Assignment 1: Linux Hands-on Assignment

1. Create a Folder

┌──(kali㉿kali)-[~]

└─$ mkdir assignment_folder

┌──(kali㉿kali)-[~]

└─$ ls -l

total 0

drwxrwxr-x 2 kali kali 40 Jan 26 15:32 assignment_folder

drwxr-xr-x 2 kali kali 40 Jan 26 2025 Desktop

drwxr-xr-x 2 kali kali 40 Jan 26 2025 Documents

drwxr-xr-x 2 kali kali 40 Jan 26 2025 Downloads

drwxr-xr-x 2 kali kali 40 Jan 26 2025 Music

drwxr-xr-x 2 kali kali 80 Jan 26 15:30 Pictures

drwxr-xr-x 2 kali kali 40 Jan 26 2025 Public

drwxr-xr-x 2 kali kali 40 Jan 26 2025 Templates

drwxr-xr-x 2 kali kali 40 Jan 26 2025 VideosDesktop   Music   Templates

Documents   Pictures   Videos

2. Create a File

┌──(kali㉿kali)-[~]

└─$ cd assignment_folder

┌──(kali㉿kali)-[~/assignment_folder]

└─$ touch example.txt

3. Check File Permissions

┌──(kali㉿kali)-[~/assignment_folder]

└─$ ls -l example.txt

-rw-rw-r-- 1 kali kali 0 Jan 26 15:33 example.txt

4. Change File Permissions

┌──(kali㉿kali)-[~/assignment_folder]

└─$ chmod 740 example.txt

┌──(kali㉿kali)-[~/assignment_folder]

└─$ ls -l example.txt

-rwxr----- 1 kali kali 0 Jan 26 15:33 example.txt

5. List All Users

┌──(kali㉿kali)-[~/assignment_folder]

└─$ cat /etc/passwd

root:x:0:0:root:/root:/usr/bin/zsh

daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin

bin:x:2:2:bin:/bin:/usr/sbin/nologin

sys:x:3:3:sys:/dev:/usr/sbin/nologin

sync:x:4:65534:sync:/bin:/bin/sync

games:x:5:60:games:/usr/games:/usr/sbin/nologin

man:x:6:12:man:/var/cache/man:/usr/sbin/nologin

┌──(kali㉿kali)-[~/assignment_folder]

└─$ whoami

kali

6. Change File Ownership

┌──(kali㉿kali)-[~/assignment_folder]

└─$ sudo chown kali:kali example.txt

┌──(kali㉿kali)-[~/assignment_folder]

└─$ ls -l example.txt

-rwxr----- 1 kali kali 0 Jan 26 15:33 example.txt

7. Delete the File

┌──(kali㉿kali)-[~/assignment_folder]

└─$ rm example.txt

┌──(kali㉿kali)-[~/assignment_folder]

└─$ ls -l

total 0

8. Delete the Directory

┌──(kali⊕kali)-[~/assignment_folder]

└─$ cd ..

┌──(kali⊕kali)-[~]

└─$ rmdir assignment_folder

┌──(kali⊕kali)-[~]

└─$ ls -l

total 0

drwxr-xr-x 2 kali kali 40 Jan 26 2025 Desktop

drwxr-xr-x 2 kali kali 40 Jan 26 2025 Documents

drwxr-xr-x 2 kali kali 40 Jan 26 2025 Downloads

drwxr-xr-x 2 kali kali 40 Jan 26 2025 Music

drwxr-xr-x 2 kali kali 80 Jan 26 15:30 Pictures

drwxr-xr-x 2 kali kali 40 Jan 26 2025 Public

drwxr-xr-x 2 kali kali 40 Jan 26 2025 Templates

drwxr-xr-x 2 kali kali 40 Jan 26 2025 Videos

Assignment 2: Installing and Managing Tools

1. Install a Tool

o Install a tool called curl using the package manager on your system.

sudo apt install curl

Upgrading:

  curl ldap-utils libcurl3t64-gnutls libcurl4t64 libldap-common

Installing dependencies:

  libldap2

Summary: Upgrading: 5, Installing: 1, Removing: 0, Not Upgrading: 1063

Download size: 1,346 kB

Space needed: 595 kB / 11.8 GB available

2. Verify Installation

curl --version

curl 8.11.1 (x86_64-pc-linux-gnu) libcurl/8.11.1 GnuTLS/3.8.8 zlib/1.3.1 brotli/1.1.0 zstd/1.5.6 libidn2/2.3.7 libpsl/0.21.2 libssh2/1.11.1 nghttp2/1.64.0 ngtcp2/1.6.0 nghttp3/1.4.0 librtmp/2.3 OpenLDAP/2.6.9

