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# DEVOPS

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Lab Assignment 2

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## Lab 02

### 🔑 General & File Operations

- `pwd` → Show current directory.
- `ls` → List files and folders.
- `cd` → Change directory.
- `mkdir` → Create a directory.
- `touch file.txt` → Create an empty file.
- `cp src dest` → Copy files/folders.
- `mv old new` → Move or rename files.
- `rm file.txt` → Delete a file.
- `rm -rf folder` → Delete a folder recursively.
- `cat file.txt` → Show file contents.
- `echo "text" >> file.txt` → Append text to a file.
- `head/tail file.txt` → Show first/last lines of file.
- `nano file.txt / vim file.txt` → Edit file.
- `sed -i 's/old/new/g' file.txt` → Replace text in file.

```
phoenix@DESKTOP-SQ9G92V: ~/Desktop
phoenix@DESKTOP-SQ9G92V:~$ ls -l
total 12
drwxr-xr-x 3 phoenix phoenix 4096 Sep  8 20:40 Desktop
-rw-r--r-- 1 phoenix phoenix 2908 Sep 10 10:43 history.txt
-rwxr-xr-x 1 phoenix phoenix 768 Sep 10 11:00 share_history.sh
-rw-r--r-- 1 phoenix phoenix  0 Sep  4 16:00 task
phoenix@DESKTOP-SQ9G92V:~$ mkdir devops_project && cd Desktop
phoenix@DESKTOP-SQ9G92V:~/Desktop$ ls
directory directory.sh system.sh task.sh user user.sh user.sh.save
phoenix@DESKTOP-SQ9G92V:~/Desktop$ cd
phoenix@DESKTOP-SQ9G92V:~$ ls
Desktop devops_project history.txt share_history.sh task
phoenix@DESKTOP-SQ9G92V:~$ mkdir devops_project && cd devops_project
mkdir: cannot create directory 'devops_project': File exists
phoenix@DESKTOP-SQ9G92V:~$ cd Desktop
phoenix@DESKTOP-SQ9G92V:~/Desktop$ touch app.py README.md
phoenix@DESKTOP-SQ9G92V:~/Desktop$ echo "this is Devops project" > notes.txt
phoenix@DESKTOP-SQ9G92V:~/Desktop$ cp README.md back_upREADME.md
phoenix@DESKTOP-SQ9G92V:~/Desktop$ mv notes.txt docs.txt
phoenix@DESKTOP-SQ9G92V:~/Desktop$ cat docs.txt
this is Devops project
phoenix@DESKTOP-SQ9G92V:~/Desktop$ head -n 3 docs.txt
this is Devops project
this is Devops project
this is Devops project
phoenix@DESKTOP-SQ9G92V:~/Desktop$ tail -n 1 docs.txt
this is Devops project
phoenix@DESKTOP-SQ9G92V:~/Desktop$ nano docs.txt
phoenix@DESKTOP-SQ9G92V:~/Desktop$ sed -i 's/Devops/linux Devops/g' docs.txt
phoenix@DESKTOP-SQ9G92V:~/Desktop$ cat docs.txt
we have wide
range
of course\outline
this is linux Devops project
phoenix@DESKTOP-SQ9G92V:~/Desktop$ rm backup_README.md
rm: cannot remove 'backup_README.md': No such file or directory
phoenix@DESKTOP-SQ9G92V:~/Desktop$ ls
README.md app.py back_upREADME.md directory directory.sh docs.txt system.sh task.sh user user.sh user.sh.save
phoenix@DESKTOP-SQ9G92V:~/Desktop$ rm back_upREADME.md
phoenix@DESKTOP-SQ9G92V:~/Desktop$ rm -f temp_folder
phoenix@DESKTOP-SQ9G92V:~/Desktop$ ls
README.md app.py directory directory.sh docs.txt system.sh task.sh user user.sh user.sh.save
phoenix@DESKTOP-SQ9G92V:~/Desktop$
```

### 👤 User & Permission Management

- `adduser user` → Add a new user.

