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4IT-B

**ITP111 – System Administration and Maintenance**  
**MIDTERM – LABORATORY ACTIVITY 1**  
Basic Ubuntu Server Commands

**BASIC UBUNTU SERVER COMMANDS**

**SYSTEM INFORMATION**

a. **Check System Information:**

- Display the system's kernel version:

`uname -r`

```
lucky@luckyd:~$ uname -r
6.8.0-45-generic
```

- Check disk usage of the filesystem:

`df -h`

```
lucky@luckyd:~$ df -h
Filesystem                Size      Used Avail Use% Mounted on
tmpfs                      197M        1.1M  196M   1% /run
/dev/mapper/ubuntu--vg-ubuntu--lv  12G       4.3G   6.4G  40% /
tmpfs                      985M          0  985M   0% /dev/shm
tmpfs                      5.0M          0   5.0M   0% /run/lock
/dev/sda2                  2.0G        95M   1.7G   6% /boot
tmpfs                      197M        12K   197M   1% /run/user/1000
```

- Check memory usage:

`free -h`

```
lucky@luckyd:~$ free -h
               total        used        free       shared    buff/cache   available
Mem:           1.9Gi        299Mi        1.5Gi         1.1Mi        269Mi        1.6Gi
Swap:          2.0Gi          0B          2.0Gi
```

b. **File System Navigation:**

- Navigate to the /var/log directory and list its contents:

`cd /var/log`

`ls -lh`

```
lucky@luckyd:~$ cd /var/log
lucky@luckyd:/var/log$ ls -lh
total 1.1M
-rw-r--r-- 1 root    root      34K Oct  4 02:20 alternatives.log
-rw-r--r-- 1 root    adm        0 Oct  4 02:24 apport.log
drwxr-xr-x 2 root    root      4.0K Oct  4 02:20 apt
-rw-r--r-- 1 syslog  adm       3.3K Oct  4 02:25 auth.log
-rw-r--r-- 1 root    root      60K Aug 27 14:18 bootstrap.log
-rw-r--r-- 1 root    utmp      384 Oct  4 02:24 btmp
-rw-r--r-- 1 syslog  adm      82K Oct  4 02:24 cloud-init.log
-rw-r--r-- 1 root    adm      4.6K Oct  4 02:24 cloud-init-output.log
drwxr-xr-x 2 root    root      4.0K Aug 21 16:55 dist-upgrade
-rw-r--r-- 1 root    adm       50K Oct  4 02:24 dmesg
-rw-r--r-- 1 root    root     625K Oct  4 02:20 dpkg.log
-rw-r--r-- 1 root    root        0 Aug 27 14:18 faillog
drwxrwx--- 4 root    adm       4.0K Oct  4 02:20 installer
drwxr-sr-x+ 3 root    systemd-journal 4.0K Oct  4 02:23 journal
-rw-r--r-- 1 syslog  adm      58K Oct  4 02:24 kern.log
drwxr-xr-x 2 landscape landscape 4.0K Aug 27 14:26 landscape
-rw-r--r-- 1 root    utmp        0 Aug 27 14:18 lastlog
drwx----- 2 root    root      4.0K Aug 27 14:21 private
lrwxrwxrwx 1 root    root       39 Aug 27 14:21 README -> ../../usr/share/doc/systemd/README.logs
-rw-r--r-- 1 syslog  adm     121K Oct  4 02:29 syslog
drwxr-xr-x 2 root    root      4.0K Oct  4 02:24 sysstat
drwxr-x--- 2 root    adm       4.0K Oct  4 02:24 unattended-upgrades
-rw-r--r-- 1 root    utmp      1.5K Oct  4 02:24 wtmp
```



