

Red Hat System Administration I

Day4

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Mansoura Open Source

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Lab 3 cont.

3. List the available shells in your system.

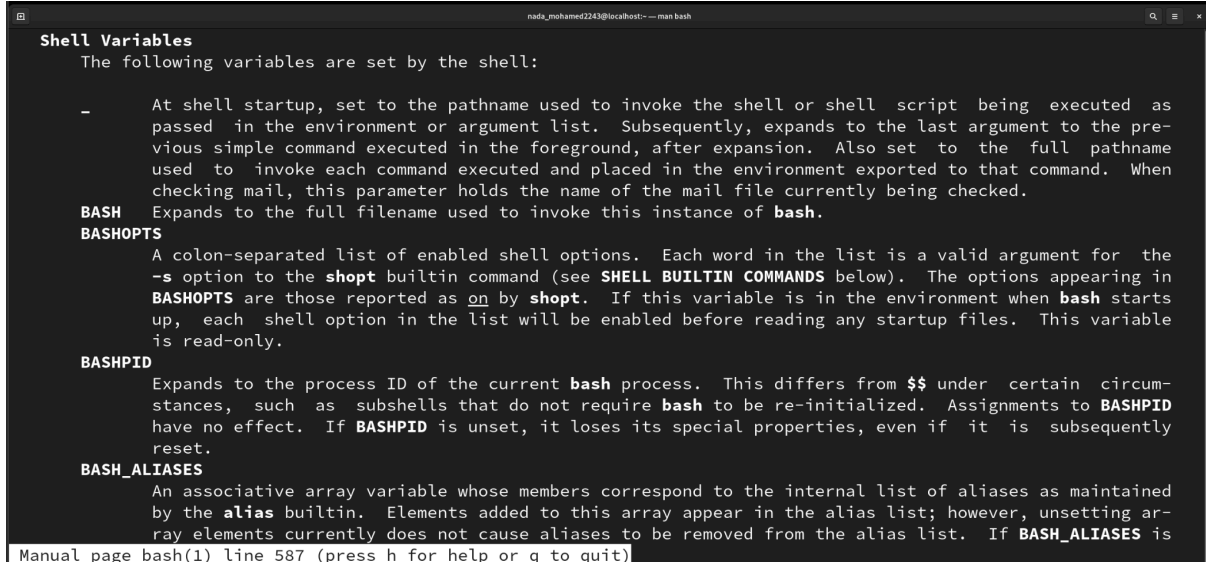
cat /etc/shells

```
nada_mohamed2243@localhost:~$ cat /etc/shells
/bin/sh
/bin/bash
/usr/bin/sh
/usr/bin/bash
[nada_mohamed2243@localhost ~]$
```

4. List the environment variables in your current shell.

man bash

```
[nada_mohamed2243@localhost ~]$ man bash
```



Shell Variables
The following variables are set by the shell:

- At shell startup, set to the pathname used to invoke the shell or shell script being executed as passed in the environment or argument list. Subsequently, expands to the last argument to the previous simple command executed in the foreground, after expansion. Also set to the full pathname used to invoke each command executed and placed in the environment exported to that command. When checking mail, this parameter holds the name of the mail file currently being checked.
- BASH** Expands to the full filename used to invoke this instance of **bash**.
- BASHOPTS** A colon-separated list of enabled shell options. Each word in the list is a valid argument for the **-s** option to the **shopt** builtin command (see **SHELL BUILTIN COMMANDS** below). The options appearing in **BASHOPTS** are those reported as **on** by **shopt**. If this variable is in the environment when **bash** starts up, each shell option in the list will be enabled before reading any startup files. This variable is read-only.
- BASHPID** Expands to the process ID of the current **bash** process. This differs from **\$\$** under certain circumstances, such as subshells that do not require **bash** to be re-initialized. Assignments to **BASHPID** have no effect. If **BASHPID** is unset, it loses its special properties, even if it is subsequently reset.
- BASH_ALIASES** An associative array variable whose members correspond to the internal list of aliases as maintained by the **alias** builtin. Elements added to this array appear in the alias list; however, unsetting array elements currently does not cause aliases to be removed from the alias list. If **BASH_ALIASES** is

