

CLOUD ENGINEERING TRAINING

TASK DAY 3

A.. 1. File And Directory Commands-

```
sahaj@sahaj-Victus: ~$ cd ~/Documents/"cloud training"
sahaj@sahaj-Victus: ~/Documents/cloud training$ ls
sahaj@sahaj-Victus: ~/Documents/cloud training$ ls -l
total 0
sahaj@sahaj-Victus: ~/Documents/cloud training$ ls -a
.
..
sahaj@sahaj-Victus: ~/Documents/cloud training$ -lh
-lh: command not found
sahaj@sahaj-Victus: ~/Documents/cloud training$ pwd
/home/sahaj/Documents/cloud training
sahaj@sahaj-Victus: ~/Documents/cloud training$ mkdir notes
sahaj@sahaj-Victus: ~/Documents/cloud training$ touch sample1.txt
sahaj@sahaj-Victus: ~/Documents/cloud training$ cat sample1.txt
sahaj@sahaj-Victus: ~/Documents/cloud training$ head sample1.txt
sahaj@sahaj-Victus: ~/Documents/cloud training$ head -n 5 sample1.txt
sahaj@sahaj-Victus: ~/Documents/cloud training$ tail sample1.txt
sahaj@sahaj-Victus: ~/Documents/cloud training$ head sample1.txt
Linux is a free and open-source operating system based on the Unix architecture. Originally created by Linus Torvalds in 1991, it has since evolved into one of the most widely used operating systems in the world, powering everything from servers and desktops to smartphones, embedded systems, and even supercomputers. At its core, Linux consists of a kernel that manages hardware resources and enables communication between software and hardware. It is often bundled with additional software, forming what are known as Linux distributions—examples include Ubuntu, Fedora, and Arch Linux. One of Linux's defining features is its open-source nature, which allows anyone to view, modify, and distribute the source code. It is highly customizable, secure, and stable, making it a favorite among developers, system administrators, and tech enthusiasts.

sahaj@sahaj-Victus: ~/Documents/cloud training$ head -n 5 sample1.txt
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sahaj@sahaj-Victus: ~/Documents/cloud training$ tail -n 2 sample1.txt
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```

```
sahaj@sahaj-Victus: ~/Documents/cloud training$ cp sample1.txt
cp: missing destination file operand after 'sample1.txt'
Try 'cp --help' for more information.
sahaj@sahaj-Victus: ~/Documents/cloud training$ cp sample1.txt ~/Desktop/
sahaj@sahaj-Victus: ~/Documents/cloud training$ cp -r notes ~/Desktop/
sahaj@sahaj-Victus: ~/Documents/cloud training$ mv sample1.txt file_renamed.txt
sahaj@sahaj-Victus: ~/Documents/cloud training$ rm file_renamed.txt
sahaj@sahaj-Victus: ~/Documents/cloud training$ -r notes
-r: command not found
sahaj@sahaj-Victus: ~/Documents/cloud training$ rm -r
rm: missing operand
Try 'rm --help' for more information.
sahaj@sahaj-Victus: ~/Documents/cloud training$ rm -r notes
sahaj@sahaj-Victus: ~/Documents/cloud training$ rm -f sample2.txt
sahaj@sahaj-Victus: ~/Documents/cloud training$ ln -s sample1.txt link_to_file1.txt
sahaj@sahaj-Victus: ~/Documents/cloud training$ find . -name
find: missing argument to '-name'
sahaj@sahaj-Victus: ~/Documents/cloud training$ find . -name "*.txt"
./link_to_file1.txt
sahaj@sahaj-Victus: ~/Documents/cloud training$ find . -type d
.
sahaj@sahaj-Victus: ~/Documents/cloud training$
```

2. File Permission Commands

```
sahaj@sahaj-Victus:~/Documents$ chmod ug+x text.txt
sahaj@sahaj-Victus:~/Documents$ ls -al
total 20
drwxr-xr-x  4 sahaj sahaj 4096 Aug  6 19:57 .
drwxr-x--- 20 sahaj sahaj 4096 Aug  6 18:07 ..
drwxrwxr-x  3 sahaj sahaj 4096 Aug  5 20:31 'cloud training'
lrwxrwxrwx  1 sahaj sahaj    6 Aug  6 19:57 link_name -> target
drwxrwxr-x  2 sahaj sahaj 4096 Aug  6 19:45 my_dir
-rwxrwxr--  1 sahaj sahaj   50 Aug  6 19:54 text.txt
sahaj@sahaj-Victus:~/Documents$ chown sahaj:root text.txt
chown: changing ownership of 'text.txt': Operation not permitted
sahaj@sahaj-Victus:~/Documents$ sudo chown sahaj:root text.txt
[sudo] password for sahaj:
sahaj@sahaj-Victus:~/Documents$ ls -al
total 20
drwxr-xr-x  4 sahaj sahaj 4096 Aug  6 19:57 .
drwxr-x--- 20 sahaj sahaj 4096 Aug  6 18:07 ..
drwxrwxr-x  3 sahaj sahaj 4096 Aug  5 20:31 'cloud training'
lrwxrwxrwx  1 sahaj sahaj    6 Aug  6 19:57 link_name -> target
drwxrwxr-x  2 sahaj sahaj 4096 Aug  6 19:45 my_dir
-rwxrwxr--  1 sahaj root    50 Aug  6 19:54 text.txt
sahaj@sahaj-Victus:~/Documents$ chgrp root text.txt
sahaj@sahaj-Victus:~/Documents$ ls -al
total 20
drwxr-xr-x  4 sahaj sahaj 4096 Aug  6 19:57 .
drwxr-x--- 20 sahaj sahaj 4096 Aug  6 18:07 ..
drwxrwxr-x  3 sahaj sahaj 4096 Aug  5 20:31 'cloud training'
lrwxrwxrwx  1 sahaj sahaj    6 Aug  6 19:57 link_name -> target
drwxrwxr-x  2 sahaj sahaj 4096 Aug  6 19:45 my_dir
-rwxrwxr--  1 sahaj root    50 Aug  6 19:54 text.txt
sahaj@sahaj-Victus:~/Documents$ chgrp sahaj text.txt
sahaj@sahaj-Victus:~/Documents$ ls -al
total 20
drwxr-xr-x  4 sahaj sahaj 4096 Aug  6 19:57 .
drwxr-x--- 20 sahaj sahaj 4096 Aug  6 18:07 ..
drwxrwxr-x  3 sahaj sahaj 4096 Aug  5 20:31 'cloud training'
lrwxrwxrwx  1 sahaj sahaj    6 Aug  6 19:57 link_name -> target
drwxrwxr-x  2 sahaj sahaj 4096 Aug  6 19:45 my_dir
-rwxrwxr--  1 sahaj sahaj   50 Aug  6 19:54 text.txt
sahaj@sahaj-Victus:~/Documents$
```

3.File Compression and Archiving Commands

```
sahaj@sahaj-Victus:~/Downloads$ gzip archive.tar.gz
gzip: archive.tar.gz already has .gz suffix -- unchanged
sahaj@sahaj-Victus:~/Downloads$ ls
archive.tar.gz          code-stable-x64-1753759483.tar      thunderbird.tmp
code-stable-x64-1753759483  code-stable-x64-1753759483.tar.gz  VSCode-linux-x64
sahaj@sahaj-Victus:~/Downloads$ ls -al
total 578152
drwxr-xr-x  5 sahaj sahaj   4096 Aug  6 20:22 .
drwxr-x--- 20 sahaj sahaj   4096 Aug  6 18:07 ..
-rw-rw-r--  1 sahaj sahaj    45 Aug  6 20:17 archive.tar.gz
drwxrwxr-x  3 sahaj sahaj   4096 Aug  6 18:32 code-stable-x64-1753759483
-rw-rw-r--  1 sahaj sahaj 437626880 Aug  6 18:31 code-stable-x64-1753759483.tar
-rw-rw-r--  1 sahaj sahaj 154367064 Aug  6 20:22 code-stable-x64-1753759483.tar.gz
drwx----- 2 sahaj sahaj   4096 Aug  6 19:14 thunderbird.tmp
drwxr-xr-x  5 sahaj sahaj   4096 Jul 29 08:54 VSCode-linux-x64
sahaj@sahaj-Victus:~/Downloads$ gzip -d code-stable-x64-1753759483.tar.gz
gzip: code-stable-x64-1753759483.tar already exists; do you wish to overwrite (y or n)? y
sahaj@sahaj-Victus:~/Downloads$ tar -czvf tar -xvf code-stable-x64-1753759483.tar
tar: You may not specify more than one '-Acdtrux', '--delete' or '--test-label' option
Try 'tar --help' or 'tar --usage' for more information.
sahaj@sahaj-Victus:~/Downloads$ tar -xvf code-stable-x64-1753759483.tar
VSCode-linux-x64/
```

```
sahaj@sahaj-Victus:~/Downloads$ tar -xvf code-stable-x64-1753759483.tar
VSCode-linux-x64/
VSCode-linux-x64/resources/
VSCode-linux-x64/resources/app/
VSCode-linux-x64/resources/app/resources/
VSCode-linux-x64/resources/app/resources/linux/
VSCode-linux-x64/resources/app/resources/linux/code.png
VSCode-linux-x64/resources/app/out/
VSCode-linux-x64/resources/app/out/vs/
VSCode-linux-x64/resources/app/out/vs/workbench/
VSCode-linux-x64/resources/app/out/vs/workbench/contrib/
VSCode-linux-x64/resources/app/out/vs/workbench/contrib/welcomeGettingStarted/
VSCode-linux-x64/resources/app/out/vs/workbench/contrib/welcomeGettingStarted/common/
VSCode-linux-x64/resources/app/out/vs/workbench/contrib/welcomeGettingStarted/common/media/
VSCode-linux-x64/resources/app/out/vs/workbench/contrib/welcomeGettingStarted/common/media/languages.svg
VSCode-linux-x64/resources/app/out/vs/workbench/contrib/welcomeGettingStarted/common/media/customize-ai.svg
VSCode-linux-x64/resources/app/out/vs/workbench/contrib/welcomeGettingStarted/common/media/search.svg
VSCode-linux-x64/resources/app/out/vs/workbench/contrib/welcomeGettingStarted/common/media/multi-file-edits.svg
VSCode-linux-x64/resources/app/out/vs/workbench/contrib/welcomeGettingStarted/common/media/profiles.svg
VSCode-linux-x64/resources/app/out/vs/workbench/contrib/welcomeGettingStarted/common/media/debug.svg
VSCode-linux-x64/resources/app/out/vs/workbench/contrib/welcomeGettingStarted/common/media/dark-hc.png
VSCode-linux-x64/resources/app/out/vs/workbench/contrib/welcomeGettingStarted/common/media/git.svg
VSCode-linux-x64/resources/app/out/vs/workbench/contrib/welcomeGettingStarted/common/media/menuBar.svg
VSCode-linux-x64/resources/app/out/vs/workbench/contrib/welcomeGettingStarted/common/media/commandPalette.svg
VSCode-linux-x64/resources/app/out/vs/workbench/contrib/welcomeGettingStarted/common/media/shortcuts.svg
VSCode-linux-x64/resources/app/out/vs/workbench/contrib/welcomeGettingStarted/common/media/learn.svg
VSCode-linux-x64/resources/app/out/vs/workbench/contrib/welcomeGettingStarted/common/media/light-hc.png
VSCode-linux-x64/resources/app/out/vs/workbench/contrib/welcomeGettingStarted/common/media/dark.png
VSCode-linux-x64/resources/app/out/vs/workbench/contrib/welcomeGettingStarted/common/media/settings.svg
VSCode-linux-x64/resources/app/out/vs/workbench/contrib/welcomeGettingStarted/common/media/terminal.svg
VSCode-linux-x64/resources/app/out/vs/workbench/contrib/welcomeGettingStarted/common/media/extensions.svg
VSCode-linux-x64/resources/app/out/vs/workbench/contrib/welcomeGettingStarted/common/media/settingsSync.svg
VSCode-linux-x64/resources/app/out/vs/workbench/contrib/welcomeGettingStarted/common/media/ai-powered-suggestions.svg
VSCode-linux-x64/resources/app/out/vs/workbench/contrib/welcomeGettingStarted/common/media/workspaceTrust.svg
VSCode-linux-x64/resources/app/out/vs/workbench/contrib/welcomeGettingStarted/common/media/extensions-web.svg
VSCode-linux-x64/resources/app/out/vs/workbench/contrib/welcomeGettingStarted/common/media/light.png
VSCode-linux-x64/resources/app/out/vs/workbench/contrib/welcomeGettingStarted/common/media/openFolder.svg
VSCode-linux-x64/resources/app/out/vs/workbench/contrib/welcomeGettingStarted/common/media/notebookThemes/
VSCode-linux-x64/resources/app/out/vs/workbench/contrib/welcomeGettingStarted/common/media/notebookThemes/jupyter.png
VSCode-linux-x64/resources/app/out/vs/workbench/contrib/welcomeGettingStarted/common/media/notebookThemes/colab.png
VSCode-linux-x64/resources/app/out/vs/workbench/contrib/welcomeGettingStarted/common/media/notebookThemes/default.png
VSCode-linux-x64/resources/app/out/vs/workbench/contrib/welcomeGettingStarted/common/media/runTask.svg
VSCode-linux-x64/resources/app/out/vs/workbench/contrib/debug/
VSCode-linux-x64/resources/app/out/vs/workbench/contrib/debug/node/
VSCode-linux-x64/resources/app/out/vs/workbench/contrib/debug/node/telemetryApp.js
```

Cont...

```
sahaj@sahaj-Victus:~/Downloads$ ls
archive.tar.gz          code-stable-x64-1753759483.tar  VSCode-linux-x64
code-stable-x64-1753759483  thunderbird.tmp
sahaj@sahaj-Victus:~/Downloads$ cd VSCode-linux-x64/
sahaj@sahaj-Victus:~/Downloads/VSCode-linux-x64$ cd ~
sahaj@sahaj-Victus:~$ [
```

4. Process Management Commands

