

Assignment 01



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Cloud Computing applications

Some different kinds of cloud computing applications that are not in Google,

- **Vercel:** Vercel is a cloud platform designed for modern web development, providing a seamless workflow for deploying and hosting web applications. It is particularly known for its focus on serverless functions and static site generation.
- **MongoDB Atlas:** MongoDB Atlas is a fully managed, cloud-based database service provided by MongoDB, Inc. It is designed to simplify the deployment, management, and scaling of MongoDB, a popular NoSQL database, in the cloud.
- **Evernote:** Evernote is a cloud-based note-taking application. It stores users' notes and other content in the cloud, allowing seamless synchronization across multiple devices.
- **Dropbox:** Dropbox is a cloud-based file hosting service that allows users to store and synchronize files across devices and share them with others.
- **Slack:** Slack is a cloud-based collaboration platform that facilitates communication and collaboration within teams and organizations.

20 shell commands

1. ls -al

The command `ls -al` lists all files and directories in the current directory, including hidden ones, with detailed information in a long format.

```
[abir@ahammed-20101197] [~/Compact-Transformers] [main]
ls -al
drwxr-xr-x abir abir 4.0 KB Fri Jan 5 01:11:45 2024 .
drwx----- abir abir 4.0 KB Fri Feb 2 09:42:53 2024 ..
drwxr-xr-x abir abir 4.0 KB Fri Jan 5 00:58:06 2024 .git
drwxr-xr-x abir abir 4.0 KB Fri Jan 5 01:09:36 2024 __pycache__
-rw-r--r-- abir abir 123 KB Fri Jan 5 01:11:07 2024 cct_binary.ipynb
drwxr-xr-x abir abir 4.0 KB Fri Jan 5 00:58:06 2024 configs
-rw-r--r-- abir abir 1.9 KB Fri Jan 5 01:07:18 2024 data_setup.py
-rwxr-xr-x abir abir 165 B Fri Jan 5 00:58:06 2024 dist_train.sh
-rw-r--r-- abir abir 6.7 KB Fri Jan 5 01:07:18 2024 engine.py
drwxr-xr-x abir abir 4.0 KB Fri Jan 5 00:58:06 2024 examples
-rw-r--r-- abir abir 5.7 KB Fri Jan 5 01:24:13 2024 hello.ipynb
drwxr-xr-x abir abir 4.0 KB Fri Jan 5 00:58:06 2024 images
-rw-r--r-- abir abir 11 KB Fri Jan 5 00:58:06 2024 LICENSE
drwxr-xr-x abir abir 4.0 KB Fri Jan 5 00:58:06 2024 nlp
-rw-r--r-- abir abir 13 KB Fri Jan 5 00:58:06 2024 README.md
drwxr-xr-x abir abir 4.0 KB Fri Jan 5 00:59:16 2024 src
-rw-r--r-- abir abir 38 KB Fri Jan 5 00:58:06 2024 train.py
-rw-r--r-- abir abir 1.1 KB Fri Jan 5 01:07:18 2024 utils.py
-rw-r--r-- abir abir 8.1 KB Fri Jan 5 00:58:06 2024 Variants.md
```

2. factor

The `factor` command in Unix-like operating systems is used to display the prime factors of a given integer.

```
[ab1r@ahammed-20101197] [~]  
o factor 1234232348  
1234232348: 2 2 23 41 327209
```

3. tree

The `tree` command is used to display the directory structure in a tree-like format.

```
[ab1r@ahammed-20101197] [~/CSE221]  
o tree -L 2 .  
.  
├── lab01  
│   ├── 11_20101197_CSE221LabAssignment01_Fall2023.zip  
│   ├── CSE221_Lab1.docx.pdf  
│   ├── input1a.txt  
│   ├── input1b.txt  
│   ├── input2.txt  
│   ├── input3.txt  
│   ├── input4.txt  
│   ├── task1a.py  
│   ├── task1b.py  
│   ├── task2.py  
│   ├── task3.py  
│   └── task4.py  
└── 2 directories, 12 files
```

4. du

The `du` command in Unix-like operating systems is used to estimate the disk space usage of files and directories.

```
[ab1r@ahammed-20101197] [~/CSE221]  
o du -h  
152K    ./lab01  
156K    .
```

