	16	0.0	0.0	0	0	?	I	17:58	0:00	[rcu_tasks_trace_kthread]
root	17	0.0	0.0	0	0	?	S	17:58	0:00	[ksoftirqd/0]
root	18	0.1	0.0	0	0	?	I	17:58	0:07	[rcu_preempt]
root	19	0.0	0.0	0	0	?	S	17:58	0:00	[rcu_exp_par_gp_kthread_worker/0]
root	20	0.0	0.0	0	0	?	S	17:58	0:00	[rcu_exp_gp_kthread_worker]
root	21	0.0	0.0	0	0	?	S	17:58	0:01	[migration/0]
root	22	0.0	0.0	0	0	?	S	17:58	0:00	[idle_inject/0]
root	23	0.0	0.0	0	0	?	S	17:58	0:00	[cpuhp/0]
root	24	0.0	0.0	0	0	?	S	17:58	0:00	[cpuhp/2]
root	25	0.0	0.0	0	0	?	S	17:58	0:00	[idle_inject/2]
root	26	0.0	0.0	0	0	?	S	17:58	0:01	[migration/2]
root	27	0.0	0.0	0	0	?	S	17:58	0:00	[ksoftirqd/2]
root	29	0.0	0.0	0	0	?	I<	17:58	0:00	[kworker/2:0H-events_highpri]
root	30	0.0	0.0	0	0	?	S	17:58	0:00	[cpuhp/4]
root	31	0.0	0.0	0	0	?	S	17:58	0:00	[idle_inject/4]
root	32	0.0	0.0	0	0	?	S	17:58	0:00	[migration/4]
root	33	0.0	0.0	0	0	?	S	17:58	0:00	[ksoftirqd/4]
root	35	0.0	0.0	0	0	?	I<	17:58	0:00	[kworker/4:0H-events_highpri]
root	36	0.0	0.0	0	0	?	S	17:58	0:00	[cpuhp/6]
root	37	0.0	0.0	0	0	?	S	17:58	0:00	[idle_inject/6]
root	38	0.0	0.0	0	0	?	S	17:58	0:01	[migration/6]
root	39	0.0	0.0	0	0	?	S	17:58	0:00	[ksoftirqd/6]
root	41	0.0	0.0	0	0	?	I<	17:58	0:00	[kworker/6:0H-events_highpri]
root	42	0.0	0.0	0	0	?	S	17:58	0:00	[cpuhp/8]
root	43	0.0	0.0	0	0	?	S	17:58	0:00	[idle_inject/8]
root	44	0.0	0.0	0	0	?	S	17:58	0:01	[migration/8]

```

rohitp@CertifiedLinuxBoy:~$ top -b -n1 | head
rohitp@CertifiedLinuxBoy:~$ top -b -n1 | head
top - 19:52:20 up 1:54, 1 user, load average: 0.76, 0.90, 0.81
Tasks: 399 total, 1 running, 398 sleeping, 0 stopped, 0 zombie
%CPU(s): 0.0 us, 0.6 sy, 0.0 ni, 99.4 id, 0.0 wa, 0.0 hi, 0.0 si, 0.0 st
MiB Mem : 13825.1 total, 3451.9 free, 3976.1 used, 6051.5 buff/cache
MiB Swap: 4096.0 total, 4096.0 free, 0.0 used. 9849.0 avail Mem

      PID USER      PR  NI    VIRT    RES    SHR S %CPU %MEM     TIME+ COMMAND
  33150 rohitp    20   0  14500  5480  3432 R  9.1  0.0  0:00.01 top
    1 root      20   0  23348 14564  9700 S  0.0  0.1  0:12.58 systemd
    2 root      20   0      0      0      0 S  0.0  0.0  0:00.01 kthreadd
rohitp@CertifiedLinuxBoy:~$ kill -STOP 32694
bash: kill: (32694) - Operation not permitted
rohitp@CertifiedLinuxBoy:~$ kill -CONT 32694
bash: kill: (32694) - Operation not permitted
rohitp@CertifiedLinuxBoy:~$ 