```
sahaj@sahaj-Victus:~$ ps aux
USER   PID %CPU %MEM VSZ RSS TTY STAT START  TIME COMMAND
root      1  1.6  0.0 23496 14168 ? Ss   12:04  0:01 /sbin/init sp
root      2  0.0  0.0    0   0 ?     S   12:04  0:00 [kthreadd]
root      3  0.0  0.0    0   0 ?     S   12:04  0:00 [pool_workque
root      4  0.0  0.0    0   0 ?     I<  12:04  0:00 [kworker/R-rc
root      5  0.0  0.0    0   0 ?     I<  12:04  0:00 [kworker/R-sy
root      6  0.0  0.0    0   0 ?     I<  12:04  0:00 [kworker/R-kv
root      7  0.0  0.0    0   0 ?     I<  12:04  0:00 [kworker/R-sl
root      8  0.0  0.0    0   0 ?     I<  12:04  0:00 [kworker/R-ne
root      9  0.0  0.0    0   0 ?     I   12:04  0:00 [kworker/0:0-
root     10 0.0  0.0    0   0 ?     I<  12:04  0:00 [kworker/0:0H
root     11 0.0  0.0    0   0 ?     I   12:04  0:00 [kworker/0:1-
root     12 0.1  0.0    0   0 ?     I   12:04  0:00 [kworker/u48:
root     13 0.0  0.0    0   0 ?     I<  12:04  0:00 [kworker/R-mm
root     14 0.0  0.0    0   0 ?     I   12:04  0:00 [rcu_tasks_kt
root     15 0.0  0.0    0   0 ?     I   12:04  0:00 [rcu_tasks_ru
root     16 0.0  0.0    0   0 ?     I   12:04  0:00 [rcu_tasks_tr
root     17 0.0  0.0    0   0 ?     S   12:04  0:00 [ksoftirqd/0]
root     18 0.1  0.0    0   0 ?     I   12:04  0:00 [rcu_preempt]
root     19 0.0  0.0    0   0 ?     S   12:04  0:00 [rcu_exp_par_
root     20 0.0  0.0    0   0 ?     S   12:04  0:00 [rcu_exp_gp_k
root     21 0.0  0.0    0   0 ?     S   12:04  0:00 [migration/0]
root     22 0.0  0.0    0   0 ?     S   12:04  0:00 [idle_inject/
root     23 0.0  0.0    0   0 ?     S   12:04  0:00 [cpuhp/0]
root     24 0.0  0.0    0   0 ?     S   12:04  0:00 [cpuhp/1]
root     25 0.0  0.0    0   0 ?     S   12:04  0:00 [idle_inject/
root     26 0.1  0.0    0   0 ?     S   12:04  0:00 [migration/1]
root     27 0.0  0.0    0   0 ?     S   12:04  0:00 [ksoftirqd/1]
root     28 0.0  0.0    0   0 ?     I   12:04  0:00 [kworker/1:0-
root     29 0.0  0.0    0   0 ?     I<  12:04  0:00 [kworker/1:0H
root     30 0.0  0.0    0   0 ?     S   12:04  0:00 [cpuhp/2]
root     31 0.0  0.0    0   0 ?     S   12:04  0:00 [idle_inject/
root     32 0.1  0.0    0   0 ?     S   12:04  0:00 [migration/2]
root     33 0.0  0.0    0   0 ?     S   12:04  0:00 [ksoftirqd/2]
```

root	34	0.0	0.0	0	0?	I	12:04	0:00	[kworker/2:0-
root	35	0.0	0.0	0	0?	I<	12:04	0:00	[kworker/2:0H
root	36	0.0	0.0	0	0?	S	12:04	0:00	[cpuhp/3]
root	37	0.0	0.0	0	0?	S	12:04	0:00	[idle_inject/
root	38	0.1	0.0	0	0?	S	12:04	0:00	[migration/3]
root	39	0.0	0.0	0	0?	S	12:04	0:00	[ksoftirqd/3]
root	40	0.0	0.0	0	0?	I	12:04	0:00	[kworker/3:0-
root	41	0.0	0.0	0	0?	I<	12:04	0:00	[kworker/3:0H
root	42	0.0	0.0	0	0?	S	12:04	0:00	[cpuhp/4]
root	43	0.0	0.0	0	0?	S	12:04	0:00	[idle_inject/
root	44	0.1	0.0	0	0?	S	12:04	0:00	[migration/4]
root	45	0.0	0.0	0	0?	S	12:04	0:00	[ksoftirqd/4]
root	46	0.0	0.0	0	0?	I	12:04	0:00	[kworker/4:0-
root	47	0.0	0.0	0	0?	I<	12:04	0:00	[kworker/4:0H
root	48	0.0	0.0	0	0?	S	12:04	0:00	[cpuhp/5]
root	49	0.0	0.0	0	0?	S	12:04	0:00	[idle_inject/
root	50	0.1	0.0	0	0?	S	12:04	0:00	[migration/5]
root	51	0.0	0.0	0	0?	S	12:04	0:00	[ksoftirqd/5]
root	52	0.0	0.0	0	0?	I	12:04	0:00	[kworker/5:0-
root	53	0.0	0.0	0	0?	I<	12:04	0:00	[kworker/5:0H
root	54	0.0	0.0	0	0?	S	12:04	0:00	[cpuhp/6]
root	55	0.0	0.0	0	0?	S	12:04	0:00	[idle_inject/
root	56	0.1	0.0	0	0?	S	12:04	0:00	[migration/6]
root	57	0.0	0.0	0	0?	S	12:04	0:00	[ksoftirqd/6]
root	58	0.0	0.0	0	0?	I	12:04	0:00	[kworker/6:0-
root	59	0.0	0.0	0	0?	I<	12:04	0:00	[kworker/6:0H
root	60	0.0	0.0	0	0?	S	12:04	0:00	[cpuhp/7]
root	61	0.0	0.0	0	0?	S	12:04	0:00	[idle_inject/
root	62	0.1	0.0	0	0?	S	12:04	0:00	[migration/7]
root	63	0.0	0.0	0	0?	S	12:04	0:00	[ksoftirqd/7]
root	64	0.0	0.0	0	0?	I	12:04	0:00	[kworker/7:0-
root	65	0.0	0.0	0	0?	I<	12:04	0:00	[kworker/7:0H
root	66	0.0	0.0	0	0?	S	12:04	0:00	[cpuhp/8]
root	67	0.0	0.0	0	0?	S	12:04	0:00	[idle_inject/
root	68	0.1	0.0	0	0?	S	12:04	0:00	[migration/8]
root	69	0.0	0.0	0	0?	S	12:04	0:00	[ksoftirqd/8]
root	70	0.0	0.0	0	0?	I	12:04	0:00	[kworker/8:0-
root	71	0.0	0.0	0	0?	I<	12:04	0:00	[kworker/8:0H
root	72	0.0	0.0	0	0?	S	12:04	0:00	[cpuhp/9]
root	73	0.0	0.0	0	0?	S	12:04	0:00	[idle_inject/
root	74	0.1	0.0	0	0?	S	12:04	0:00	[migration/9]
root	75	0.0	0.0	0	0?	S	12:04	0:00	[ksoftirqd/9]
root	76	0.0	0.0	0	0?	I	12:04	0:00	[kworker/9:0-
root	77	0.0	0.0	0	0?	I<	12:04	0:00	[kworker/9:0H
root	78	0.0	0.0	0	0?	S	12:04	0:00	[cpuhp/10]
root	79	0.0	0.0	0	0?	S	12:04	0:00	[idle_inject/
root	80	0.1	0.0	0	0?	S	12:04	0:00	[migration/10]
root	81	0.0	0.0	0	0?	S	12:04	0:00	[ksoftirqd/10]
root	82	0.0	0.0	0	0?	I	12:04	0:00	[kworker/10:0
root	83	0.0	0.0	0	0?	I<	12:04	0:00	[kworker/10:0H
root	84	0.0	0.0	0	0?	S	12:04	0:00	[cpuhp/11]
root	85	0.0	0.0	0	0?	S	12:04	0:00	[idle_inject/

root	86	0.1	0.0	0	0?	S	12:04	0:00	[migration/11]
root	87	0.0	0.0	0	0?	S	12:04	0:00	[ksoftirqd/11]
root	88	0.0	0.0	0	0?	I	12:04	0:00	[kworker/11:0]
root	89	0.0	0.0	0	0?	I<	12:04	0:00	[kworker/11:0]
root	90	0.0	0.0	0	0?	S	12:04	0:00	[kdevtmpfs]
root	91	0.0	0.0	0	0?	I<	12:04	0:00	[kworker/R-in]
root	92	0.0	0.0	0	0?	S	12:04	0:00	[kaudittd]
root	93	0.0	0.0	0	0?	S	12:04	0:00	[khungtaskd]
root	94	0.0	0.0	0	0?	S	12:04	0:00	[oom_reaper]
root	95	0.0	0.0	0	0?	I	12:04	0:00	[kworker/u48:0]
root	96	0.0	0.0	0	0?	I	12:04	0:00	[kworker/u48:1]
root	97	0.0	0.0	0	0?	I<	12:04	0:00	[kworker/R-wr]
root	98	0.0	0.0	0	0?	S	12:04	0:00	[kcompactd0]
root	99	0.0	0.0	0	0?	SN	12:04	0:00	[ksmd]
root	100	0.0	0.0	0	0?	SN	12:04	0:00	[khugepaged]
root	101	0.0	0.0	0	0?	I<	12:04	0:00	[kworker/R-ki]
root	102	0.0	0.0	0	0?	I<	12:04	0:00	[kworker/R-kb]
root	103	0.0	0.0	0	0?	I<	12:04	0:00	[kworker/R-bl]
root	104	0.0	0.0	0	0?	S	12:04	0:00	[irq/9-acpi]
root	105	0.0	0.0	0	0?	I	12:04	0:00	[kworker/6:1]
root	106	0.0	0.0	0	0?	I	12:04	0:00	[kworker/1:1]
root	107	0.0	0.0	0	0?	I<	12:04	0:00	[kworker/R-tp]
root	108	0.0	0.0	0	0?	I<	12:04	0:00	[kworker/R-at]
root	109	0.0	0.0	0	0?	I<	12:04	0:00	[kworker/R-md]
root	110	0.0	0.0	0	0?	I<	12:04	0:00	[kworker/R-md]
root	111	0.0	0.0	0	0?	I<	12:04	0:00	[kworker/R-ed]
root	112	0.0	0.0	0	0?	I<	12:04	0:00	[kworker/R-de]
root	113	0.0	0.0	0	0?	S	12:04	0:00	[watchdogd]
root	114	0.0	0.0	0	0?	I<	12:04	0:00	[kworker/0:1H]
root	115	0.0	0.0	0	0?	I	12:04	0:00	[kworker/3:1]
root	116	0.0	0.0	0	0?	I	12:04	0:00	[kworker/9:1]
root	117	0.0	0.0	0	0?	S	12:04	0:00	[kswapd0]
root	118	0.0	0.0	0	0?	S	12:04	0:00	[ecryptfs-kth]
root	119	0.0	0.0	0	0?	I<	12:04	0:00	[kworker/R-kt]
root	120	0.0	0.0	0	0?	I<	12:04	0:00	[kworker/R-ac]
root	121	0.0	0.0	0	0?	I	12:04	0:00	[kworker/u48:0]
root	122	0.0	0.0	0	0?	S	12:04	0:00	[hwrng]
root	123	0.0	0.0	0	0?	I	12:04	0:00	[kworker/7:1]
root	124	0.0	0.0	0	0?	I<	12:04	0:00	[kworker/R-ml]
root	125	0.0	0.0	0	0?	I<	12:04	0:00	[kworker/6:1H]
root	126	0.0	0.0	0	0?	I<	12:04	0:00	[kworker/R-ip]
root	133	0.0	0.0	0	0?	I<	12:04	0:00	[kworker/R-ks]
root	134	0.0	0.0	0	0?	I	12:04	0:00	[kworker/1:2]
root	135	0.0	0.0	0	0?	I	12:04	0:00	[kworker/5:1]
root	136	0.0	0.0	0	0?	I	12:04	0:00	[kworker/2:1]
root	137	0.0	0.0	0	0?	I	12:04	0:00	[kworker/11:1]
root	139	0.1	0.0	0	0?	I<	12:04	0:00	[kworker/u49:0]
root	153	0.0	0.0	0	0?	I	12:04	0:00	[kworker/10:1]
root	154	0.0	0.0	0	0?	I<	12:04	0:00	[kworker/R-ch]
root	155	0.0	0.0	0	0?	I	12:04	0:00	[kworker/7:2]
root	173	0.0	0.0	0	0?	I	12:04	0:00	[kworker/7:3]
root	177	0.0	0.0	0	0?	I	12:04	0:00	[kworker/7:4]

root	180	0.0	0.0	0	0	?	I<	12:04	0:00	[kworker/5:1H]
root	184	0.0	0.0	0	0	?	I<	12:04	0:00	[kworker/1:1H]
root	199	0.0	0.0	0	0	?	I<	12:04	0:00	[kworker/7:1H]
root	200	0.0	0.0	0	0	?	I<	12:04	0:00	[kworker/8:1H]
root	222	0.0	0.0	0	0	?	I<	12:04	0:00	[kworker/4:1H]
root	223	0.0	0.0	0	0	?	I<	12:04	0:00	[kworker/3:1H]
root	224	0.0	0.0	0	0	?	I<	12:04	0:00	[kworker/2:1H]
root	225	0.0	0.0	0	0	?	I<	12:04	0:00	[kworker/9:1H]
root	226	0.0	0.0	0	0	?	I<	12:04	0:00	[kworker/10:1]
root	252	0.0	0.0	0	0	?	I	12:04	0:00	[kworker/8:1-]
root	263	0.0	0.0	0	0	?	I	12:04	0:00	[kworker/8:2-]
root	265	0.0	0.0	0	0	?	I<	12:04	0:00	[kworker/11:1]
root	267	0.0	0.0	0	0	?	I	12:04	0:00	[kworker/6:2-]
root	268	0.0	0.0	0	0	?	S	12:04	0:00	[irq/84-SYNA3]
root	269	0.0	0.0	0	0	?	I<	12:04	0:00	[kworker/R-sd]
root	270	0.0	0.0	0	0	?	S	12:04	0:00	[irq/161-mmc0]
root	272	0.0	0.0	0	0	?	I	12:04	0:00	[kworker/7:5]
root	273	0.0	0.0	0	0	?	I<	12:04	0:00	[kworker/R-nv]
root	274	0.0	0.0	0	0	?	I<	12:04	0:00	[kworker/R-nv]
root	275	0.0	0.0	0	0	?	I<	12:04	0:00	[kworker/R-nv]
root	276	0.0	0.0	0	0	?	I<	12:04	0:00	[kworker/R-nv]
root	277	0.1	0.0	0	0	?	I	12:04	0:00	[kworker/u48:]
root	278	0.0	0.0	0	0	?	I<	12:04	0:00	[kworker/R-US]
root	315	0.0	0.0	0	0	?	S	12:04	0:00	[jbd2/nvme0n1]
root	316	0.0	0.0	0	0	?	I<	12:04	0:00	[kworker/R-ex]
root	321	0.1	0.0	0	0	?	I	12:04	0:00	[kworker/4:1-]
root	331	0.0	0.0	0	0	?	I	12:04	0:00	[kworker/5:2-]
root	367	0.4	0.1	50976	17648	?	S<s	12:04	0:00	/usr/lib/syst
root	392	0.0	0.0	0	0	?	I	12:04	0:00	[kworker/u48:]
root	396	0.0	0.0	0	0	?	I	12:04	0:00	[kworker/9:2-]
root	400	0.0	0.0	0	0	?	I	12:04	0:00	[kworker/11:2]
root	404	0.2	0.0	30768	8160	?	Ss	12:04	0:00	/usr/lib/syst
root	463	0.0	0.0	0	0	?	I	12:04	0:00	[kworker/1:3-]
root	464	0.0	0.0	0	0	?	S	12:04	0:00	[psimon]
root	482	0.0	0.0	0	0	?	I	12:04	0:00	[kworker/u48:]
root	483	0.0	0.0	0	0	?	I	12:04	0:00	[kworker/u48:]
root	485	0.0	0.0	0	0	?	I	12:04	0:00	[kworker/u48:]
root	486	0.1	0.0	0	0	?	I	12:04	0:00	[kworker/u48:]
root	488	0.0	0.0	0	0	?	I	12:04	0:00	[kworker/u48:]
root	489	0.0	0.0	0	0	?	I	12:04	0:00	[kworker/u48:]
root	492	0.0	0.0	0	0	?	I	12:04	0:00	[kworker/u48:]
root	493	0.0	0.0	0	0	?	I	12:04	0:00	[kworker/u48:]
root	495	0.0	0.0	0	0	?	I	12:04	0:00	[kworker/u48:]
root	496	0.0	0.0	0	0	?	I	12:04	0:00	[kworker/u48:]
root	497	0.0	0.0	0	0	?	I	12:04	0:00	[kworker/u48:]
root	498	0.0	0.0	0	0	?	I	12:04	0:00	[kworker/u48:]
root	500	0.0	0.0	0	0	?	I	12:04	0:00	[kworker/u48:]
root	501	0.0	0.0	0	0	?	I	12:04	0:00	[kworker/u48:]
root	529	0.0	0.0	0	0	?	I	12:04	0:00	[kworker/8:3-]
root	532	0.0	0.0	0	0	?	I	12:04	0:00	[kworker/8:4-]
root	536	0.0	0.0	0	0	?	I	12:04	0:00	[kworker/3:2-]
root	590	0.0	0.0	0	0	?	I<	12:04	0:00	[kworker/R-cf]

root	594	0.0	0.0	0	0 ?	I	12:04	0:00	[kworker/2:2-
root	605	0.0	0.0	0	0 ?	S	12:04	0:00	[irq/186-mei_
root	615	0.0	0.0	0	0 ?	S	12:04	0:00	[irq/187-iwlw
root	616	0.0	0.0	0	0 ?	S	12:04	0:00	[irq/188-iwlw
root	617	0.0	0.0	0	0 ?	S	12:04	0:00	[irq/189-iwlw
root	618	0.0	0.0	0	0 ?	S	12:04	0:00	[irq/190-iwlw
root	619	0.0	0.0	0	0 ?	S	12:04	0:00	[irq/191-iwlw
root	620	0.0	0.0	0	0 ?	S	12:04	0:00	[irq/192-iwlw
root	621	0.0	0.0	0	0 ?	S	12:04	0:00	[irq/193-iwlw
root	622	0.0	0.0	0	0 ?	S	12:04	0:00	[irq/194-iwlw
root	623	0.0	0.0	0	0 ?	S	12:04	0:00	[irq/195-iwlw
root	624	0.0	0.0	0	0 ?	S	12:04	0:00	[irq/196-iwlw
root	625	0.0	0.0	0	0 ?	S	12:04	0:00	[irq/197-iwlw
root	626	0.0	0.0	0	0 ?	S	12:04	0:00	[irq/198-iwlw
root	629	0.0	0.0	0	0 ?	S	12:04	0:00	[irq/199-iwlw
root	630	0.0	0.0	0	0 ?	S	12:04	0:00	[irq/200-iwlw
root	633	0.0	0.0	0	0 ?	I<	12:04	0:00	[kworker/R-cr
root	641	0.0	0.0	0	0 ?	I<	12:04	0:00	[kworker/u49:
root	642	0.0	0.0	0	0 ?	I<	12:04	0:00	[kworker/u49:
root	664	0.0	0.0	0	0 ?	I<	12:04	0:00	[kworker/R-tt
root	668	0.0	0.0	0	0 ?	S	12:04	0:00	[card1-crtc0]
root	669	0.0	0.0	0	0 ?	S	12:04	0:00	[card1-crtc1]
root	670	0.0	0.0	0	0 ?	S	12:04	0:00	[card1-crtc2]
root	671	0.0	0.0	0	0 ?	S	12:04	0:00	[card1-crtc3]
root	768	0.0	0.0	0	0 ?	I	12:04	0:00	[kworker/10:2]
systemd+	796	0.0	0.0	17556	7708 ?	Ss	12:04	0:00	/usr/lib/syst
systemd+	822	0.2	0.0	22104	13228 ?	Ss	12:04	0:00	/usr/lib/syst
systemd+	823	0.0	0.0	91044	7688 ?	Ssl	12:04	0:00	/usr/lib/syst
root	830	0.0	0.0	0	0 ?	I	12:04	0:00	[kworker/0:2]
root	831	0.0	0.0	0	0 ?	S	12:04	0:00	[irq/202-Audi
root	842	0.0	0.0	0	0 ?	S	12:04	0:00	[nv_queue]
root	843	0.0	0.0	0	0 ?	S	12:04	0:00	[nv_queue]
root	845	0.0	0.0	0	0 ?	S	12:04	0:00	[nv_open_q]
root	856	0.0	0.0	0	0 ?	S	12:04	0:00	[nvidia-modes]
root	857	0.0	0.0	0	0 ?	S	12:04	0:00	[nvidia-modes]
root	890	0.0	0.0	0	0 ?	S	12:04	0:00	[irq/203-nvid
root	891	0.0	0.0	0	0 ?	S	12:04	0:00	[nvidia]
root	892	0.0	0.0	0	0 ?	S	12:04	0:00	[nv_queue]
root	904	0.0	0.0	0	0 ?	I	12:04	0:00	[kworker/10:3]
avahi	929	0.0	0.0	8672	4068 ?	Ss	12:04	0:00	avahi-daemon:
root	931	0.0	0.0	13556	6532 ?	Ss	12:04	0:00	/usr/libexec/
message+	933	0.5	0.0	12284	6624 ?	Ss	12:04	0:00	@dbus-daemon
gnome-r+	940	0.0	0.0	439208	15832 ?	Ssl	12:04	0:00	/usr/libexec/
polkitd	977	0.4	0.0	384468	10324 ?	Ssl	12:04	0:00	/usr/lib/polk
root	1023	0.0	0.0	313648	7836 ?	Ssl	12:04	0:00	/usr/libexec/
root	1029	2.1	0.2	2587804	40624 ?	Ssl	12:04	0:02	/usr/lib/snap
root	1032	0.1	0.0	313292	7384 ?	Ssl	12:04	0:00	/usr/libexec/
root	1034	0.0	0.0	9424	2868 ?	Ss	12:04	0:00	/usr/sbin/cro
root	1036	0.0	0.0	309816	6732 ?	Ssl	12:04	0:00	/usr/libexec/
root	1042	0.1	0.0	18152	9180 ?	Ss	12:04	0:00	/usr/lib/syst
root	1045	0.0	0.0	424872	10528 ?	Ssl	12:04	0:00	/usr/sbin/the
root	1046	0.1	0.0	469956	13516 ?	Ssl	12:04	0:00	/usr/libexec/

avahi	1067	0.0	0.0	8480	1252	?	S	12:04	0:00	avahi-daemon:
root	1073	0.1	0.1	336820	19240	?	Ssl	12:04	0:00	/usr/sbin/Net
root	1075	0.0	0.0	0	0	?	I	12:04	0:00	[kworker/3:3]
root	1081	0.0	0.0	18164	11284	?	Ss	12:04	0:00	/usr/sbin/wpa
syslog	1129	0.1	0.0	222564	5648	?	Ssl	12:04	0:00	/usr/sbin/rsy
root	1185	0.0	0.0	392028	12520	?	Ssl	12:04	0:00	/usr/sbin/Mod
root	1209	0.0	0.0	0	0	?	I	12:04	0:00	[kworker/2:3-]
root	1313	0.0	0.0	38204	11608	?	Ss	12:04	0:00	/usr/sbin/cup
root	1316	0.0	0.1	112256	23068	?	Ssl	12:04	0:00	/usr/bin/pyth
root	1408	0.0	0.0	314820	9068	?	Ssl	12:04	0:00	/usr/sbin/gdm
root	1454	0.0	0.0	0	0	?	S	12:04	0:00	[psimon]
root	1489	0.0	0.0	0	0	?	S	12:04	0:00	[UVM global q]
root	1490	0.0	0.0	0	0	?	S	12:04	0:00	[UVM deferred]
root	1491	0.0	0.0	0	0	?	S	12:04	0:00	[UVM Tools Ev]
nvidia-+	1497	0.0	0.0	5384	2120	?	Ss	12:04	0:00	/usr/bin/nvid
rtkit	1542	0.0	0.0	22940	3528	?	SNsl	12:04	0:00	/usr/libexec/
root	1586	0.0	0.0	0	0	?	S<	12:04	0:00	[krfcomm]
colord	1710	0.1	0.0	320184	14448	?	Ssl	12:04	0:00	/usr/libexec/
root	1795	0.0	0.1	375272	20392	?	Ssl	12:04	0:00	/usr/libexec/
root	1797	0.1	0.0	317244	9172	?	Ssl	12:04	0:00	/usr/libexec/
cups-br+	2092	0.0	0.1	268348	19848	?	Ssl	12:04	0:00	/usr/sbin/cup
kernoops	2094	0.0	0.0	12744	2144	?	Ss	12:04	0:00	/usr/sbin/ker
kernoops	2097	0.0	0.0	12744	2348	?	Ss	12:04	0:00	/usr/sbin/ker
root	2125	0.0	0.0	242588	10012	?	Sl	12:04	0:00	gdm-session-w
sahaj	2146	0.9	0.0	21384	13456	?	Ss	12:04	0:00	/usr/lib/syst
sahaj	2152	0.0	0.0	21460	3676	?	S	12:04	0:00	(sd-pam)
sahaj	2165	0.0	0.0	114844	13232	?	S<sl	12:04	0:00	/usr/bin/pipe
sahaj	2166	0.0	0.0	97736	5892	?	Ssl	12:04	0:00	/usr/bin/pipe
sahaj	2170	0.1	0.1	406348	18092	?	S<sl	12:04	0:00	/usr/bin/wire
sahaj	2171	0.0	0.0	110740	11820	?	S<sl	12:04	0:00	/usr/bin/pipe
sahaj	2173	0.0	0.0	316508	9620	?	SLsl	12:04	0:00	/usr/bin/gnom
sahaj	2189	0.5	0.0	10884	6128	?	Ss	12:04	0:00	/usr/bin/dbus
sahaj	2222	0.0	0.0	536560	6968	?	Ssl	12:04	0:00	/usr/libexec/
sahaj	2234	0.0	0.0	309308	6016	?	Ssl	12:04	0:00	/usr/libexec/
root	2241	0.0	0.0	2704	2020	?	Ss	12:04	0:00	fusermount3 -
sahaj	2265	0.0	0.0	235712	6072	tty2	Ssl+	12:04	0:00	/usr/libexec/
sahaj	2270	2.4	1.0	26072548	166272	tty2	Sl+	12:04	0:02	/usr/lib/xorg
root	2286	0.0	0.0	0	0	?	I	12:04	0:00	[kworker/4:2-]
sahaj	2356	0.0	0.1	298212	16476	tty2	Sl+	12:04	0:00	/usr/libexec/
sahaj	2439	0.0	0.0	382988	8408	?	Ssl	12:04	0:00	/usr/libexec/
sahaj	2446	0.0	0.0	9480	5064	?	S	12:04	0:00	/usr/bin/dbus
sahaj	2455	0.0	0.0	162652	7032	?	Ssl	12:04	0:00	/usr/libexec/
sahaj	2456	0.0	0.0	91548	5752	?	Ssl	12:04	0:00	/usr/libexec/
sahaj	2470	0.0	0.0	314268	7672	?	Ssl	12:04	0:00	/usr/libexec/
sahaj	2478	0.0	0.0	459712	7032	?	Sl	12:04	0:00	/usr/libexec/
sahaj	2479	0.0	0.0	39136	11700	?	Ss	12:04	0:00	/snap/snapd-d
sahaj	2482	0.1	0.1	520524	17768	?	Ssl	12:04	0:00	/usr/libexec/
sahaj	2569	6.5	1.9	4602144	318108	?	Ssl	12:04	0:05	/usr/bin/gnom
sahaj	2586	0.4	0.7	1537892	118048	?	Sl	12:04	0:00	/snap/snapd-d
sahaj	2609	0.2	0.7	1116076	115156	?	Sl	12:04	0:00	/usr/libexec/
sahaj	2613	0.0	0.0	236052	8164	?	Sl	12:04	0:00	/usr/libexec/
sahaj	2676	0.0	0.1	654828	17044	?	Sl	12:04	0:00	/usr/libexec/

sahaj	2684	0.1	0.5	760736	87896 ?	Ssl	12:04	0:00	/usr/libexec/
sahaj	2698	0.0	0.1	2736424	26396 ?	Sl	12:04	0:00	/usr/bin/gjs
sahaj	2720	0.1	0.0	388864	11984 ?	Ssl	12:04	0:00	/usr/bin/ibus
sahaj	2722	0.0	0.0	383568	6540 ?	Ssl	12:04	0:00	/usr/libexec/
sahaj	2723	0.2	0.1	415508	24992 ?	Ssl	12:04	0:00	/usr/libexec/
sahaj	2726	0.0	0.0	431720	11880 ?	Ssl	12:04	0:00	/usr/libexec/
sahaj	2728	0.0	0.0	385188	7760 ?	Ssl	12:04	0:00	/usr/libexec/
sahaj	2729	0.2	0.1	414348	23812 ?	Ssl	12:04	0:00	/usr/libexec/
sahaj	2732	0.2	0.1	670452	29176 ?	Ssl	12:04	0:00	/usr/libexec/
sahaj	2734	0.2	0.1	526148	27664 ?	Ssl	12:04	0:00	/usr/libexec/
sahaj	2740	0.0	0.0	323628	11344 ?	Ssl	12:04	0:00	/usr/libexec/
sahaj	2747	0.0	0.0	531084	6092 ?	Ssl	12:04	0:00	/usr/libexec/
sahaj	2748	0.0	0.0	309560	5988 ?	Ssl	12:04	0:00	/usr/libexec/
sahaj	2752	0.0	0.0	543236	11520 ?	Ssl	12:04	0:00	/usr/libexec/
sahaj	2753	0.0	0.0	385868	7920 ?	Ssl	12:04	0:00	/usr/libexec/
sahaj	2759	0.0	0.0	393688	9648 ?	Ssl	12:04	0:00	/usr/libexec/
sahaj	2761	0.2	0.1	415040	24360 ?	Ssl	12:04	0:00	/usr/libexec/
sahaj	2766	0.0	0.0	305492	7288 ?	Sl	12:04	0:00	/usr/libexec/
sahaj	2769	0.2	0.1	416636	26564 ?	Ssl	12:04	0:00	/usr/libexec/
sahaj	2795	0.1	0.0	389372	10440 ?	Ssl	12:04	0:00	/usr/libexec/
sahaj	2798	0.3	0.6	989660	106340 ?	Sl	12:04	0:00	/usr/libexec/
sahaj	2863	0.0	0.0	236648	6872 ?	Sl	12:04	0:00	/usr/libexec/
sahaj	2866	2.5	0.1	347904	31164 ?	Sl	12:04	0:02	/usr/libexec/
sahaj	2868	0.1	0.1	267136	23928 ?	Sl	12:04	0:00	/usr/libexec/
sahaj	2880	0.0	0.0	310428	7072 ?	Sl	12:04	0:00	/usr/libexec/
sahaj	2892	0.0	0.0	416208	14940 ?	Sl	12:04	0:00	/usr/libexec/
sahaj	2912	0.0	0.1	546632	23980 ?	Sl	12:04	0:00	/usr/libexec/
sahaj	2949	0.0	0.0	389128	9120 ?	Sl	12:04	0:00	/usr/libexec/
sahaj	2955	0.0	0.1	890912	24076 ?	Ssl	12:04	0:00	/usr/libexec/
sahaj	2958	0.0	0.0	309792	6420 ?	Ssl	12:04	0:00	/usr/libexec/
sahaj	2969	0.0	0.0	310760	6812 ?	Ssl	12:04	0:00	/usr/libexec/
sahaj	2975	0.0	0.0	389376	7956 ?	Ssl	12:04	0:00	/usr/libexec/
sahaj	2992	0.0	0.0	309772	6460 ?	Ssl	12:04	0:00	/usr/libexec/
sahaj	3000	0.0	0.1	825488	29640 ?	Ssl	12:04	0:00	/usr/libexec/
sahaj	3028	0.0	0.1	2793688	26548 ?	Sl	12:04	0:00	/usr/bin/gjs
sahaj	3044	0.1	0.1	735604	29080 ?	SNsl	12:04	0:00	/usr/libexec/
sahaj	3050	0.0	0.0	236772	7504 ?	Sl	12:04	0:00	/usr/libexec/
sahaj	3067	0.0	0.0	230108	5680 ?	Ssl	12:04	0:00	/usr/libexec/
sahaj	3093	0.0	0.0	609444	8540 ?	Sl	12:04	0:00	/usr/libexec/
sahaj	3120	0.1	0.0	554224	13976 ?	Ssl	12:04	0:00	/usr/libexec/
sahaj	3125	0.2	0.7	1426776	125212 ?	Ssl	12:04	0:00	/usr/libexec/
sahaj	3148	0.0	0.1	415364	25752 ?	Ssl	12:04	0:00	/usr/libexec/
sahaj	3174	0.7	0.3	3206500	58480 ?	Sl	12:04	0:00	gjs /usr/shar
sahaj	3236	0.0	0.0	236304	6292 ?	Ssl	12:04	0:00	/usr/libexec/
sahaj	3330	30.2	3.2	12125904	512864 ?	Sl	12:04	0:22	/snap/firefox
sahaj	3406	0.0	0.0	21288	4264 ?	Sl	12:04	0:00	/snap/firefox
sahaj	3517	0.0	0.2	295820	34068 ?	S	12:04	0:00	/snap/firefox
sahaj	3530	0.0	0.2	308168	38592 ?	Sl	12:04	0:00	/snap/firefox
sahaj	3566	3.2	1.0	2533092	167356 ?	Sl	12:04	0:02	/snap/firefox
sahaj	3576	0.0	0.2	441196	45112 ?	Sl	12:04	0:00	/snap/firefox
sahaj	3614	0.0	0.1	1840076	23664 ?	Sl	12:04	0:00	/usr/bin/snap
sahaj	3924	0.6	0.6	2473976	101196 ?	Sl	12:04	0:00	/snap/firefox