- `deluser user / userdel -r user` → Delete a user.
- `passwd user` → Set/change user password.
- `usermod -aG group user` → Add user to a group.
- `groupadd group` → Create a group.
- `gpasswd -d user group` → Remove user from group.
- `usermod -L user / usermod -U user` → Lock/unlock account.
- `usermod -s /usr/sbin/nologin user` → Disable login shell.
- `chmod 755 file` → Change file permissions.
- `chown user:group file` → Change file ownership.
- `sudo usermod -s /usr/sbin/nologin devuser`
- `ls -l` → View file permissions.

```

phoenix@DESKTOP-SQ9G92V: ~/Desktop
phoenix@DESKTOP-SQ9G92V:~/Desktop$ sudo adduser devuser
[sudo] password for phoenix:
info: Adding user 'devuser' ...
info: Selecting UID/GID from range 1000 to 59999 ...
info: Adding new group 'devuser' (1002) ...
info: Adding new user 'devuser' (1002) with group 'devuser' (1002) ...
info: Creating home directory '/home/devuser' ...
info: Copying files from '/etc/skel' ...
New password:
Retype new password:
passwd: password updated successfully
Changing the user information for devuser
Enter the new value, or press ENTER for the default
    Full Name []: User
    Room Number []: 1
    Work Phone []: 1
    Home Phone []:
    1 Other []: 2
Is the information correct? [Y/n] y
info: Adding new user 'devuser' to supplemental / extra groups 'users' ...
info: Adding user 'devuser' to group 'users' ...
phoenix@DESKTOP-SQ9G92V:~/Desktop$ sudo passwd devuser
New password:
Retype new password:
passwd: password updated successfully
phoenix@DESKTOP-SQ9G92V:~/Desktop$ sudo groupadd devops
phoenix@DESKTOP-SQ9G92V:~/Desktop$ user usermod -aG devops devuser
Command 'user' not found, did you mean:
  command 'iuser' from deb ipmitool (3.1.9-3)
  command 'userv' from deb userv (1.2.1-beta4)
  command 'fuser' from deb psmisc (23.6-1)
  command 'users' from deb coreutils (9.4-2ubuntu2)
Try: sudo apt install <deb name>
phoenix@DESKTOP-SQ9G92V:~/Desktop$ sudo usermod -aG devops devuser
usermod: homedir must be an absolute path
phoenix@DESKTOP-SQ9G92V:~/Desktop$ ls
README.md  app.py  directory  directory.sh  docs.txt  system.sh  task.sh  user  user.sh  user.sh.save
phoenix@DESKTOP-SQ9G92V:~/Desktop$ ls -l
total 16
-rw-r--r-- 1 phoenix phoenix  0 Sep 14 22:31 README.md
-rw-r--r-- 1 phoenix phoenix  0 Sep 14 22:31 app.py

```

```

phoenix@DESKTOP-SQ9G92V: ~/Desktop
-rw-r--r-- 1 phoenix phoenix  68 Sep 14 22:35 docs.txt
-rwxr-xr-x 1 phoenix phoenix  0 Sep  8 15:59 system.sh
-rwxrwxrwx 1 phoenix phoenix 76 Sep  4 16:20 task.sh
-rw-r--r-- 1 phoenix phoenix  0 Sep  8 19:06 user
-rwxr-xr-x 1 phoenix phoenix  0 Sep  8 15:59 user.sh
-rwxr-xr-x 1 phoenix phoenix 38 Sep  8 16:12 user.sh.save
phoenix@DESKTOP-SQ9G92V:~/Desktop$ sudo usermod -L devuser
phoenix@DESKTOP-SQ9G92V:~/Desktop$ ls -l
total 16
-rw-r--r-- 1 phoenix phoenix  0 Sep 14 22:31 README.md
-rwxr-xr-x 1 devuser devops  0 Sep 14 22:31 app.py
drwxr-xr-x 2 phoenix phoenix 4096 Sep  8 19:09 directory
-rwxr-xr-x 1 phoenix phoenix  0 Sep  8 15:59 directory.sh
-rw-r--r-- 1 phoenix phoenix  68 Sep 14 22:35 docs.txt
-rwxr-xr-x 1 phoenix phoenix  0 Sep  8 15:59 system.sh
-rwxrwxrwx 1 phoenix phoenix 76 Sep  4 16:20 task.sh
-rw-r--r-- 1 phoenix phoenix  0 Sep  8 19:06 user
-rwxr-xr-x 1 phoenix phoenix  0 Sep  8 15:59 user.sh
-rwxr-xr-x 1 phoenix phoenix 38 Sep  8 16:12 user.sh.save
phoenix@DESKTOP-SQ9G92V:~/Desktop$ sudo usermod -s /usr/sbin/nologin devuser
phoenix@DESKTOP-SQ9G92V:~/Desktop$