5. df

The `df` command in Unix-like operating systems is used to display information about the available disk space on file systems.

```
[ab1r@ahammed-20101197] [~]
o df -h
Filesystem      Size  Used Avail Use% Mounted on
dev             3.9G   0    3.9G   0% /dev
run             3.9G  1.3M   3.9G   1% /run
/dev/sdb1       92G   67G   21G   77% /
tmpfs           3.9G   46M   3.9G   2% /dev/shm
tmpfs           3.9G   12M   3.9G   1% /tmp
/dev/sdb2      143G   35G  108G   25% /media/wow
tmpfs           789M   60K   789M   1% /run/user/1000
```

6. head

The `head` command is used in Unix-like operating systems to display the beginning (or "head") of a file. It prints the first few lines of a text file to the standard output.

```
[ab1r@ahammed-20101197] [~/config/dwm_files]
o head autostart
#!/bin/sh

# this is just an example!
# add your autostart stuffs here
xrandr --output HDMI-0 --dpi 96 --mode 1280x1024 &
picom -f &
nitrogen --restore &
dwmblocks &
dwm
```

7. tail

The `tail` command displays the last few lines of a text file on the standard output.

```
[ab1r@ahammed-20101197] [~/config/dwm_files/dwm-6.2]
o tail Makefile
    chmod 755 ${DESTDIR}${PREFIX}/bin/dwm
    mkdir -p ${DESTDIR}${MANPREFIX}/man1
    sed "s/VERSION/${VERSION}/g" < dwm.1 > ${DESTDIR}${MANPREFIX}/man1/dwm.1
    chmod 644 ${DESTDIR}${MANPREFIX}/man1/dwm.1

uninstall:
    rm -f ${DESTDIR}${PREFIX}/bin/dwm\
        ${DESTDIR}${MANPREFIX}/man1/dwm.1

.PHONY: all options clean dist install uninstall
```

