

OS LAB 1

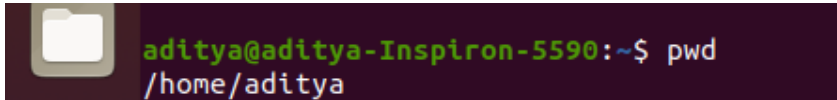
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BRANCH: IT

BASIC LINUX COMMANDS

- 1) pwd : prints the name of the current working directory

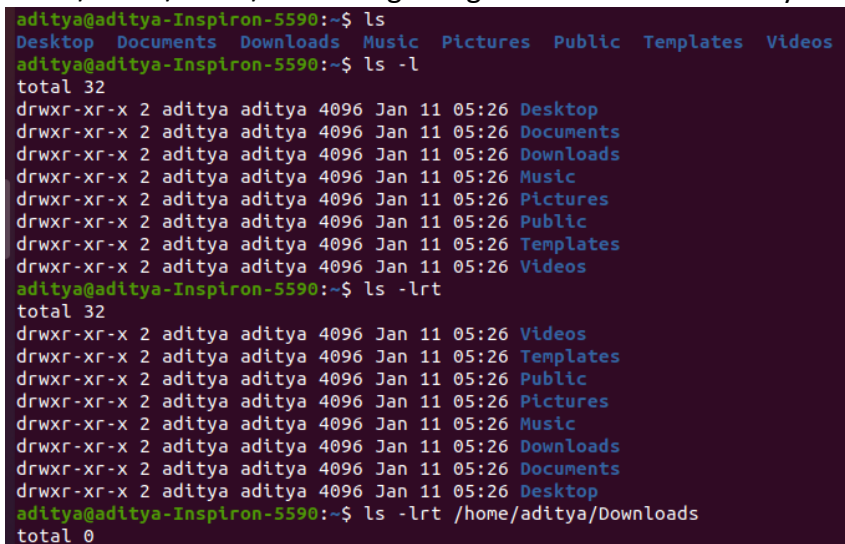


```
aditya@aditya-Inspiron-5590:~$ pwd
/home/aditya
```

- 2) ls : list contents of the current working directory

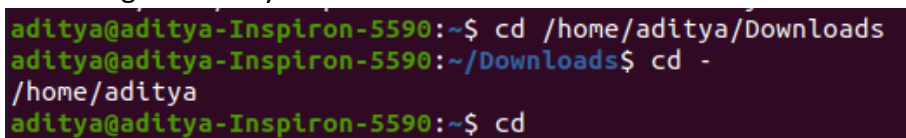
ls -lrt : long listing

ls -lrt /home/name/something : long list a different directory



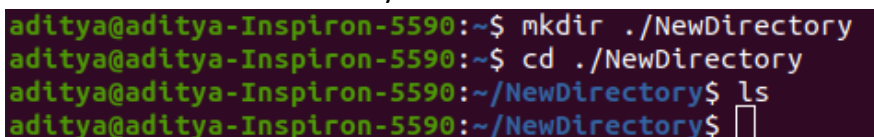
```
aditya@aditya-Inspiron-5590:~$ ls
Desktop  Documents  Downloads  Music  Pictures  Public  Templates  Videos
aditya@aditya-Inspiron-5590:~$ ls -l
total 32
drwxr-xr-x 2 aditya aditya 4096 Jan 11 05:26 Desktop
drwxr-xr-x 2 aditya aditya 4096 Jan 11 05:26 Documents
drwxr-xr-x 2 aditya aditya 4096 Jan 11 05:26 Downloads
drwxr-xr-x 2 aditya aditya 4096 Jan 11 05:26 Music
drwxr-xr-x 2 aditya aditya 4096 Jan 11 05:26 Pictures
drwxr-xr-x 2 aditya aditya 4096 Jan 11 05:26 Public
drwxr-xr-x 2 aditya aditya 4096 Jan 11 05:26 Templates
drwxr-xr-x 2 aditya aditya 4096 Jan 11 05:26 Videos
aditya@aditya-Inspiron-5590:~$ ls -lrt
total 32
drwxr-xr-x 2 aditya aditya 4096 Jan 11 05:26 Videos
drwxr-xr-x 2 aditya aditya 4096 Jan 11 05:26 Templates
drwxr-xr-x 2 aditya aditya 4096 Jan 11 05:26 Public
drwxr-xr-x 2 aditya aditya 4096 Jan 11 05:26 Pictures
drwxr-xr-x 2 aditya aditya 4096 Jan 11 05:26 Music
drwxr-xr-x 2 aditya aditya 4096 Jan 11 05:26 Downloads
drwxr-xr-x 2 aditya aditya 4096 Jan 11 05:26 Documents
drwxr-xr-x 2 aditya aditya 4096 Jan 11 05:26 Desktop
aditya@aditya-Inspiron-5590:~$ ls -lrt /home/aditya/Downloads
total 0
```