```

sahaj  4123 0.0 0.2 307176 34896 ?      Sl 12:04 0:00 /snap/firefox
sahaj  4131 46.8 3.6 3087740 583072 ?      Sl 12:04 0:33 /snap/firefox
sahaj  4153 0.1 0.4 2424804 69488 ?      Sl 12:04 0:00 /snap/firefox
sahaj  4316 0.0 0.4 2424808 69224 ?      Sl 12:04 0:00 /snap/firefox
sahaj  4373 0.0 0.4 2425568 69548 ?      Sl 12:04 0:00 /snap/firefox
sahaj  4449 0.5 0.9 1639032 146408 ?      Sl 12:04 0:00 /usr/bin/gnom
sahaj  4457 0.2 0.7 1041952 115236 ?      Sl 12:04 0:00 /usr/libexec/
sahaj  4592 0.7 0.3 840772 52560 ?      Ssl 12:05 0:00 /usr/libexec/
sahaj  4606 0.0 0.0 11020 5100 pts/0      Ss 12:05 0:00 bash
sahaj  4675 0.5 0.1 489308 25900 ?      Sl 12:05 0:00 /usr/bin/upda
sahaj  4718 0.0 0.0 13744 4788 pts/0      R+ 12:05 0:00 ps aux
sahaj@sahaj-Victus:~$ top

```

top - 12:09:46 up 5 min, 1 user, load average: 0.41, 0.42, 0.21
 Tasks: 355 total, 1 running, 354 sleeping, 0 stopped, 0 zombie
 %Cpu(s): 2.3 us, 0.7 sy, 0.0 ni, 97.0 id, 0.0 wa, 0.0 hi, 0.0 si, 0.0 st
 MiB Mem : 15625.5 total, 11191.5 free, 2699.9 used, 2289.6 buff/cache
 MiB Swap: 4096.0 total, 4096.0 free, 0.0 used. 12925.6 avail Mem

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
3330	sahaj	20	0	3734988	508444	240248	S	18.9	3.2	0:38.24	firefox
4131	sahaj	20	0	3097840	599264	109756	S	11.3	3.7	1:10.48	Isolated Web Co
2569	sahaj	20	0	4602020	317340	145856	S	2.0	2.0	0:07.64	gnome-shell
2270	sahaj	20	0	24.9g	166408	115960	S	1.3	1.0	0:04.49	Xorg
4592	sahaj	20	0	842016	53840	42580	S	1.3	0.3	0:02.83	gnome-terminal
4761	sahaj	20	0	14544	5916	3740	R	0.7	0.0	0:00.57	top
268	root	-51	0	0	0	S	0.3	0.0	0:00.49	irq/84-SYNA32B8:00	
641	root	0	-20	0	0	I	0.3	0.0	0:00.18	kworker/u49:1-i915_flip	
2720	sahaj	20	0	388864	11984	7032	S	0.3	0.1	0:00.20	ibus-daemon
3174	sahaj	20	0	3206500	58480	43200	S	0.3	0.4	0:00.63	gjs
1	root	20	0	23496	14168	9304	S	0.0	0.1	0:01.61	systemd
2	root	20	0	0	0	S	0.0	0.0	0:00.00	kthreadd	
3	root	20	0	0	0	S	0.0	0.0	0:00.00	pool_workqueue_release	
4	root	0	-20	0	0	I	0.0	0.0	0:00.00	kworker/R-rcu_gp	
5	root	0	-20	0	0	I	0.0	0.0	0:00.00	kworker/R-sync_wq	
6	root	0	-20	0	0	I	0.0	0.0	0:00.00	kworker/R-kvfree_rcu_reclaim	
7	root	0	-20	0	0	I	0.0	0.0	0:00.00	kworker/R-slub_flushwq	
8	root	0	-20	0	0	I	0.0	0.0	0:00.00	kworker/R-netns	
9	root	20	0	0	0	I	0.0	0.0	0:00.05	kworker/0:0-events	
10	root	0	-20	0	0	I	0.0	0.0	0:00.00	kworker/0:0H-events_highpri	
11	root	20	0	0	0	I	0.0	0.0	0:00.01	kworker/0:1-rcu_gp	
12	root	20	0	0	0	I	0.0	0.0	0:00.15	kworker/u48:0-events_unbound	
13	root	0	-20	0	0	I	0.0	0.0	0:00.00	kworker/R-mm_percpu_wq	
14	root	20	0	0	0	I	0.0	0.0	0:00.00	rcu_tasks_kthread	
15	root	20	0	0	0	I	0.0	0.0	0:00.00	rcu_tasks_rude_kthread	
16	root	20	0	0	0	I	0.0	0.0	0:00.00	rcu_tasks_trace_kthread	
17	root	20	0	0	0	S	0.0	0.0	0:00.01	ksoftirqd/0	
18	root	20	0	0	0	I	0.0	0.0	0:00.38	rcu_preempt	
19	root	20	0	0	0	S	0.0	0.0	0:00.00	rcu_exp_par_gp_kthread_worker/0	
20	root	20	0	0	0	S	0.0	0.0	0:00.00	rcu_exp_gp_kthread_worker	
21	root	rt	0	0	0	S	0.0	0.0	0:00.00	migration/0	
22	root	-51	0	0	0	S	0.0	0.0	0:00.00	idle_inject/0	

```

23 root    20 0    0 0    0 S  0.0  0.0  0:00.00 cpuhp/0
24 root    20 0    0 0    0 S  0.0  0.0  0:00.00 cpuhp/1
25 root   -51 0    0 0    0 S  0.0  0.0  0:00.00 idle_inject/1
26 root    rt 0    0 0    0 S  0.0  0.0  0:00.14 migration/1
27 root    20 0    0 0    0 S  0.0  0.0  0:00.01 ksoftirqd/1
28 root    20 0    0 0    0 I  0.0  0.0  0:00.05 kworker/1:0-events

```

sahaj@sahaj-Victus:~\$ kill 3330

sahaj@sahaj-Victus:~\$ pkill firefox

sahaj@sahaj-Victus:~\$ pgrep firefox

5991

5.System Information Commands

