

Day2 Assignment

Task 1: linux command line basics

Step 1: To create a directory as shown below in image the comammand used is:
mkdir -p devops-lab/{projects/{app1,app2},configs,logs}.



Step 2: Navigating to /devops-lab/projects/app1 and creating a file called README.md

```
(kali㉿kali)-[~]
$ cd devops-lab/projects/app1

(kali㉿kali)-[~/devops-lab/projects/app1]
$ touch README.md

(kali㉿kali)-[~/devops-lab/projects/app1]
$ ls
README.md

(kali㉿kali)-[~/devops-lab/projects/app1]
```

Step 3: Copying file README.MD from app1 directory to app2 directory.

```
└─(kali㉿kali)-[~]
$ cp devops-lab/projects/app1/README.md devops-lab/projects/app2/

└─(kali㉿kali)-[~]
$ cd devops-lab/projects/app2

└─(kali㉿kali)-[~/devops-lab/projects/app2]
$ ls
README.md
```

Step 4: Listing all files in devops-lab recursively showing hidden file.

```
└─(kali㉿kali)-[~/devops-lab]
$ ls -laR
.:
total 20
drwxrwxr-x  5 kali kali 4096 Nov 17 23:02 .
drwx—— 19 kali kali 4096 Nov 18 16:48 ..
drwxrwxr-x  2 kali kali 4096 Nov 17 23:02 configs
drwxrwxr-x  2 kali kali 4096 Nov 17 23:02 logs
drwxrwxr-x  4 kali kali 4096 Nov 17 23:02 projects

./configs:
total 8
drwxrwxr-x 2 kali kali 4096 Nov 17 23:02 .
drwxrwxr-x 5 kali kali 4096 Nov 17 23:02 ..

./logs:
total 8
drwxrwxr-x 2 kali kali 4096 Nov 17 23:02 .
drwxrwxr-x 5 kali kali 4096 Nov 17 23:02 ..

./projects:
total 16
drwxrwxr-x 4 kali kali 4096 Nov 17 23:02 .
drwxrwxr-x 5 kali kali 4096 Nov 17 23:02 ..
drwxrwxr-x 2 kali kali 4096 Nov 17 23:13 app1
drwxrwxr-x 2 kali kali 4096 Nov 17 23:16 app2

./projects/app1:
total 8
drwxrwxr-x 2 kali kali 4096 Nov 17 23:13 .
drwxrwxr-x 4 kali kali 4096 Nov 17 23:02 ..
-rw-rw-r-- 1 kali kali    0 Nov 17 23:19 README.md

./projects/app2:
total 8
drwxrwxr-x 2 kali kali 4096 Nov 17 23:16 .
drwxrwxr-x 4 kali kali 4096 Nov 17 23:02 ..
-rw-rw-r-- 1 kali kali    0 Nov 17 23:16 README.md
```

Where, **-a** → show hidden files (files starting with .) & **-R** → recursive (go inside all subdirectories)

Task 2: Package Management

Step 1: Updating Package indexing.

```
(kali㉿kali)-[~]
$ sudo apt update
[sudo] password for kali:
Get:1 http://kali.download/kali kali-rolling InRelease [34.0 kB]
Get:2 http://kali.download/kali kali-rolling/main amd64 Packages [20.9 MB]
Get:3 http://kali.download/kali kali-rolling/main amd64 Contents (deb) [52.5 MB]
93% [3 Contents-amd64 49.1 MB/52.5 MB 94%]                                86.0 kB/s 51s^
Get:4 http://kali.download/kali kali-rolling/non-free amd64 Packages [187 kB]
Get:5 http://kali.download/kali kali-rolling/non-free amd64 Contents (deb) [894 kB]
Fetched 74.6 MB in 9min 56s (125 kB/s)
4 packages can be upgraded. Run 'apt list --upgradable' to see them.

(kali㉿kali)-[~]
```

Step 2: Installing htop (system monitoring tool)

```
(kali㉿kali)-[~]
$ sudo apt install htop
[sudo] password for kali:
The following packages were automatically installed and are no longer required:
  amass-common      libdisplay-info2      libjs-jquery-ui      libobjc-14-dev    libtheoradec1   libwiretap15
  gir1.2-girepository-2.0  libgeos3.14.0    libjs-underscore    libplacebo349     libtheoraenc1   libwsutil16
  libbluray2        libgirepository-1.0-1  libmongoc-1.0-0t64  libportmidi0     libudfread0     libx264-164
  libbison-1.0-0t64 libinstpatch-1.0-2  libnetl            libravie0.7      libwireshark18  python3-bluepy
Use 'sudo apt autoremove' to remove them.

Installing:
  htop

Suggested packages:
  strace

Summary:
  Upgrading: 0, Installing: 1, Removing: 0, Not Upgrading: 4
  Download size: 171 kB
  Space needed: 434 kB / 59.5 GB available

Get:1 http://kali.download/kali kali-rolling/main amd64 htop amd64 3.4.1-5 [171 kB]
Fetched 171 kB in 3s (66.2 kB/s)
Selecting previously unselected package htop.
(Reading database ... 434910 files and directories currently installed.)
Preparing to unpack .../htop_3.4.1-5_amd64.deb ...
Unpacking htop (3.4.1-5) ...
Setting up htop (3.4.1-5) ...
Processing triggers for mailcap (3.75) ...
Processing triggers for kali-menu (2025.4.2) ...
Processing triggers for desktop-file-utils (0.28-1) ...
Processing triggers for hicolor-icon-theme (0.18-2) ...
Processing triggers for man-db (2.13.1-1) ...

(kali㉿kali)-[~]
$ htop
[2]+  Stopped                  htop
```

