

OS Lab 1 Tasks

1)

apt-get: Advanced Package Tool

Package management command for Debian and Ubuntu-based systems.

- Install a package: ``sudo apt-get install <package>``
- Update package list: ``sudo apt-get update``
- Upgrade installed packages: ``sudo apt-get upgrade``
- Remove a package: ``sudo apt-get remove <package>``

yum: Yellowdog Updater Modified

Package management command for RPM-based Linux distributions (e.g., RHEL, CentOS, Fedora).

- Install a package: ``sudo yum install <package>``
- Update all packages: ``sudo yum update``
- Remove a package: ``sudo yum remove <package>``

wget: Retrieve content from the web

- Download a file: ``wget <URL>``
- Save with a different name: ``wget -O <output_file> <URL>``
- Download in the background: ``wget -b <URL>``

gzip: Compress or decompress files.

- Compress: ``gzip <file>``

tar: Archive files and directories.

- Create a tarball: ``tar -cvf <archive.tar> <files/dirs>``
- Extract a tarball: ``tar -xvf <archive.tar>``
- Compress and archive: ``tar -czvf <archive.tar.gz> <files/dirs>``

rar: Create, modify, and extract RAR archives.

- Create a RAR archive: ``rar a <archive.rar> <files/dirs>``
- Extract a RAR archive: ``rar x <archive.rar>``

2)

Architecture of machine:

```
~ X uname -m
x86_64
```

```
~ > █
```

show cpu info:

```
~ > lscpu
Architecture:                x86_64
CPU op-mode(s):              32-bit, 64-bit
Address sizes:               39 bits physical, 48 bits virtual
Byte Order:                  Little Endian
CPU(s):                      12
On-line CPU(s) list:        0-11
Vendor ID:                   GenuineIntel
Model name:                  11th Gen Intel(R) Core(TM) i5-11400H @ 2.70GHz
CPU family:                  6
Model:                      141
Thread(s) per core:         2
Core(s) per socket:         6
Socket(s):                   1
Stepping:                    1
CPU(s) scaling MHz:         22%
CPU max MHz:                 4500.0000
CPU min MHz:                 800.0000
BogoMIPS:                    5376.00
Flags:                       fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov pat pse36 clflush dts acpi mmx fxsr sse
                             sse2 ss ht tm pbe syscall nx pdpe1gb rdtscp lm constant_tsc art arch_perfmon pebs bts rep_good nopl
                             xtology nopsid tsc cpuid aperfmperf tsc_known_freq pni pclmulqdq dtes64 monitor ds_cpl vmx est tm2
                             ssse3 sdbg fma cx16 xtpr pdcm pcid sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave av
                             x f16c rdrand lahf_lm abm 3dnowprefetch cpuid_fault epb cat_l2 cdp_l2 ssbd ibrs ibpb stibp ibrs_enhan
                             ced tpr_shadow flexpriority ept vpid ept_ad fsgsbase tsc_adjust bmi1 avx2 smep bmi2 erms invpcid rdt_
                             a avx512f avx512dq rdseed adx smap avx512ifma clflushopt clwb intel_pt avx512cd sha_ni avx512bw avx51
                             2vl xsaveopt xsavec xgetbv1 xsaves split_lock_detect user_shstk dtherm ida arat pln pts hwp hwp_notif
                             y hwp_act_window hwp_epp hwp_pkg_req vmx12b vmx12vbmip pku ospke avx512_vbmi2 gfni vaes vpclmulqdq
                             avx512_vnni avx512_bitalg avx512_vpopcntdq rdpid movdiri movdir64b fsrm avx512_vp2intersect md_clear
                             ibt flush_lld arch_capabilities

Virtualization features:
Virtualization:              VT-x
Caches (sum of all):
  L1d:                        288 KiB (6 instances)
  L1i:                        192 KiB (6 instances)
  L2:                          7.5 MiB (6 instances)
  L3:                         12 MiB (1 instance)
NUMA:
NUMA node(s):                1
NUMA node0 CPU(s):          0-11
Vulnerabilities:
Gather data sampling:        Mitigation; Microcode
Ghostwrite:                  Not affected
Indirect target selection:    Mitigation; Aligned branch/return thunks
Itlb multihit:               Not affected
Itlb multihit:               Not affected
L1tf:                        Not affected
Mds:                         Not affected
Meltdown:                    Not affected
Mmio stale data:             Not affected
Old microcode:               Not affected
Reg file data sampling:      Not affected
Retbleed:                    Not affected
Spec rstack overflow:        Not affected
Spec store bypass:           Mitigation; Speculative Store Bypass disabled via prctl
Spectre v1:                  Mitigation; usercopy/swapgs barriers and __user pointer sanitization
Spectre v2:                  Mitigation; Enhanced / Automatic IBRS; IBPB conditional; PBR SB-eIBRS SW sequence; BHI SW loop, KVM SW
                             loop
Srbds:                       Not affected
Tsa:                         Not affected
Tsx async abort:             Not affected
Vmscape:                     Not affected

~ > █
```