- 3) cd : change directory



```
aditya@aditya-Inspiron-5590:~$ cd /home/aditya/Downloads
aditya@aditya-Inspiron-5590:~/Downloads$ cd -
/home/aditya
aditya@aditya-Inspiron-5590:~$ cd
```

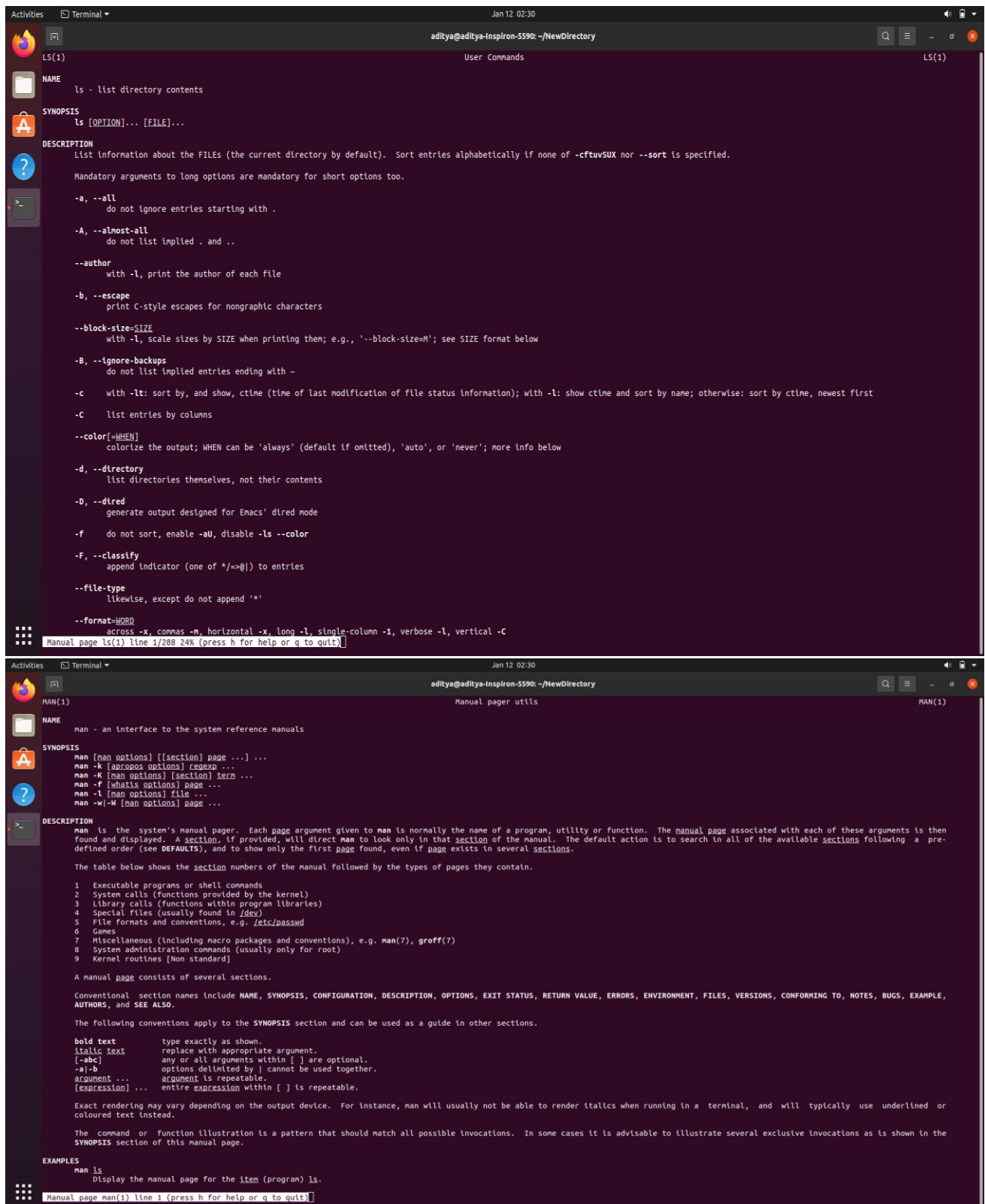
- 4) mkdir : create a new directory



```
aditya@aditya-Inspiron-5590:~$ mkdir ./NewDirectory
aditya@aditya-Inspiron-5590:~$ cd ./NewDirectory
aditya@aditya-Inspiron-5590:~/NewDirectory$ ls
aditya@aditya-Inspiron-5590:~/NewDirectory$
```