Manual page bash(1) line 587 (press h for help or q to quit)

If we want them with their values

We can use **printenv**

```
nada_mohamed2243@localhost:~$ env
SHELL=/bin/bash
SESSION_MANAGER=local/unix:@/tmp/.ICE-unix/2378,unix/unix:/tmp/.ICE-unix/2378
COLORTERM=truecolor
HISTCONTROL=ignoredups
XDG_MENU_PREFIX=gnome-
HISTSIZE=1000
HOSTNAME=localhost
SSH_AUTH_SOCK=/run/user/1000/keyring/ssh
XMODIFIERS=@im=ibus
DESKTOP_SESSION=gnome
PWD=/home/nada_mohamed2243
LOGNAME=nada_mohamed2243
XDG_SESSION_DESKTOP=gnome
XDG_SESSION_TYPE=wayland
SYSTEMD_EXEC_PID=2394
XAUTHORITY=/run/user/1000/.mutter-Xwaylandauth.9ZIPZ2
GDM_LANG=en_US.UTF-8
HOME=/home/nada_mohamed2243
USERNAME=nada_mohamed2243
LANG=en_US.UTF-8
LS_COLORS=rs=0:di=01;34:ln=01;36:mh=00:pi=40;33:so=01;35:do=01;35:bd=40;33;01:cd=40;33;01:or=40;31;01:mi=01;37;41:su=
37;41:sg=30;43:ca=30;41:tw=30;42:ow=34;42:st=37;44:ex=01;32:*.tar=01;31:*.tgz=01;31:*.arc=01;31:*.arj=01;31:*.taz=01;
31:*.lha=01;31:*.lz4=01;31:*.lzh=01;31:*.lzma=01;31:*.tlz=01;31:*.txz=01;31:*.tzo=01;31:*.t7z=01;31:*.zip=01;31:*.z=0
1;31:*.dz=01;31:*.gz=01;31:*.lrz=01;31:*.lz=01;31:*.lzo=01;31:*.xz=01;31:*.zst=01;31:*.tzst=01;31:*.bz2=01;31:*.bz=01
:31:*.th7=01:31:*.th72=01:31:*.t7=01:31:*.deb=01:31:*.rpm=01:31:*.jar=01:31:*.war=01:31:*.ear=01:31:*.rar
:31:*.th7=01:31:*.th72=01:31:*.t7=01:31:*.deb=01:31:*.rpm=01:31:*.jar=01:31:*.war=01:31:*.ear=01:31:*.rar
VM, move the mouse pointer inside or press Ctrl+G.
```

Or **env**

```
nada_mohamed2243@localhost:~$ printenv
SHELL=/bin/bash
SESSION_MANAGER=local/unix:@/tmp/.ICE-unix/2378,unix/unix:/tmp/.ICE-unix/2378
COLORTERM=truecolor
HISTCONTROL=ignoredups
XDG_MENU_PREFIX=gnome-
HISTSIZE=1000
HOSTNAME=localhost
SSH_AUTH_SOCK=/run/user/1000/keyring/ssh
XMODIFIERS=@im=ibus
DESKTOP_SESSION=gnome
PWD=/home/nada_mohamed2243
LOGNAME=nada_mohamed2243
XDG_SESSION_DESKTOP=gnome
XDG_SESSION_TYPE=wayland
SYSTEMD_EXEC_PID=2394
XAUTHORITY=/run/user/1000/.mutter-Xwaylandauth.9ZIPZ2
GDM_LANG=en_US.UTF-8
HOME=/home/nada_mohamed2243
USERNAME=nada_mohamed2243
LANG=en_US.UTF-8
LS_COLORS=rs=0:di=01;34:ln=01;36:mh=00:pi=40;33:so=01;35:do=01;35:bd=40;33;01:cd=40;33;01:or=40;31;01:mi=01;37;41:su=
37;41:sg=30;43:ca=30;41:tw=30;42:ow=34;42:st=37;44:ex=01;32:*.tar=01;31:*.tgz=01;31:*.arc=01;31:*.arj=01;31:*.taz=01;
31:*.lha=01;31:*.lz4=01;31:*.lzh=01;31:*.lzma=01;31:*.tlz=01;31:*.txz=01;31:*.tzo=01;31:*.t7z=01;31:*.zip=01;31:*.z=0
1;31:*.dz=01;31:*.gz=01;31:*.lrz=01;31:*.lz=01;31:*.lzo=01;31:*.xz=01;31:*.zst=01;31:*.tzst=01;31:*.bz2=01;31:*.bz=01
:31:*.th7=01:31:*.th72=01:31:*.t7=01:31:*.deb=01:31:*.rpm=01:31:*.jar=01:31:*.war=01:31:*.ear=01:31:*.sar=01:31:*.rar
VM, move the mouse pointer inside or press Ctrl+G.
```

