

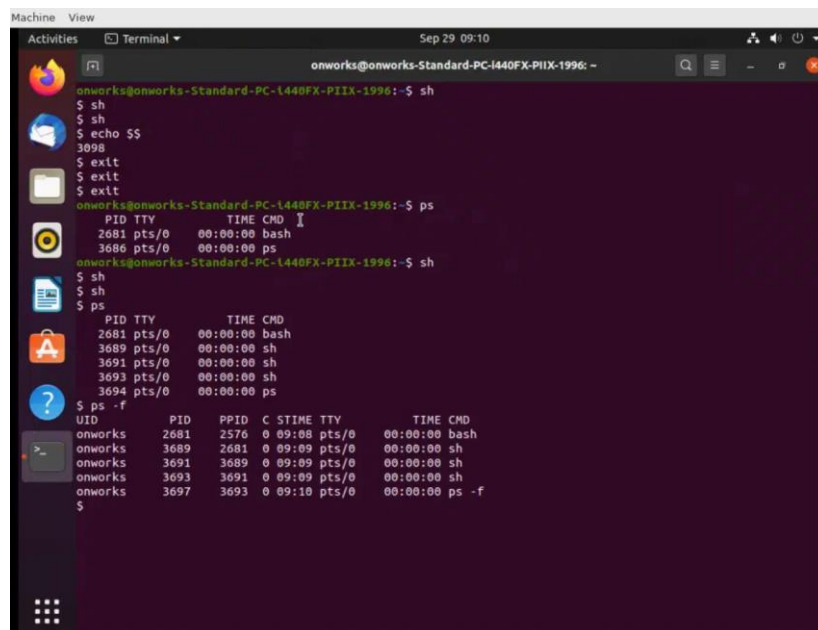
## Linux process

1. Open a terminal. Now spawn three shell processes one after another i.e. first spawn one shell, then from the spawned shell, spawn one new shell and so on. Now,

how can you see the PID of the current shell? How can you see the PID of the shell which is the grandparent of the current shell?

### #commands in terminal

```
sh
ps
sh
sh
sh
ps
```



The screenshot shows a terminal window titled "onworks@onworks-Standard-PC-l440FX-PIIX-1996: ~". The user has executed the following commands and received the following outputs:

```
onworks@onworks-Standard-PC-l440FX-PIIX-1996:~$ sh
$ sh
$ sh
$ echo $$
3098
$ exit
$ exit
$ exit
onworks@onworks-Standard-PC-l440FX-PIIX-1996:~$ ps
```

PID	TTY	TIME	CMD
2681	pts/0	00:00:00	bash
3086	pts/0	00:00:00	ps

```
onworks@onworks-Standard-PC-l440FX-PIIX-1996:~$ sh
$ sh
$ sh
$ ps
```

PID	TTY	TIME	CMD
2681	pts/0	00:00:00	bash
3089	pts/0	00:00:00	sh
3091	pts/0	00:00:00	sh
3093	pts/0	00:00:00	sh
3094	pts/0	00:00:00	ps

```
$ ps -f
```

UID	PID	PPID	C	TIME	TTY	TIME	CMD
onworks	2681	2576	0	09:08	pts/0	00:00:00	bash
onworks	3089	2681	0	09:09	pts/0	00:00:00	sh
onworks	3091	3089	0	09:09	pts/0	00:00:00	sh
onworks	3093	3091	0	09:09	pts/0	00:00:00	sh
onworks	3097	3093	0	09:10	pts/0	00:00:00	ps -f

```
$
```

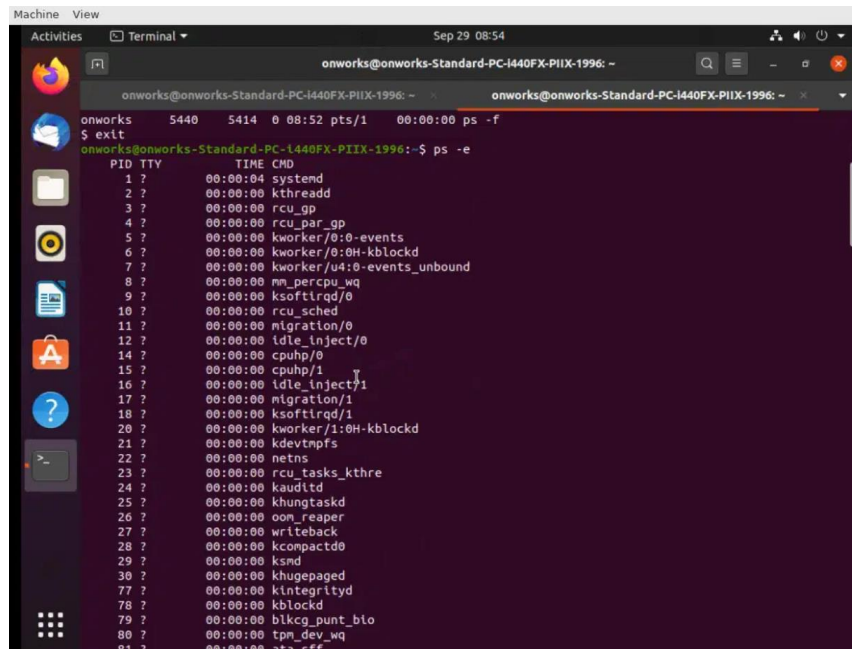
2. How can you see all the processes (both system & user processes) in your computer?