```

```

rohitp@CertifiedLinuxBoy:~$ sudo systemctl status ssh
● ssh.service - OpenBSD Secure Shell server
  Loaded: loaded (/usr/lib/systemd/system/ssh.service; enabled; preset: enabled)
  Active: active (running) since Thu 2025-11-27 19:54:55 IST; 13s ago
TriggeredBy: ● ssh.socket
  Docs: man:sshd(8)
        man:sshd_config(5)
  Process: 34234 ExecStartPre=/usr/sbin/sshd -t (code=exited, status=0/SUCCESS)
 Main PID: 34236 (sshd)
  Tasks: 1 (limit: 16348)
    Memory: 1.2M (peak: 2.1M)
       CPU: 16ms
      CGroup: /system.slice/ssh.service
           └─34236 "sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups"

Nov 27 19:54:55 CertifiedLinuxBoy systemd[1]: Starting ssh.service - OpenBSD Secure Shell server...
Nov 27 19:54:55 CertifiedLinuxBoy sshd[34236]: Server listening on 0.0.0.0 port 22.
Nov 27 19:54:55 CertifiedLinuxBoy sshd[34236]: Server listening on :: port 22.
Nov 27 19:54:55 CertifiedLinuxBoy systemd[1]: Started ssh.service - OpenBSD Secure Shell server.
rohitp@CertifiedLinuxBoy:~$ sudo systemctl restart ssh
rohitp@CertifiedLinuxBoy:~$ nano autorestart.sh
rohitp@CertifiedLinuxBoy:~$ 

```

```

GNU nano 7.2
SV=ssh
if ! systemctl is-active --quiet $SV; then
    systemctl restart $SV
fi

```

SECTION 6: Web Hosting and Security

```
rohitp@CertifiedLinuxBoy:~$ sudo apt install apache2
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following package was automatically installed and is no longer required:
  libllvm19
Use 'sudo apt autoremove' to remove it.
The following additional packages will be installed:
  apache2-bin apache2-data apache2-utils libapr1t64 libaprutil1-dbd-sqlite3 libaprutil1-ldap libaprutil1t64
Suggested packages:
  apache2-doc apache2-suexec-pristine | apache2-suexec-custom
The following NEW packages will be installed:
  apache2 apache2-bin apache2-data apache2-utils libapr1t64 libaprutil1-dbd-sqlite3 libaprutil1-ldap libaprutil1t64
Upgraded, 8 newly installed, 0 to remove and 0 not upgraded.
Need to get 1,902 kB of archives.
After this operation, 7,451 kB of additional disk space will be used.
Do you want to continue? [Y/n] Y
Get:1 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 libapr1t64 amd64 1.7.2-3.1ubuntu0.1 [108 kB]
Get:2 http://archive.ubuntu.com/ubuntu noble/main amd64 libaprutil1t64 amd64 1.6.3-1.1ubuntu7 [91.9 kB]
Get:3 http://archive.ubuntu.com/ubuntu noble/main amd64 libaprutil1-dbd-sqlite3 amd64 1.6.3-1.1ubuntu7 [11.2 kB]
Get:4 http://archive.ubuntu.com/ubuntu noble/main amd64 libaprutil1-ldap amd64 1.6.3-1.1ubuntu7 [9,116 B]
Get:5 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 apache2-bin amd64 2.4.58-1ubuntu8.8 [1,331 kB]
Fetched 1,331 kB in 1s (1,331 kB/s)
Enabling module authn_core.
Enabling module auth_basic.
Enabling module access_compat.
Enabling module authn_file.
Enabling module authz_user.
Enabling module alias.
Enabling module dir.
Enabling module autoindex.
Enabling module env.
Enabling module mime.
Enabling module negotiation.
Enabling module setenvif.
Enabling module filter.
Enabling module deflate.
Enabling module status.
Enabling module reqtimeout.
Enabling conf charset.
Enabling conf localized-error-pages.
Enabling conf other-vhosts-access-log.
Enabling conf security.
Enabling conf serve-cgi-bin.
Enabling site 000-default.
Created symlink /etc/systemd/system/multi-user.target.wants/apache2.service → /usr/lib/systemd/system/apache2.service.
Created symlink /etc/systemd/system/multi-user.target.wants/apache-htcacheload.service → /usr/lib/systemd/system/apache-htcacheload.service.
Processing triggers for ufw (0.36.2-6) ...
Processing triggers for man-db (2.12.0-4build2) ...
Processing triggers for libc-bin (2.39-0ubuntu8.6) ...
rohitp@CertifiedLinuxBoy: $ sudo systemctl enable --now apache2
Synchronizing state of apache2.service with SysV service script with /usr/lib/systemd/systemd-sysv-install.
Executing: /usr/lib/systemd/systemd-sysv-install enable apache2
rohitp@CertifiedLinuxBoy: $ echo "<h1>This is a message </h1>" | sudo tee /var/www/html/index.html
[sudo] password for rohitp:
<h1>This is a message </h1>
rohitp@CertifiedLinuxBoy: $ sudo ufw allow 80/tcp
Rules updated
Rules updated (v6)
rohitp@CertifiedLinuxBoy: $ sudo ufw allow 22/tcp
Rules updated
Rules updated (v6)
rohitp@CertifiedLinuxBoy: $ sudo ufw enable
Firewall is active and enabled on system startup
rohitp@CertifiedLinuxBoy: $
```