5) man : display the manual of a given program

```
aditya@aditya-Inspiron-5590:~/NewDirectory$ man ls
aditya@aditya-Inspiron-5590:~/NewDirectory$ man man
```



The image shows two screenshots of a terminal window. The top screenshot displays the manual page for the 'ls' command. The bottom screenshot displays the manual page for the 'man' command.

Top Screenshot: Manual page for 'ls'

LS(1)

NAME

ls - list directory contents

SYNOPSIS

ls [OPTION]... [FILE]...

DESCRIPTION

List information about the FILES (the current directory by default). Sort entries alphabetically if none of `-cftuvSUX` nor `--sort` is specified. Mandatory arguments to long options are mandatory for short options too.

`-a, --all` do not ignore entries starting with `.`

`-A, --almost-all` do not list implied `.` and `..`

`--author` with `-l`, print the author of each file

`-b, --escape` print C-style escapes for nongraphic characters

`--block-size=SIZE` with `-l`, scale sizes by SIZE when printing them; e.g., `'--block-size=M'`; see SIZE format below

`-B, --ignore-backups` do not list implied entries ending with `~`

`-c` with `-lt`: sort by, and show, ctime (time of last modification of file status information); with `-l`: show ctime and sort by name; otherwise: sort by ctime, newest first

`-C` list entries by columns

`--color[=WHEN]` colorize the output; WHEN can be 'always' (default if omitted), 'auto', or 'never'; more info below

`-d, --directory` list directories themselves, not their contents

`-D, --dired` generate output designed for Emacs' dired mode

`-f` do not sort, enable `-aU`, disable `-ls --color`

`-F, --classify` append indicator (one of `*/=>@|`) to entries

`--file-type` likewise, except do not append `'*'`

`--format=WORD` across `-x`, commas `-m`, horizontal `-x`, long `-l`, single-column `-l`, verbose `-l`, vertical `-C`

Manual page ls(1) line 1/208 24% (press h for help or q to quit)

Bottom Screenshot: Manual page for 'man'

MAN(1)

NAME

man - an interface to the system reference manuals

SYNOPSIS

man [man options] [[section] page ...] ...

man -k [apropos options] regex ...

man -k [man options] [section] term ...

man -f [whatis options] page ...

man -l [man options] file ...

man -w|-W [man options] page ...

DESCRIPTION

man is the system's manual pager. Each page argument given to man is normally the name of a program, utility or function. The manual page associated with each of these arguments is then found and displayed. A section, if provided, will direct man to look only in that section of the manual. The default action is to search in all of the available sections following a pre-defined order (see DEFAULTS), and to show only the first page found, even if page exists in several sections.

The table below shows the section numbers of the manual followed by the types of pages they contain.

- 1 Executable programs or shell commands
- 2 System calls (functions provided by the kernel)
- 3 Library calls (functions within program libraries)
- 4 Special files (usually found in `/dev`)
- 5 File formats and conventions, e.g. `/etc/passwd`
- 6 Games
- 7 Miscellaneous (including macro packages and conventions), e.g. `man(7)`, `groff(7)`
- 8 System administration commands (usually only for root)
- 9 Kernel routines [Non standard]

A manual page consists of several sections.