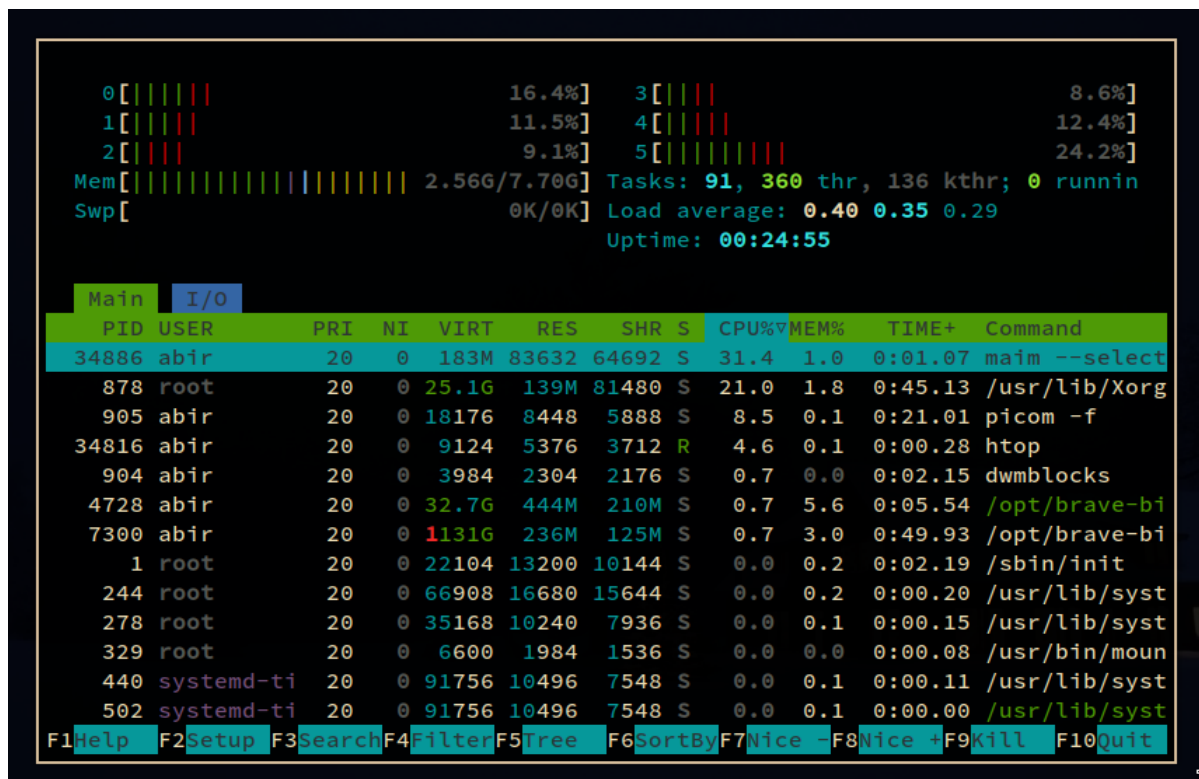
8. uname

The `uname` command is used to display system information on various operating systems.

```
[ab1r@ahammed-20101197] [~]
o uname -a
Linux ahammed-20101197 6.7.2-arch1-1 #1 SMP PREEMPT_DYNAMIC Fri, 26 Jan 2024 19:10:20 +0000 x86_64 GNU/Linux
```

9. htop

`htop` is a command-line utility that provides an interactive, real-time process viewer for Unix-like systems. It is an advanced alternative to the traditional `top` command.



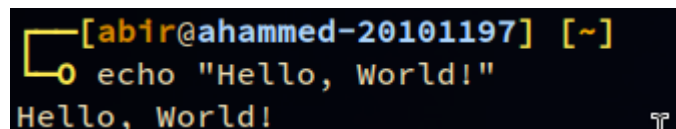
The screenshot shows the htop interface. At the top, there are system statistics: CPU usage (0%, 1%, 2%, 3%, 4%, 5%), Memory (2.56G/7.70G), Swap (0K/0K), Tasks (91), Thr (360), Kthr (136), Runnin (0), Load average (0.40, 0.35, 0.29), and Uptime (00:24:55). Below the statistics, there are two tabs: 'Main' and 'I/O'. The 'Main' tab is selected, showing a table of processes. The table has columns: PID, USER, PRI, NI, VIRT, RES, SHR, S, CPU%, MEM%, TIME+, and Command. The processes listed are:

PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	MEM%	TIME+	Command
34886	abir	20	0	183M	83632	64692	S	31.4	1.0	0:01.07	main --select
878	root	20	0	25.1G	139M	81480	S	21.0	1.8	0:45.13	/usr/lib/Xorg
905	abir	20	0	18176	8448	5888	S	8.5	0.1	0:21.01	picom -f
34816	abir	20	0	9124	5376	3712	R	4.6	0.1	0:00.28	htop
904	abir	20	0	3984	2304	2176	S	0.7	0.0	0:02.15	dwmblocks
4728	abir	20	0	32.7G	444M	210M	S	0.7	5.6	0:05.54	/opt/brave-bi
7300	abir	20	0	1131G	236M	125M	S	0.7	3.0	0:49.93	/opt/brave-bi
1	root	20	0	22104	13200	10144	S	0.0	0.2	0:02.19	/sbin/init
244	root	20	0	66908	16680	15644	S	0.0	0.2	0:00.20	/usr/lib/syst
278	root	20	0	35168	10240	7936	S	0.0	0.1	0:00.15	/usr/lib/syst
329	root	20	0	6600	1984	1536	S	0.0	0.0	0:00.08	/usr/bin/moun
440	systemd-ti	20	0	91756	10496	7548	S	0.0	0.1	0:00.11	/usr/lib/syst
502	systemd-ti	20	0	91756	10496	7548	S	0.0	0.1	0:00.00	/usr/lib/syst

At the bottom, there are function keys: F1 Help, F2 Setup, F3 Search, F4 Filter, F5 Tree, F6 SortBy, F7 Nice, F8 Nice, F9 Kill, and F10 Quit.

10. echo

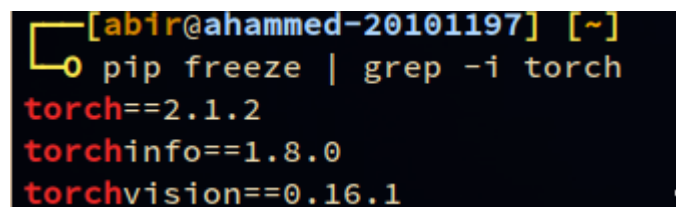
The `echo` command is a simple command-line utility used to display text or print messages to the terminal.



```
[abir@ahammed-20101197] [~]  
o echo "Hello, World!"  
Hello, World!
```

