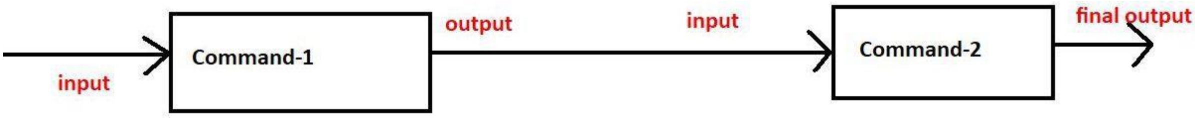
Topic: Piping

Sometimes we can use output of one command as input to another command. This concept is called piping.
By using piping, multiple commands will work together to fulfill our requirement



We can implement piping by using vertical bar (|).

```
$ ls -l /etc | wc
215 1940 11872
```

First ls got executed and the output of this command will become input to wc command.
Eg 2: $ ls -l /etc | more
Eg 3: $ ls -l /etc | wc |wc -l
The output is: 1

Topic: Process Management

We can perform process management by using ps command.
ps → Means Process Status

1) Listing Processes:

1) $ ps

If we are not passing any argument, then it shows processes related to current session.

```
$ ps
PID TTY TIME CMD
20881 pts/0 00:00:00 bash
20890 pts/0 00:00:00 ps
```

2) $ ps -e
-e means Everything. It shows all processes.

3) $ ps -ef
It shows full listing of all processes
-f means Full Listing

```
$ ps -ef
UID PID PPID C STIME TTY TIME CMD
root 1 0 0 19:41 ? 00:00:02 /sbin/init splash
root 2 0 0 19:41 ? 00:00:00 [kthreadd]
root 3 2 0 19:41 ? 00:00:00 [rcu_gp]
```

UID → UserId/ User Name
PID → Process ID (Every Process has Unique ID)
PPID → Parent Process ID

$ top

We can use top command to see processes with consumed resources like memory and cpu utilization. use 'q' to come out of top command.

```
top - 21:41:31 up 2:00, 2 users, load average: 0.06, 0.08, 0.08
Tasks: 239 total, 1 running, 201 sleeping, 0 stopped, 0 zombie
%Cpu(s): 1.9 us, 0.7 sy, 0.0 ni, 97.5 id, 0.0 wa, 0.0 hi, 0.0 si, 0.0 st
KiB Mem : 4169364 total, 1617212 free, 1336860 used, 1215292 buff/cache
KiB Swap: 483800 total, 483800 free, 0 used. 2532032 avail Mem
PID USER PR NI VIRT RES SHR S %CPU %MEM TIME+ COMMAND
1477 durgaso+ 20 0 3479664 289172 118692 S 3.0 6.9 3:13.07 gnome-shell
1286 durgaso+ 20 0 609356 142852 79532 S 1.7 3.4 0:50.24 Xorg
20871 durgaso+ 20 0 804408 38456 28308 S 1.0 0.9 0:14.59 gnome-terminal-
21385 durgaso+ 20 0 48996 3872 3152 R 1.0 0.1 0:01.51 top
1591 durgaso+ 20 0 504684 23460 18144 S 0.7 0.6 0:00.36 gsd-xsettings
644 root 20 0 1165108 24428 13884 S 0.3 0.6 0:02.41 snapd
```

5) $ htop

It is similar to top , but output will come in gui style.
We have to install separately.
$ sudo apt install htop

How to kill the process:

$ kill -9 procesid
Eg: kill -9 21484
We can kill multiple processes simultaneously.
kill -9 pid1 pid2 pid3 ...

Topic: Job scheduling with crontab

✻ cron is derived from Greek and its meaning is TIME.

✻ If any job executes automatically at the specified time intervals, such type of jobs are called cron jobs.

✻ The cron job can be either a single command or a script.

✻ We have to configure cron jobs in crontab.

✻ Cron jobs are best suitable for automating work flows.

Various Important Commands:

$ crontab -l

To list out cron jobs which are already configured.

$ crontab -e

To edit already existing cron jobs and to define new cron jobs.

$ crontab -r

To remove all configured cron jobs.