show kernel version:

```
~ > uname -r
6.18.3-arch1-1

~ > █
```

show system date:

```
~ > date
Sun Feb  1 12:53:32 PM PKT 2026

~ > █
```

set date and time: **Never set date and time manually**

show details of files and dirs:

```
~ > ls -l
Permissions Size User Date Modified Name
drwxr-xr-x - f4ll3n 25 Dec 2025 Desktop
drwxr-xr-x - f4ll3n 1 Feb 12:44 Documents
drwxr-xr-x - f4ll3n 29 Jan 20:26 Downloads
drwxr-xr-x - f4ll3n 29 Jan 20:28 Games
drwxr-xr-x - f4ll3n 13 Nov 2025 Music
drwxr-xr-x - f4ll3n 21 Jan 22:12 Pictures
drwxr-xr-x - f4ll3n 13 Nov 2025 Public
drwxr-xr-x - f4ll3n 13 Nov 2025 Templates
drwxr-xr-x - f4ll3n 21 Jan 21:12 Videos
drwxr-xr-x - f4ll3n 25 Dec 2025 Wallpapers
drwxr-xr-x - f4ll3n 30 Jan 10:54 Work

~ > █
```

show hidden files:

```
~ > ls -a
Permissions Size User Date Modified Name
drwxr-xr-x - f4ll3n 29 Jan 20:13 .cache
drwxr-xr-x - f4ll3n 8 Jan 17:30 .claudio
drwxr-xr-x - f4ll3n 29 Jan 20:30 .config
drwxr-xr-x - f4ll3n 14 Nov 2025 .dotnet
drwx----- - f4ll3n 30 Dec 2025 .gnupg
drwxr-xr-x - f4ll3n 21 Jan 06:41 .ipython
drwxr-xr-x - f4ll3n 16 Dec 2025 .local
drwx----- - f4ll3n 26 Dec 2025 .mozilla
drwxr-xr-x - f4ll3n 19 Dec 2025 .npm
drwx----- - f4ll3n 13 Nov 2025 .nv
drwx----- - f4ll3n 13 Nov 2025 .pki
drwxr-xr-x - f4ll3n 14 Nov 2025 .vscode
drwxr-xr-x - f4ll3n 25 Dec 2025 Desktop
drwxr-xr-x - f4ll3n 1 Feb 12:44 Documents
drwxr-xr-x - f4ll3n 29 Jan 20:26 Downloads
drwxr-xr-x - f4ll3n 29 Jan 20:28 Games
drwxr-xr-x - f4ll3n 13 Nov 2025 Music
drwxr-xr-x - f4ll3n 21 Jan 22:12 Pictures
drwxr-xr-x - f4ll3n 13 Nov 2025 Public
drwxr-xr-x - f4ll3n 13 Nov 2025 Templates
drwxr-xr-x - f4ll3n 21 Jan 21:12 Videos
drwxr-xr-x - f4ll3n 25 Dec 2025 Wallpapers
drwxr-xr-x - f4ll3n 30 Jan 10:54 Work
.rw----- 16k f4ll3n 1 Feb 12:32 #! .bash_history
.rw-r--r-- 21 f4ll3n 2 Aug 2025 #! .bash_logout
.rw-r--r-- 92 f4ll3n 16 Dec 2025 #! .bash_profile
.rw-r--r-- 437 f4ll3n 16 Dec 2025 #! .bashrc
.rw-r--r-- 35 f4ll3n 16 Dec 2025 #! .profile
.rw----- 81 f4ll3n 21 Jan 19:39 #! .python_history
.rw----- 532 f4ll3n 9 Dec 2025 #! .viminfo
.rw-r--r-- 127 f4ll3n 13 Nov 2025 #! .XCompose
.rw-r--r-- 35 f4ll3n 16 Dec 2025 #! .zshrc

~ > █
```

show files and dirs containing numbers: no dirs/files in home with numbers in them.

```
~ X ls -l | grep '[0-9]'

~ X █
```

Make directories and pwd:

```
~ × mkdir dir1

~ > mkdir dir2 dir3

~ > pwd
/home/f4ll3n

~ > ls -l | grep 'dir'
dir1
dir2
dir3

~ > █
```

