

# Linux Administration Day 5 Lab

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## 1 Assignment Questions

### 1.1 Question 1, 2

Issue the command `sleep 100` then stop the command

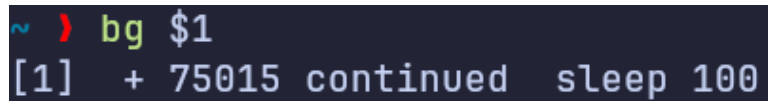


```
~ ) sleep 100
^Z
[1] + 75015 suspended sleep 100
```

Figure 1: Command Output

### 1.2 Question 3

Resume `sleep` command in the background

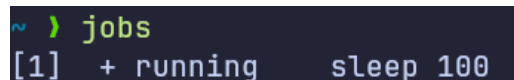


```
~ ) bg $1
[1] + 75015 continued sleep 100
```

Figure 2: Command Output

### 1.3 Question 4

Issue the `jobs` command and view its output



```
~ ) jobs
[1] + running sleep 100
```

Figure 3: Command Output

### 1.4 Question 5

Send the `sleep` command to:

- Foreground
- Then back to background

```

~ ~ sleep 100 &
[1] 76063
~ ~ fg
[1] + 76063 running sleep 100
^Z
[1] + 76063 suspended sleep 100

```

Figure 4: Command Output

### 1.5 Question 6

Kill the sleep command

```

~ ~ sleep 100 &
[1] 76498
~ ~ kill 76498
[1] + 76498 terminated sleep 100

```

Figure 5: Command Output

### 1.6 Question 7

Display your processes only (processes started by your username)

```

~ ~ ps -Fu emary

```

UID	PID	PPID	C	SZ	RSS	PSR	STIME	TTY	TIME	CMD
emary	821	1	0	5234	12608	4	07:12	?	00:00:04	/usr/lib/systemd/systemd --user
emary	823	821	0	5570	3924	7	07:12	?	00:00:00	(sd-pam)
emary	831	821	0	165515	25844	4	07:12	?	00:00:14	/usr/bin/appimagelauncherd
emary	834	821	0	78224	9116	7	07:12	?	00:00:00	/usr/bin/gnome-keyring-daemon --foreground --compone
emary	840	821	0	1988	3900	7	07:12	?	00:00:00	/usr/bin/dbus-broker-launch --scope user
emary	841	840	0	1861	5512	4	07:12	?	00:00:10	dbus-broker --log 4 --controller 10 --machine-id fed
emary	845	1	0	275882	73216	7	07:12	?	00:00:00	/usr/bin/kwalletd6 --pam-login 12 13
emary	846	815	0	54959	32624	6	07:12	tty1	00:00:00	/usr/bin/startplasma-wayland

Figure 6: Command Output

### 1.7 Question 8

Display all processes except yours

```

~ ~ ps -FA | grep -v ^emary

```

UID	PID	PPID	C	SZ	RSS	PSR	STIME	TTY	TIME	CMD
root	1	0	0	5533	14144	7	07:11	?	00:00:03	/usr/lib/systemd/systemd --switched-root --system --
root	2	0	0	0	0	2	07:11	?	00:00:00	[kthreadd]
root	3	2	0	0	0	0	07:11	?	00:00:00	[pool_workqueue_release]
root	4	2	0	0	0	0	07:11	?	00:00:00	[kworker/R-rcu_gp]
root	5	2	0	0	0	0	07:11	?	00:00:00	[kworker/R-sync_wq]
root	6	2	0	0	0	0	07:11	?	00:00:00	[kworker/R-slab_flushwq]
root	7	2	0	0	0	0	07:11	?	00:00:00	[kworker/R-netns]
root	9	2	0	0	0	0	07:11	?	00:00:00	[kworker/0:0H-events_highpri]
root	12	2	0	0	0	0	07:11	?	00:00:00	[kworker/R-mm_percpu_wq]
root	14	2	0	0	0	4	07:11	?	00:00:00	[rcu_tasks_kthread]
root	15	2	0	0	0	0	07:11	?	00:00:00	[rcu_tasks_rude_kthread]
root	16	2	0	0	0	0	07:11	?	00:00:00	[rcu_tasks_trace_kthread]
root	17	2	0	0	0	0	07:11	?	00:00:03	[ksoftirqd/0]
root	18	2	0	0	0	7	07:11	?	00:00:10	[rcu_preempt]
root	19	2	0	0	0	0	07:11	?	00:00:00	[rcub/0]