```

sahaj@sahaj-Victus: $ kill 3330
sahaj@sahaj-Victus: $ pkill firefox
sahaj@sahaj-Victus: $ pgrep firefox
5991
sahaj@sahaj-Victus: $ kill 6991
bash: kill: (6991) - No such process
sahaj@sahaj-Victus: $ kill 3330
bash: kill: (3330) - No such process
sahaj@sahaj-Victus: $ uname
Linux
sahaj@sahaj-Victus: $ uname -a
Linux sahaj-Victus 6.14.0-27-generic #27~24.04.1-Ubuntu SMP PREEMPT_DYNAMIC Tue Jul 22 17:38:49 UTC 2 x86_64 x86_64 x86_64 GNU/Linux
sahaj@sahaj-Victus: $ whoami
sahaj
sahaj@sahaj-Victus: $ df -h
Filesystem      Size  Used Avail Use% Mounted on
tmpfs           1.6G   2.3M  1.6G  1% /run
/dev/nvme0n1p4  136G  16G 114G  12% /
tmpfs           7.7G  4.0K  7.7G  1% /dev/shm
tmpfs           5.0M  12K  5.0M  1% /run/lock
efivars          192K  119K  69K  64% /sys/firmware/efi/efivars
/dev/nvme0n1p3  1.1G  6.2M  1.1G  1% /boot/efi
tmpfs           1.6G  2.5M  1.6G  1% /run/user/1000
sahaj@sahaj-Victus: $ du -sh /document/
du: cannot access '/document/': No such file or directory
sahaj@sahaj-Victus: $ du -sh /home/sahaj/Documents/"cloud trainning/tasks"
948K  /home/sahaj/Documents/cloud trainning/tasks
sahaj@sahaj-Victus: $ du -sh "/home/sahaj/Documents/cloud trainning/tasks"
948K  /home/sahaj/Documents/cloud trainning/tasks
sahaj@sahaj-Victus: $ free -h
              total        used        free     shared  buff/cache   available
Mem:      15Gi       3.7Gi      9.4Gi    656Mi       2.8Gi      11Gi
Swap:      4.0Gi        0B      4.0Gi
sahaj@sahaj-Victus: $ uptime
12:26:24 up 22 min, 1 user,  load average: 0.25, 0.41, 0.42
sahaj@sahaj-Victus: $ 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: 23%
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 tsc art arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc cpuid aperfmpfper tsc_known_freq pni pclmulqdq dtes64 monitor ma cx16 xtpr pdcm pcid sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave avx f16c rdrand lahf_lm abm 3dnowprefetch ssbd ibrs ibpb stibp ibrs_enhanced tpr_shadow flexpriority ept vpid ept_ad fsgsbase tsc_adjust bmi1 avx2 smep bmi2 erms invpcid adx snap avx512ifma clflushopt clwb intel_pt avx512cd sha_ni avx512bw avx512vl xsaveopt xsavec xgetbv1 xsaves split_lock_detect pts hwp hwp_notify hwp_act_window hwp_epp hwp_pkg_eq vnmi avx512vbmi umip pkru ospke avx512_vbm12 gfni vaes vpclmulqdq avx512_ntdq rdpid movdir64b fsrn avx512_vp2intersect md_clear ibt flush_lid 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: Vulnerable
  Ghostwrite:           Not affected
  Itlb multihit:        Not affected
  L1tf:                 Not affected
  Mds:                  Not affected
  Meltdown:             Not affected
  Mmio stale data:     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/swaps barriers and __user pointer sanitization
  Spectre v2:            Mitigation; Enhanced / Automatic IBRS; IBPB conditional; PBRSB-eIBRS SW sequence; BHI SW loop, KVM SW loop
  Srbds:                Not affected
  Tx sync abort:        Not affected

sahaj@sahaj-Victus:~$ lspci
0000:00:00.0 Host bridge: Intel Corporation 11th Gen Core Processor Host Bridge/DRAM Registers (rev 05)
0000:00:01.0 PCI bridge: Intel Corporation 11th Gen Core Processor PCIe Controller #1 (rev 05)

```

```

0000:00:02.0 VGA compatible controller: Intel Corporation TigerLake-H GT1 [UHD Graphics] (rev 01)
0000:00:06.0 System peripheral: Intel Corporation RST VMD Managed Controller
0000:00:08.0 System peripheral: Intel Corporation GNA Scoring Accelerator module (rev 05)
0000:00:0d.0 USB controller: Intel Corporation Tiger Lake-H Thunderbolt 4 USB Controller (rev 05)
0000:00:0e.0 RAID bus controller: Intel Corporation Volume Management Device NVMe RAID Controller
0000:00:14.0 USB controller: Intel Corporation Tiger Lake-H USB 3.2 Gen 2x1 XHCI Host Controller (rev 11)
0000:00:14.2 RAM memory: Intel Corporation Tiger Lake-H Shared SRAM (rev 11)
0000:00:14.3 Network controller: Intel Corporation Tiger Lake PCH CNVi WiFi (rev 11)
0000:00:15.0 Serial bus controller: Intel Corporation Tiger Lake-H Serial IO I2C Controller #0 (rev 11)
0000:00:16.0 Communication controller: Intel Corporation Tiger Lake-H Management Engine Interface (rev 11)
0000:00:1c.0 PCI bridge: Intel Corporation Tiger Lake-H PCI Express Root Port #5 (rev 11)
0000:00:1d.0 System peripheral: Intel Corporation RST VMD Managed Controller
0000:00:1d.7 PCI bridge: Intel Corporation Device 43b7 (rev 11)
0000:00:1f.0 ISA bridge: Intel Corporation HM570 LPC/eSPI Controller (rev 11)
0000:00:1f.3 Multimedia audio controller: Intel Corporation Tiger Lake-H HD Audio Controller (rev 11)
0000:00:1f.4 SMBus: Intel Corporation Tiger Lake-H SMBus Controller (rev 11)
0000:00:1f.5 Serial bus controller: Intel Corporation Tiger Lake-H SPI Controller (rev 11)
0000:01:00.0 VGA compatible controller: NVIDIA Corporation TU117M [GeForce GTX 1650 Mobile / Max-Q] (rev a1)
0000:01:01.1 Audio device: NVIDIA Corporation Device 10fa (rev a1)
0000:02:00.0 Ethernet controller: Realtek Semiconductor Co., Ltd. RTL8111/8168/8211/8411 PCI Express Gigabit Ethernet Controller (rev 16)
0000:03:00.0 SD Host controller: Genesys Logic, Inc GL9750 SD Host Controller (rev 01)
10000:e0:06.0 PCI bridge: Intel Corporation 11th Gen Core Processor PCIe Controller #0 (rev 05)
10000:e0:1d.0 PCI bridge: Intel Corporation Tiger Lake-H PCI Express Root Port #9 (rev 11)
10000:e1:00.0 Non-Volatile memory controller: Sandisk Corp WD PC SN810 / Black SN850 NVMe SSD (rev 01)
10000:e2:00.0 Non-Volatile memory controller: Kingston Technology Company, Inc. NV2 NVMe SSD SM2267XT (DRAM-less) (rev 03)

sahaj@sahaj-Victus:~$ lsusb
Bus 001 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
Bus 002 Device 001: ID 1d6b:0003 Linux Foundation 3.0 root hub
Bus 003 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
Bus 003 Device 002: ID 30c9:0000 Luxvisions Innotech Limited HP Wide Vision HD Camera
Bus 003 Device 003: ID 8087:0026 Intel Corp. AX201 Bluetooth
Bus 004 Device 001: ID 1d6b:0003 Linux Foundation 3.0 root hub
sahaj@sahaj-Victus:~$ []

```

6. Networking Commands

```
sahaj@sahaj-Victus:~$ ifconfig
eno1: flags=4099<UP,BROADCAST,MULTICAST> mtu 1500
      ether e0:73:e7:30:35:52 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 3140 bytes 378671 (378.6 KB)
            RX errors 0 dropped 0 overruns 0 frame 0
            TX packets 3140 bytes 378671 (378.6 KB)
            TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

wlo1: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
      inet 192.168.29.10 netmask 255.255.255.0 broadcast 192.168.29.255
        inet6 fe80::36fc:b1b9:c1f4:47dd prefixlen 64 scopeid 0x20<link>
          inet6 2405:201:e036:f0ad:dd2b:1654:dd3c:f85f prefixlen 64 scopeid 0x0<global>
            inet6 2405:201:e036:c1f4:47dd:15f5:448b prefixlen 64 scopeid 0x0<global>
              ether 64:49:7d:d6:c5:6d txqueuelen 1000 (Ethernet)
                RX packets 25478 bytes 19111027 (19.1 MB)
                RX errors 0 dropped 0 overruns 0 frame 0
                TX packets 17951 bytes 6076781 (6.0 MB)
                TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

sahaj@sahaj-Victus:~$ ping firefox.com
PING firefox.com (35.190.14.201) 56(84) bytes of data.
64 bytes from 201.14.190.35.bc.googleusercontent.com (35.190.14.201): icmp_seq=1 ttl=112 time=7.46 ms
64 bytes from 201.14.190.35.bc.googleusercontent.com (35.190.14.201): icmp_seq=2 ttl=112 time=8.80 ms
64 bytes from 201.14.190.35.bc.googleusercontent.com (35.190.14.201): icmp_seq=3 ttl=112 time=8.47 ms
64 bytes from 201.14.190.35.bc.googleusercontent.com (35.190.14.201): icmp_seq=4 ttl=112 time=7.94 ms
64 bytes from 201.14.190.35.bc.googleusercontent.com (35.190.14.201): icmp_seq=5 ttl=112 time=7.77 ms
64 bytes from 201.14.190.35.bc.googleusercontent.com (35.190.14.201): icmp_seq=6 ttl=112 time=8.46 ms
64 bytes from 201.14.190.35.bc.googleusercontent.com (35.190.14.201): icmp_seq=7 ttl=112 time=7.23 ms
64 bytes from 201.14.190.35.bc.googleusercontent.com (35.190.14.201): icmp_seq=8 ttl=112 time=7.12 ms
64 bytes from 201.14.190.35.bc.googleusercontent.com (35.190.14.201): icmp_seq=9 ttl=112 time=9.23 ms
64 bytes from 201.14.190.35.bc.googleusercontent.com (35.190.14.201): icmp_seq=10 ttl=112 time=7.18 ms
64 bytes from 201.14.190.35.bc.googleusercontent.com (35.190.14.201): icmp_seq=11 ttl=112 time=8.85 ms
64 bytes from 201.14.190.35.bc.googleusercontent.com (35.190.14.201): icmp_seq=12 ttl=112 time=7.55 ms
64 bytes from 201.14.190.35.bc.googleusercontent.com (35.190.14.201): icmp_seq=13 ttl=112 time=9.01 ms
64 bytes from 201.14.190.35.bc.googleusercontent.com (35.190.14.201): icmp_seq=14 ttl=112 time=9.20 ms
64 bytes from 201.14.190.35.bc.googleusercontent.com (35.190.14.201): icmp_seq=15 ttl=112 time=8.27 ms
```

```
sahaj@sahaj-Victus:~$ netstat -tuln
Command 'netstat' not found, did you mean:
  command 'netstat' from deb net-tools (2.10-0.1ubuntu3)
Try: sudo apt install <deb name>
sahaj@sahaj-Victus:~$ sudo apt install net-tools
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
net-tools is already the newest version (2.10-0.1ubuntu4.4).
0 upgraded, 0 newly installed, 0 to remove and 155 not upgraded.
sahaj@sahaj-Victus:~$ netstat -tuln
Command 'netstat' not found, did you mean:
  command 'netstat' from deb net-tools (2.10-0.1ubuntu3)
Try: sudo apt install <deb name>
sahaj@sahaj-Victus:~$ ss -tuln
Netid      State     Recv-Q      Send-Q      Local Address:Port          Peer Address:Port
udp        UNCONN     0           0           0.0.0.0:5353             0.0.0.0:*
udp        UNCONN     0           0           0.0.0.0:48804            0.0.0.0:*
udp        UNCONN     0           0           127.0.0.54:53             0.0.0.0:*
udp        UNCONN     0           0           127.0.0.53%lo:53          0.0.0.0:*
udp        UNCONN     0           0           [::]:5353                [::]:*
udp        UNCONN     0           0           [fe80::36fc:b1b9:c1f4:47dd]@wlo1:546   [::]:*
udp        UNCONN     0           0           [::]:42048               [::]:*
tcp        LISTEN    4096        0           127.0.0.1:631              0.0.0.0:*
tcp        LISTEN    4096        0           127.0.0.53%lo:53          0.0.0.0:*
tcp        LISTEN    4096        0           127.0.0.54:53              0.0.0.0:*
tcp        LISTEN    4096        0           [::]:631                 [::]:*
sahaj@sahaj-Victus:~$ ssh user@hostname
ssh: Could not resolve hostname hostname: Temporary failure in name resolution
sahaj@sahaj-Victus:~$ 
64 bytes from 201.14.190.35.bc.googleusercontent.com (35.190.14.201): icmp_seq=47 ttl=112 time=8.20 ms
64 bytes from 201.14.190.35.bc.googleusercontent.com (35.190.14.201): icmp_seq=48 ttl=112 time=8.40 ms
64 bytes from 201.14.190.35.bc.googleusercontent.com (35.190.14.201): icmp_seq=49 ttl=112 time=9.31 ms
64 bytes from 201.14.190.35.bc.googleusercontent.com (35.190.14.201): icmp_seq=50 ttl=112 time=8.78 ms
64 bytes from 201.14.190.35.bc.googleusercontent.com (35.190.14.201): icmp_seq=51 ttl=112 time=7.97 ms
^C
-- firefox.com ping statistics --
51 packets transmitted, 51 received, 0% packet loss, time 50072ms
rtt min/avg/max/mdev = 7.029/8.496/17.353/1.449 ms
```

7. IO Redirection Commands

```
sahaj@sahaj-Victus:~$ cmd < file
bash: file: No such file or directory
sahaj@sahaj-Victus:~$ cmd < cloud training
bash: cloud: No such file or directory
sahaj@sahaj-Victus:~$ cmd < task
bash: task: No such file or directory
sahaj@sahaj-Victus:~$ cat < test.txt
bash: test.txt: No such file or directory
sahaj@sahaj-Victus:~$ cat < sample1.txt
bash: sample1.txt: No such file or directory
sahaj@sahaj-Victus:~$ echo "This is a sample file" > sample1.txt
sahaj@sahaj-Victus:~$ cat < sample1.txt
This is a sample file
sahaj@sahaj-Victus:~$ echo "Hello World" > out.txt
sahaj@sahaj-Victus:~$ cat out.txt
Hello World
sahaj@sahaj-Victus:~$ ls notofile 2> error.txt
sahaj@sahaj-Victus:~$ ls notofile 2> error.txt
sahaj@sahaj-Victus:~$ cat error.txt
ls: cannot access 'notofile': No such file or directory
sahaj@sahaj-Victus:~$ ls existingfile notofile&>all_output.txt
sahaj@sahaj-Victus:~$ cat all_out.txt
cat: all_out.txt: No such file or directory
sahaj@sahaj-Victus:~$ echo "Gone" > /dev/null
sahaj@sahaj-Victus:~$ echo "Message" 1>&2
Message
sahaj@sahaj-Victus:~$ echo "Line 1" > append.txt
sahaj@sahaj-Victus:~$ echo "Line 2" >> append.txt
sahaj@sahaj-Victus:~$ cat append.txt
Line 1
Line 2
sahaj@sahaj-Victus:~$ diff <(echo "hello") <(echo "helloo")
1c1
< hello
...
> helloo
sahaj@sahaj-Victus:~$ 
```

B. Network configuration and troubleshooting commands

```
sahaj@sahaj-Victus:~$ ping firefox.com
PING firefox.com (35.190.14.201) 56(84) bytes of data.
64 bytes from 201.14.190.35.bc.googleusercontent.com (35.190.14.201): icmp_seq=1 ttl=112 time=8.42 ms
64 bytes from 201.14.190.35.bc.googleusercontent.com (35.190.14.201): icmp_seq=2 ttl=112 time=9.64 ms
64 bytes from 201.14.190.35.bc.googleusercontent.com (35.190.14.201): icmp_seq=3 ttl=112 time=8.48 ms
64 bytes from 201.14.190.35.bc.googleusercontent.com (35.190.14.201): icmp_seq=4 ttl=112 time=8.76 ms
64 bytes from 201.14.190.35.bc.googleusercontent.com (35.190.14.201): icmp_seq=5 ttl=112 time=8.66 ms
64 bytes from 201.14.190.35.bc.googleusercontent.com (35.190.14.201): icmp_seq=6 ttl=112 time=8.74 ms
64 bytes from 201.14.190.35.bc.googleusercontent.com (35.190.14.201): icmp_seq=7 ttl=112 time=11.2 ms
64 bytes from 201.14.190.35.bc.googleusercontent.com (35.190.14.201): icmp_seq=8 ttl=112 time=9.61 ms
64 bytes from 201.14.190.35.bc.googleusercontent.com (35.190.14.201): icmp_seq=9 ttl=112 time=8.49 ms
64 bytes from 201.14.190.35.bc.googleusercontent.com (35.190.14.201): icmp_seq=10 ttl=112 time=8.60 ms
64 bytes from 201.14.190.35.bc.googleusercontent.com (35.190.14.201): icmp_seq=11 ttl=112 time=9.47 ms
^C
--- firefox.com ping statistics ---
11 packets transmitted, 11 received, 0% packet loss, time 10019ms
rtt min/avg/max/mdev = 8.416/9.094/11.166/0.789 ms
sahaj@sahaj-Victus:~$ ^C
sahaj@sahaj-Victus:~$ ping 35.190.14.201
PING 35.190.14.201 (35.190.14.201) 56(84) bytes of data.
64 bytes from 35.190.14.201: icmp_seq=1 ttl=112 time=12.0 ms
64 bytes from 35.190.14.201: icmp_seq=2 ttl=112 time=10.0 ms
64 bytes from 35.190.14.201: icmp_seq=3 ttl=112 time=8.07 ms
64 bytes from 35.190.14.201: icmp_seq=4 ttl=112 time=8.63 ms
64 bytes from 35.190.14.201: icmp_seq=5 ttl=112 time=8.62 ms
64 bytes from 35.190.14.201: icmp_seq=6 ttl=112 time=10.2 ms
64 bytes from 35.190.14.201: icmp_seq=7 ttl=112 time=12.6 ms
64 bytes from 35.190.14.201: icmp_seq=8 ttl=112 time=9.16 ms
^C
--- 35.190.14.201 ping statistics ---
8 packets transmitted, 8 received, 0% packet loss, time 7012ms
rtt min/avg/max/mdev = 8.066/9.923/12.649/1.553 ms
sahaj@sahaj-Victus:~$ nslookup firefox.com
Server:      127.0.0.53
Address:     127.0.0.53#53

Non-authoritative answer:
Name:   firefox.com
Address: 35.190.14.201

sahaj@sahaj-Victus:~$ nslookup 35.190.14.201
201.14.190.35.in-addr.arpa      name = 201.14.190.35.bc.googleusercontent.com.