remove file1:

```
~ > touch file1

~ > ls
Permissions Size User Date Modified Name
drwxr-xr-x - f4ll3n 25 Dec 2025 Desktop
drwxr-xr-x - f4ll3n 1 Feb 13:03 dir1
drwxr-xr-x - f4ll3n 1 Feb 13:03 dir2
drwxr-xr-x - f4ll3n 1 Feb 13:03 dir3
drwxr-xr-x - f4ll3n 1 Feb 12:44 Documents
drwxr-xr-x - f4ll3n 29 Jan 20:26 Downloads
drwxr-xr-x - f4ll3n 29 Jan 20:28 Games
drwxr-xr-x - f4ll3n 13 Nov 2025 Music
drwxr-xr-x - f4ll3n 21 Jan 22:12 Pictures
drwxr-xr-x - f4ll3n 13 Nov 2025 Public
drwxr-xr-x - f4ll3n 13 Nov 2025 Templates
drwxr-xr-x - f4ll3n 21 Jan 21:12 Videos
drwxr-xr-x - f4ll3n 25 Dec 2025 Wallpapers
drwxr-xr-x - f4ll3n 30 Jan 10:54 Work
-rw-r--r-- 0 f4ll3n 1 Feb 13:04 file1

~ > rm file1

~ > ls
Permissions Size User Date Modified Name
drwxr-xr-x - f4ll3n 25 Dec 2025 Desktop
drwxr-xr-x - f4ll3n 1 Feb 13:03 dir1
drwxr-xr-x - f4ll3n 1 Feb 13:03 dir2
drwxr-xr-x - f4ll3n 1 Feb 13:03 dir3
drwxr-xr-x - f4ll3n 1 Feb 12:44 Documents
drwxr-xr-x - f4ll3n 29 Jan 20:26 Downloads
drwxr-xr-x - f4ll3n 29 Jan 20:28 Games
drwxr-xr-x - f4ll3n 13 Nov 2025 Music
drwxr-xr-x - f4ll3n 21 Jan 22:12 Pictures
drwxr-xr-x - f4ll3n 13 Nov 2025 Public
drwxr-xr-x - f4ll3n 13 Nov 2025 Templates
drwxr-xr-x - f4ll3n 21 Jan 21:12 Videos
drwxr-xr-x - f4ll3n 25 Dec 2025 Wallpapers
drwxr-xr-x - f4ll3n 30 Jan 10:54 Work

~ > █
```

remove dir1 recursively:

```
~ > ls
Permissions Size User Date Modified Name
drwxr-xr-x - f4ll3n 25 Dec 2025 Desktop
drwxr-xr-x - f4ll3n 1 Feb 13:03 dir1
drwxr-xr-x - f4ll3n 1 Feb 13:03 dir2
drwxr-xr-x - f4ll3n 1 Feb 13:03 dir3
drwxr-xr-x - f4ll3n 1 Feb 12:44 Documents
drwxr-xr-x - f4ll3n 29 Jan 20:26 Downloads
drwxr-xr-x - f4ll3n 29 Jan 20:28 Games
drwxr-xr-x - f4ll3n 13 Nov 2025 Music
drwxr-xr-x - f4ll3n 21 Jan 22:12 Pictures
drwxr-xr-x - f4ll3n 13 Nov 2025 Public
drwxr-xr-x - f4ll3n 13 Nov 2025 Templates
drwxr-xr-x - f4ll3n 21 Jan 21:12 Videos
drwxr-xr-x - f4ll3n 25 Dec 2025 Wallpapers
drwxr-xr-x - f4ll3n 30 Jan 10:54 Work

~ > rm -r dir1

~ > ls
Permissions Size User Date Modified Name
drwxr-xr-x - f4ll3n 25 Dec 2025 Desktop
drwxr-xr-x - f4ll3n 1 Feb 13:03 dir2
drwxr-xr-x - f4ll3n 1 Feb 13:03 dir3
drwxr-xr-x - f4ll3n 1 Feb 12:44 Documents
drwxr-xr-x - f4ll3n 29 Jan 20:26 Downloads
drwxr-xr-x - f4ll3n 29 Jan 20:28 Games
drwxr-xr-x - f4ll3n 13 Nov 2025 Music
drwxr-xr-x - f4ll3n 21 Jan 22:12 Pictures
drwxr-xr-x - f4ll3n 13 Nov 2025 Public
drwxr-xr-x - f4ll3n 13 Nov 2025 Templates
drwxr-xr-x - f4ll3n 21 Jan 21:12 Videos
drwxr-xr-x - f4ll3n 25 Dec 2025 Wallpapers
drwxr-xr-x - f4ll3n 30 Jan 10:54 Work
```

modifying timestamp of a file or dir:

```
~ > touch -c -t 202010212121.10 dir2

~ > ls dir2

~ > ls
Permissions Size User Date Modified Name
drwxr-xr-x - f4ll3n 25 Dec 2025 Desktop
drwxr-xr-x - f4ll3n 21 Oct 2020 dir2
drwxr-xr-x - f4ll3n 1 Feb 13:03 dir3
drwxr-xr-x - f4ll3n 1 Feb 13:08 Documents
drwxr-xr-x - f4ll3n 29 Jan 20:26 Downloads
drwxr-xr-x - f4ll3n 29 Jan 20:28 Games
drwxr-xr-x - f4ll3n 13 Nov 2025 Music
drwxr-xr-x - f4ll3n 21 Jan 22:12 Pictures
drwxr-xr-x - f4ll3n 13 Nov 2025 Public
drwxr-xr-x - f4ll3n 13 Nov 2025 Templates
drwxr-xr-x - f4ll3n 21 Jan 21:12 Videos
drwxr-xr-x - f4ll3n 25 Dec 2025 Wallpapers
drwxr-xr-x - f4ll3n 30 Jan 10:54 Work

~ > █
```