```

## 🔧 Process Management

- `ps -ef` → List all processes.
- `top / htop` → Monitor running processes.
- `pgrep nginx` → Get PID of a process.
- `pstree` → Show process hierarchy.
- `kill <PID>` → Kill process by ID.
- `pkill name` → Kill process by name.
- `killall name` → Kill all processes with same name.
- `jobs` → List background jobs.
- `fg %1 / bg %1` → Bring job to foreground/background.
- `nohup ./script.sh &` → Run process that survives logout.
- `nice -n 10 ./script.sh` → Run with lower priority.
- `renice -n 5 -p <PID>` → Change running process priority.
- `lsof` → List open files.
- `strace -p <PID>` → Trace system calls.

```
phoenix@DESKTOP-SQ9G92V: ~/Desktop
514 phoenix  20  0 20104 11008 9216 S  0.0  0.3  0:00.27 systemd
phoenix@DESKTOP-SQ9G92V:~/Desktop$ http
phoenix@DESKTOP-SQ9G92V:~/Desktop$ pstree
systemd--2*[agetty]
          |--2*[apache2--26*[{apache2}]]
          |--cron
          |--dbus-daemon
          |--init-systemd(Ub)
          |   |--SessionLeader--Relay(465)--bash--pstree
          |   |--init--{init}
          |   |--login--bash
          |   |--{init-systemd(Ub)}
          |--rsyslogd--3*[{rsyslogd}]
          |--systemd--(sd-pam)
          |--systemd-journal
          |--systemd-logind
          |--systemd-resolve
          |--systemd-timesyn--{systemd-timesyn}
          |--systemd-udev
          |--unattended-upgr--{unattended-upgr}
          |--wsl-pro-service--7*[{wsl-pro-service}]
phoenix@DESKTOP-SQ9G92V:~/Desktop$ pkill -f app.py
phoenix@DESKTOP-SQ9G92V:~/Desktop$ nice -n 10 ./app.py
nice: './app.py': No such file or directory
phoenix@DESKTOP-SQ9G92V:~/Desktop$ nice -n 10 ./app.py
phoenix@DESKTOP-SQ9G92V:~/Desktop$ renice -n 5 -p <PID>
-bash: syntax error near unexpected token `newline'
phoenix@DESKTOP-SQ9G92V:~/Desktop$ lsof -p <PID>
-bash: syntax error near unexpected token `newline'
phoenix@DESKTOP-SQ9G92V:~/Desktop$ strace -p <PID>
-bash: syntax error near unexpected token `824'
phoenix@DESKTOP-SQ9G92V:~/Desktop$
```

```
phoenix@DESKTOP-SQ9G92V: ~/Desktop
phoenix@DESKTOP-SQ9G92V:~/Desktop$ nohup ./app.py
nohup: ignoring input and appending output to 'nohup.out'
phoenix@DESKTOP-SQ9G92V:~/Desktop$ nohup ./app.py &
[1] 824
phoenix@DESKTOP-SQ9G92V:~/Desktop$ nohup: ignoring input and appending output to 'nohup.out'
ps -ef | grep app.py
phoenix      826      465    0 22:48 pts/0    00:00:00 grep --color=auto app.py
[1]+  Done                  nohup ./app.py
phoenix@DESKTOP-SQ9G92V:~/Desktop$ top
top - 22:49:16 up 22 min,  1 user,  load average: 0.00, 0.00, 0.00
tasks: 26 total,  1 running, 25 sleeping,  0 stopped,  0 zombie
%Cpu(s):  0.0 us,  0.2 sy,  0.0 ni, 99.8 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
MiB Mem : 3835.2 total, 3366.1 free,  470.5 used,  133.2 buff/cache
MiB Swap: 1024.0 total, 1024.0 free,  0.0 used. 3364.7 avail Mem

  PID USER      PR  NI   VIRT   RES   SHR  S  %CPU  %MEM     TIME+ COMMAND
    1 root        20   0   21688  12544  9344  S   0.0   0.3   0:02.23 systemd
    2 root        20   0    3072   1664   1664  S   0.0   0.0   0:00.03 init-systemd(Ub
    7 root        20   0    3088   1852   1792  S   0.0   0.0   0:00.00 init
   65 root        19  -1   66748  15588  14564  S   0.0   0.4   0:00.93 systemd-journal
  110 root        20   0   25136   6016   4864  S   0.0   0.2   0:00.37 systemd-udev
  166 systemd+    20   0   21452  12800  10624  S   0.0   0.3   0:00.33 systemd-resolve
  167 systemd+    20   0   91020   7680   6912  S   0.0   0.2   0:00.32 systemd-timesyn
  180 root        20   0    4236   2560   2432  S   0.0   0.1   0:00.05 cron
  181 message+    20   0    9624   4736   4352  S   0.0   0.1   0:00.33 dbus-daemon
  217 root        20   0   17960   8448   7552  S   0.0   0.2   0:00.26 systemd-logind
  226 root        20   0  1755840  12800  10880  S   0.0   0.3   0:00.34 wsl-pro-service
  228 syslog      20   0   22508   5504   4352  S   0.0   0.1   0:00.23 rsyslogd
```

## Package Management

### Debian/Ubuntu

- `sudo apt update` → Update package index.
- `sudo apt upgrade` → Upgrade all packages.
- `sudo apt install pkg` → Install package.
- `sudo apt remove pkg` → Remove package.
- `apt search name` → Search for package.
- `dpkg -i file.deb` → Install .deb file.

### Universal

- `snap install app / snap remove app` → Manage snap apps.
- `flatpak install app` → Install flatpak package

```
phoenix@DESKTOP-SQ9G92V: ~
218 clear
219 nohup ./app.py
220 nohup ./app.py &
221 ps -ef | grep app.py
222 top
223 htop
224 pstree
225 pkill -f app.py
226 nice -n 10 ./app.py
227 nice -n 10 ./app.py
228 renice -n 5 -p <PID>
229 lsof -p <PID>
230 strace -p <824>
231 clear
232 ls
233 cl
234 claer
235 clear
236 sudo apt update
237 sudo apt update -y
238 sudo apt install nginx git htop -y
239 sudo yum install nginx git -y
240 sudo install nginx git -y
241 cat history
242 cat history.txt
243 ls
244 cd
245 cat history.txt
246 history
```

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## ⌘ Service Management (systemd)

- `systemctl start service` → Start a service.
- `systemctl stop service` → Stop a service.
- `systemctl restart service` → Restart service.
- `systemctl reload service` → Reload config without restart.
- `systemctl status service` → Check service status.
- `systemctl enable service` → Enable service at boot.
- `systemctl disable service` → Disable service at boot.
- `journalctl -u service` → View service logs.