Authoritative answers can be found from:
```

```

sahaj@sahaj-Victus:~$ traceroute www.firefox.com
Command 'traceroute' not found, but can be installed with:
sudo apt install inetutils-traceroute # version 2:2.4-3ubuntu1, or
sudo apt install traceroute        # version 1:2.1.5-1
sahaj@sahaj-Victus:~$ host firefox.com
firefox.com has address 35.190.14.201
firefox.com mail is handled by 10 smtp1.mdc1.mozilla.com.
sahaj@sahaj-Victus:~$ host 35.190.14.201
201.14.190.35.in-addr.arpa domain name pointer 201.14.190.35.bc.googleusercontent.com.
sahaj@sahaj-Victus:~$ netstat
Active Internet connections (w/o servers)
Proto Recv-Q Send-Q Local Address          Foreign Address        State
tcp      0      0 sahaj-Victus:39168      53.253.110.34.bc.:https ESTABLISHED
tcp      0      0 sahaj-Victus:54714      pnbomb-bk-in-f2.1:https ESTABLISHED
tcp      0      0 sahaj-Victus:58254      93.243.107.34.bc.:https ESTABLISHED
tcp      0      0 sahaj-Victus:55332      123.208.120.34.bc:https ESTABLISHED
tcp      0      0 sahaj-Victus:46356      a23-223-46-8.depl:https ESTABLISHED
tcp6     0      0 sahaj-Victus:54926      del11s08-in-x0e.1:https ESTABLISHED
tcp6     0      0 sahaj-Victus:57288      whatsapp-cdn6-shv:https ESTABLISHED
tcp6     0      0 sahaj-Victus:35716      del11s03-in-x0e.1:https ESTABLISHED
tcp6     0      0 sahaj-Victus:57606      2a04:4e42:25::787:https ESTABLISHED
tcp6     0      0 sahaj-Victus:39274      2600:1901:0:e988:https ESTABLISHED
udp      0      0 sahaj-Victus:bootpc    reliance.relianc:bootps ESTABLISHED
Active UNIX domain sockets (w/o servers)
Proto RefCnt Flags       Type      State       I-Node   Path
unix    3      [ ]        STREAM    CONNECTED  38279
unix    3      [ ]        STREAM    CONNECTED  21026
unix    3      [ ]        STREAM    CONNECTED  35525
unix    3      [ ]        SEQPACKET  CONNECTED  35522
unix    3      [ ]        STREAM    CONNECTED  26934
unix    3      [ ]        STREAM    CONNECTED  25820
unix    3      [ ]        STREAM    CONNECTED  19021   /run/user/1000/bus
unix    3      [ ]        STREAM    CONNECTED  23093   /home/sahaj/.cache/ibus/dbus-6poi1QL2
unix    3      [ ]        STREAM    CONNECTED  23769   /run/user/1000/bus
unix    3      [ ]        STREAM    CONNECTED  14191
unix    3      [ ]        STREAM    CONNECTED  32111
unix    3      [ ]        STREAM    CONNECTED  21950   /run/systemd/journal/stdout
unix    3      [ ]        STREAM    CONNECTED  38556
unix    3      [ ]        STREAM    CONNECTED  21345
unix    3      [ ]        STREAM    CONNECTED  23911
unix    3      [ ]        STREAM    CONNECTED  18948   /run/user/1000/bus
unix    2      [ ]        DGRAM
unix    3      [ ]        STREAM    CONNECTED  17652   /run/dbus/system_bus_socket
unix    3      [ ]        STREAM    CONNECTED  12736   /run/systemd/journal/stdout

```

Cont..

```

sahaj@sahaj-Victus:~$ host 35.190.14.201
201.14.190.35.in-addr.arpa domain name pointer 201.14.190.35.bc.googleusercontent.com.
sahaj@sahaj-Victus:~$ netstat -r
Kernel IP routing table
Destination      Gateway          Genmask         Flags   MSS Window irtt Iface
default          reliance.relian 0.0.0.0        UG        0 0          0 wlo1
192.168.29.0    0.0.0.0        255.255.255.0   U         0 0          0 wlo1
sahaj@sahaj-Victus:~$ ifconfig
eno1: flags=4099<UP,BROADCAST,MULTICAST>  mtu 1500
      ether e0:73:e7:30:35:52  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 3158 bytes 377724 (377.7 KB)
      RX errors 0 dropped 0 overruns 0 frame 0
      TX packets 3158 bytes 377724 (377.7 KB)
      TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

wlo1: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
      inet 192.168.29.10  netmask 255.255.255.0  broadcast 192.168.29.255
      inet6 2405:201:e036:f0ad:2966:fbe6:2dd6:20ca  prefixlen 64  scopeid 0x0<global>
      inet6 2405:201:e036:f0ad:dd2b:1654:dd3c:f85f  prefixlen 64  scopeid 0x0<global>
      inet6 fe80::36fc:b1b9:c1f4:47dd  prefixlen 64  scopeid 0x20<link>
      ether 64:49:7d:d6:c5:6d  txqueuelen 1000  (Ethernet)
      RX packets 30118 bytes 27483911 (27.4 MB)
      RX errors 0 dropped 0 overruns 0 frame 0
      TX packets 15338 bytes 4683531 (4.6 MB)
      TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

```

```
sahaj@sahaj-Victus:~$ dig A firefox
; <>> DiG 9.18.30-0ubuntu0.24.04.2-Ubuntu <>> A firefox
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: SERVFAIL, id: 14866
;; flags: qr aa rd ra; QUERY: 1, ANSWER: 0, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 65494
;; QUESTION SECTION:
;firefox.           IN      A

;; Query time: 0 msec
;; SERVER: 127.0.0.53#53(127.0.0.53) (UDP)
;; WHEN: Thu Aug 07 18:47:26 IST 2025
;; MSG SIZE  rcvd: 36

sahaj@sahaj-Victus:~$ dig ANY firefox
; <>> DiG 9.18.30-0ubuntu0.24.04.2-Ubuntu <>> ANY firefox
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NXDOMAIN, id: 20491
;; flags: qr rd ra; QUERY: 1, ANSWER: 0, AUTHORITY: 1, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 65494
;; QUESTION SECTION:
;firefox.           IN      ANY

;; AUTHORITY SECTION:
.          61935   IN      SOA     a.root-servers.net. nstld.verisign-grs.com. 2025080700 1800 900 604800 86400

;; Query time: 7 msec
;; SERVER: 127.0.0.53#53(127.0.0.53) (TCP)
;; WHEN: Thu Aug 07 18:52:34 IST 2025
;; MSG SIZE  rcvd: 111

sahaj@sahaj-Victus:~$ route
Kernel IP routing table
Destination      Gateway          Genmask        Flags Metric Ref  Use Iface
default          reliance.relian  0.0.0.0      UG    600    0      0 wlo1
192.168.29.0    0.0.0.0        255.255.255.0  U     600    0      0 wlo1
```

C. SHELL SCRIPTING

```
sahaj@sahaj-Victus:~$ touch script.sh
Command 'touch' not found, did you mean:
  command 'touch' from deb coreutils (9.4-2ubuntu2)
Try: sudo apt install <deb name>
sahaj@sahaj-Victus:~$ touch script.sh
sahaj@sahaj-Victus:~$ if [ $x -ne $y ]; then echo "Not equal"; else echo "" fi
all_output.txt          .gnupg/          script.sh
append.txt              .lessht          snap/
.bash_history           .local/          .ssh/
.bash_logout            Music/          .sudo_as_admin_successful
.bashrc                 my_directory/    Templates/
.cache/                out.txt         testfile
.config/               Pictures/       text.txt
Desktop/               .pki/           .var/
Documents/             .profile        Videos/
Downloads/             Public/         .vscode/
error.txt              sample1.txt

sahaj@sahaj-Victus:~$ Ctrl + u
Ctrl: command not found
sahaj@sahaj-Victus:~$ if [ $x -ne $y ]; then echo "Not equal"; else echo "Equal"; fi
Not equal
sahaj@sahaj-Victus:~$ x=2; while [ $x -lt 6 ]; do echo $x x=`expr $x + 1`; done
bash: [: missing `'
sahaj@sahaj-Victus:~$ x=2; while [ $x -lt 6]; do echo $x; x=`expr $x + 1`; done
bash: [: missing `'
sahaj@sahaj-Victus:~$ x=2; while [ $x -lt 6 ]; do echo $x; x=`expr $x + 1`; done
2
3
4
5
sahaj@sahaj-Victus:~$ x=2; while [ $x -lt 6 ]; do echo $x; x=`expr $x + 1`; done
2
3
4
5
sahaj@sahaj-Victus:~$ for var in 2 4 5 8; do echo $var; done
2
4
5
8
sahaj@sahaj-Victus:~$ #!/bin/bash
sahaj@sahaj-Victus:~$ echo "No of argument is $#"; echo "Script name is $0"; echo "First argument is $1"; echo "Second argument is $2"
No of argument is 0
Script name is bash
First argument is
Second argument is
```

```

sahaj@sahaj-Victus:~$ nano args.sh
sahaj@sahaj-Victus:~$ chmod +x args.sh
sahaj@sahaj-Victus:~$ ./args.sh
No of arguments is 0
Script name is ./args.sh
First argument is
Second argument is
sahaj@sahaj-Victus:~$ ./args.sh apply banana
No of arguments is 2
Script name is ./args.sh
First argument is apply
Second argument is banana
sahaj@sahaj-Victus:~$ x=5; y=5; z=$((x+y)); echo $z
10
sahaj@sahaj-Victus:~$ x=5; y=5; z=$((x-y)); echo $z
0
sahaj@sahaj-Victus:~$ x=5; y=5; z=$((x%y)); echo $z
0
sahaj@sahaj-Victus:~$ x=5; y=5; z=$((x^y)); echo $z
25
sahaj@sahaj-Victus:~$ x=5; y=5; z=$((x*y)); echo $z
25
sahaj@sahaj-Victus:~$ z=$((2*2)); echo $z
4
sahaj@sahaj-Victus:~$ current_dir=$(pwd); echo $current_dir
/home/sahaj
sahaj@sahaj-Victus:~$ echo $?
0
sahaj@sahaj-Victus:~$ ^C
sahaj@sahaj-Victus:~$ ls
all_output.txt Desktop error.txt out.txt sample1.txt Templates Videos
append.txt Documents Music Pictures script.sh testfile
args.sh Downloads my_directory Public snap text.txt
sahaj@sahaj-Victus:~$ ls -al
total 136
drwxr-x--- 20 sahaj sahaj 4096 Aug  7 20:31 .
drwxr-xr-x  3 root  root  4096 Aug  1 22:57 ..
-rw-rw-r--  1 sahaj sahaj  116 Aug  6 13:02 all_output.txt
-rw-rw-r--  1 sahaj sahaj   14 Aug  6 13:04 append.txt
-rwxrwxr-x  1 sahaj sahaj 124 Aug  7 20:31 args.sh
-rw-----  1 sahaj sahaj 6408 Aug  7 19:29 .bash_history
-rw-r--r--  1 sahaj sahaj 220 Mar 31 2024 .bash_logout
-rw-r--r--  1 sahaj sahaj 3771 Mar 31 2024 .bashrc

```

```

drwx----- 19 sahaj sahaj 4096 Aug  6 17:00 .cache
drwx----- 21 sahaj sahaj 4096 Aug  6 16:44 .config
drwxr-xr-x  3 sahaj sahaj 4096 Aug  5 20:23 Desktop
drwxr-xr-x  4 sahaj sahaj 4096 Aug  6 19:57 Documents
drwxr-xr-x  5 sahaj sahaj 4096 Aug  6 20:23 Downloads
-rw-rw-r--  1 sahaj sahaj  56 Aug  6 12:58 error.txt
drwx----- 2 sahaj sahaj 4096 Aug  7 18:24 gnupg
-rw----- 1 sahaj sahaj  20 Aug  6 16:12 lesshist
drwx----- 4 sahaj sahaj 4096 Aug  1 22:59 local
drwxr-xr-x  2 sahaj sahaj 4096 Aug  1 22:59 Music
drwxrwxr-x  2 sahaj sahaj 4096 Aug  5 19:58 my_directory
-rw-rw-r--  1 sahaj sahaj  12 Aug  6 12:58 out.txt
drwxr-xr-x  3 sahaj sahaj 4096 Aug  5 20:29 Pictures
drwx----- 3 sahaj sahaj 4096 Aug  2 16:15 pk
-rw-r--r--  1 sahaj sahaj  807 Mar 31 2024 profile
drwxr-xr-x  2 sahaj sahaj 4096 Aug  1 22:59 Public
-rw-rw-r--  1 sahaj sahaj  22 Aug  6 12:57 sample1.txt
-rwxrwxr-x  1 sahaj sahaj  79 Aug  7 19:59 script.sh
drwx----- 8 sahaj sahaj 4096 Aug  6 19:14 snap
drwx----- 2 sahaj sahaj 4096 Aug  1 22:58 ssh
-rw-r--r--  1 sahaj sahaj   0 Aug  2 16:13 sudo_as_admin_successful
drwxr-xr-x  2 sahaj sahaj 4096 Aug  1 22:59 Templates
-rw-rw-r--  1 sahaj sahaj   0 Aug  7 20:01 testfile
-rwxrwxr-x  1 sahaj root   35 Aug  6 18:07 text.txt
drwxr-xr-x  3 sahaj sahaj 4096 Aug  6 16:26 var
drwxr-xr-x  2 sahaj sahaj 4096 Aug  1 22:59 Videos
drwxrwxr-x  4 sahaj sahaj 4096 Aug  2 16:15 vscode
sahaj@sahaj-Victus:~$ cat script.sh
echo This is my first shell script
touch testfile
ls
echo End of my shell script
sahaj@sahaj-Victus:~$ cat args.sh
#!/bin/bash

echo "No of arguments is $#"
echo "Script name is $0"
echo "First argument is $1"
echo "Second argument is $2"

```

D.Shell Scripting - Different types of Variables:

1. Local Variable

```
GNU nano 7.2                                     sample.sh
#!/bin/bash
#NAME=SAHAJ

getName(){
NAME=UBUNTU
echo " $NAME "
}

echo " $NAME "
getName
```

```
sahaj@sahaj-Victus:~/Documents/my_dir$ nano sample.sh
sahaj@sahaj-Victus:~/Documents/my_dir$ ./sample.sh

UBUNTU
```

2.Global Variables

```
GNU nano 7.2                                     sample.sh
#!/bin/bash
NAME=SAHAJ

getName(){
#NAME=UBUNTU
echo " $NAME "
}

echo " $NAME "
getName
```

```
sahaj@sahaj-Victus:~/Documents/my_dir$ nano sample.sh
sahaj@sahaj-Victus:~/Documents/my_dir$ ./sample.sh
SAHAJ
SAHAJ
```

3.Shell Variables

```
sahaj@sahaj-Victus:~/Documents/my_dir$ echo $USERNAME
sahaj
sahaj@sahaj-Victus:~/Documents/my_dir$ echo $HOSTNAME
sahaj-Victus
sahaj@sahaj-Victus:~/Documents/my_dir$ echo $HOME
/home/sahaj
sahaj@sahaj-Victus:~/Documents/my_dir$ echo $BASH_VERSION
5.2.21(1)-release
```

E. Key Concepts of Bash Scripting

1. Variables in bash

```
GNU nano 7.2                                     sample2.sh
var1="Apple" #global variable
myfun(){
    local var2="Banana" #local variable
    var3="Cherry" #global variable
    var4="Mango"
    echo "The name of first fruit is $var1"
    echo "The name of second fruit is $var2"
    echo "The name of forth fruit is $var4"
}
myfun #calling function

echo "The name of first fruit is $var1"
#trying to access local variable
echo "The name of second fruit is $var2"
echo "The name of third fruit is $var3"
echo "The name of forth fruit is $var4"
```

```
sahaj@sahaj-Victus:~/Documents/my_dir$ nano sample2.sh
sahaj@sahaj-Victus:~/Documents/my_dir$ ./sample2.sh
The name of first fruit is Apple
The name of second fruit is Banana
The name of forth fruit is Mango
The name of first fruit is Apple
The name of second fruit is
The name of third fruit is Cherry
The name of forth fruit is Mango
```

2. Input and Output in bash

```
GNU nano 7.2                                     sample.sh
#!/bin/bash
echo "Enter filename"
read filename

if [ -e $filename ]
then
echo "$filename is exits on the directory"
cat $filename

else
    cat > $filename
    echo "File created"
fi
```

```
sahaj@sahaj-Victus:~/Documents/my_dir$ ./sample.sh
```

```
Enter filename
sample.txt
Hollo World
File Created
^C
```

```
sahaj@sahaj-Victus:~/Documents/my_dir$ ./sample.sh
```

```
Enter filename
sample.txt
sample.txt is exits on the directory
Hollo World
File Created
```

```
sahaj@sahaj-Victus:~/Documents/my_dir$ nano sample.sh
sahaj@sahaj-Victus:~/Documents/my_dir$ █
```

3. Functions used in bash

```
GNU nano 7.2                                     function.sh
myFunction () {
echo "Testing Hello World "
}

#function call
myFunction
```

```
sahaj@sahaj-Victus:~/Documents/my_dir$ touch function.sh
sahaj@sahaj-Victus:~/Documents/my_dir$ chmod +x function.sh
sahaj@sahaj-Victus:~/Documents/my_dir$ nano function.sh
sahaj@sahaj-Victus:~/Documents/my_dir$ nano function.sh
sahaj@sahaj-Victus:~/Documents/my_dir$ ./function.sh
Testing Hello World
```

F. Defining Variables

1) Accessing variable

```
GNU nano 7.2                                     variable_difining.sh
VAR1=Accessing
VAR2=Variable

echo " $VAR1$VAR2 "
```

```
sahaj@sahaj-Victus:~/Documents/my_dir$ touch variable_difining.sh
sahaj@sahaj-Victus:~/Documents/my_dir$ chmod variable_difining.sh
chmod: missing operand after 'variable_difining.sh'
Try 'chmod --help' for more information.
sahaj@sahaj-Victus:~/Documents/my_dir$ chmod +x variable_difining.sh
sahaj@sahaj-Victus:~/Documents/my_dir$ nano variable_difining.sh
sahaj@sahaj-Victus:~/Documents/my_dir$ ./variable_difining.sh
AccessingVariable
```

Docker Commands

Docker Run command

```
sahaj@sahaj-Victus:~/Downloads$ docker run redis
Unable to find image 'redis:latest' locally
latest: Pulling from library/redis
accfee890494: Pull complete
d8436afda7e9: Pull complete
ab5447c9536a: Pull complete
4f4fb700ef54: Pull complete
1ca7d5e3c9bc: Pull complete
c456b835af74: Pull complete
Digest: sha256:e7d6b261beaa22b1dc001f438b677f1c691ac7805607d8979bae65fe0615c2e6
Status: Downloaded newer image for redis:latest
Starting Redis Server
1:C 18 Aug 2025 14:54:40.564 * o000o000o000o Redis is starting o000o000o000o
1:C 18 Aug 2025 14:54:40.564 * Redis version=8.2.0, bits=64, commit=00000000, modified=1, pid=1, just started
1:C 18 Aug 2025 14:54:40.564 * Configuration loaded
1:M 18 Aug 2025 14:54:40.565 * monotonic clock: POSIX clock_gettime
1:M 18 Aug 2025 14:54:40.565 * Running mode=standalone, port=6379.
1:M 18 Aug 2025 14:54:40.565 * <bf> RedisBloom version 8.2.0 (Git=unknown)
1:M 18 Aug 2025 14:54:40.565 * <bf> Registering configuration options: [
1:M 18 Aug 2025 14:54:40.565 *   { bf-error-rate : 0.01 }
1:M 18 Aug 2025 14:54:40.565 *   { bf-initial-size : 100 }
1:M 18 Aug 2025 14:54:40.565 *   { bf-expansion-factor : 2 }
1:M 18 Aug 2025 14:54:40.565 *   { cf-bucket-size : 2 }
1:M 18 Aug 2025 14:54:40.565 *   { cf-initial-size : 1024 }
1:M 18 Aug 2025 14:54:40.565 *   { cf-max-iterations : 20 }
1:M 18 Aug 2025 14:54:40.565 *   { cf-expansion-factor : 1 }
1:M 18 Aug 2025 14:54:40.565 *   { cf-max-expansions : 32 }
1:M 18 Aug 2025 14:54:40.565 *   ]
1:M 18 Aug 2025 14:54:40.566 * Module 'bf' loaded from /usr/local/lib/redis/modules//redisbloom.so
1:M 18 Aug 2025 14:54:40.569 * <search> Redis version found by RedisSearch : 8.2.0 - oss
1:M 18 Aug 2025 14:54:40.569 * <search> RedisSearch version 8.2.0 (Git=d81ebce)
1:M 18 Aug 2025 14:54:40.569 * <search> Low level api version 1 initialized successfully
1:M 18 Aug 2025 14:54:40.569 * <search> gc: ON, prefix min length: 2, min word length to stem: 4, prefix max expansions: 200, query timeout (ms): 500, timeout policy: return, cursor read size: 1000, cursor max idle (ms): 300000, max doctable size: 1000000, max number of search results: 1000000,
1:M 18 Aug 2025 14:54:40.569 * <search> Initialized thread pools!
1:M 18 Aug 2025 14:54:40.569 * <search> Disabled workers threadpool of size 0
1:M 18 Aug 2025 14:54:40.569 * <search> Subscribe to config changes
1:M 18 Aug 2025 14:54:40.569 * <search> Enabled role change notification
1:M 18 Aug 2025 14:54:40.569 * <search> Cluster configuration: AUTO partitions, type: 0, coordinator timeout: 0ms
1:M 18 Aug 2025 14:54:40.569 * <search> Register write commands
```