**FILE MANAGEMENT**

**a. Creation:**

- Create a new directory project inside your home directory:  
`mkdir ~/project`
- Create an empty file called logfile.txt inside project:  
`touch ~/project/logfile.txt`
- Copy the logfile.txt file to /tmp directory:  
`cp ~/project/logfile.txt /tmp/`

```
lucky@luckyd:~$ mkdir ~/project
lucky@luckyd:~$ touch ~/project/logfile.txt
lucky@luckyd:~$ cp ~/project/logfile.txt /tmp
lucky@luckyd:~$ cp ~/project/logfile.txt /tmp/
lucky@luckyd:~$ ls ~/project
logfile.txt
lucky@luckyd:~$ ls /tmp/
logfile.txt
snap-private-tmp
systemd-private-9b4dfc1ca526455ba02794833a051708-ModemManager.service-bsDJT3
systemd-private-9b4dfc1ca526455ba02794833a051708-systemd-resolved.service-eSIIEl
systemd-private-9b4dfc1ca526455ba02794833a051708-polkit.service-BWjWuA
systemd-private-9b4dfc1ca526455ba02794833a051708-systemd-logind.service-r61Xf0
systemd-private-9b4dfc1ca526455ba02794833a051708-systemd-timesyncd.service-96NFEL
```

**b. View and Edit Files:**

- Display the first 10 lines of a system log file:  
`head -n 10 /var/log/syslog`

```
lucky@luckyd:~$ head -n 10 /var/log/syslog
2024-10-04T02:24:04.409328+00:00 luckyd lvm[301]: 1 logical volume(s) in volume group "ubuntu-vg" monitored
2024-10-04T02:24:04.409832+00:00 luckyd systemd-modules-load[318]: Inserted module 'msr'
2024-10-04T02:24:04.409840+00:00 luckyd systemd[1]: Mounted dev-hugepages.mount - Huge Pages File System.
2024-10-04T02:24:04.409842+00:00 luckyd systemd-modules-load[318]: Inserted module 'dm_multipath'
2024-10-04T02:24:04.409844+00:00 luckyd systemd[1]: Mounted dev-mqueue.mount - POSIX Message Queue File System.
2024-10-04T02:24:04.409846+00:00 luckyd systemd[1]: Mounted sys-kernel-debug.mount - Kernel Debug File System.
2024-10-04T02:24:04.409848+00:00 luckyd systemd[1]: Mounted sys-kernel-tracing.mount - Kernel Trace File System.
2024-10-04T02:24:04.409850+00:00 luckyd systemd[1]: Finished keyboard-setup.service - Set the console keyboard layout.
2024-10-04T02:24:04.409853+00:00 luckyd systemd[1]: Finished kmod-static-nodes.service - Create List of Static Device Nodes.
2024-10-04T02:24:04.409855+00:00 luckyd systemd[1]: Finished lvm2-monitor.service - Monitoring of LVM2 mirrors, snapshots etc. using dmeventd or progress pollin
```

- Use nano to edit logfile.txt, write some content, and save:  
`nano ~/project/logfile.txt`

```
GNU nano 7.2 /home/lucky/project/logfile.txt
luckyd pog1

File Name to Write: /home/lucky/project/logfile.txt
^G Help      ^M-D DOS Format  ^M-A Append      ^M-B Backup File
^O Cancel    ^M-W Mac Format  ^M-P Prepend     ^M-T Browse
```





## USER AND GROUP MANAGEMENT

### a. Create a New User:

- Add a new user webadmin:

*sudo adduser webadmin*

```
lucky@luckyd:~$ sudo adduser webadmin
[sudo] password for lucky:
info: Adding user `webadmin' ...
info: Selecting UID/GID from range 1000 to 59999 ...
info: Adding new group `webadmin' (1001) ...
info: Adding new user `webadmin' (1001) with group `webadmin (1001)' ...
info: Creating home directory `/home/webadmin' ...
info: Copying files from `/etc/skel' ...
New password:
Retype new password:
passwd: password updated successfully
Changing the user information for webadmin
Enter the new value, or press ENTER for the default
  Full Name []: lucky d
  Room Number []: 2
  Work Phone []: 123
  Home Phone []: 1234
  Other []: n/a
Is the information correct? [Y/n] y
info: Adding new user `webadmin' to supplemental / extra groups `users' ...
info: Adding user `webadmin' to group `users' ...
```