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## 🌐 Network Management

- `ip a / ifconfig` → Show network interfaces.
- `ip route` → Show routing table.
- `hostname -I` → Show IP addresses.
- `ping host` → Test connectivity.
- `traceroute host` → Show path to host.
- `dig host / nslookup host` → DNS lookup.
- `curl url / wget url` → Test HTTP request.

- `ss -tln / netstat -tlnp` → Show listening ports.

```
phoenix@DESKTOP-SQ9G92V: ~
phoenix@DESKTOP-SQ9G92V:~$ sudo systemctl start nginx
Job for nginx.service failed because the control process exited with error code.
See "systemctl status nginx.service" and "journalctl -xeu nginx.service" for details.
phoenix@DESKTOP-SQ9G92V:~$ sudo systemctl enable nginx
Synchronizing state of nginx.service with SysV service script with /usr/lib/systemd/systemd-sysv-install.
Executing: /usr/lib/systemd/systemd-sysv-install enable nginx
phoenix@DESKTOP-SQ9G92V:~$ sudo systemctl start nginx
Job for nginx.service failed because the control process exited with error code.
See "systemctl status nginx.service" and "journalctl -xeu nginx.service" for details.
phoenix@DESKTOP-SQ9G92V:~$ sudo systemctl start nginx.service
Job for nginx.service failed because the control process exited with error code.
See "systemctl status nginx.service" and "journalctl -xeu nginx.service" for details.
phoenix@DESKTOP-SQ9G92V:~$ sudo systemctl status nginx.service
* nginx.service - A high performance web server and a reverse proxy server
   Loaded: loaded (/usr/lib/systemd/system/nginx.service; enabled; preset: enabled)
   Active: failed (Result: exit-code) since Sun 2025-09-14 23:06:49 PKT; 20s ago
     Docs: man:nginx(8)
  Process: 1786 ExecStartPre=/usr/sbin/nginx -t -q -g daemon on; master_process on; (code=exited, status=0/SUCCESS)
  Process: 1787 ExecStart=/usr/sbin/nginx -g daemon on; master_process on; (code=exited, status=1/FAILURE)
    CPU: 72ms

Sep 14 23:06:48 DESKTOP-SQ9G92V nginx[1787]: nginx: [emerg] bind() to 0.0.0.0:80 failed (98: Address already in use)
Sep 14 23:06:48 DESKTOP-SQ9G92V nginx[1787]: nginx: [emerg] bind() to [::]:80 failed (98: Address already in use)
Sep 14 23:06:48 DESKTOP-SQ9G92V nginx[1787]: nginx: [emerg] bind() to 0.0.0.0:80 failed (98: Address already in use)
Sep 14 23:06:48 DESKTOP-SQ9G92V nginx[1787]: nginx: [emerg] bind() to [::]:80 failed (98: Address already in use)
Sep 14 23:06:49 DESKTOP-SQ9G92V nginx[1787]: nginx: [emerg] bind() to 0.0.0.0:80 failed (98: Address already in use)
Sep 14 23:06:49 DESKTOP-SQ9G92V nginx[1787]: nginx: [emerg] bind() to [::]:80 failed (98: Address already in use)
Sep 14 23:06:49 DESKTOP-SQ9G92V nginx[1787]: nginx: [emerg] still could not bind()
Sep 14 23:06:49 DESKTOP-SQ9G92V systemd[1]: nginx.service: Control process exited, code=exited, status=1/FAILURE
Sep 14 23:06:49 DESKTOP-SQ9G92V systemd[1]: nginx.service: Failed with result 'exit-code'.
Sep 14 23:06:49 DESKTOP-SQ9G92V systemd[1]: Failed to start nginx.service - A high performance web server and a reverse proxy server.
phoenix@DESKTOP-SQ9G92V:~$ 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
        valid_lft forever preferred_lft forever
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc mq state UP group default qlen 1000
    link/ether 00:15:5d:e6:59:05 brd ff:ff:ff:ff:ff:ff
    inet 172.17.89.143/20 brd 172.17.95.255 scope global eth0
        valid_lft forever preferred_lft forever
```