Conventional section names include NAME, SYNOPSIS, CONFIGURATION, DESCRIPTION, OPTIONS, EXIT STATUS, RETURN VALUE, ERRORS, ENVIRONMENT, FILES, VERSIONS, CONFORMING TO, NOTES, BUGS, EXAMPLE, AUTHORS, and SEE ALSO.

The following conventions apply to the SYNOPSIS section and can be used as a guide in other sections.

bold text type exactly as shown.

italic text replace with appropriate argument.

`[-abc]` any or all arguments within [] are optional.

`-a|-b` options delimited by | cannot be used together.

`argument ...` argument is repeatable.

`[expression] ...` entire expression within [] is repeatable.

Exact rendering may vary depending on the output device. For instance, man will usually not be able to render italics when running in a terminal, and will typically use underlined or coloured text instead.

The command or function illustration is a pattern that should match all possible invocations. In some cases it is advisable to illustrate several exclusive invocations as is shown in the SYNOPSIS section of this manual page.

EXAMPLES

man ls

Display the manual page for the item (program) ls.

Manual page man(1) line 1 (press h for help or q to quit)

6) echo : to create a file

SYNTAX: echo 'Text to be added' > filename

```
aditya@aditya-Inspiron-5590:~/NewDirectory$ echo 'This is a test file' > data.txt
aditya@aditya-Inspiron-5590:~/NewDirectory$ ls
data.txt
```

- 7) mv : move or rename a file

```
aditya@aditya-Inspiron-5590:~/NewDirectory$ mv data.txt newData.txt
aditya@aditya-Inspiron-5590:~/NewDirectory$ ls
newData.txt
```

- 8) cp : copy a file

```
aditya@aditya-Inspiron-5590:~/NewDirectory$ cp newData.txt data.txt
aditya@aditya-Inspiron-5590:~/NewDirectory$ ls
data.txt  newData.txt
```

- 9) chmod : change the permissions of a file

```
aditya@aditya-Inspiron-5590:~/NewDirectory$ chmod a+r data.txt
```

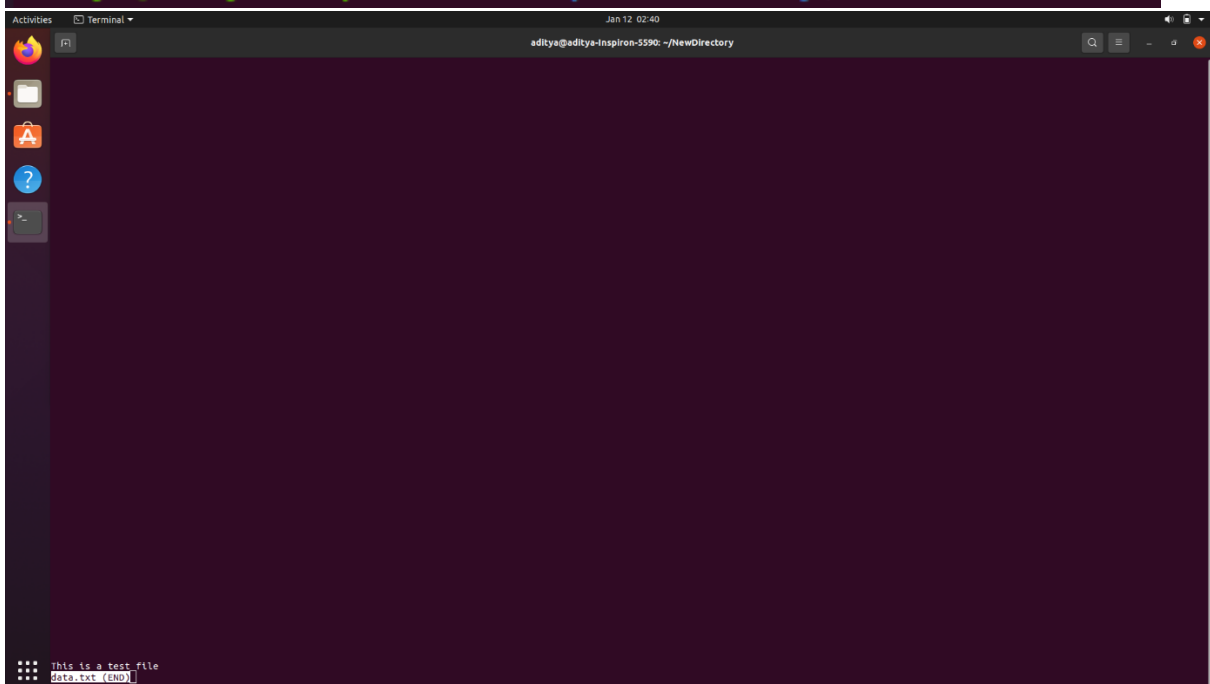
- 10) rm : delete a file forever

```
aditya@aditya-Inspiron-5590:~/NewDirectory$ rm newData.txt
aditya@aditya-Inspiron-5590:~/NewDirectory$ ls
data.txt
```