### b. Grant Administrative Privileges:

- Add webadmin to the sudo group:

*sudo usermod -aG sudo webadmin*

```
lucky@luckyd:~$ sudo usermod -aG sudo webadmin
lucky@luckyd:~$ groups
lucky adm cdrom sudo dip plugdev lxd
```

### c. Check User Groups:

- Display the groups the current user belongs to:

*Groups*

```
lucky@luckyd:~$ sudo usermod -aG sudo webadmin
lucky@luckyd:~$ groups
lucky adm cdrom sudo dip plugdev lxd
```

## FILE PERMISSION AND OWNERSHIP

### a. Change Permissions:

- Make logfile.txt readable and writable by the user, but not executable:

*chmod 644 ~/project/logfile.txt*

```
lucky@luckyd:~$ chmod 644 ~/project/logfile.txt
lucky@luckyd:~$ ls -l ~/project/logfile.txt
-rw-r--r-- 1 lucky lucky 12 Oct  4 02:38 /home/lucky/project/logfile.txt
```

### b. Change Ownership:

- Change the ownership of logfile.txt to the webadmin user:

*sudo chown webadmin:webadmin ~/project/logfile.txt*

```
lucky@luckyd:~$ sudo chown webadmin:webadmin ~/project/logfile.txt
lucky@luckyd:~$ ls -l ~/project/logfile.txt
-rw-r--r-- 1 webadmin webadmin 12 Oct  4 02:38 /home/lucky/project/logfile.txt
```



ADVANCE UBUNTU SERVER COMMANDS

1. Process Management

1. List Active Processes:

- Display a list of currently running processes:

ps aux

root	49	0.0	0.0	0	0	?	I	<	02:23	0:00	[kworker/R-scsi1_
root	50	0.0	0.0	0	0	?	S		02:23	0:00	[scsi_eh_1]
root	51	0.0	0.0	0	0	?	I	<	02:23	0:00	[kworker/R-scsi1_
root	52	0.0	0.0	0	0	?	I		02:23	0:00	[kworker/u2:3-events_unbound]
root	53	0.0	0.0	0	0	?	I		02:23	0:00	[kworker/u2:4-flush-252:0]
root	54	0.0	0.0	0	0	?	I	<	02:23	0:00	[kworker/R-mld]
root	55	0.0	0.0	0	0	?	I	<	02:23	0:00	[kworker/R-lpvs_]
root	62	0.0	0.0	0	0	?	I	<	02:23	0:00	[kworker/R-ksftp]
root	64	0.0	0.0	0	0	?	I	<	02:23	0:00	[kworker/u3:0]
root	69	0.0	0.0	0	0	?	I	<	02:23	0:00	[kworker/R-crypt]
root	79	0.0	0.0	0	0	?	I	<	02:23	0:00	[kworker/R-chang]
root	141	0.0	0.0	0	0	?	S		02:23	0:00	[scsi_eh_2]
root	142	0.0	0.0	0	0	?	I	<	02:23	0:00	[kworker/R-scsi1_
root	158	0.0	0.0	0	0	?	I	<	02:23	0:00	[kworker/R-kdmf1]
root	187	0.0	0.0	0	0	?	I	<	02:23	0:00	[kworker/R-raids]
root	227	0.0	0.0	0	0	?	S		02:23	0:00	[jbd2/dm-0-8]
root	228	0.0	0.0	0	0	?	I	<	02:23	0:00	[kworker/R-ext4_]
root	238	0.0	0.0	50436	16264	?	S	<	02:23	0:00	/usr/lib/systemd/systemd-journald
root	322	0.0	0.0	0	0	?	I	<	02:23	0:00	[kworker/R-kmpat]
root	323	0.0	0.0	0	0	?	I	<	02:23	0:00	[kworker/R-kmpat]
root	350	0.0	1.3	269112	27392	?	S	S	02:23	0:00	/sbin/multipathd -d -s
root	375	0.0	0.3	29180	7784	?	S	s	02:23	0:00	/usr/lib/systemd/systemd-udev
root	376	0.0	0.0	0	0	?	S		02:23	0:00	[psimn]
root	414	0.0	0.0	0	0	?	I	<	02:23	0:00	[kworker/0:2H-kblockd]
root	449	0.0	0.0	0	0	?	S		02:23	0:00	[irq/18-vmmgfx]
root	451	0.0	0.0	0	0	?	I	<	02:23	0:00	[kworker/R-ttm]
root	587	0.0	0.0	0	0	?	S		02:23	0:00	[jbd2/sda2-0]
root	588	0.0	0.0	0	0	?	I	<	02:23	0:00	[kworker-ext4_]
systemd+	570	0.0	0.6	21584	12800	?	S	s	02:23	0:00	/usr/lib/systemd/systemd-resolved
systemd+	576	0.0	0.3	91020	7936	?	S	s	02:23	0:00	/usr/lib/systemd/systemd-timesyncd
root	728	0.0	0.0	0	0	?	I	<	02:23	0:00	[kworker/R-cfg80]
systemd+	796	0.0	0.4	18996	9472	?	S	s	02:24	0:00	/usr/lib/systemd/systemd-networkd
root	816	0.0	0.1	4236	2560	?	S	s	02:24	0:00	/usr/sbin/cron -f -P
message+	817	0.0	0.2	9780	5376	?	S	s	02:24	0:00	@dbus-daemon --system --address=systemd: --nofork --nopidfile --systemd-activation --syslog
polkitd	821	0.0	0.3	308160	7936	?	S	s	02:24	0:00	/usr/lib/polkit-1/polkitd --no-debug
root	829	0.0	0.4	17988	8832	?	S	s	02:24	0:00	/usr/lib/systemd/systemd-logind
root	830	0.0	0.6	468980	13568	?	S	s	02:24	0:00	/usr/libexec/udisks2/udisksd
root	852	0.0	1.1	106384	22656	?	S	s	02:24	0:00	/usr/bin/python3 /usr/share/unattended-upgrades/unattended-upgrade-shutdown --wait-for-signa
syslog	867	0.0	0.2	222508	6016	?	S	s	02:24	0:00	/usr/sbin/rsyslogd -n -iNONE
root	889	0.0	0.6	392096	12800	?	S	s	02:24	0:00	/usr/sbin/ModemManager
root	1023	0.0	0.2	6956	4736	ttty1	S	s	02:24	0:00	/bin/login -p --
root	1147	0.0	0.0	0	0	?	S		02:24	0:00	[psimn]
lucky	1149	0.0	0.5	20140	11264	?	S	s	02:24	0:00	/usr/lib/systemd/systemd --user
lucky	1151	0.0	0.1	21148	3520	?	S		02:24	0:00	(sd-pam)
lucky	1166	0.0	0.2	8656	5632	ttty1	S		02:24	0:00	-bash
root	1209	0.0	0.0	0	0	?	I	<	02:24	0:00	[kworker/R-tls-s]
root	1224	0.0	0.0	0	0	?	I		02:30	0:00	[kworker/0:1-events]
root	1272	0.0	0.0	0	0	?	I		02:39	0:00	[kworker/u2:0-events_power_efficient]
lucky	1307	0.0	0.2	10884	4480	ttty1	R	+	02:44	0:00	ps aux

2. Monitor System in Real-Time:

htop

- Exit htop by pressing q.