SECTION 7: Backup and Recovery

```
rohithp@CertifiedLinuxBoy:~$ mkdir -p ~/Backups
rohithp@CertifiedLinuxBoy:~$ nano daily_backup.sh
rohithp@CertifiedLinuxBoy:~$ chmod +x daily_backup.sh
rohithp@CertifiedLinuxBoy:~$ ./daily_backup.sh
tar: Removing leading '/' from member names
tar: Removing leading '/' from hard link targets
rohithp@CertifiedLinuxBoy:~$ find ~/Backups/ -mtime +10 -type f -delete
rohithp@CertifiedLinuxBoy:~$ 
rohithp@CertifiedLinuxBoy:~$ 
rohithp@CertifiedLinuxBoy:~$ 
rohithp@CertifiedLinuxBoy:~$ 
rohithp@CertifiedLinuxBoy:~$ 
```

```
GNU nano 7.2
NOW=$(date +"%Y%m%d_%H%M")
FILE="backup_$NOW.tar.gz"

tar -czf ~/Backups/$FILE ~/SysOpsLab/
```

SECTION 8: Text Processing & File Manipulation

```
rohithp@CertifiedLinuxBoy:~$ touch myfile.txt
rohithp@CertifiedLinuxBoy:~$ nano myfile.txt
rohithp@CertifiedLinuxBoy:~$ sudo grep "hello" *.txt
myfile.txt:hello
myfile.txt:hello
myfile.txt:hello
myfile.txt:hello
rohithp@CertifiedLinuxBoy:~$ sed -i 's/hello/neword/g' myfile.txt
```

The text file before:

```
GNU nano 7.2                                     textfile.txt
hello
hi
how are you
hello
hello
hi
hello
hi
```

The text file after:

```
GNU nano 7.2                                     textfile.txt *
neword
hi
how are you
neword
neword
hi
neword
hi
```

```
rohithp@CertifiedLinuxBoy:~$ awk '{print $2}' textfile.txt
```

```
are
```

```
rohithp@CertifiedLinuxBoy:~$ tr ' ' '\n' < textfile.txt | sort | uniq -c
```

```
1
1 are
3 hi
1 how
4 neword
1 you
```