- 11) more : displays the contents of a file page by page

less : a replacement for more, displays data more nicely and makes search easy

```
aditya@aditya-Inspiron-5590:~/NewDirectory$ more data.txt
This is a test file
aditya@aditya-Inspiron-5590:~/NewDirectory$ less data.txt
```



- 12) find : search for files across directories

```
aditya@aditya-Inspiron-5590:~$ find ./ -name 'da*.txt'
./NewDirectory/data.txt
```

13) df : check how much space is left

```
aditya@aditya-Inspiron-5590:~$ df
Filesystem      1K-blocks    Used Available Use% Mounted on
udev            3935372         0   3935372  0% /dev
tmpfs           793000         1940    791060  1% /run
/dev/sda5       56958080 5118240  48916784 10% /
tmpfs           3964988         0   3964988  0% /dev/shm
tmpfs           5120          4      5116  1% /run/lock
tmpfs           3964988         0   3964988  0% /sys/fs/cgroup
/dev/loop0      224256    224256         0 100% /snap/gnome-3-34-1804/72
/dev/loop1      56832     56832         0 100% /snap/core18/2128
/dev/loop2      66688     66688         0 100% /snap/gtk-common-themes/1515
/dev/loop3      52224     52224         0 100% /snap/snap-store/547
/dev/loop4      33152     33152         0 100% /snap/snapd/12704
tmpfs           792996        24    792972  1% /run/user/1000

aditya@aditya-Inspiron-5590:~$ df .
Filesystem      1K-blocks    Used Available Use% Mounted on
/dev/sda5       56958080 5118240  48916784 10% /
```