CPU[ 0.0%] Tasks: 20, 22 thr, 73 kthr; 1 running

Mem[|||||] 148M/1.92G Load average: 0.00 0.00 0.00

Sup[ ] 0K/2.00G Uptime: 00:21:06

Main	I/O	PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	MEM%	TIME+	Command
		1	root	20	0	22388	13408	9440	S	N/A	0.7	0:01.42	/sbin/init
		298	root	19	-1	50436	16264	15240	S	N/A	0.8	0:00.23	/usr/lib/systemd/systemd-journald
		350	root	RT	0	282M	27392	8704	S	N/A	1.4	0:00.03	/sbin/multipathd -d -s
		364	root	20	0	282M	27392	8704	S	N/A	1.4	0:00.00	/sbin/multipathd -d -s
		366	root	RT	0	282M	27392	8704	S	N/A	1.4	0:00.00	/sbin/multipathd -d -s
		367	root	RT	0	282M	27392	8704	S	N/A	1.4	0:00.00	/sbin/multipathd -d -s
		368	root	RT	0	282M	27392	8704	S	N/A	1.4	0:00.00	/sbin/multipathd -d -s
		369	root	RT	0	282M	27392	8704	S	N/A	1.4	0:00.09	/sbin/multipathd -d -s
		370	root	RT	0	282M	27392	8704	S	N/A	1.4	0:00.00	/sbin/multipathd -d -s
		375	root	20	0	29180	7784	4968	S	N/A	0.4	0:00.10	/usr/lib/systemd/systemd-udev
		570	systemd-ne	20	0	21584	12800	10624	S	N/A	0.6	0:00.08	/usr/lib/systemd/systemd-resolved
		576	systemd-ti	20	0	91020	7936	7040	S	N/A	0.4	0:00.05	/usr/lib/systemd/systemd-timesyncd
		596	systemd-ti	20	0	91020	7936	7040	S	N/A	0.4	0:00.00	/usr/lib/systemd/systemd-timesyncd
		796	systemd-ne	20	0	18996	9472	8320	S	N/A	0.5	0:00.05	/usr/lib/systemd/systemd-networkd
		816	root	20	0	4236	2560	2304	S	N/A	0.1	0:00.02	/usr/sbin/cron -f -P
		817	messagebus	20	0	9780	5376	4608	S	N/A	0.3	0:00.08	@dbus-daemon --system --address=systemd: --nofork --
		821	polkitd	20	0	300M	7936	7040	S	N/A	0.4	0:00.04	/usr/lib/polkit-1/polkitd --no-debug
		829	root	20	0	17988	8832	7808	S	N/A	0.4	0:00.04	/usr/lib/systemd/systemd-logind
		830	root	20	0	457M	13568	11392	S	N/A	0.7	0:00.03	/usr/libexec/udisks2/udisksd
		847	root	20	0	457M	13568	11392	S	N/A	0.7	0:00.03	/usr/libexec/udisks2/udisksd
		849	root	20	0	457M	13568	11392	S	N/A	0.7	0:00.00	/usr/libexec/udisks2/udisksd
		852	root	20	0	104M	22656	13312	S	N/A	1.1	0:00.06	/usr/bin/python3 /usr/share/unattended-upgrades/unatt
		854	root	20	0	457M	13568	11392	S	N/A	0.7	0:00.00	/usr/libexec/udisks2/udisksd
		867	syslog	20	0	217M	6016	4480	S	N/A	0.3	0:00.03	/usr/sbin/rsyslogd -n -iNONE
		874	polkitd	20	0	300M	7936	7040	S	N/A	0.4	0:00.00	/usr/lib/polkit-1/polkitd --no-debug
		877	polkitd	20	0	300M	7936	7040	S	N/A	0.4	0:00.00	/usr/lib/polkit-1/polkitd --no-debug
		880	polkitd	20	0	300M	7936	7040	S	N/A	0.4	0:00.00	/usr/lib/polkit-1/polkitd --no-debug
		888	root	20	0	457M	13568	11392	S	N/A	0.7	0:00.00	/usr/libexec/udisks2/udisksd
		889	root	20	0	382M	12800	10752	S	N/A	0.6	0:00.06	/usr/sbin/ModemManager
		910	root	20	0	457M	13568	11392	S	N/A	0.7	0:00.00	/usr/libexec/udisks2/udisksd
		921	syslog	20	0	217M	6016	4480	S	N/A	0.3	0:00.00	/usr/sbin/rsyslogd -n -iNONE
		922	syslog	20	0	217M	6016	4480	S	N/A	0.3	0:00.00	/usr/sbin/rsyslogd -n -iNONE
		923	syslog	20	0	217M	6016	4480	S	N/A	0.3	0:00.00	/usr/sbin/rsyslogd -n -iNONE
		926	root	20	0	382M	12800	10752	S	N/A	0.6	0:00.00	/usr/sbin/ModemManager
		930	root	20	0	382M	12800	10752	S	N/A	0.6	0:00.00	/usr/sbin/ModemManager
		934	root	20	0	382M	12800	10752	S	N/A	0.6	0:00.00	/usr/sbin/ModemManager
		937	root	20	0	104M	22656	13312	S	N/A	1.1	0:00.00	/usr/bin/python3 /usr/share/unattended-upgrades/unatt
		1023	root	20	0	6956	4736	3968	S	N/A	0.2	0:00.10	/bin/login -p --
		1149	lucky	20	0	20140	11264	9344	S	N/A	0.6	0:00.10	/usr/lib/systemd/systemd --user
		1151	lucky	20	0	21148	3520	1792	S	N/A	0.2	0:00.00	(sd-pam)
		1166	lucky	20	0	8656	5632	3968	S	N/A	0.3	0:00.16	-bash
		1308	lucky	20	0	8680	4864	3712	R	N/A	0.2	0:00.03	htop