- `nmap host` → Scan open ports.
- `scp file user@host:/path` → Copy file to remote server.
- `rsync -av src/ user@host:dest/` → Sync directories.
- `ssh user@host` → Remote login.
- `ufw allow 22 / firewall-cmd --add-port=8080/tcp` → Open firewall ports.

```
phoenix@DESKTOP-SQ9G92V: ~
phoenix@DESKTOP-SQ9G92V:~$ ip route
default via 172.17.80.1 dev eth0 proto kernel
172.17.80.0/20 dev eth0 proto kernel scope link src 172.17.89.143
phoenix@DESKTOP-SQ9G92V:~$ ping google.com
PING google.com (142.251.37.206) 56(84) bytes of data:
64 bytes from mrs89s15-in-f14.1e100.net (142.251.37.206): icmp_seq=1 ttl=112 time=130 ms
64 bytes from mrs89s15-in-f14.1e100.net (142.251.37.206): icmp_seq=2 ttl=112 time=130 ms
64 bytes from mrs89s15-in-f14.1e100.net (142.251.37.206): icmp_seq=3 ttl=112 time=131 ms
64 bytes from mrs89s15-in-f14.1e100.net (142.251.37.206): icmp_seq=4 ttl=112 time=220 ms
64 bytes from mrs89s15-in-f14.1e100.net (142.251.37.206): icmp_seq=5 ttl=112 time=130 ms
64 bytes from mrs89s15-in-f14.1e100.net (142.251.37.206): icmp_seq=6 ttl=112 time=130 ms
64 bytes from mrs89s15-in-f14.1e100.net (142.251.37.206): icmp_seq=7 ttl=112 time=130 ms
64 bytes from mrs89s15-in-f14.1e100.net (142.251.37.206): icmp_seq=8 ttl=112 time=129 ms

64 bytes from mrs89s15-in-f14.1e100.net (142.251.37.206): icmp_seq=9 ttl=112 time=131 ms
64 bytes from mrs89s15-in-f14.1e100.net (142.251.37.206): icmp_seq=10 ttl=112 time=130 ms
64 bytes from mrs89s15-in-f14.1e100.net (142.251.37.206): icmp_seq=11 ttl=112 time=183 ms
64 bytes from mrs89s15-in-f14.1e100.net (142.251.37.206): icmp_seq=12 ttl=112 time=131 ms
64 bytes from mrs89s15-in-f14.1e100.net (142.251.37.206): icmp_seq=13 ttl=112 time=132 ms
^C
--- google.com ping statistics ---
13 packets transmitted, 13 received, 0% packet loss, time 11997ms
rtt min/avg/max/mdev = 129.488/141.441/219.741/26.607 ms
phoenix@DESKTOP-SQ9G92V:~$ traceroute google.com
Command 'traceroute' not found, but can be installed with:
sudo apt install inetutils-traceroute # version 2:2.4-3ubuntu1, or
sudo apt install traceroute # version 1:2.1.5-1
phoenix@DESKTOP-SQ9G92V:~$ traceroute google.com
Command 'traceroute' not found, but can be installed with:
sudo apt install inetutils-traceroute # version 2:2.4-3ubuntu1, or
sudo apt install traceroute # version 1:2.1.5-1
phoenix@DESKTOP-SQ9G92V:~$ traceroute google.com
Command 'traceroute' not found, but can be installed with:
sudo apt install inetutils-traceroute # version 2:2.4-3ubuntu1, or
sudo apt install traceroute # version 1:2.1.5-1
phoenix@DESKTOP-SQ9G92V:~$ sudo apt install traceroute
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following NEW packages will be installed:
  traceroute
```



```
phoenix@DESKTOP-SQ9G92V: ~  
Command 'traceroute' not found, but can be installed with:  
sudo apt install inetutils-traceroute # version 2:2.4-3ubuntu1, or  
sudo apt install traceroute # version 1:2.1.5-1  
phoenix@DESKTOP-SQ9G92V:~$ sudo apt install traceroute  
Reading package lists... Done  
Building dependency tree... Done  
Reading state information... Done  
The following NEW packages will be installed:  
  traceroute  
0 upgraded, 1 newly installed, 0 to remove and 186 not upgraded.  
Need to get 60.5 kB of archives.  
After this operation, 162 kB of additional disk space will be used.  
Get:1 http://archive.ubuntu.com/ubuntu noble/universe amd64 traceroute amd64 1:2.1.5-1 [60.5 kB]  
Fetched 60.5 kB in 1s (50.4 kB/s)  
Selecting previously unselected package traceroute.  
(Reading database ... 41770 files and directories currently installed.)  
Preparing to unpack .../traceroute_1x3a2.1.5-1_amd64.deb ...  
Unpacking traceroute (1:2.1.5-1) ...  
Setting up traceroute (1:2.1.5-1) ...  
update-alternatives: using /usr/bin/traceroute.db to provide /usr/bin/traceroute (traceroute) in auto mode  
update-alternatives: using /usr/bin/traceroute6.db to provide /usr/bin/traceroute6 (traceroute6) in auto mode  
update-alternatives: using /usr/bin/lft.db to provide /usr/bin/lft (lft) in auto mode  
update-alternatives: using /usr/bin/traceproto.db to provide /usr/bin/traceproto (traceproto) in auto mode  
update-alternatives: using /usr/sbin/tcptraceroute.db to provide /usr/sbin/tcptraceroute (tcptraceroute) in auto mode  
Processing triggers for man-db (2.12.0-4build2) ...  
phoenix@DESKTOP-SQ9G92V:~$ traceroute google.com  
traceroute to google.com (142.251.37.206), 30 hops max, 60 byte packets  
 1  DESKTOP-SQ9G92V.ms.home.net (172.17.80.1)  3.494 ms  2.557 ms  2.488 ms  
 2  192.168.0.1 (192.168.0.1)  5.033 ms  5.690 ms  5.038 ms  
 3  * * *  
 4  * * *  
 5  * * *  
 6  * * *  
 7  * * *  
 8  * * *  
 9  * * *  
10  * * *  
11  * * *  
12  * * *  
13  * * *  
phoenix@DESKTOP-SQ9G92V:~$
```

```
phoenix@DESKTOP-SQ9G92V:~$ ip route  
default via 172.17.80.1 dev eth0 proto kernel  
172.17.80.0/20 dev eth0 proto kernel scope link src 172.17.89.143  
phoenix@DESKTOP-SQ9G92V:~$ ping google.com  