Release-Date: 2024-12-11, security patched: 8.11.1-1+b1

Protocols: dict file ftp ftps gopher gophers http https imap imaps ipfs ipns ldap ldaps mqtt pop3 pop3s rtmp rtsp scp sftp smb smbs smtp smtps telnet tftp ws wss

Features: alt-svc AsynchDNS brotli GSS-API HSTS HTTP2 HTTP3 HTTPS-proxy IDN IPv6 Kerberos Largefile libz NTLM PSL SPNEGO SSL threadsafe TLS-SRP UnixSockets zstd

3. Explore curl Functionality

curl http://google.com

<HTML><HEAD><meta http-equiv="content-type" content="text/html;charset=utf-8">

<TITLE>301 Moved</TITLE></HEAD><BODY>

<H1>301 Moved</H1>

The document has moved

<A HREF="http://www.google.com/">here</A>.

</BODY></HTML>

Assignment 3: Using Networking Tools

1. Ping a Host
ping google.com

PING google.com (2404:6800:4002:816::200e) 56 data bytes

64 bytes from del11s11-in-x0e.1e100.net (2404:6800:4002:816::200e): icmp_seq=1 ttl=58 time=102 ms

64 bytes from del11s11-in-x0e.1e100.net (2404:6800:4002:816::200e): icmp_seq=2 ttl=58 time=125 ms

64 bytes from del11s11-in-x0e.1e100.net (2404:6800:4002:816::200e): icmp_seq=3 ttl=58 time=148 ms

64 bytes from del11s11-in-x0e.1e100.net (2404:6800:4002:816::200e): icmp_seq=4 ttl=58 time=172 ms

64 bytes from del11s11-in-x0e.1e100.net (2404:6800:4002:816::200e): icmp_seq=5 ttl=58 time=196 ms

64 bytes from del11s11-in-x0e.1e100.net (2404:6800:4002:816::200e): icmp_seq=6 ttl=58 time=118 ms

64 bytes from del11s11-in-x0e.1e100.net (2404:6800:4002:816::200e): icmp_seq=7 ttl=58 time=244 ms

^C

--- google.com ping statistics ---

7 packets transmitted, 7 received, 0% packet loss, time 6002ms

rtt min/avg/max/mdev = 101.506/157.967/244.285/46.455 ms

2. Check Network Configuration

ifconfig

eth0: flags=4099<UP,BROADCAST,MULTICAST> mtu 1500

        ether 84:69:93:52:d2:51 txqueuelen 1000 (Ethernet)

RX packets 0 bytes 0 (0.0 B)

RX errors 0 dropped 0 overruns 0 frame 0

TX packets 0 bytes 0 (0.0 B)

TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536

inet 127.0.0.1 netmask 255.0.0.0

inet6 ::1 prefixlen 128 scopeid 0x10<host>

loop txqueuelen 1000 (Local Loopback)

RX packets 1768 bytes 152840 (149.2 KiB)

RX errors 0 dropped 0 overruns 0 frame 0

TX packets 1768 bytes 152840 (149.2 KiB)

TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

wlan0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500

inet 192.168.1.10 netmask 255.255.255.0 broadcast 192.168.1.255

inet6 fe80::a748:14ee:944:f756 prefixlen 64 scopeid 0x20<link>

inet6 2401:4900:8829:4ed8:49dd:a32e:96c8:9634 prefixlen 64 scopeid 0x0<global>

ether 38:d5:7a:03:ad:9f txqueuelen 1000 (Ethernet)

RX packets 109750 bytes 130282172 (124.2 MiB)

RX errors 0 dropped 817 overruns 0 frame 0

TX packets 16431 bytes 4638477 (4.4 MiB)

TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

3. Download a File via HTTP

curl -O https://www.google.com/sample.txt

```
 % Total    % Received % Xferd  Average Speed  Time   Time     Time Current
                                 Dload  Upload  Total  Spent   Left  Speed
100  1571 100  1571    0     0   2171      0 --:--:-- --:--:-- --:--:--  2169
```

┌──(kali㉿kali)-[~]