### 3. Kill a Process:

- Find the process ID (PID) of a running program (e.g., nano) and kill it:

```
ps aux | grep nano  
kill <PID>
```

```
lucky@luckyd:~$ kill 1234  
-bash: kill: (1234) - No such process
```

## 2. Package Management

### 1. Update System Packages:

- Update the package list and upgrade installed packages:

```
sudo apt update  
sudo apt upgrade
```

```
lucky@luckyd:~$ sudo apt update  
Hit:1 http://security.ubuntu.com/ubuntu noble-security InRelease  
Hit:2 http://ph.archive.ubuntu.com/ubuntu noble InRelease  
Hit:3 http://ph.archive.ubuntu.com/ubuntu noble-updates InRelease  
Hit:4 http://ph.archive.ubuntu.com/ubuntu noble-backports InRelease  
Reading package lists... Done  
Building dependency tree... Done  
Reading state information... Done  
35 packages can be upgraded. Run 'apt list --upgradable' to see them.  
lucky@luckyd:~$ sudo apt upgrade  
Reading package lists... Done  
Building dependency tree... Done  
Reading state information... Done  
Calculating upgrade... Done  
The following upgrades have been deferred due to phasing:  
  python3-distupgrade ubuntu-release-upgrader-core  
The following packages will be upgraded:  
  apparmor cloud-init cloud-initramfs-copymods cloud-initramfs-dyn-netconf cryptsetup cryptsetup-bin cryptsetup-initram  
  initramfs-tools initramfs-tools-bin initramfs-tools-core libapparmor1 libcryptsetup12 libdevmapper-event1.02.1 libdevm  
  libproc2-0 lvm2 lxd-agent-loader mdadm open-vm-tools overlayroot procps python3-update-manager systemd-hwe-hwdb tmux u  
  ubuntu-pro-client-l10n update-manager-core  
33 upgraded, 0 newly installed, 0 to remove and 2 not upgraded.  
Need to get 11.9 MB of archives.  
After this operation, 242 kB of additional disk space will be used.  
Do you want to continue? [Y/n] y  
Get:1 http://ph.archive.ubuntu.com/ubuntu noble-updates/main amd64 ubuntu-drivers-common amd64 1:0.9.7.6ubuntu3.1 [64.5  
Get:2 http://ph.archive.ubuntu.com/ubuntu noble-updates/main amd64 libproc2-0 amd64 2:4.0.4-4ubuntu3.1 [59.4 kB]  
Get:3 http://ph.archive.ubuntu.com/ubuntu noble-updates/main amd64 procps amd64 2:4.0.4-4ubuntu3.1 [708 kB]  
3% [3 procps 202 kB/708 kB 29%]
```