14) top : list processes in order of CPU storage

```
aditya@aditya-Inspiron-5590:~$ top
top - 02:43:05 up 22 min, 1 user, load average: 0.02, 0.06, 0.10
Tasks: 251 total, 1 running, 250 sleeping, 0 stopped, 0 zombie
MiB Mem:  0.3 us, 0.1 sy, 0.0 ni, 99.5 id, 0.1 wa, 0.0 hi, 0.0 si, 0.0 st
MiB Mem:  7744.1 total, 6235.4 free, 840.0 used, 668.7 buff/cache
MiB Swap: 1906.0 total, 1906.0 free,  0.0 used, 6652.7 avail Mem

  PID USER      PR  NI  VIRT  RES  SHR S  %CPU  %MEM     time+ COMMAND
 889 root        0   0 1442856 32852 10864 S   2.0   0.4   0:04.39 snapd
 899 root        0   0 24.3g 121612 73772 S   1.0   1.5   0:15.26 Xorg
234 root        0   0 0 0 0 S  0.3  0.0   0:02.58 usb-storage
1890 aditya       0   0 20628 4216 3392 R  0.3  0.1   0:00.05 top
  1 root        0 107416 11392 8368 S  0.0  0.1   0:01.42 systemd
  2 root        0 0 0 0 0 S  0.5  0.0  0:00.00 kthreadd
  3 root        0 -20 0 0 0 I  0.1  0.0  0:00.00 rcu_gp
  4 root        0 -20 0 0 0 I  0.1  0.0  0:00.00 rcu_par_gp
  6 root        0 -20 0 0 0 I  0.1  0.0  0:00.00 kworker/0:0H-kblockd
  9 root        0 -20 0 0 0 I  0.1  0.0  0:00.00 mm_percpu_wq
 10 root        0 0 0 0 0 S  0.5  0.0  0:00.00 rcu_tasks_rude
 11 root        0 0 0 0 0 S  0.5  0.0  0:00.00 rcu_tasks_trace
 12 root        0 0 0 0 0 S  0.5  0.0  0:00.10 ksoftirqd/0
 13 root        0 0 0 0 0 I  0.1  0.0  0:00.31 rcu_sched
 14 root        rt 0 0 0 0 0 S  0.5  0.0  0:00.00 migration/0
 15 root       -51 0 0 0 0 S  0.5  0.0  0:00.00 idle_inject/0
 16 root        0 0 0 0 0 S  0.5  0.0  0:00.00 cpuhp/0
 17 root        0 0 0 0 0 S  0.5  0.0  0:00.00 cpuhp/1
 18 root       -51 0 0 0 0 S  0.5  0.0  0:00.00 idle_inject/1
 19 root        0 0 0 0 0 S  0.5  0.0  0:00.10 migration/1
 20 root        0 0 0 0 0 S  0.5  0.0  0:00.04 ksoftirqd/1
 22 root        0 -20 0 0 0 I  0.1  0.0  0:00.00 kworker/1:0H
 23 root        0 0 0 0 0 S  0.5  0.0  0:00.00 cpuhp/2
 24 root       -51 0 0 0 0 S  0.5  0.0  0:00.00 idle_inject/2
 25 root        rt 0 0 0 0 0 S  0.5  0.0  0:00.10 migration/2
 26 root        0 0 0 0 0 S  0.5  0.0  0:00.16 ksoftirqd/2
 28 root        0 -20 0 0 0 I  0.1  0.0  0:00.00 kworker/2:0H
 29 root        0 0 0 0 0 S  0.5  0.0  0:00.00 cpuhp/3
 30 root       -51 0 0 0 0 S  0.5  0.0  0:00.00 idle_inject/3
 31 root        rt 0 0 0 0 0 S  0.5  0.0  0:00.10 migration/3
 32 root        0 0 0 0 0 S  0.5  0.0  0:00.08 ksoftirqd/3
 34 root        0 -20 0 0 0 I  0.1  0.0  0:00.00 kworker/3:0H-events_highpri
 35 root        0 0 0 0 0 S  0.5  0.0  0:00.00 cpuhp/4
 36 root       -51 0 0 0 0 S  0.5  0.0  0:00.00 idle_inject/4
 37 root        rt 0 0 0 0 0 S  0.5  0.0  0:00.10 migration/4
 38 root        0 0 0 0 0 S  0.5  0.0  0:00.04 ksoftirqd/4
 40 root        0 -20 0 0 0 I  0.1  0.0  0:00.00 kworker/4:0H-events_highpri
 41 root        0 0 0 0 0 S  0.5  0.0  0:00.00 cpuhp/5
 42 root       -51 0 0 0 0 S  0.5  0.0  0:00.00 idle_inject/5
 43 root        rt 0 0 0 0 0 S  0.5  0.0  0:00.10 migration/5
 44 root        0 0 0 0 0 S  0.5  0.0  0:00.09 ksoftirqd/5
 46 root        0 -20 0 0 0 I  0.1  0.0  0:00.00 kworker/5:0H-kblockd
 47 root        0 0 0 0 0 S  0.5  0.0  0:00.00 cpuhp/6
 48 root       -51 0 0 0 0 S  0.5  0.0  0:00.00 idle_inject/6
 49 root        rt 0 0 0 0 0 S  0.5  0.0  0:00.10 migration/6
 50 root        0 0 0 0 0 S  0.5  0.0  0:00.09 ksoftirqd/6
 52 root        0 -20 0 0 0 I  0.1  0.0  0:00.00 kworker/6:0H-events_highpri
```