Figure 7: Command Output

### 1.8 Question 9

Use the `pgrep` command to list your processes only

```
~ > pgrep --euid=emary
821
823
831
834
840
841
845
846
868
872
879
```

Figure 8: Command Output

### 1.9 Question 10

Start Firefox application

*PS: I started chromium browser instead of Firefox*

```
~ > chromium &
[1] 80731
```

Figure 9: Command Output

### 1.10 Question 11

Send kill signal to Firefox

```
~ > chromium &
[1] 81859
~ > Gtk-Message: 19:46:28.936: Failed to load module "appmenu-gtk-module"
~ >
~ > [81905:81905:0116/194633.719639:ERROR:gl_surface_presentation_helper.
imes!
~ > kill 81859
~ >
[1] + 81859 done      chromium
```

Figure 10: Command Output

### 1.11 Question 12

Change nice value of an already running process

```
lab > sleep 100 &
[1] 99217
lab > ps -o pid,ni,cmd -p 99217
  PID  NI  CMD
  99217   5 sleep 100
lab > renice 10 -p 99217
99217 (process ID) old priority 5, new priority 10
```

Figure 11: Command Output

### 1.12 Question 13

Compress a file using: gzip, bzip2 Then decompress it

#### *Compression using gzip, bzip2:*

Here I have saved the first 1000 lines of journalctl logs in a file named journal.log and compressed it using gzip, bzip2 the file size before compression is 141kb and after compression the archive file size is 8.7kb with gzip and 7.7kb with bzip2:

```
lab > journalctl -n 1000 > journal.log
lab > gzip -k journal.log
lab > bzip2 -k journal.log
lab > l
```

Permissions	Size	User	Date Modified	Name
drwxr-xr-x	-	emary	16 Jan 20:35	.
drwxrwxrwx	-	emary	16 Jan 20:28	..
.rw-r--r--	7.8k	emary	16 Jan 20:35	journal.log.bz2
.rw-r--r--	8.8k	emary	16 Jan 20:35	journal.log.gz
.rw-r--r--	141k	emary	16 Jan 20:35	journal.log

Figure 12: Command Output

#### *Compression using gzip, bzip2:*

After decompressing each archive file, the file size is back to 141kb:

```
lab > l
```

Permissions	Size	User	Date Modified	Name
drwxr-xr-x	-	emary	16 Jan 20:41	.
drwxrwxrwx	-	emary	16 Jan 20:28	..
.rw-r--r--	7.8k	emary	16 Jan 20:41	journal.log.bz2
.rw-r--r--	8.9k	emary	16 Jan 20:41	journal.log.gz

```
lab > gzip -d journal.log.gz
lab > l
```

Permissions	Size	User	Date Modified	Name
drwxr-xr-x	-	emary	16 Jan 20:41	.
drwxrwxrwx	-	emary	16 Jan 20:28	..
.rw-r--r--	7.8k	emary	16 Jan 20:41	journal.log.bz2
.rw-r--r--	141k	emary	16 Jan 20:41	journal.log

```
lab > rm journal.log
lab > bzip2 -d journal.log.bz2
lab > l
```

Permissions	Size	User	Date Modified	Name
drwxr-xr-x	-	emary	16 Jan 20:42	.
drwxrwxrwx	-	emary	16 Jan 20:28	..
.rw-r--r--	141k	emary	16 Jan 20:41	journal.log

Figure 13: Command Output

### 1.13 Question 14

State the differences between `gzip` and `bzip2` commands

- `gzip` is generally faster but has a lower compression ratio.
- `bzip2` has a higher compression ratio but is slower.