### 2. Install a New Package:

- Install the nginx web server:

```
sudo apt install nginx
```

```
lucky@luckyd:~$ sudo apt install nginx  
[sudo] password for lucky:  
Reading package lists... Done  
Building dependency tree... Done  
Reading state information... Done  
The following additional packages will be installed:  
  nginx-common  
Suggested packages:  
  fcgiwrap nginx-doc ssl-cert  
The following NEW packages will be installed:  
  nginx nginx-common  
0 upgraded, 2 newly installed, 0 to remove and 35 not upgraded.  
Need to get 552 kB of archives.  
After this operation, 1,596 kB of additional disk space will be used.  
Do you want to continue? [Y/n] y  
Get:1 http://ph.archive.ubuntu.com/ubuntu noble-updates/main amd64 nginx-common all 1.24.0-2ubuntu7.1 [31.2 kB]  
Get:2 http://ph.archive.ubuntu.com/ubuntu noble-updates/main amd64 nginx amd64 1.24.0-2ubuntu7.1 [521 kB]  
Fetched 552 kB in 2s (262 kB/s)  
Preconfiguring packages ...  
Selecting previously unselected package nginx-common.  
(Reading database ... 80609 files and directories currently installed.)  
Preparing to unpack .../nginx-common_1.24.0-2ubuntu7.1_all.deb ...  
Unpacking nginx-common (1.24.0-2ubuntu7.1) ...  
Selecting previously unselected package nginx.  
Preparing to unpack .../nginx_1.24.0-2ubuntu7.1_amd64.deb ...  
Unpacking nginx (1.24.0-2ubuntu7.1) ...  
Setting up nginx-common (1.24.0-2ubuntu7.1) ...  
Created symlink /etc/systemd/system/multi-user.target.wants/nginx.service → /usr/lib/systemd/system/nginx.service.  
Processing triggers for ufw (0.36.2-6) ...  
Processing triggers for man-db (2.12.0-4build2) ...  
Scanning processes...  
Scanning linux images...  
  
Running kernel seems to be up-to-date.  
  
No services need to be restarted.  
  
No containers need to be restarted.  
  
No user sessions are running outdated binaries.  
  
No VM guests are running outdated hypervisor (qemu) binaries on this host.
```





### 3. Check Service Status:

- Check if nginx is running:  
`sudo systemctl status nginx`
- Start the service if it's not running:  
`sudo systemctl start nginx`

```
lucky@luckyd:~$ sudo systemctl status nginx
● nginx.service - A high performance web server and a reverse proxy server
   Loaded: loaded (/usr/lib/systemd/system/nginx.service; enabled; preset: enabled)
   Active: active (running) since Fri 2024-10-04 02:53:29 UTC; 51s ago
     Docs: man:nginx(8)
   Process: 1118 ExecStartPre=/usr/sbin/nginx -t -q -g daemon on; master_process on; (code=exited, status=0/SUCCESS)
   Process: 1120 ExecStart=/usr/sbin/nginx -g daemon on; master_process on; (code=exited, status=0/SUCCESS)
   Main PID: 1121 (nginx)
      Tasks: 2 (limit: 2276)
     Memory: 1.7M (peak: 1.9M)
        CPU: 6ms
    CGroup: /system.slice/nginx.service
            └─1121 "nginx: master process /usr/sbin/nginx -g daemon on; master_process on;"
              └─1122 "nginx: worker process"

Oct 04 02:53:29 luckyd systemd[1]: Starting nginx.service - A high performance web server and a reverse proxy server...
Oct 04 02:53:29 luckyd systemd[1]: Started nginx.service - A high performance web server and a reverse proxy server.
```