The output can be quite large. How can you view the output as multipage output?

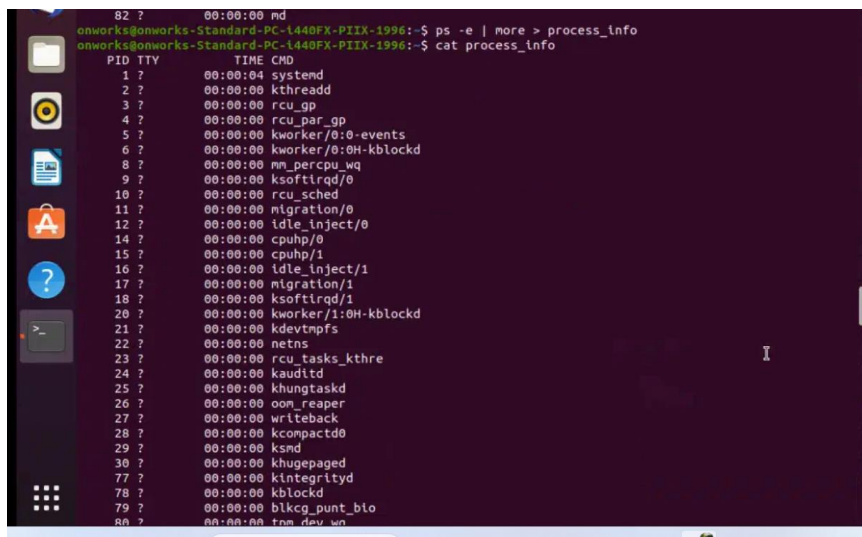
How can you store the output in a file named process\_info?

## #commands in terminal

```
ps -e
ps -e | more > process_info
cat process_info
```



```
onworks@onworks-Standard-PC-I440FX-PIIX-1996: ~
onworks@onworks-Standard-PC-I440FX-PIIX-1996: ~$ ps -e
  PID TTY          TIME CMD
    1 ?        00:00:04 systemd
    2 ?        00:00:00 kthreadd
    3 ?        00:00:00 rcu_gp
    4 ?        00:00:00 rcu_par_gp
    5 ?        00:00:00 kworker/0:0-events
    6 ?        00:00:00 kworker/0:0H-kblockd
    7 ?        00:00:00 kworker/u4:0-events_unbound
    8 ?        00:00:00 mm_percpu_wq
    9 ?        00:00:00 ksoftirqd/0
   10 ?        00:00:00 rcu_sched
   11 ?        00:00:00 migration/0
   12 ?        00:00:00 idle_inject/0
   14 ?        00:00:00 cpuhp/0
   15 ?        00:00:00 cpuhp/1
   16 ?        00:00:00 idle_inject/1
   17 ?        00:00:00 migration/1
   18 ?        00:00:00 ksoftirqd/1
   20 ?        00:00:00 kworker/1:0H-kblockd
   21 ?        00:00:00 kdevtmpfs
   22 ?        00:00:00 netns
   23 ?        00:00:00 rcu_tasks_kthre
   24 ?        00:00:00 kauditd
   25 ?        00:00:00 khungtaskd
   26 ?        00:00:00 oom_reaper
   27 ?        00:00:00 writeback
   28 ?        00:00:00 kcompactd0
   29 ?        00:00:00 ksm
   30 ?        00:00:00 khugepaged
   77 ?        00:00:00 kintegrityd
   78 ?        00:00:00 kblockd
   79 ?        00:00:00 blkcg_punt_bio
   80 ?        00:00:00 tpm_dev_wq
   81 ?        00:00:00 ata_sff
```



```
onworks@onworks-Standard-PC-I440FX-PIIX-1996: ~$ ps -e | more > process_info
  PID TTY          TIME CMD
    1 ?        00:00:04 systemd
    2 ?        00:00:00 kthreadd
    3 ?        00:00:00 rcu_gp
    4 ?        00:00:00 rcu_par_gp
    5 ?        00:00:00 kworker/0:0-events
    6 ?        00:00:00 kworker/0:0H-kblockd
    8 ?        00:00:00 mm_percpu_wq
    9 ?        00:00:00 ksoftirqd/0
   10 ?        00:00:00 rcu_sched
   11 ?        00:00:00 migration/0
   12 ?        00:00:00 idle_inject/0
   14 ?        00:00:00 cpuhp/0
   15 ?        00:00:00 cpuhp/1
   16 ?        00:00:00 idle_inject/1
   17 ?        00:00:00 migration/1
   18 ?        00:00:00 ksoftirqd/1
   20 ?        00:00:00 kworker/1:0H-kblockd
   21 ?        00:00:00 kdevtmpfs
   22 ?        00:00:00 netns
   23 ?        00:00:00 rcu_tasks_kthre
   24 ?        00:00:00 kauditd
   25 ?        00:00:00 khungtaskd
   26 ?        00:00:00 oom_reaper
   27 ?        00:00:00 writeback
   28 ?        00:00:00 kcompactd0
   29 ?        00:00:00 ksm
   30 ?        00:00:00 khugepaged
   77 ?        00:00:00 kintegrityd
   78 ?        00:00:00 kblockd
   79 ?        00:00:00 blkcg_punt_bio
   80 ?        00:00:00 tpm_dev_wq
```