5. List all of the environment variables for the bash shell.

We can use `printenv`

Or `env`

6. What are the commands that list the value of a specific variable?

`echo $VARIABLE_NAME` → like `echo $PATH`

```
[nada_mohamed2243@localhost ~]$ echo $PATH
/home/nada_mohamed2243/.local/bin:/home/nada_mohamed2243/bin:/usr/local/bin:/usr/local/sbin:/usr/bin:/usr/sbin
```

`printenv VARIABLE_NAME` → like `printenv PATH`

```
[nada_mohamed2243@localhost ~]$ printenv PATH
/home/nada_mohamed2243/.local/bin:/home/nada_mohamed2243/bin:/usr/local/bin:/usr/local/sbin:/usr/bin:/usr/sbin
```

7. Display your current shell name.

`echo $SHELL`

```
[nada_mohamed2243@localhost ~]$ printenv SHELL
/bin/bash
[nada_mohamed2243@localhost ~]$ echo $SHELL
/bin/bash
```

8. State the initialization files of: sh, ksh, bash.

sh (Bourne Shell)

- `/etc/profile`
- `~/.profile`

ksh (Korn Shell)

- `/etc/profile`
- `~/.profile`
- `~/.kshrc`

bash (Bourne Again Shell)

- `/etc/profile`
- `~/.bash_profile`

- ~/.bashrc
- ~/.bash_logout

```
[nada_mohamed2243@localhost ~]$ ls -a
.          .bash_logout  .cache  Documents  .lessht  Music      myteam    Public  Videos
..         .bash_profile .config Downloads  .local    mycv       oldpasswd Templates .viminfo
.bash_history .bashrc      Desktop file       .mozilla  .mycv.swp Pictures   test
```

```
[nada_mohamed2243@localhost ~]$ cat .bash_profile
# .bash_profile

# Get the aliases and functions
if [ -f ~/.bashrc ]; then
    . ~/.bashrc
fi

# User specific environment and startup programs
```

```
[nada_mohamed2243@localhost ~]$ cat .bashrc
# .bashrc

# Source global definitions
if [ -f /etc/bashrc ]; then
    . /etc/bashrc