### 1.14 Question 15

Backup/Archive `/etc` directory using `tar` utility

```
Lab > sudo tar czf ./etc.tar.gz --directory=/etc .
[sudo] password for emary:
tar: ./pacman.d/gnupg/S.gpg-agent: socket ignored
tar: ./pacman.d/gnupg/S.gpg-agent.browser: socket ignored
tar: ./pacman.d/gnupg/S.gpg-agent.extra: socket ignored
tar: ./pacman.d/gnupg/S.dirmngr: socket ignored
tar: ./pacman.d/gnupg/S.gpg-agent.ssh: socket ignored
tar: ./pacman.d/gnupg/S.keyboxd: socket ignored
Lab > l
Permissions Size User Date Modified Name
drwxr-xr-x - emary 16 Jan 20:49 .
drwxrwxrwx - emary 16 Jan 20:28 ..
-rw-r--r-- 11M root 16 Jan 20:49 etc.tar.gz
```

Figure 14: Command Output

### 1.15 Question 16

Install packages: `ncompress`, `ksh`

command for Debian-based systems: `sudo apt install ncompress ksh`

*I'm using a non-Debian based system (a distro based on [Arch Linux](#)), so I used `pacman` package manager to install the packages.*

```
> sudo pacman -S ksh ncompress
[sudo] password for emary:
resolving dependencies...
looking for conflicting packages...

Package (2)      New Version  Net Change  Download Size
extra/ksh        2020.0.0-3   2.51 MiB    0.69 MiB
extra/ncompress  5.0-3        0.03 MiB    0.02 MiB

Total Download Size: 0.71 MiB
Total Installed Size: 2.55 MiB

:: Proceed with installation? [Y/n]
:: Retrieving packages...
ncompress-5.0-3-x86_64 17.9 KiB 8.55 KiB/s 00:02 [-----] 100%
ksh-2020.0.0-3-x86_64 711.5 KiB 187 KiB/s 00:04 [-----] 100%
Total (2/2) 729.4 KiB 173 KiB/s 00:04 [-----] 100%
(2/2) checking keys in keyring [-----] 100%
(2/2) checking package integrity [-----] 100%
(2/2) loading package files [-----] 100%
(2/2) checking for file conflicts [-----] 100%
(2/2) checking available disk space [-----] 100%
:: Processing package changes...
(1/2) installing ksh [-----] 100%
(2/2) installing ncompress [-----] 100%
:: Running post-transaction hooks...
(1/2) Arming ConditionNeedsUpdate...
(2/2) Refreshing PackageKit...
```

Figure 15: Command Output

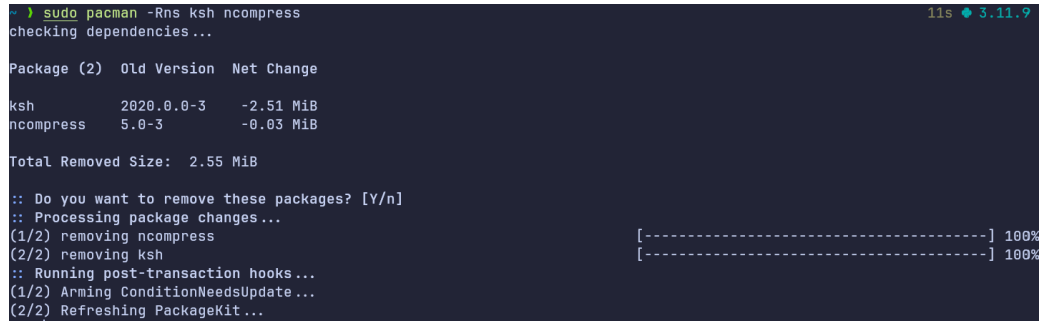
### 1.16 Question 17

Remove packages: `ncompress`, `ksh`

## Question 18

---

command for Debian-based systems: `sudo apt remove ncompress ksh`



```
lab ~$ sudo pacman -Rns ksh ncompress
checking dependencies...

Package (2)  Old Version  Net Change
ksh          2020.0.0-3      -2.51 MiB
ncompress    5.0-3           -0.03 MiB

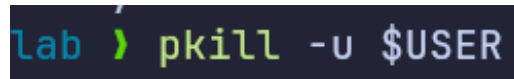
Total Removed Size: 2.55 MiB

:: Do you want to remove these packages? [Y/n]
:: Processing package changes...
(1/2) removing ncompress [-----] 100%
(2/2) removing ksh       [-----] 100%
:: Running post-transaction hooks...
(1/2) Arming ConditionNeedsUpdate...
(2/2) Refreshing PackageKit...
```

Figure 16: Command Output

### 1.17 Question 18

Kill all your processes (Warning: Save work before execution)



```
lab ~$ pkill -u $USER
```

Figure 17: Command Output