11. grep

The `grep` command is a powerful text-searching utility in Unix-like operating systems. It is used to search for a specific pattern or regular expression within files or input streams.



```
[abir@ahammed-20101197] [~]  
o pip freeze | grep -i torch  
torch==2.1.2  
torchinfo==1.8.0  
torchvision==0.16.1
```

12. cat

The `cat` command, short for "concatenate", is used in Unix-like operating systems to concatenate and display the content of files.

```
[ab1r@ahammed-20101197] [~]
o cat hello.c
#include <stdio.h>

int main() {

    int sum = 7+6/3+14*2;

    printf("%d\n", sum);

    return 0;

}
```

13. sed

The `sed` command, short for "stream editor", is a powerful text-processing utility in Unix-like operating systems.

```
[ab1r@ahammed-20101197] [~]
o sed 's/sum/num/g' hello.c
#include <stdio.h>

int main() {

    int num = 7+6/3+14*2;

    printf("%d\n", num);

    return 0;

}
```

14. systemctl status

The `systemctl status` command is used in Unix-like operating systems that utilize systemd as the init system. It is used to display detailed information about the status of a system service or unit.

```
[ab1r@ahammed-20101197] [~]
o sudo systemctl status mongodb
● mongodb.service - MongoDB Database Server
   Loaded: loaded (/usr/lib/systemd/system/mongodb.service; enabled; preset: disabled)
   Active: active (running) since Fri 2024-02-02 09:36:20 +06; 34min ago
     Docs: https://docs.mongodb.org/manual
   Main PID: 622 (mongod)
    Memory: 357.1M (peak: 370.7M)
       CPU: 14.699s
    CGroup: /system.slice/mongodb.service
            └─622 /usr/bin/mongod --config /etc/mongodb.conf

Feb 02 09:36:20 ahammed-20101197 systemd[1]: Started MongoDB Database Server.
Feb 02 09:36:21 ahammed-20101197 mongod[622]: {"t":{"$date":"2024-02-02T03:36:21.288Z"},"s
lines 1-12/12 (END)
```

15. date

The `date` command is used to display the current date and time in Unix-like operating systems.

```
[ab1r@ahammed-20101197] [~]  
o date  
Fri Feb  2 10:13:36 AM +06 2024
```

16. cal

The `cal` command is used to display a calendar for a specific month or year.

```
[ab1r@ahammed-20101197] [~]  
o cal  
February 2024  
Su Mo Tu We Th Fr Sa  
          1  2  3  
 4  5  6  7  8  9 10  
11 12 13 14 15 16 17  
18 19 20 21 22 23 24  
25 26 27 28 29
```

17. shred

The `shred` command is used to securely delete files by overwriting their content with random data.

```
[ab1r@ahammed-20101197] [~]  
o shred hello.py  
[ab1r@ahammed-20101197] [~]  
o vim hello.py  
[ab1r@ahammed-20101197] [~]  
o xxd hello.py | less  
[ab1r@ahammed-20101197] [~]  
o xxd hello.py | head  
00000000: 7543 6b6f 8d0a f237 95a9 19d6 9f6d 787e  uCko...7.....mx~  
00000010: 60db 529b 050c 95f9 a126 d193 33da 926b  ` .R.....&...3..k  
00000020: 6f35 8ce6 0c65 3c79 505a f5d6 7f00 2201  o5...e<yPZ....".  
00000030: 8b12 4a79 3032 ac9e 94ed dd70 4da4 8c6b  ..Jy02.....pM..k  
00000040: b28c d70c e50a 1802 6726 8904 4fe8 3c17  ....g&...0.<.  
00000050: 24f5 5343 fe66 5097 6ca8 11dc ec20 fd87  $.SC.fP.l......  
00000060: 2e67 5bac d35f 36e8 87a6 9dc8 e64d a665  .g[..._6.....M.e  
00000070: fe00 aa80 13da dbeb 90c6 c4b1 feb6 36d8  ....6.  
00000080: 8b22 6a9d 4119 ec05 4ed3 6d19 f772 7783  ."j.A...N.m..rw.  
00000090: 28e3 5d9a 3b74 ea1f 0608 e4bc 6200 7b44  (.) .;t.....b.{D
```