PING google.com (142.251.37.206) 56(84) bytes of data:  
64 bytes from mrs89s15-in-f14.1e100.net (142.251.37.206): icmp_seq=1 ttl=112 time=130 ms  
64 bytes from mrs89s15-in-f14.1e100.net (142.251.37.206): icmp_seq=2 ttl=112 time=130 ms  
64 bytes from mrs89s15-in-f14.1e100.net (142.251.37.206): icmp_seq=3 ttl=112 time=131 ms  
64 bytes from mrs89s15-in-f14.1e100.net (142.251.37.206): icmp_seq=4 ttl=112 time=220 ms  
64 bytes from mrs89s15-in-f14.1e100.net (142.251.37.206): icmp_seq=5 ttl=112 time=130 ms  
64 bytes from mrs89s15-in-f14.1e100.net (142.251.37.206): icmp_seq=6 ttl=112 time=130 ms  
64 bytes from mrs89s15-in-f14.1e100.net (142.251.37.206): icmp_seq=7 ttl=112 time=130 ms  
64 bytes from mrs89s15-in-f14.1e100.net (142.251.37.206): icmp_seq=8 ttl=112 time=129 ms  
  
64 bytes from mrs89s15-in-f14.1e100.net (142.251.37.206): icmp_seq=9 ttl=112 time=131 ms  
64 bytes from mrs89s15-in-f14.1e100.net (142.251.37.206): icmp_seq=10 ttl=112 time=130 ms  
64 bytes from mrs89s15-in-f14.1e100.net (142.251.37.206): icmp_seq=11 ttl=112 time=183 ms  
64 bytes from mrs89s15-in-f14.1e100.net (142.251.37.206): icmp_seq=12 ttl=112 time=131 ms  
64 bytes from mrs89s15-in-f14.1e100.net (142.251.37.206): icmp_seq=13 ttl=112 time=132 ms  
^C  
--- google.com ping statistics ---  
13 packets transmitted, 13 received, 0% packet loss, time 11997ms  
rtt min/avg/max/mdev = 129.488/141.441/219.741/26.607 ms  
phoenix@DESKTOP-SQ9G92V:~$ traceroute google.com  
Command 'traceroute' not found, but can be installed with:  
sudo apt install inetutils-traceroute # version 2:2.4-3ubuntu1, or  
sudo apt install traceroute # version 1:2.1.5-1  
phoenix@DESKTOP-SQ9G92V:~$ traceroute google.com  
Command 'traceroute' not found, but can be installed with:  
sudo apt install inetutils-traceroute # version 2:2.4-3ubuntu1, or  
sudo apt install traceroute # version 1:2.1.5-1  
phoenix@DESKTOP-SQ9G92V:~$ traceroute google.com  
Command 'traceroute' not found, but can be installed with:  
sudo apt install inetutils-traceroute # version 2:2.4-3ubuntu1, or  
sudo apt install traceroute # version 1:2.1.5-1  
phoenix@DESKTOP-SQ9G92V:~$ sudo apt install traceroute  
Reading package lists... Done  
Building dependency tree... Done  
Reading state information... Done  
The following NEW packages will be installed:  
  traceroute
```

```
Processing triggers for libc-bin (2.39-0ubuntu3) ...  
Processing triggers for rsyslog (8.2312.0-3ubuntu9) ...  
Processing triggers for man-db (2.12.0-4build2) ...  
phoenix@DESKTOP-SQ9G92V:~$ sudo ufw allow 80  
Rules updated  
Rules reloaded (v6)  
phoenix@DESKTOP-SQ9G92V:~$ sudo firewall-cmd --add-port=8080/tcp --permanent && sudo firewall-cmd --reload  
sudo: firewall-cmd: command not found  
phoenix@DESKTOP-SQ9G92V:~$ sudo firewall-cmd --add-port=8080/tcp --permanent && sudo firewall-cmd --reload
```



```
phoenix@DESKTOP-SQ9G92V: ~
</body>
</html>
phoenix@DESKTOP-SQ9G92V:~$ ss -tln | grep 80
tcp LISTEN 0 511 *:80 *:
phoenix@DESKTOP-SQ9G92V:~$ sudo ufw allow 80
sudo: ufw: command not found
phoenix@DESKTOP-SQ9G92V:~$ ss -tln | grep 80
tcp LISTEN 0 511 *:80 *:
phoenix@DESKTOP-SQ9G92V:~$ sudo ufw allow 80
Command 'ufw' not found, but can be installed with:
sudo snap install ufw # version 0.36.2, or
sudo apt install ufw # version 0.36.2-1
See 'snap info ufw' for additional versions.
phoenix@DESKTOP-SQ9G92V:~$ sudo apt install ufw
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  iptables libip4tc2 libip6tc2 libnetfilter-contrack3 libnftnl11 nftables
Suggested packages:
  firewallld
The following NEW packages will be installed:
  iptables libip4tc2 libip6tc2 libnetfilter-contrack3 libnftnl11 nftables ufw
0 upgraded, 9 newly installed, 0 to remove and 186 not upgraded.
Need to get 1152 kB of archives.
After this operation, 5144 kB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://archive.ubuntu.com/ubuntu noble/main amd64 libip4tc2 amd64 1.8.10-3ubuntu2 [23.3 kB]
Get:2 http://archive.ubuntu.com/ubuntu noble/main amd64 libip6tc2 amd64 1.8.10-3ubuntu2 [23.7 kB]
Get:3 http://archive.ubuntu.com/ubuntu noble/main amd64 libnftnl11 amd64 1.0.2-2build1 [14.8 kB]
Get:4 http://archive.ubuntu.com/ubuntu noble/main amd64 libnetfilter-contrack3 amd64 1.0.9-6build1 [45.2 kB]
Get:5 http://archive.ubuntu.com/ubuntu noble/main amd64 libnftnl11 amd64 1.2.6-2build1 [66.0 kB]
Get:6 http://archive.ubuntu.com/ubuntu noble/main amd64 iptables amd64 1.8.10-3ubuntu2 [381 kB]
Get:7 http://archive.ubuntu.com/ubuntu noble/main amd64 libnftables1 amd64 1.0.9-1build1 [358 kB]
Get:8 http://archive.ubuntu.com/ubuntu noble/main amd64 nftables amd64 1.0.9-1build1 [69.8 kB]
Get:9 http://archive.ubuntu.com/ubuntu noble/main amd64 ufw all 0.36.2-6 [169 kB]
Fetched 1152 kB in 3s (381 kB/s)
Preconfiguring packages ...
Selecting previously unselected package libip4tc2:amd64.
(Reading database ... 41790 files and directories currently installed.)
Preparing to unpack .../0-libip4tc2_1.8.10-3ubuntu2_amd64.deb ...
```