```
1:M 18 Aug 2025 14:54:40.569 * Module 'search' loaded from /usr/local/lib/redis/modules//redisearch.so
1:M 18 Aug 2025 14:54:40.570 * <timeseries> RedisTimeSeries version 80200, git_sha=1439d4a439ca9c063e6ef124a510abff09a5d493
1:M 18 Aug 2025 14:54:40.570 * <timeseries> Redis version found by RedisTimeSeries : 8.2.0 - oss
1:M 18 Aug 2025 14:54:40.570 * <timeseries> Registering configuration options: [
1:M 18 Aug 2025 14:54:40.570 * <timeseries>     { ts-compaction-policy :          }
1:M 18 Aug 2025 14:54:40.570 * <timeseries>     { ts-num-threads :          3 }
1:M 18 Aug 2025 14:54:40.570 * <timeseries>     { ts-retention-policy :          0 }
1:M 18 Aug 2025 14:54:40.570 * <timeseries>     { ts-duplicate-policy :      block }
1:M 18 Aug 2025 14:54:40.570 * <timeseries>     { ts-chunk-size-bytes :        4096 }
1:M 18 Aug 2025 14:54:40.570 * <timeseries>     { ts-encoding :    compressed }
1:M 18 Aug 2025 14:54:40.570 * <timeseries>     { ts-ignore-max-time-diff:        0 }
1:M 18 Aug 2025 14:54:40.570 * <timeseries>     { ts-ignore-max-val-diff : 0.000000 }
1:M 18 Aug 2025 14:54:40.570 * <timeseries> ]
1:M 18 Aug 2025 14:54:40.570 * <timeseries> Detected redis oss
1:M 18 Aug 2025 14:54:40.570 * <timeseries> Enabled diskless replication
1:M 18 Aug 2025 14:54:40.570 * Module 'timeseries' loaded from /usr/local/lib/redis/modules//redistimeseries.so
1:M 18 Aug 2025 14:54:40.570 * <ReJSON> Created new data type 'ReJSON-RL'
1:M 18 Aug 2025 14:54:40.570 * <ReJSON> version: 80200 git sha: unknown branch: unknown
1:M 18 Aug 2025 14:54:40.570 * <ReJSON> Exported RedisJSON_V1 API
1:M 18 Aug 2025 14:54:40.570 * <ReJSON> Exported RedisJSON_V2 API
1:M 18 Aug 2025 14:54:40.570 * <ReJSON> Exported RedisJSON_V3 API
1:M 18 Aug 2025 14:54:40.570 * <ReJSON> Exported RedisJSON_V4 API
1:M 18 Aug 2025 14:54:40.570 * <ReJSON> Exported RedisJSON_V5 API
1:M 18 Aug 2025 14:54:40.570 * <ReJSON> Enabled diskless replication
1:M 18 Aug 2025 14:54:40.570 * <ReJSON> Initialized shared string cache, thread safe: false
.
1:M 18 Aug 2025 14:54:40.570 * Module 'ReJSON' loaded from /usr/local/lib/redis/modules//rejson.so
1:M 18 Aug 2025 14:54:40.570 * <search> Acquired RedisJSON_V5 API
1:M 18 Aug 2025 14:54:40.571 * Server initialized
1:M 18 Aug 2025 14:54:40.571 * Ready to accept connections tcp
```

Docker Pull

```
sahaj@sahaj-Victus:~/Downloads$ docker pull hello-world
Using default tag: latest
latest: Pulling from library/hello-world
Digest: sha256:a0dfb02aac212703bfcb339d77d47ec32c8706ff250850ecc0e19c8737b18567
Status: Image is up to date for hello-world:latest
docker.io/library/hello-world:latest
sahaj@sahaj-Victus:~/Downloads$ 
```

Docker PS

```
sahaj@sahaj-Victus:~/Downloads$ docker ps
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
1cbe51ba1cc1 ubuntu "bash" 34 minutes ago Up 30 minutes
0839bfff6a51b nginx "/docker-entrypoint..." 45 minutes ago Up 45 minutes 0.0.0.0:8080->80/tcp, [::]:8080->80/tcp practical_wozniak
sahaj@sahaj-Victus:~/Downloads$ docker ps -a
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
31b66e82a3be redis "/docker-entrypoint.s..." 3 minutes ago Exited (0) About a minute ago
92982bd96ff hello-world "/hello"
62a9baeed079 asahaj/myubuntu:1.0 "bash" 11 minutes ago Exited (0) 11 minutes ago
1ec9f6da93fa myubuntu:1.0 "bash" 23 minutes ago Exited (0) 23 minutes ago
1cbe51ba1cc1 ubuntu "bash" 34 minutes ago Up 30 minutes
9994e92f4f58 nginx "/docker-entrypoint..." 39 minutes ago Created
8db9b5f4abfc hello-world "/hello"
0839bfff6a51b nginx "/docker-entrypoint..." 45 minutes ago Up 45 minutes 0.0.0.0:8080->80/tcp, [::]:8080->80/tcp practical_wozniak
b107995ff2fa busybox "sh" 49 minutes ago Exited (137) 42 minutes ago
Bebedf6c0e04 ubuntu:latest "/bin/bash" 2 hours ago Exited (0) 2 hours ago
my_ubuntu
upbeat_austin
great_satoshi
vigilant_wiles
admiring_mirzakhani
my_ubuntu
sleepy_lamport
blissful_mccarthy
practical_wozniak
awesome_bassi
heuristic_rubin
sahaj@sahaj-Victus:~/Downloads$ docker ps -l
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
31b66e82a3be redis "/docker-entrypoint.s..." 3 minutes ago Exited (0) About a minute ago
upbeat_austin
1cbe51ba1cc1
0839bfff6a51b
```

Docker Stop

```
sahaj@sahaj-Victus:~/Downloads$ docker stop 8db9b5f4abfc
8db9b5f4abfc
```

Docker Start

```
sahaj@sahaj-Victus:~/Downloads$ docker start 8db9b5f4abfc
8db9b5f4abfc
```

Docker rm

```
sahaj@sahaj-Victus:~/Downloads$ docker rm -v 8db9b5f4abfc
8db9b5f4abfc
```

Docker RMI

Removies the image

```
docker rmi <image ID/ image name>
```

Docker Images

```
sahaj@sahaj-Victus:~/Downloads$ docker images
REPOSITORY TAG IMAGE ID CREATED SIZE
<none> <none> 1751708a7fd4 25 minutes ago 240MB
myubuntu latest 003be6a1b5ea 30 minutes ago 240MB
asahaj/myubuntu 1.0 54c895dbf8fb 30 minutes ago 240MB
myubuntu 1.0 54c895dbf8fb 30 minutes ago 240MB
nginx latest 33e0bbc7ca9e 4 days ago 279MB
hello-world latest a0dfb02a4ac21 9 days ago 20.3kB
redis latest e7d6b261beaa 2 weeks ago 224MB
ubuntu latest 7c06e91f61fa 2 weeks ago 117MB
busybox latest ab33eacc8251 10 months ago 6.78MB
ai/deepseek-r1-distill-llama latest 88795a9b69fc 55 years ago 4.92GB
```

Docker exec

```
sahaj@sahaj-Victus:~/Downloads$ docker exec -it my_ubuntu bash
root@1cbe51ba1cc1:/# echo "Hello-Docker"
Hello-Docker
root@1cbe51ba1cc1:/# exit
exit
```

Docker Ports (Port Mapping)

```
sahaj@sahaj-Victus:~/Downloads$ docker run -d -p 8080:80 nginx
66803bb43c65d891a04384f495f1a40df908f4ba6d6b66b56a433251be0fe84a
docker: Error response from daemon: failed to set up container networking: driver failed pr
ogramming external connectivity on endpoint zen_wescoff (6701f738b81b13cca3fb058e37b80ac4b8
a83cd607d8560ba3ac6d1d7ea91260): Bind for 0.0.0.0:8080 failed: port is already allocated
```



Docker Login

```
Ran "docker run --help" for more information
sahaj@sahaj-Victus:~/Downloads$ docker login
Authenticating with existing credentials... [Username: asahaj]

Info → To login with a different account, run 'docker logout' followed by 'docker login'

Login Succeeded
```

Docker Push

```
sahaj@sahaj-Victus:~/Downloads$ docker push mybuntu
Using default tag: latest
The push refers to repository [docker.io/library/mybuntu]
tag does not exist: mybuntu:latest
```

Docker Build

```
sahaj@sahaj-Victus:~/Downloads$ docker build -t myubuntu .
[+] Building 1.1s (6/6) FINISHED                                            docker:desktop-linux
=> [internal] load build definition from Dockerfile                      0.0s
=> => transferring dockerfile: 126B                                         0.0s
=> [internal] load metadata for docker.io/library/ubuntu:22.04           1.0s
=> [internal] load .dockerignore                                         0.0s
=> => transferring context: 2B                                           0.0s
=> [1/2] FROM docker.io/library/ubuntu:22.04@sha256:1aa979d85661c488ce030ac292876cf 0.0s
=> => resolve docker.io/library/ubuntu:22.04@sha256:1aa979d85661c488ce030ac292876cf 0.0s
=> CACHED [2/2] RUN apt-get update && apt-get install -y curl             0.0s
=> exporting to image                                                 0.1s
=> => exporting layers                                              0.0s
=> => exporting manifest sha256:f2b351071d074087e87205e4ef3d3a904e8690885ea16ba2653 0.0s
=> => exporting config sha256:4a26c81628575a82bba980f4e836be4df377fad7e7a0b06157490 0.0s
=> => exporting attestation manifest sha256:ef30ac3e5bae471d3363db1b992d996af023e54 0.0s
=> => exporting manifest list sha256:003be6a1b5ea11b6a94f7d00c4a118b73d96f2193c0d81 0.0s
=> => naming to docker.io/library/myubuntu:latest                         0.0s
=> => unpacking to docker.io/library/myubuntu:latest                      0.0s

View build details: docker-desktop://dashboard/build/desktop-linux/desktop-linux/o419uf51a8
0tg9rqmz6qcr6dr
```

Docker Stop

```
sahaj@sahaj-Victus:~/Downloads$ docker stop b107995ff2fa
b107995ff2fa
```

Docker Restart

```
sahaj@sahaj-Victus:~/Downloads$ docker restart b107995ff2fa
b107995ff2fa
```

Docker Inspection

```
sahaj@sahaj-Victus:~/Downloads$ docker inspect 1ec9f6da93fa
[
  {
    "Id": "1ec9f6da93fa1ceae8076d3ec42b58c523034d051dab62890ea4f9b68a7fc23",
    "Created": "2025-08-18T14:34:32.896900142Z",
    "Path": "bash",
    "Args": [],
    "State": {
      "Status": "exited",
      "Running": false,
      "Paused": false,
      "Restarting": false,
      "OOMKilled": false,
      "Dead": false,
      "Pid": 0,
      "ExitCode": 0,
      "Error": "",
      "StartedAt": "2025-08-18T14:34:33.007419732Z",
      "FinishedAt": "2025-08-18T14:35:01.509968542Z"
    },
    "Image": "sha256:54c895dbf8fbef00323377dic6d4f146911ea47da80e1da27dcff3cb8d849e75",
    "ResolvConfPath": "/var/lib/docker/containers/1ec9f6da93fa1ceae8076d3ec42b58c523034d051dab62890ea4f9b68a7fc23/resolv.conf",
    "HostnamePath": "/var/lib/docker/containers/1ec9f6da93fa1ceae8076d3ec42b58c523034d051dab62890ea4f9b68a7fc23/hostname",
    "HostsPath": "/var/lib/docker/containers/1ec9f6da93fa1ceae8076d3ec42b58c523034d051dab62890ea4f9b68a7fc23/hosts",
    "LogPath": "/var/lib/docker/containers/1ec9f6da93fa1ceae8076d3ec42b58c523034d051dab62890ea4f9b68a7fc23/1ec9f6da93fa1ceae8076d3ec42b58c523034d051dab62890ea4f9b68a7fc23.json.log"
  }
]
```

```
        "MaximumRetryCount": 0
    },
    "AutoRemove": false,
    "VolumeDriver": "",
    "VolumesFrom": null,
    "ConsoleSize": [
        45,
        91
    ],
    "CapAdd": null,
    "CapDrop": null,
    "CgroupsnsMode": "private",
    "Dns": [],
    "DnsOptions": [],
    "DnsSearch": [],
    "ExtraHosts": null,
    "GroupAdd": null,
    "IpcMode": "private",
    "Cgroup": "",
    "Links": null,
    "OomScoreAdj": 0,
    "PidMode": "",
    "Privileged": false,
    "PublishAllPorts": false,
    "ReadonlyRootfs": false,
    "SecurityOpt": null,
    "UTSMode": "",
    "UsernsMode": "",
    "ShmSize": 67108864,
    "Runtime": "runc",
    "Isolation": "",
    "CpuShares": 0,
    "Memory": 0,
    "NanoCpus": 0,
    "GroupParent": "",
    "BlkioWeight": 0,
    "BlkioWeightDevice": [],
    "BlkioDeviceReadBps": [],
    "BlkioDeviceWriteBps": [],
    "BlkioDeviceReadIOPS": [],
    "BlkioDeviceWriteIOPS": [],
    "CpuPeriod": 0,
    "CpuQuota": 0,
    "CpuRealtimePeriod": 0,
    "CpuRealtimeRuntime": 0
  }
]
```

```

        "CpuRealtimeRuntime": 0,
        "CpusetCpus": "",
        "CpusetMems": "",
        "Devices": [],
        "DeviceCgroupRules": null,
        "DeviceRequests": null,
        "MemoryReservation": 0,
        "MemorySwap": 0,
        "MemorySwappiness": null,
        "OomKillDisable": null,
        "PidsLimit": null,
        "Ulimits": [],
        "CpuCount": 0,
        "CpuPercent": 0,
        "IOMaximumIOPS": 0,
        "IOMaximumBandwidth": 0,
        "MaskedPaths": [
            "/proc/asound",
            "/proc/acpi",
            "/proc/interrupts",
            "/proc/kcore",
            "/proc/keys",
            "/proc/latency_stats",
            "/proc/timer_list",
            "/proc/timer_stats",
            "/proc/sched_debug",
            "/proc/scsi",
            "/sys/firmware",
            "/sys/devices/virtual/powercap"
        ],
        " ReadonlyPaths": [
            "/proc/bus",
            "/proc/fs",
            "/proc/irq",
            "/proc/sys",
            "/proc/sysrq-trigger"
        ]
    },
    "GraphDriver": {
        "Data": null,
        "Name": "overlayfs"
    },
    "Mounts": [],
    "Config": {
        "Hostname": "1ec9f6da93fa",
        "Domainname": ""
    }
}

```

```

        "User": {
            "AttachStdin": true,
            "AttachStdout": true,
            "AttachStderr": true,
            "Tty": true,
            "OpenStdin": true,
            "StdinOnce": true,
            "Env": [
                "PATH=/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin"
            ],
            "Cmd": [
                "bash"
            ],
            "Image": "myubuntu:1.0",
            "Volumes": null,
            "WorkingDir": "",
            "Entrypoint": null,
            "OnBuild": null,
            "Labels": {
                "org.opencontainers.image.ref.name": "ubuntu",
                "org.opencontainers.image.version": "22.04"
            }
        },
        "NetworkSettings": {
            "Bridge": "",
            "SandboxID": "",
            "SandboxKey": "",
            "Ports": {},
            "HairpinMode": false,
            "LinkLocalIPv6Address": "",
            "LinkLocalIPv6PrefixLen": 0,
            "SecondaryIPAddresses": null,
            "SecondaryIPv6Addresses": null,
            "EndpointID": "",
            "Gateway": "",
            "GlobalIPv6Address": null,
            "GlobalIPv6PrefixLen": 0,
            "Networks": [
                {
                    "bridge": {
                        "IPAMConfig": null,
                        "Links": null,
                        "Aliases": null,
                        "MacAddress": "",
                        "DriverOpts": null,
                        "GwPriority": 0,
                        "NetworkID": "e2a2ae42a48085013c193dae39af0b51e1e5f0bb76ac46b8399b41f71805673a",
                        "EndpointID": "",
                        "Gateway": "",
                        "IPAddress": "",
                        "IPPrefixLen": 0,
                        "IPv6Gateway": "",
                        "GlobalIPv6Address": null,
                        "GlobalIPv6PrefixLen": 0,
                        "DNSNames": null
                    }
                }
            ],
            "ImageManifestDescriptor": {
                "mediaType": "application/vnd.oci.image.manifest.v1+json",
                "digest": "sha256:f2b351071d074087e87205e4ef3d3a904e8690885ea16ba2653d8f6adb0b6dc2",
                "size": 675,
                "platform": {
                    "architecture": "amd64",
                    "os": "linux"
                }
            }
        }
    }
]

```

Docker Commit command

```
sahaj@sahaj-Victus:~/Downloads$ docker commit 1ec9f6da93fa
sha256:1751708a7fd4b52c9a3a9ccf718251dbbf0fd02228893bb58513bcd688073b5
sahaj@sahaj-Victus:~/Downloads$ docker run m_ubuntu
Unable to find image 'm_ubuntu:latest' locally
docker: Error response from daemon: pull access denied for m_ubuntu, repository does not exist or may require 'docker login'