Step 3: Checking if nginx service exists.

```
(kali㉿kali)-[~]
$ dpkg -l | grep nginx
ii  nginx                               1.28.0-6          amd64      small, powerful, scalable web/proxy server
ii  nginx-common                         1.28.0-6          all        small, powerful, scalable web/proxy server - common files
(kali㉿kali)-[~]
$
```

Where,

dpkg → Debian package manager (used in Ubuntu, Kali, Debian, etc.)

-l → list all installed packages on your system

| → Take all the text output and filter it through the next command.”

grep → searches text for a pattern, Here, the pattern is nginx

Step 4: Listing all currently installed packages and saving the output to devops-lab/packages.txt.

```
(kali㉿kali)-[~]
$ dpkg -l > devops-lab/packages.txt
(kali㉿kali)-[~]
$ ls
Desktop  devops-lab  Documents  Downloads  Music  Pictures  Public  Templates  Videos
(kali㉿kali)-[~]
$ cd devops-lab/
(kali㉿kali)-[~/devops-lab]
$ ls
configs  logs  packages.txt  projects

(kali㉿kali)-[~/devops-lab]
$ cat packages.txt
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  7zip                            25.01+dfsg-4       amd64      7-Zip file archiver with a high compression ratio
ii  accountsservice                  23.13.9-8         amd64      query and manipulate user account information
ii  acl                             2.3.2-2+b1        amd64      access control list - utilities
ii  adduser                         3.153              all        add and remove users and groups
ii  adwaita-icon-theme               49.0-1             all        default icon theme of GNOME
ii  aircrack-ng                     1:1.7+git20230807.4bf83f1a-2+b1   amd64      wireless WEP/WPA cracking utilities
ii  alsa-topology-conf              1.2.5.1-3         all        ALSA topology configuration files
ii  alsa-ucm-conf                   1.2.14-1          all        ALSA Use Case Manager configuration files
ii  amass                           5.0.1-0kali4       amd64      In-depth DNS Enumeration and Network Mapping
```

Task 3: DORA thresholds

Given,

Total deployments (month): **40**

Deployments causing incidents: **6**

Working days: **30**

Average lead time (commit → production): **3 hours**

Incidents (detected → resolved):

1. 10:00 → 11:30 → **1.5 h = 90 min**
2. 14:00 → 14:45 → **0.75 h = 45 min**
3. 09:00 → 11:00 → **2.0 h = 120 min**
4. 16:00 → 20:00 → **4.0 h = 240 min**
5. 13:00 → 13:30 → **0.5 h = 30 min**
6. 11:00 → 15:00 → **4.0 h = 240 min**

Sum of incident recovery times = $90 + 45 + 120 + 240 + 30 + 240 = 765 \text{ minutes}$

Number of incidents = 6

1) Deployment frequency (per day)

Formula: total deployments / working days

$40 \text{ deployments} \div 20 \text{ days}$

= 2 deployments per working day

2) Lead Time for Changes

Given directly: **3 hours (average)**

Answer: 3 hours (commit → production)

3) Change Failure Rate (%)

Formula:

(Deployments causing incidents / total deployments) × 100

$$= (6 \div 40) \times 100$$

$$= 0.15 \times 100$$

$$= 15\%$$

4) Mean Time To Recovery (MTTR)

Formula: **average of incident recovery durations**

Total minutes = 765

MTTR (minutes) = $765 \div 6 = 127.5$ minutes

Convert to hours/minutes:

$$= 127.5 \text{ minutes}$$

$$= 2 \text{ hours} + 7 \text{ minutes} + 30 \text{ seconds}$$

$$= 2.125 \text{ hours}$$

5) Classification (Elite / High / Medium / Low) — based on common DORA bands

Deployment frequency

Elite: multiple deploys per day

This team: **2/day → Elite**

Lead time for changes

Elite: minutes → hours (very short)

This team: **3 hours → Elite**

Change failure rate

Elite: **0–15%** ($\leq 15\%$ as top tier)

This team: **15% (Elite/High MTTR)**

Elite: < 1 hour

High: < 1 day (hours)

This team: **~2.13 hours → High**