18. sha512sum

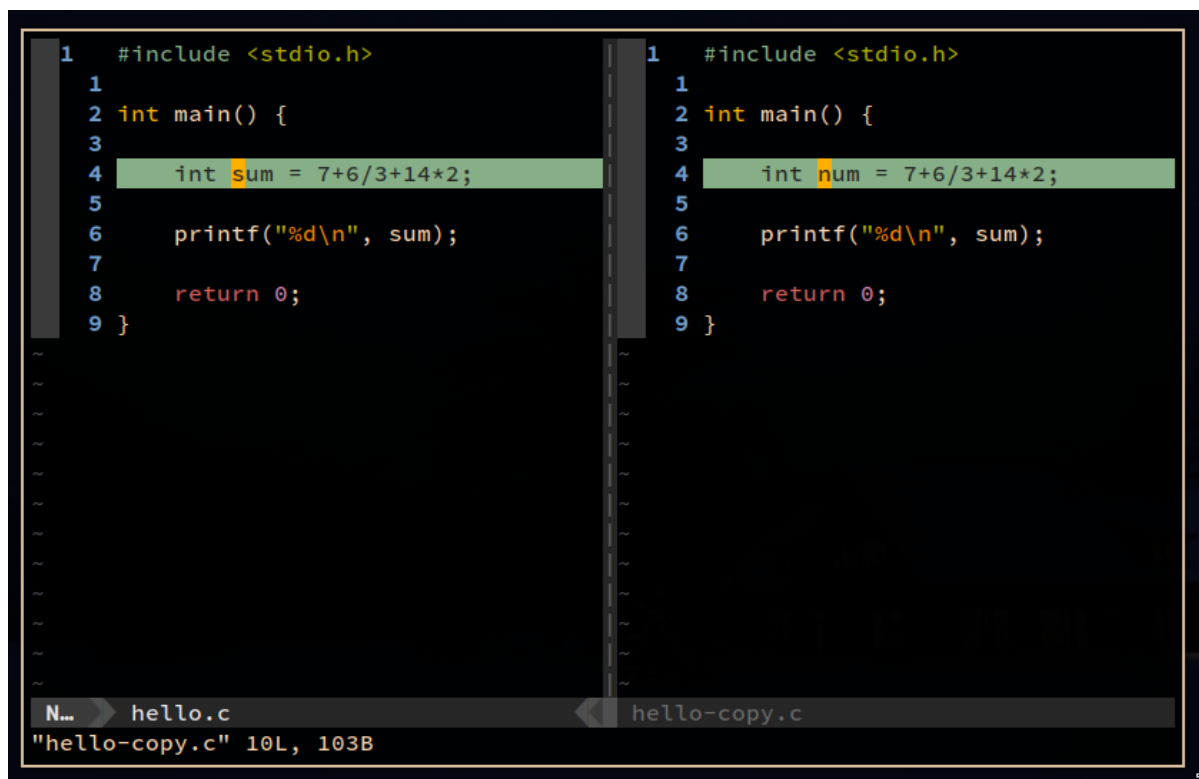
The `sha512sum` command is used to compute and display the SHA-512 checksum of a file.

```
[ab1r@ahammed-20101197] [~]
o sha512sum hello.c
5c5a759e2d84635d969977d42d49dbf1d3dc64eb4525159e4e97813a0004db7ce7da8757b86dc4f2
d9fc4564686c972f092861abaf484546e89a63cd7bcfb0bb  hello.c
[ab1r@ahammed-20101197] [~]
```

19. vimdiff

The `vimdiff` command is used to open Vim in a side-by-side, visual differencing mode. It allows users to compare and edit two or three files interactively, highlighting the differences between them.

```
[ab1r@ahammed-20101197] [~]
o vimdiff hello.c hello-copy.c
2 files to edit
[ab1r@ahammed-20101197] [~]
```



```
1  #include <stdio.h>
2  int main() {
3
4  int sum = 7+6/3+14*2;
5
6  printf("%d\n", sum);
7
8  return 0;
9  }

1  #include <stdio.h>
2  int main() {
3
4  int num = 7+6/3+14*2;
5
6  printf("%d\n", sum);
7
8  return 0;
9  }

N... hello.c
"hello-copy.c" 10L, 103B
```

20. wc

The `wc` command is used in Unix-like operating systems to display the number of lines, words, and characters in a file or input stream. The name "wc" stands for "word count".

```
[ab1r@ahammed-20101197] [~]
o ll -al | wc -l
117
```