└─$ ls

Desktop Documents Downloads Music Pictures Public sample.txt Templates Videos

Assignment 4: Monitoring Processes and System Resources

1. View Running Processes

top

top - 15:49:22 up 31 min, 3 users, load average: 0.30, 0.27, 0.21

Tasks: 294 total,   1 running, 293 sleeping,   0 stopped,   0 zombie

%Cpu(s): 2.7 us, 0.6 sy, 0.0 ni, 96.4 id, 0.0 wa, 0.0 hi, 0.3 si, 0.0 st

MiB Mem : 23375.7 total, 18697.1 free,   3177.8 used,   2403.6 buff/cache

MiB Swap: 0.0 total,   0.0 free,   0.0 used. 20197.9 avail Mem

```
  PID USER    PR  NI   VIRT   RES   SHR S %CPU %MEM   TIME+ COMMAND

 2525 kali    20   0  11.4g 549900 258592 S  8.0  2.3  2:18.14 firefox-esr

 1673 root    20   0 1627528 209588 113356 S  5.3  0.9  1:13.14 Xorg

 7665 kali    20   0 2684116 241568 107252 S  5.3  1.0  0:38.09 Isolated Web Co

 7802 kali    20   0  917724 118320  99276 S  1.3  0.5  0:10.61 qterminal
```

2. Kill a Process

kill 1673

Completing process ID

```
 1706  0.0 ?       00:00:00 /usr/lib/systemd/systemd --user

 1708  0.0 ?       00:00:00 (sd-pam)
```

3. Monitor Resource Usage

df -h

Filesystem   Size Used Avail Use% Mounted on

udev   12G   0 12G 0% /dev

tmpfs   2.3G 1.8M 2.3G 1% /run

4. Check Memory Usage

free -h

```
        total     used     free    shared  buff/cache  available

Mem:     22Gi    3.2Gi    18Gi     548Mi     2.4Gi      19Gi

Swap:     0B      0B       0B
```

Assignment 5: Comprehensive Linux Operations

1. Directory and File Management

mkdir project_files

cd project_files

touch file1.txt file2.txt file3.txt

ls -l

mkdir: cannot create directory 'project_files': File exists

total 0

-rw-rw-r-- 1 kali kali 0 Jan 26 15:53 file1.txt

-rw-rw-r-- 1 kali kali 0 Jan 26 15:53 file2.txt

-rw-rw-r-- 1 kali kali 0 Jan 26 15:53 file3.txt

2. Permissions Management

chmod u=rw,g=r,o= file1.txt

ls -l file1.txt

-rw-r----- 1 kali kali 0 Jan 26 15:53 file1.txt

chmod 640 file1.txt

ls -l file1.txt

-rw-r----- 1 kali kali 0 Jan 26 15:53 file1.txt

3. Change Ownership

sudo chown kali:kali file2.txt

ls -l file2.txt

-rw-rw-r-- 1 kali kali 0 Jan 26 15:53 file2.txt

4. Install a Tool

sudo apt install net-tools

net-tools is already the newest version (2.10-1.1).

net-tools set to manually installed.

netstat -tuln

Active Internet connections (only servers)

Proto Recv-Q Send-Q Local Address   Foreign Address   State

udp   0   0 192.168.1.10:3702   0.0.0.0:*

udp   0   0 239.255.255.250:3702   0.0.0.0

5. Networking Tools

ping -c 4 www.github.com

PING github.com (20.207.73.82) 56(84) bytes of data.

64 bytes from 20.207.73.82: icmp_seq=1 ttl=118 time=102 ms

64 bytes from 20.207.73.82: icmp_seq=2 ttl=118 time=124 ms

64 bytes from 20.207.73.82: icmp_seq=3 ttl=118 time=248 ms

64 bytes from 20.207.73.82: icmp_seq=4 ttl=118 time=271 ms

--- github.com ping statistics ---

4 packets transmitted, 4 received, 0% packet loss, time 3005ms

rtt min/avg/max/mdev = 102.453/186.296/270.878/74.077 ms

curl -O https://www.example.com/sample.txt

```
 % Total    % Received % Xferd  Average Speed  Time    Time     Time Current
                                 Dload  Upload  Total   Spent    Left  Speed
100  1256  100  1256    0     0    993      0 0:00:01 0:00:01 --:--:--  994
```


┌──(kali㋛kali)-[~/project_files/project_files]

└─$ ls -l

total 4

-rw-r----- 1 kali kali   0 Jan 26 15:53 file1.txt

-rw-rw-r-- 1 kali kali   0 Jan 26 15:53 file2.txt

-rw-rw-r-- 1 kali kali   0 Jan 26 15:53 file3.txt

-rw-rw-r-- 1 kali kali 1256 Jan 26 15:59 sample.txt

6. Delete Resources

rm file3.txt

ls -l

total 4

-rw-r----- 1 kali kali   0 Jan 26 15:53 file1.txt

-rw-rw-r-- 1 kali kali   0 Jan 26 15:53 file2.txt

-rw-rw-r-- 1 kali kali 1256 Jan 26 15:59 sample.txt

rmdir project_files

┌──(kali㋛kali)-[~]

└─$ ls

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