Run 'docker run --help' for more information
```

GIT CMDS

```
sahaj@sahaj-Victus:~/myproject/CloudTraining$ git add index.html
sahaj@sahaj-Victus:~/myproject/CloudTraining$ git commit -m "Add index.html"
[main 2d3b2b6] Add index.html
 1 file changed, 12 insertions(+)
  create mode 100644 index.html
sahaj@sahaj-Victus:~/myproject/CloudTraining$ git push origin main
Username for 'https://github.com': asahaj2002@gmail.com
Password for 'https://asahaj2002%40gmail.com@github.com':
Enumerating objects: 4, done.
Counting objects: 100% (4/4), done.
Delta compression using up to 12 threads
Compressing objects: 100% (3/3), done.
Writing objects: 100% (3/3), 401 bytes | 401.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/SahajA25/CloudTraining.git
 f550577..2d3b2b6  main -> main
```

```
sahaj@sahaj-Victus:~/myproject/CloudTraining$ git add text.txt
sahaj@sahaj-Victus:~/myproject/CloudTraining$ git commit -m "modified text.txt"
[main 1e782ef] modified text.txt
 1 file changed, 1 insertion(+), 1 deletion(-)
sahaj@sahaj-Victus:~/myproject/CloudTraining$ git status
On branch main
Your branch is ahead of 'origin/main' by 1 commit.
  (use "git push" to publish your local commits)

Untracked files:
  (use "git add <file>..." to include in what will be committed)
    abc.txt

nothing added to commit but untracked files present (use "git add" to track)
```

```
sahaj@sahaj-Victus:~/myproject/CloudTraining$ git blame
usage: git blame [<options>] [<rev-opts>] [<rev>] [--] <file>

<rev-opts> are documented in git-rev-list(1)

--[no-]incremental      show blame entries as we find them, incrementally
-b                      do not show object names of boundary commits (Default: off)
--[no-]root              do not treat root commits as boundaries (Default: off)
--[no-]show-stats        show work cost statistics
--[no-]progress          force progress reporting
--[no-]score-debug       show output score for blame entries
-f, --[no-]show-name    show original filename (Default: auto)
-n, --[no-]show-number   show original linenumbers (Default: off)
-p, --[no-]porcelain    show in a format designed for machine consumption
--[no-]line-porcelain   show porcelain format with per-line commit information
-c                      use the same output mode as git-annotate (Default: off)
-t                      show raw timestamp (Default: off)
-l                      show long commit SHA1 (Default: off)
-s                      suppress author name and timestamp (Default: off)
-e, --[no-]show-email   show author email instead of name (Default: off)
-w                      ignore whitespace differences
--[no-]ignore-rev <rev>
                      ignore <rev> when blaming
--[no-]ignore-revs-file <file>
                      ignore revisions from <file>
--[no-]color-lines       color redundant metadata from previous line differently
--[no-]color-by-age      color lines by age
--[no-]minimal           spend extra cycles to find better match
-S <file>               use revisions from <file> instead of calling git-rev-list
--[no-]contents <file>
                      use <file>'s contents as the final image
-C[<score>]             find line copies within and across files
-M[<score>]             find line movements within and across files
-L <range>              process only line range <start>,<end> or function :<funcname>
--[no-]abbrev[=<n>]     use <n> digits to display object names
```

```
sahaj@sahaj-Victus:~/myproject/CloudTraining$ git remote -v
origin  git@github.com:git@github.com:SahajA25/CloudTraining.git (fetch)
origin  git@github.com:git@github.com:SahajA25/CloudTraining.git (push)
sahaj@sahaj-Victus:~/myproject/CloudTraining$ git remote set-url origin git@github.com:Saha
jA25/CloudTraining.git
dDC.txt  tExL.txt
```

```

create mode 100644 index.html
sahaj@sahaj-Victus:~/myproject/CloudTraining$ git push origin main
Everything up-to-date
sahaj@sahaj-Victus:~/myproject/CloudTraining$ git push origin main --force
Everything up-to-date
sahaj@sahaj-Victus:~/myproject/CloudTraining$ nano asd.txt
sahaj@sahaj-Victus:~/myproject/CloudTraining$ git commit -m "modified asd.txt"
[main 032238e] modified asd.txt
 1 file changed, 1 insertion(+)
 create mode 100644 asd.txt
sahaj@sahaj-Victus:~/myproject/CloudTraining$ git add asd.txt
sahaj@sahaj-Victus:~/myproject/CloudTraining$ git push origin main
Enumerating objects: 4, done.
Counting objects: 100% (4/4), done.
Delta compression using up to 12 threads
Compressing objects: 100% (2/2), done.
Writing objects: 100% (3/3), 313 bytes | 313.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
To github.com:SahajA25/CloudTraining.git
  1e782ef..032238e main -> main
sahaj@sahaj-Victus:~/myproject/CloudTraining$ git rm asd.txt
error: the following file has changes staged in the index:
  asd.txt
(use --cached to keep the file, or -f to force removal)
sahaj@sahaj-Victus:~/myproject/CloudTraining$ git commit -m "deleted asd.txt"
[main 31922f7] deleted asd.txt
 1 file changed, 1 insertion(+), 1 deletion(-)

```

Minikube And Kubernetes

```

sahaj@sahaj-Victus:~$ curl -LO https://storage.googleapis.com/minikube/releases/latest/minikube-linux-amd64
sudo install minikube-linux-amd64 /usr/local/bin/minikube
      % Total    % Received % Xferd  Average Speed   Time     Time      Current
                                     Dload  Upload   Total   Spent   Left  Speed
100  126M  100  126M    0     0  6167k      0  0:00:21  0:00:21  --::--  7493k
[sudo] password for sahaj:
sahaj@sahaj-Victus:~$ minikube version
W0826 23:44:51.282660    6286 main.go:291] Unable to resolve the current Docker CLI context
"default": context "default": context not found: open /home/sahaj/.docker getContexts/meta/37
a8eec1ce19687d132fe29051dca629d164e2c4958ba141d5f4133a33f0688f/meta.json: no such file or d
irectory
W0826 23:44:51.282714    6286 main.go:292] Try running `docker context use default` to reso
lve the above error
minikube version: v1.36.0
commit: f8f52f5de11fc6ad8244afac475e1d0f96841df1-dirty

```

```
sahaj@sahaj-Victus:~$ minikube start
W0826 23:46:29.161842    6368 main.go:291] Unable to resolve the current Docker CLI context
  "default": context "default": context not found: open /home/sahaj/.docker/contexts/meta/37
a8eec1ce19687d132fe29051dca629d164e2c4958ba141d5f4133a33f0688f/meta.json: no such file or d
irectory
W0826 23:46:29.161899    6368 main.go:292] Try running `docker context use default` to reso
lve the above error
🌟 minikube v1.36.0 on Ubuntu 24.04
📌 Automatically selected the docker driver
📌 Using Docker driver with root privileges
👍 Starting "minikube" primary control-plane node in "minikube" cluster
🚜 Pulling base image v0.0.47 ...
💻 Downloading Kubernetes v1.33.1 preload ...
  > gcr.io/k8s-minikube/kicbase...: 502.26 MiB / 502.26 MiB 100.00% 5.60 Mi
  > preloaded-images-k8s-v18-v1...: 347.04 MiB / 347.04 MiB 100.00% 2.74 Mi
🔥 Creating docker container (CPUs=2, Memory=3900MB) ...
🌐 Preparing Kubernetes v1.33.1 on Docker 28.1.1 ...
  └ Generating certificates and keys ...
  └ Booting up control plane ...
  └ Configuring RBAC rules ...
🔧 Configuring bridge CNI (Container Networking Interface) ...
🔧 Verifying Kubernetes components...
  └ Using image gcr.io/k8s-minikube/storage-provisioner:v5
💡 Enabled addons: storage-provisioner, default-storageclass
💡 kubectl not found. If you need it, try: 'minikube kubectl -- get pods -A'
🎉 Done! kubectl is now configured to use "minikube" cluster and "default" namespace by de
fault
sahaj@sahaj-Victus:~$ minikube status
W0826 23:50:43.849104    11517 main.go:291] Unable to resolve the current Docker CLI context
  "default": context "default": context not found: open /home/sahaj/.docker/contexts/meta/37
a8eec1ce19687d132fe29051dca629d164e2c4958ba141d5f4133a33f0688f/meta.json: no such file or d
irectory
W0826 23:50:43.849194    11517 main.go:292] Try running `docker context use default` to reso
lve the above error
minikube
type: Control Plane
host: Running
kubelet: Running
apiserver: Running
kubeconfig: Configured
```

```

sahaj@sahaj-Victus:~$ minikube kubectl -- get nodes
W0826 23:52:17.562810    12127 main.go:291] Unable to resolve the current Docker CLI context
  "default": context "default": context not found: open /home/sahaj/.docker/contexts/meta/37
a8eec1ce19687d132fe29051dca629d164e2c4958ba141d5f4133a33f0688f/meta.json: no such file or d
irectory
W0826 23:52:17.562871    12127 main.go:292] Try running `docker context use default` to reso
lve the above error
    > kubectl.sha256: 64 B / 64 B [-----] 100.00% ? p/s 0s
    > kubectl: 57.34 MiB / 57.34 MiB [-----] 100.00% 8.28 MiB p/s 7.1s
NAME      STATUS      ROLES      AGE      VERSION
minikube   Ready       control-plane   3m28s   v1.33.1
sahaj@sahaj-Victus:~$ sudo snap install kubectl --classic
[sudo] password for sahaj:
kubectl 1.33.4 from Canonical✓ installed
sahaj@sahaj-Victus:~$ kubectl version --client
Client Version: v1.33.4
Kustomize Version: v5.6.0
sahaj@sahaj-Victus:~$ kubectl get nodes
NAME      STATUS      ROLES      AGE      VERSION
minikube   Ready       control-plane   4m12s   v1.33.1
sahaj@sahaj-Victus:~$ minikube kubectl -- get nodes
W0826 23:53:30.475278    13227 main.go:291] Unable to resolve the current Docker CLI context
  "default": context "default": context not found: open /home/sahaj/.docker/contexts/meta/37
a8eec1ce19687d132fe29051dca629d164e2c4958ba141d5f4133a33f0688f/meta.json: no such file or d
irectory
W0826 23:53:30.475339    13227 main.go:292] Try running `docker context use default` to reso
lve the above error
NAME      STATUS      ROLES      AGE      VERSION
minikube   Ready       control-plane   4m31s   v1.33.1
sahaj@sahaj-Victus:~$ kubectl create deployment hello-minikube --image=kicbase/echo-server:
1.0
kubectl expose deployment hello-minikube --type=NodePort --port=8080
deployment.apps/hello-minikube created
service/hello-minikube exposed
sahaj@sahaj-Victus:~$ kubectl get services hello-minikube
NAME      TYPE      CLUSTER-IP      EXTERNAL-IP      PORT(S)      AGE
hello-minikube   NodePort      10.110.65.190      <none>      8080:32073/TCP      7s

```

```

sahaj@sahaj-Victus:~$ minikube service hello-minikube
W0826 23:54:00.356418    13682 main.go:291] Unable to resolve the current Docker CLI context
  "default": context "default": context not found: open /home/sahaj/.docker/contexts/meta/37
a8eec1ce19687d132fe29051dca629d164e2c4958ba141d5f4133a33f0688f/meta.json: no such file or d
irectory
W0826 23:54:00.356478    13682 main.go:292] Try running `docker context use default` to reso
lve the above error
|-----|-----|-----|
| NAMESPACE |     NAME      | TARGET PORT |          URL        |
|-----|-----|-----|
| default   | hello-minikube |         8080 | http://192.168.49.2:32073 |
|-----|-----|-----|
💡 Opening service default/hello-minikube in default browser...

```

```

sahaj@sahaj-Victus:~$ minikube dashboard
W0826 23:56:59.769271    16136 main.go:291] Unable to resolve the current Docker CLI context
  "default": context "default": context not found: open /home/sahaj/.docker/contexts/meta/37
a8eec1ce19687d132fe29051dca629d164e2c4958ba141d5f4133a33f0688f/meta.json: no such file or d
irectory
W0826 23:56:59.769303    16136 main.go:292] Try running `docker context use default` to reso
lve the above error
🟡 Verifying dashboard health ...
🚀 Launching proxy ...
🟡 Verifying proxy health ...
🎉 Opening http://127.0.0.1:33155/api/v1/namespaces/kubernetes-dashboard/services/http:kub
ernetes-dashboard:/proxy/ in your default browser...
Gtk-Message: 23:57:00.429: Not loading module "atk-bridge": The functionality is provided b
y GTK natively. Please try to not load it.
[16384, Main Thread] WARNING: GTK+ module /snap/firefox/6700/gnome-platform/usr/lib/gtk-2.0
/modules/libcanberra-gtk-module.so cannot be loaded.
GTK+ 2.x symbols detected. Using GTK+ 2.x and GTK+ 3 in the same process is not supported.:'
'glib warning', file /build/firefox/parts/firefox/build/toolkit/xre/nsSigHandlers.cpp:201

(firefox_firefox:16384): Gtk-WARNING **: 23:57:00.507: GTK+ module /snap/firefox/6700/gnome
-platform/usr/lib/gtk-2.0/modules/libcanberra-gtk-module.so cannot be loaded.
GTK+ 2.x symbols detected. Using GTK+ 2.x and GTK+ 3 in the same process is not supported.
Gtk-Message: 23:57:00.507: Failed to load module "canberra-gtk-module"
[16384, Main Thread] WARNING: GTK+ module /snap/firefox/6700/gnome-platform/usr/lib/gtk-2.0
/modules/libcanberra-gtk-module.so cannot be loaded.
GTK+ 2.x symbols detected. Using GTK+ 2.x and GTK+ 3 in the same process is not supported.:'
'glib warning', file /build/firefox/parts/firefox/build/toolkit/xre/nsSigHandlers.cpp:201

(firefox_firefox:16384): Gtk-WARNING **: 23:57:00.508: GTK+ module /snap/firefox/6700/gnome
-platform/usr/lib/gtk-2.0/modules/libcanberra-gtk-module.so cannot be loaded.
GTK+ 2.x symbols detected. Using GTK+ 2.x and GTK+ 3 in the same process is not supported.
Gtk-Message: 23:57:00.508: Failed to load module "canberra-gtk-module"

```

http://127.0.0.1:43507/api/v1/namespaces/kubernetes-dashboard/services/http:kubernetes-dashboard:/proxy/#/workloads?namespace=default

kubernetes default Search

Workloads

- Workloads
- Cron Jobs
- Daemon Sets
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- Jobs
- Pods
- Replica Sets
- Replication Controllers
- Stateful Sets

Service

- Ingresses
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- Services

Config and Storage

- Config Maps
- Persistent Volume Claims
- Secrets
- Storage Classes

Cluster

- Cluster Role Bindings
- Cluster Roles
- Events
- Namespaces
- Network Policies

Deployments

Name	Images	Labels	Pods	Created
hello-minikube	kicbase/echo-server:1.0	app: hello-minikube	1 / 1	9 minutes ago

Pods

Name	Images	Labels	Node	Status	Restarts	CPU Usage (cores)	Memory Usage (bytes)	Created
hello-minikube-fcbb5874-xltbv	kicbase/echo-server:1.0	app: hello-minikube pod-template-hash: fcbb5874	minikube	Running	0	-	-	9 minutes ago

Replica Sets

Name	Images	Labels	Pods	Created
hello-minikube-fcbb5874	kicbase/echo-server:1.0	app: hello-minikube pod-template-hash: fcbb5874	1 / 1	9 minutes ago

Kubernetes

default

Search

Workloads > Deployments > hello-minikube

Metadata

Name	hello-minikube	Namespace	default	Created	Aug 26, 2025	Age	10 minutes ago	UID	f937897e-3039-4c40-a40c-17819ee7bdb1
Labels	app: hello-minikube								
Annotations	deployment.kubernetes.io/revision: 1								

Resource information

Strategy	RollingUpdate	Min ready seconds	0	Revision history limit	10
Selector	app: hello-minikube				

Rolling update strategy

Max surge	25%	Max unavailable	25%
-----------	-----	-----------------	-----

Pods status

Updated	Total	Available
1	1	1

Workloads

- Cron Jobs
- Daemon Sets
- Deployments**
- Jobs
- Pods
- Replica Sets
- Replication Controllers
- Stateful Sets

Service

- Ingresses
- Ingress Classes
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Config and Storage

- Config Maps
- Persistent Volume Claims
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- Storage Classes

Cluster

- Cluster Role Bindings
- Cluster Roles
- Events
- Namespaces
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The screenshot shows the Kubernetes Dashboard interface for a deployment named 'hello-minikube' in the 'default' namespace. The deployment was created on Aug 26, 2025, and has been running for 10 minutes. It uses a RollingUpdate strategy with 25% max surge and 25% max unavailable. There is one pod in total, which is updated, total, and available.

Creating the App on Kubernetes