## ✂ Troubleshooting & Monitoring

- `df -h` → Disk usage by filesystem.
- `du -sh *` → Size of directories.
- `lsblk` → List block devices.
- `free -h` → Show memory usage.
- `uptime` → Show load averages.

```
phoenix@DESKTOP-SQ9G92V: ~
phoenix@DESKTOP-SQ9G92V:~$ df -h
Filesystem      Size  Used Avail Use% Mounted on
none            1.9G  0 1.9G  0% /usr/lib/modules/6.6.87.2-microsoft-standard-WSL2
none            1.9G  4.0K 1.9G  1% /mnt/wsl
drivers          98G   97G 960M 100% /usr/lib/wsl/drivers
/dev/sdd        1007G  1.9G 954G  1% /
none            1.9G  76K 1.9G  1% /mnt/wsl/g
none            1.9G  0 1.9G  0% /usr/lib/wsl/lib
rootfs          1.9G  2.7M 1.9G  1% /init
none            1.9G  492K 1.9G  1% /run
none            1.9G  0 1.9G  0% /run/lock
none            1.9G  0 1.9G  0% /run/shm
none            1.9G  76K 1.9G  1% /mnt/wsl/g/versions.txt
none            1.9G  76K 1.9G  1% /mnt/wsl/g/doc
C:\             98G   97G 960M 100% /mnt/c
D:\            141G  90G  52G  64% /mnt/d
tmpfs           384M   28K 384M  1% /run/user/1000
phoenix@DESKTOP-SQ9G92V:~$ du -sh
96K
phoenix@DESKTOP-SQ9G92V:~$ free -h
total        used        free      shared  buff/cache   available
Mem:        3.7Gi        466Mi       3.3Gi       3.8Mi       129Mi       3.3Gi
Swap:        1.0Gi          0B        1.0Gi
phoenix@DESKTOP-SQ9G92V:~$ uptime
 23:20:22 up 54 min, 1 user, load average: 0.00, 0.02, 0.00
phoenix@DESKTOP-SQ9G92V:~$ dmesg | grep error
phoenix@DESKTOP-SQ9G92V:~$ journalctl -xe
Sep 14 23:17:58 DESKTOP-SQ9G92V wsl-pro-service[226]: INFO Reconnecting to Windows host in 60 seconds
Sep 14 23:17:58 DESKTOP-SQ9G92V wsl-pro-service[226]: DEBUG Updated system status to "Not connected: waiting to retry"
Sep 14 23:18:08 DESKTOP-SQ9G92V systemd-resolved[166]: Clock change detected. Flushing caches.
Sep 14 23:18:42 DESKTOP-SQ9G92V PackageKit[1900]: daemon quit
Sep 14 23:18:42 DESKTOP-SQ9G92V systemd[1]: packagekit.service: Deactivated successfully.
Subject: Unit succeeded
Defined-By: systemd
Support: http://www.ubuntu.com/support

The unit packagekit.service has successfully entered the 'dead' state.
Sep 14 23:18:54 DESKTOP-SQ9G92V systemd-resolved[166]: Clock change detected. Flushing caches.
Sep 14 23:18:55 DESKTOP-SQ9G92V wsl-pro-service[226]: INFO Daemon: connecting to Windows Agent
Sep 14 23:18:55 DESKTOP-SQ9G92V wsl-pro-service[226]: DEBUG Updated system status to "Connecting"
Sep 14 23:18:55 DESKTOP-SQ9G92V wsl-pro-service[226]: WARNING Daemon: could not connect to Windows Agent: could not get
```