### 3. Networking and Firewall Configuration

#### 1. Check Network Interfaces:

- Display active network interfaces:  
`ip addr show`

```
lucky@luckyd:~$ ip addr show
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: enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group default qlen 1000
   link/ether 08:00:27:19:db:c0 brd ff:ff:ff:ff:ff:ff
   inet 10.0.2.15/24 metric 100 brd 10.0.2.255 scope global dynamic enp0s3
       valid_lft 86233sec preferred_lft 86233sec
   inet6 fe80::a00:27ff:fe19:dbc0/64 scope link
       valid_lft forever preferred_lft forever
```

#### 2. Test Network Connectivity:

- Ping a remote server (e.g., Google's DNS):  
`ping 8.8.8.8`

```
lucky@luckyd:~$ ping 8.8.8.8
PING 8.8.8.8 (8.8.8.8) 56(84) bytes of data.
64 bytes from 8.8.8.8: icmp_seq=1 ttl=54 time=5.43 ms
64 bytes from 8.8.8.8: icmp_seq=2 ttl=54 time=4.24 ms
64 bytes from 8.8.8.8: icmp_seq=3 ttl=54 time=4.04 ms
64 bytes from 8.8.8.8: icmp_seq=4 ttl=54 time=4.35 ms
64 bytes from 8.8.8.8: icmp_seq=5 ttl=54 time=3.67 ms
64 bytes from 8.8.8.8: icmp_seq=6 ttl=54 time=4.32 ms
64 bytes from 8.8.8.8: icmp_seq=7 ttl=54 time=4.45 ms
64 bytes from 8.8.8.8: icmp_seq=8 ttl=54 time=4.04 ms
64 bytes from 8.8.8.8: icmp_seq=9 ttl=54 time=4.18 ms
64 bytes from 8.8.8.8: icmp_seq=10 ttl=54 time=4.32 ms
64 bytes from 8.8.8.8: icmp_seq=11 ttl=54 time=3.67 ms
^S64 bytes from 8.8.8.8: icmp_seq=12 ttl=54 time=3.68 ms
64 bytes from 8.8.8.8: icmp_seq=13 ttl=54 time=4.42 ms
64 bytes from 8.8.8.8: icmp_seq=14 ttl=54 time=4.27 ms
```



### 3. Configure the UFW Firewall:

- Enable UFW (Uncomplicated Firewall) and allow SSH connections:  
`sudo ufw allow OpenSSH`  
`sudo ufw enable`
- Allow HTTP traffic (for nginx):  
`sudo ufw allow 'Nginx HTTP'`
- Check UFW status:  
`sudo ufw status`

```
lucky@luckyd:~$ sudo ufw allow OpenSSH
[sudo] password for lucky:
ERROR: Could not find a profile matching 'OpenSSH'
lucky@luckyd:~$ sudo ufw enable
Firewall is active and enabled on system startup
lucky@luckyd:~$ sudo ufw allow OpenSSH
ERROR: Could not find a profile matching 'OpenSSH'
lucky@luckyd:~$ sudo ufw allow 'Nginx HTTP'
Rule added
Rule added (v6)
lucky@luckyd:~$ sudo ufw status
Status: active

To Action From
--
Nginx HTTP ALLOW Anywhere
Nginx HTTP (v6) ALLOW Anywhere (v6)

lucky@luckyd:~$ _
```

### 4. Backup and Restore

#### 1. Create a Backup Using tar:

- Create a backup of your project directory:  
`tar -czvf project-backup.tar.gz ~/project`

#### 2. Extract the Backup:

- Restore the backup by extracting it into a new directory:  
`mkdir ~/project-restore`  
`tar -xzf project-backup.tar.gz -C ~/project-restore`

```
lucky@luckyd:~$ sudo tar -czvf project-backup.tar.gz ~/project
tar: Removing leading `/' from member names
/home/lucky/project/
/home/lucky/project/logfile.txt
lucky@luckyd:~$ mkdir ~/project-restore
lucky@luckyd:~$ tar -xzf project-backup.tar.gz -C ~/project-restore
home/lucky/project/
home/lucky/project/logfile.txt
```