```
sahaj@sahaj-Victus:~/myproject/CloudTraining$ nano Dockerfile
sahaj@sahaj-Victus:~/myproject/CloudTraining$ docker build -t hello-k8s .
[+] Building 28.7s (9/9) FINISHED                                            docker:default
=> [internal] load build definition from Dockerfile                      0.0s
=> => transferring dockerfile: 98B                                         0.0s
=> [internal] load metadata for docker.io/library/node:18                  3.5s
=> [auth] library/node:pull token for registry-1.docker.io                 0.0s
=> [internal] load .dockerignore                                         0.0s
=> => transferring context: 2B                                           0.0s
=> [1/3] FROM docker.io/library/node:18@sha256:c6ae79e38498325db67193d391e6ec1d224 24.5s
=> => resolve docker.io/library/node:18@sha256:c6ae79e38498325db67193d391e6ec1d224d 0.0s
=> => sha256:c6ae79e38498325db67193d391e6ec1d224d96c693a8a4d9434985 6.41kB / 6.41kB 0.0s
=> => sha256:eb29363371ee2859fad6a3c5af88d4abc6ff7d399addb13b7de3c1 2.49kB / 2.49kB 0.0s
=> => sha256:b50082bc3670d0396b2d90e4b0e5bb10265ba5d0ee16bf40f9a505 6.39kB / 6.39kB 0.0s
=> => sha256:3e6b9d1a95114e19f12262a4e8a59ad1d1a10ca7b82108adcf0 48.49MB / 48.49MB 18.4s
=> => sha256:37927ed901b1b2608b72796c6881bf645480268eca4ac9a37b92 24.02MB / 24.02MB 3.2s
=> => sha256:79b2f47ad4443652b9b5cc81a95ede249fd976310efdbe159f 64.40MB / 64.40MB 20.3s
=> => sha256:e23f099911d692f62b851cf49a1e93294288a115f5cd2d014 211.36MB / 211.36MB 18.9s
=> => extracting sha256:3e6b9d1a95114e19f12262a4e8a59ad1d1a10ca7b82108adcf0605a2002 0.7s
=> => sha256:cda7f44f2bddcc4bb7514474024b3f3705de00ddb6355a33be5ac 3.32kB / 3.32kB 19.0s
=> => sha256:c6b30c3f16966552af10ac00521f60355b1fcfd46ac1c20b103 45.68MB / 45.68MB 22.9s
=> => sha256:3697be50c98b9d071df4637e1d3491d00e7b9f3a732768c876d82 1.25MB / 1.25MB 19.8s
=> => extracting sha256:37927ed901b1b2608b72796c6881bf645480268eca4ac9a37b9219e050b 0.2s
=> => sha256:461077a72fb7fe40d34a37d6a1958c4d16772d0dd77f572ec50a1fdc4 446B / 446B 20.4s
=> => extracting sha256:79b2f47ad4443652b9b5cc81a95ede249fd976310efdbe159f29638783 0.9s
=> => extracting sha256:e23f099911d692f62b851cf49a1e93294288a115f5cd2d014180e4d3684 2.4s
=> => extracting sha256:cda7f44f2bddcc4bb7514474024b3f3705de00ddb6355a33be5ac7808e5 0.0s
=> => extracting sha256:c6b30c3f16966552af10ac00521f60355b1fcfd46ac1c20b1038587e285 0.7s
=> => extracting sha256:3697be50c98b9d071df4637e1d3491d00e7b9f3a732768c876d82309b3c 0.0s
=> => extracting sha256:461077a72fb7fe40d34a37d6a1958c4d16772d0dd77f572ec50a1fdc41a 0.0s
=> [internal] load build context                                         0.0s
=> => transferring context: 378.21kB                                     0.0s
=> [2/3] WORKDIR /app                                                 0.6s
=> [3/3] COPY . .                                                    0.0s
=> exporting to image                                                 0.0s
=> => exporting layers                                              0.0s
=> => writing image sha256:8f789b1ad2e4d7ed958f309bed027822332810b0effe375c703f0fef 0.0s
=> => naming to docker.io/library/hello-k8s                           0.0s
```

View build details: docker-desktop://dashboard/build/default/default/8xi684k5ix8p2oyeupuwp7mf1

```
GNU nano 7.2                                         server.js
const http = require('http');
const port = 8080;

const requestHandler = (req, res) => {
  res.end('Hello Kubernetes!');
};

const server = http.createServer(requestHandler);
server.listen(port, () => {
  console.log(`Server running on port ${port}`);
});
```

GNU nano 7.2

Dockerfile

```
FROM node:18
WORKDIR /app
COPY .
CMD ["node", "server.js"]
```

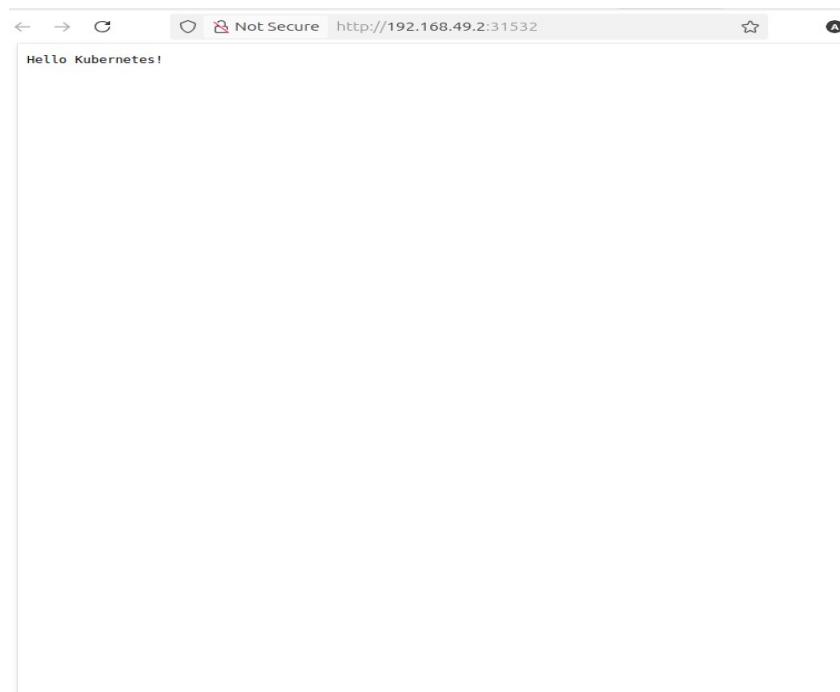
sahaj@sahaj-Victus:~/myproject/CloudTraining\$ eval \$(minikube docker-env)						
CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAMES
ed11e2e1e85b	07655ddf2eeb	"/dashboard --insecure_..."	6 hours ago	Up 6 hours		k8s_kubernetes-dashboard_kubernetes-dashboard-7779f9b69b-rws1f_kubernetes-dash
45bcd4d5dd3	6004-492f-9d60-84f230cfa6da_2	"/storage-provisioner"	6 hours ago	Up 6 hours		k8s_storage-provisioner_storage-provisioner_kube-system_a8975f9b-33ab-4df8-931
9-714ac0746c18_3	e4fcde9942d5	"/coredns -conf /etc..."	6 hours ago	Up 6 hours		k8s_coredns_coredns-674b8bbfcf-885pp_kube-system_461fffc7-a450-4966-8e84-079c0
dic/ae5_1	e483f01444ef	"/metrics-sidecar"	6 hours ago	Up 6 hours		k8s_dashboard-metrics-scraper_dashboard-metrics-scraper-5d59dccf9b-r9z7t_kuber
netes-dashba..._b755a31-d0d-4c28-8f80-bf78e6af81f4_1	f2449f5e76f1	9056ab77afb8	"/bin/echo-server"	6 hours ago	Up 6 hours	k8s_echo-server_hello-minikube-ffccb5874-xltbv_default_43bac379-eac8-4c16-bce2
.-4eeef395b4e91_1	b79c189b052c	"usr/local/bin/kube_..."	6 hours ago	Up 6 hours		k8s_kube-proxy_kube-proxy-vwth7_kube-system_6d390a88-1579-4863-acab-6b0976be33
702f2f04d9a2	9f1_					k8s_POD_kubernetes-dashboard-7779f9b69b-rws1f_kubernetes-dashboard_453d525f-60
95266b3781e2	registry.k8s.io/pause:3.10	"/pause"	6 hours ago	Up 6 hours		k8s_POD_hello-minikube-ffccb5874-xltbv_default_43bac379-eac8-4c16-bce2-4eeef395
04-492f-9d60-84f230cfa6da_1	346b05481b3	registry.k8s.io/pause:3.10	"/pause"	6 hours ago	Up 6 hours	k8s_POD_coredns-674b8bbfcf-885pp_kube-system_461fffc7-a450-4966-8e84-079c0d1c7
b4e91_1	949488c2de57	registry.k8s.io/pause:3.10	"/pause"	6 hours ago	Up 6 hours	k8s_POD_dashboard-metrics-scraper-5d59dccf9b-r9z7t_kubernetes-dashboard_b755a5
ae5_1	ddd6496f5fe1	registry.k8s.io/pause:3.10	"/pause"	6 hours ago	Up 6 hours	k8s_POD_kube-proxy-vwth7_kube-system_6d390a88-1579-4863-acab-ab0976be339_f_1
31-dd0d-4c28-8f80-bf78e6af81f4_1	5c14826d1d49	registry.k8s.io/pause:3.10	"/pause"	6 hours ago	Up 6 hours	k8s_POD_storage-provisioner_kube-system_a8975f9b-33ab-4df8-931-714ac0746c18_1
b3fb899804e4	registry.k8s.io/pause:3.10	"/pause"	6 hours ago	Up 6 hours		k8s_kube-controller-manager_kube-controller-manager-minikube_kube-system_0378f
ea6dcba279848	ef43894fa110	"kube-controller-man..."	6 hours ago	Up 6 hours		7_13c980f85a71d36305baccba6d1_1
5826fa624_1	c4a53fa6fbcd	c6ab243b29f8	"kube-apiserver --ad..."	6 hours ago	Up 6 hours	k8s_kube-apiserver_kube-apiserver-minikube_kube-system_78e1292e1d47cc7d09b2c6f
1f0be238e6e0	398c985c0d95	"kube-scheduler --au..."	6 hours ago	Up 6 hours		k8s_kube-scheduler_kube-scheduler-minikube_kube-system_feee622ba49882ef945e240
6d3ba86df_1	dad8b1d197d4	499038711c08	"etcd --advertise-cl..."	6 hours ago	Up 6 hours	k8s_etcd_etcd-minikube_kube-system_3924ef3609584191d8d09190210d2d7_1
0a92d108f966	registry.k8s.io/pause:3.10	"/pause"	6 hours ago	Up 6 hours		k8s_POD_kube-scheduler-minikube_kube-system_feee622ba49882ef945e2406d3ba86df_1
6b9c70e9298c	registry.k8s.io/pause:3.10	"/pause"	6 hours ago	Up 6 hours		k8s_POD_kube-controller-manager-minikube_kube-system_0378f173c980f85a71d36305b
acb0ad1_1	bf4ebb79ad79	registry.k8s.io/pause:3.10	"/pause"	6 hours ago	Up 6 hours	
c12ac3b76d62	registry.k8s.io/pause:3.10	"/pause"	6 hours ago	Up 6 hours		k8s_POD_etcd-minikube_kube-system_3924ef3609584191d8d09190210d2d7_1
						k8s_POD_kube-apiserver-minikube_kube-system_78e1292e1d47cc7d09b2c6f5826fa624_1

```
sahaj@sahaj-Victus:~/myproject/CloudTraining$ docker build -t hello-k8s .
[+] Building 3.5s (9/9) FINISHED
          docker:default
=> [internal] load build definition from Dockerfile
=> => transferring dockerfile: 98B
=> [internal] load metadata for docker.io/library/node:18
=> [auth] library/node:pull token for registry-1.docker.io
=> [internal] load .dockerignore
=> => transferring context: 2B
=> [1/3] FROM docker.io/library/node:18@sha256:c6ae79e38498325db67193d391e6ec1d224d
=> => resolve docker.io/library/node:18@sha256:c6ae79e38498325db67193d391e6ec1d224d
=> => sha256:c6ae79e38498325db67193d391e6ec1d224d96c693a8a4d9434985 6.41kB / 6.41kB
=> => sha256:eb29363371ee2859fad6a3c5af88d4abc6ff7d399addb13b7de3c1 2.49kB / 2.49kB
=> => sha256:b50082bc3670d0396b2d90e4b0e5bb10265ba5d0ee16bf40f9a505 6.39kB / 6.39kB
=> [internal] load build context
=> => transferring context: 378.21kB
=> [2/3] WORKDIR /app
=> [3/3] COPY .
=> exporting to image
=> => exporting layers
=> => writing image sha256:fa8deae5fa4db7c51ceab5259a1dcraf2f2e65b75b6088f2bbaab5f30
=> => naming to docker.io/library/hello-k8s
View build details: docker-desktop://dashboard/build/default/default/2ks49l3eriq1190voonyw0
:22
sahaj@sahaj-Victus:~/myproject/CloudTraining$ minikube image ls | grep hello-k8s
docker.io/library/hello-k8s:latest
sahaj@sahaj-Victus:~/myproject/CloudTraining$ kubectl create deployment hello-node --image=hello-k8s --port=8080
deployment.apps/hello-node created
sahaj@sahaj-Victus:~/myproject/CloudTraining$ kubectl expose deployment hello-node --type=LoadBalancer --port=8080
service/hello-node exposed
```

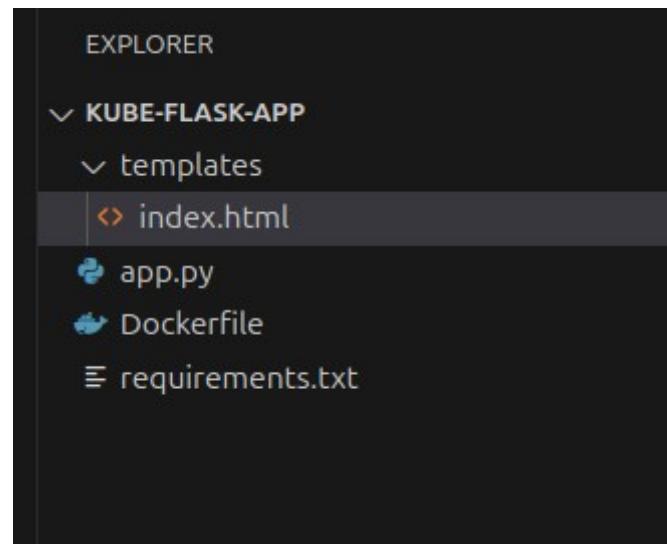
```

sahaj@sahaj-Victus:~/myproject/CloudTraining$ kubectl get deployments
NAME          READY   UP-TO-DATE   AVAILABLE   AGE
hello-minikube 1/1      1           1           6d20h
hello-node     0/1      1           0           51s
sahaj@sahaj-Victus:~/myproject/CloudTraining$ kubectl get pods
NAME                  READY   STATUS        RESTARTS   AGE
hello-minikube-ffcbb5874-xltbv 1/1    Running       1 (6d20h ago) 6d20h
hello-node-7dc94b794f-5stxj    0/1    ImagePullBackOff 0           56s
sahaj@sahaj-Victus:~/myproject/CloudTraining$ kubectl delete deployment hello-node
deployment.apps "hello-node" deleted
sahaj@sahaj-Victus:~/myproject/CloudTraining$ kubectl create deployment hello-node --image=hello-k8s --port=8080 --dry-run=client -o yaml > deployment.yaml
sahaj@sahaj-Victus:~/myproject/CloudTraining$ nano deployment.yaml
sahaj@sahaj-Victus:~/myproject/CloudTraining$ kubectl apply -f deployment.yaml
deployment.apps/hello-node created
sahaj@sahaj-Victus:~/myproject/CloudTraining$ kubectl expose deployment hello-node --type=NodePort --port=8080
Error from server (AlreadyExists): services "hello-node" already exists
sahaj@sahaj-Victus:~/myproject/CloudTraining$ kubectl get pods
kubectl get svc
NAME          READY   STATUS        RESTARTS   AGE
hello-minikube-ffcbb5874-xltbv 1/1    Running       1 (6d20h ago) 6d20h
hello-node-65d6f45ff8-s97w7    1/1    Running       0           16s
NAME          TYPE        CLUSTER-IP   EXTERNAL-IP   PORT(S)   AGE
hello-minikube  NodePort    10.110.65.190 <none>        8080:32073/TCP 6d20h
hello-node     LoadBalancer 10.109.13.57  <pending>      8080:31532/TCP 4m
kubernetes     ClusterIP   10.96.0.1    <none>        443/TCP   6d20h
sahaj@sahaj-Victus:~/myproject/CloudTraining$ minikube service hello-node --url
http://192.168.49.2:31532

```



KUBERNET APP USING PYTHON FLASK



```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <title>Kubernetes App</title>
    <style>
        body {
            background-color: black;
            color: white;
            font-family: Arial, sans-serif;
            display: flex;
            justify-content: center;
            align-items: center;
            height: 100vh;
            margin: 0;
        }
        h1 {
            font-size: 3rem;
            text-align: center;
        }
    </style>
</head>
<body>
    <h1> Welcome to Kubernetes with Minikube! </h1>
</body>
</html>
```

Do you want extension fro

EXPLORER

...

KUBE-FLASK-APP

templates

index.html

app.py

Dockerfile

requirements.txt

app.py

```
from flask import Flask, render_template
app = Flask(__name__)
@app.route("/")
def home():
    return render_template("index.html")
if __name__ == "__main__":
    app.run(host="0.0.0.0", port=8080)
```

Do you want extension from

EXPLORER

...

KUBE-FLASK-APP

templates

index.html

app.py

Dockerfile

requirements.txt

Dockerfile

```
# Use official Python image
FROM python:3.10-slim
# Set working directory
WORKDIR /app
# Copy files
COPY requirements.txt .
COPY app.py .
COPY templates ./templates
# Install dependencies
RUN pip install -r requirements.txt
# Run the app
CMD ["python", "app.py"]
```

EXPLORER

...

KUBE-FLASK-APP

templates

index.html

app.py

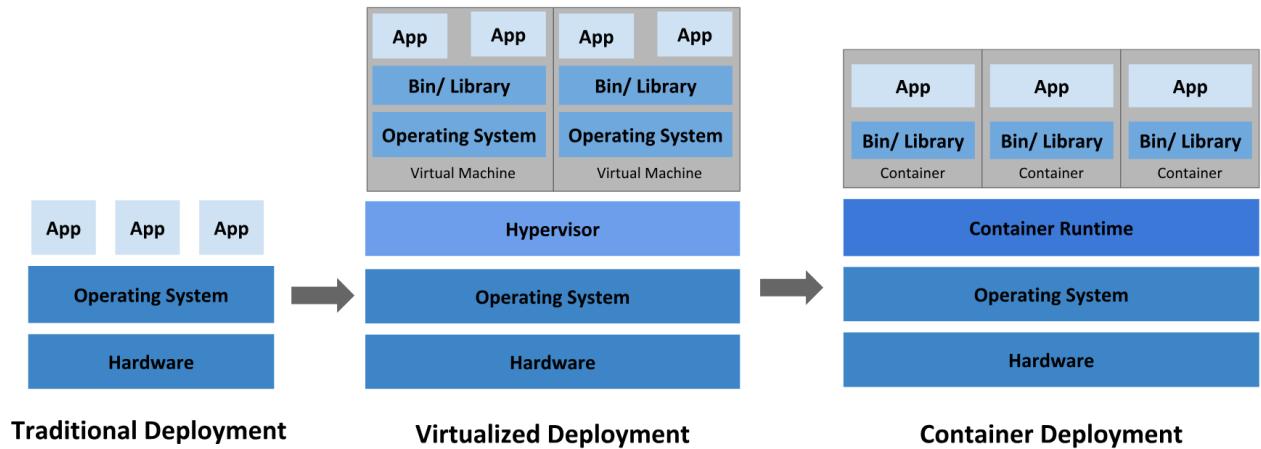
Dockerfile

requirements.txt

requirements.txt

```
flask
```

Virtualization



Hypervisors

TYPE-1 VS TYPE-2 HYPERVISORS

TYPE 2 HYPERVISOR
(HOSTED ARCHITECTURE)

TYPE 1 HYPERVISOR
(BARE-METAL ARCHITECTURE)