- dmesg | grep error → Kernel logs.
- journalctl -xe → System logs.
- tail -n 50 /var/log/syslog → Last 50 log lines.
- systemctl restart networking → Restart network service.
- fsck /dev/sda1 → Check/repair filesystem.
- mount /dev/sdb1 /mnt → Mount storage device.

```
phoenix@DESKTOP-SQ9G92V: ~
2025-09-14T23:18:42.403315+05:00 DESKTOP-SQ9G92V system[1]: packagekit.service: Deactivated successfully.
2025-09-14T23:18:54.243267+05:00 DESKTOP-SQ9G92V system-resolved[166]: Clock change detected. Flushing caches.
2025-09-14T23:18:55.592915+05:00 DESKTOP-SQ9G92V wsl-pro-service[226]: #033[36mINFO#033[0m Daemon: connecting to Windows Agent
2025-09-14T23:18:55.593660+05:00 DESKTOP-SQ9G92V wsl-pro-service[226]: #033[37mDEBUG#033[0m Updated systemd status to "Connecting"
2025-09-14T23:18:55.607587+05:00 DESKTOP-SQ9G92V wsl-pro-service[226]: #033[33mWARNING#033[0m Daemon: could not connect to Windows Agent: could not get address: could not read agent port file "/mnt/c/Users/mugha/.ubuntuupro/.address": open /mnt/c/Users/mugha/.ubuntuupro/.address: no such file or directory
2025-09-14T23:18:55.608499+05:00 DESKTOP-SQ9G92V wsl-pro-service[226]: #033[36mINFO#033[0m Reconnecting to Windows host in 60 seconds
2025-09-14T23:18:55.611814+05:00 DESKTOP-SQ9G92V wsl-pro-service[226]: #033[37mDEBUG#033[0m Updated systemd status to "Not connected: waiting to retry"
2025-09-14T23:19:25.690094+05:00 DESKTOP-SQ9G92V system-resolved[166]: Clock change detected. Flushing caches.
2025-09-14T23:19:54.637928+05:00 DESKTOP-SQ9G92V wsl-pro-service[226]: #033[36mINFO#033[0m Daemon: connecting to Windows Agent
2025-09-14T23:19:54.638644+05:00 DESKTOP-SQ9G92V wsl-pro-service[226]: #033[37mDEBUG#033[0m Updated systemd status to "Connecting"
2025-09-14T23:19:54.648125+05:00 DESKTOP-SQ9G92V wsl-pro-service[226]: #033[33mWARNING#033[0m Daemon: could not connect to Windows Agent: could not get address: could not read agent port file "/mnt/c/Users/mugha/.ubuntuupro/.address": open /mnt/c/Users/mugha/.ubuntuupro/.address: no such file or directory
2025-09-14T23:19:54.648900+05:00 DESKTOP-SQ9G92V wsl-pro-service[226]: #033[36mINFO#033[0m Reconnecting to Windows host in 60 seconds
2025-09-14T23:19:57.124732+05:00 DESKTOP-SQ9G92V system-resolved[166]: Clock change detected. Flushing caches.
2025-09-14T23:20:43.395854+05:00 DESKTOP-SQ9G92V system-resolved[166]: Clock change detected. Flushing caches.
2025-09-14T23:20:52.160123+05:00 DESKTOP-SQ9G92V wsl-pro-service[226]: #033[36mINFO#033[0m Daemon: connecting to Windows Agent
2025-09-14T23:20:52.171638+05:00 DESKTOP-SQ9G92V wsl-pro-service[226]: #033[37mDEBUG#033[0m Updated systemd status to "Connecting"
2025-09-14T23:20:52.171975+05:00 DESKTOP-SQ9G92V wsl-pro-service[226]: #033[33mWARNING#033[0m Daemon: could not connect to Windows Agent: could not get address: could not read agent port file "/mnt/c/Users/mugha/.ubuntuupro/.address": open /mnt/c/Users/mugha/.ubuntuupro/.address: no such file or directory
2025-09-14T23:20:52.172149+05:00 DESKTOP-SQ9G92V wsl-pro-service[226]: #033[36mINFO#033[0m Reconnecting to Windows host in 60 seconds
2025-09-14T23:20:52.172484+05:00 DESKTOP-SQ9G92V wsl-pro-service[226]: #033[37mDEBUG#033[0m Updated systemd status to "Not connected: waiting to retry"
2025-09-14T23:21:14.861009+05:00 DESKTOP-SQ9G92V system-resolved[166]: Clock change detected. Flushing caches.
phoenix@DESKTOP-SQ9G92V:~$ sudo systemctl restart networking
Failed to restart networking.service: Unit networking.service not found.
phoenix@DESKTOP-SQ9G92V:~$ sudo systemctl restart networking
Failed to restart networking.service: Unit networking.service not found.
phoenix@DESKTOP-SQ9G92V:~$ sudo fsck /dev/sda1
fsck from util-linux 2.39.3
e2fsck 1.47.0 (5-Feb-2023)
fsck.ext2: No such file or directory while trying to open /dev/sda1
Possibly non-existent device?
phoenix@DESKTOP-SQ9G92V:~$ sudo mount /dev/sdb1 /mnt
mount: /mnt: special device /dev/sdb1 does not exist.
dmesg(1) may have more information after failed mount system call.
phoenix@DESKTOP-SQ9G92V:~$
```