$ crontab filename

Install a new crontab from file

Format of crontab:

m h dom mon dow command

m → Minutes. The allowed values reange **: 0 to 59.**

h → Hours. The allowed values range**: 0 to 23**

dom → Day of Month. Allowed values range**: 1 to 31**

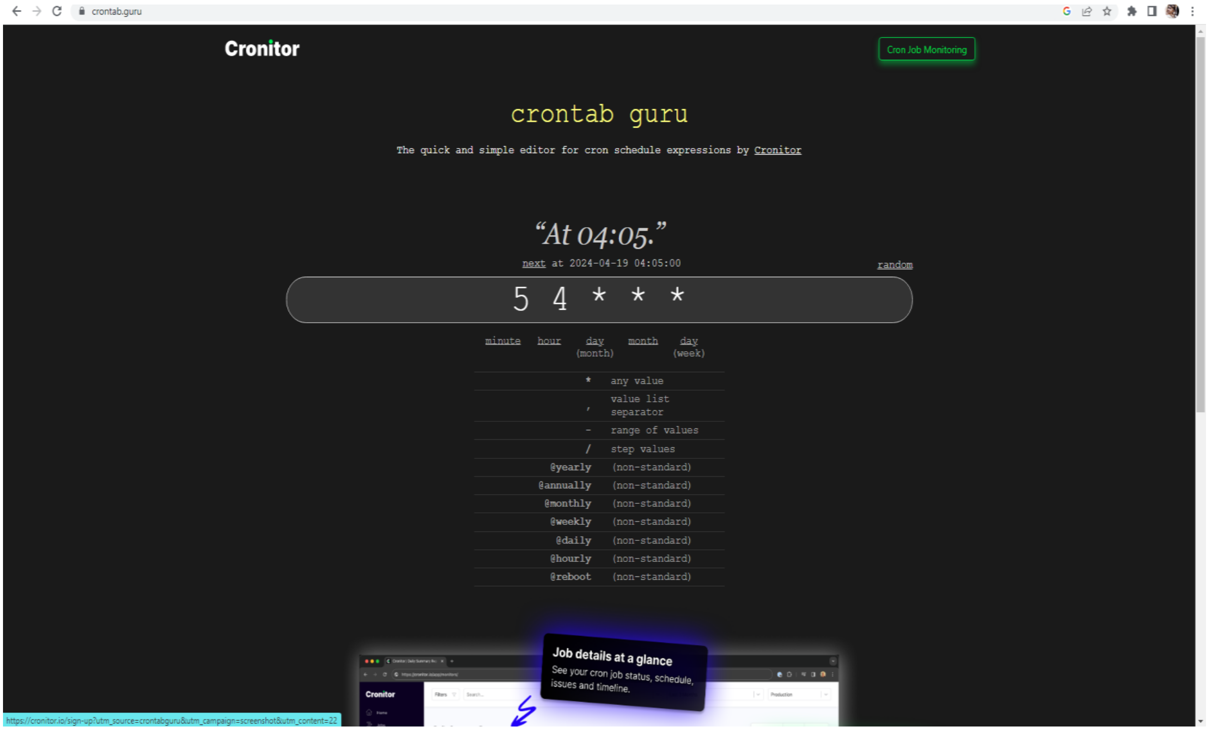
mon → Month of Year. Allowed values range is**: 1 to 12**

Even we can use english words like **JAN,FEB,MAR etc**

dow → Day of week. The allowed values range is**: 0 to 6**

Even we can use english words like **SUN(0),MON(1),TUE(2)**

Note: https://crontab.guru/ can provide option to check our configurations


crontab.guru
Cronitor
Cron Job Monitoring
random
Job details at a glance
See your cron job status, schedule, issues and timeline.
https://cronitor.io/sign-up?utm_source=crontabguru&utm_campaign=screenshot&utm_content=22

crontab guru

The quick and simple editor for cron schedule expressions by Cronitor

"At 04:05."

next at 2024-04-19 04:05:00

```
5 4 * * *
```

minute hour day (month) month day (week)

*	any value
,	value list separator
-	range of values
/	step values
@yearly	(non-standard)
@annually	(non-standard)
@monthly	(non-standard)
@weekly	(non-standard)
@daily	(non-standard)
@hourly	(non-standard)
@reboot	(non-standard)