fi

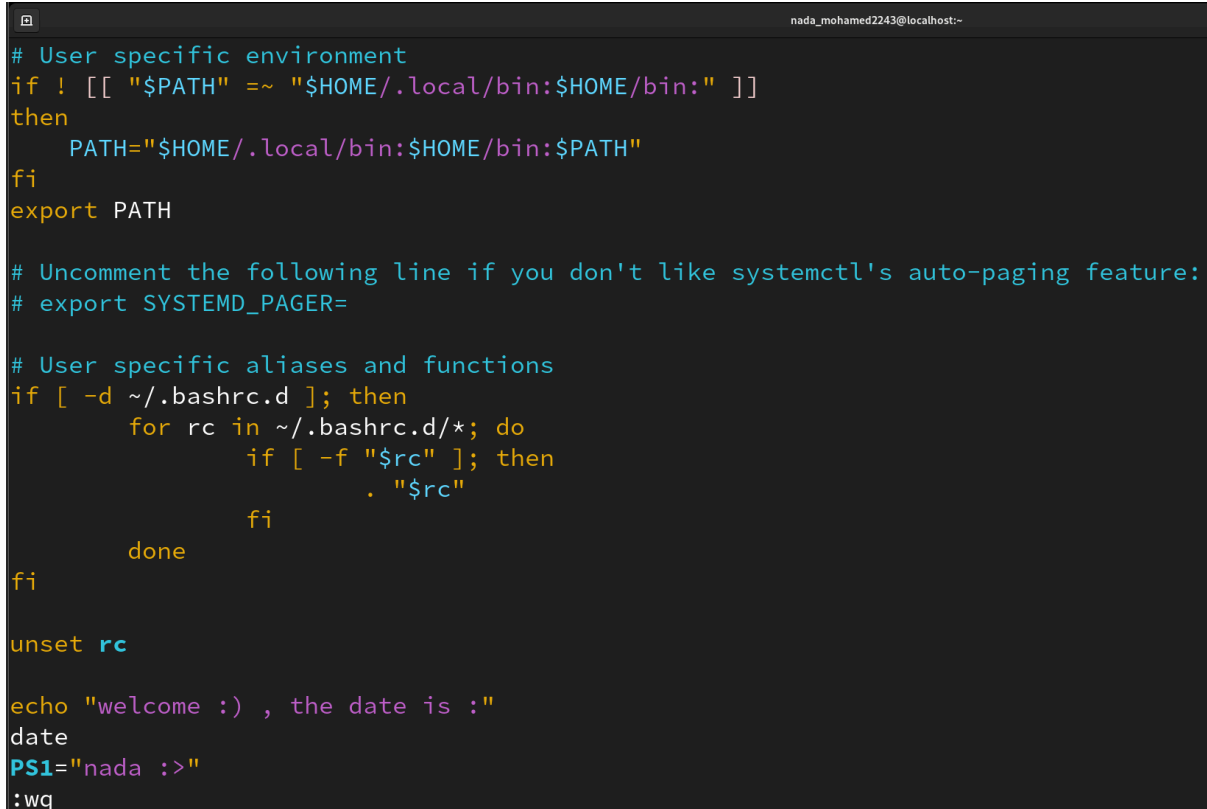
# User specific environment
if ! [[ "$PATH" =~ "$HOME/.local/bin:$HOME/bin:" ]]
then
    PATH="$HOME/.local/bin:$HOME/bin:$PATH"
fi
export PATH

# Uncomment the following line if you don't like systemctl's auto-paging feature:
# export SYSTEMD_PAGER=

# User specific aliases and functions
if [ -d ~/.bashrc.d ]; then
    for rc in ~/.bashrc.d/*; do
        if [ -f "$rc" ]; then
            . "$rc"
        fi
    done
fi
```

9. Edit in your profile to display date at login and change your prompt permanently.

```
[nada_mohamed2243@localhost ~]$ vi .bashrc
```



```
# User specific environment
if ! [[ "$PATH" =~ "$HOME/.local/bin:$HOME/bin:" ]]
then
    PATH="$HOME/.local/bin:$HOME/bin:$PATH"
fi
export PATH

# Uncomment the following line if you don't like systemctl's auto-paging feature:
# export SYSTEMD_PAGER=

# User specific aliases and functions
if [ -d ~/.bashrc.d ]; then
    for rc in ~/.bashrc.d/*; do
        if [ -f "$rc" ]; then
            . "$rc"
        fi
    done
fi

unset rc

echo "welcome :) , the date is :"
date
PS1="nada :>"
:wq
```

```
[nada_mohamed2243@localhost ~]$ su -
Password:
[root@localhost ~]# su - nada_mohamed2243
welcome :) , the date is :
Sun Dec 29 01:39:07 PM EET 2024
nada :>ls
Desktop  Documents  Downloads  file  Music  mycv  myteam  oldpasswd  Pictures  Public  Templates  test  Videos
nada :>
```

10. Execute the following command :

**echo **

then press enter

What is the purpose of \ ?

the backslash (\) acts as an escape character. It tells the shell that the command is not complete and continues on the next line →

the prompt change to **>**.

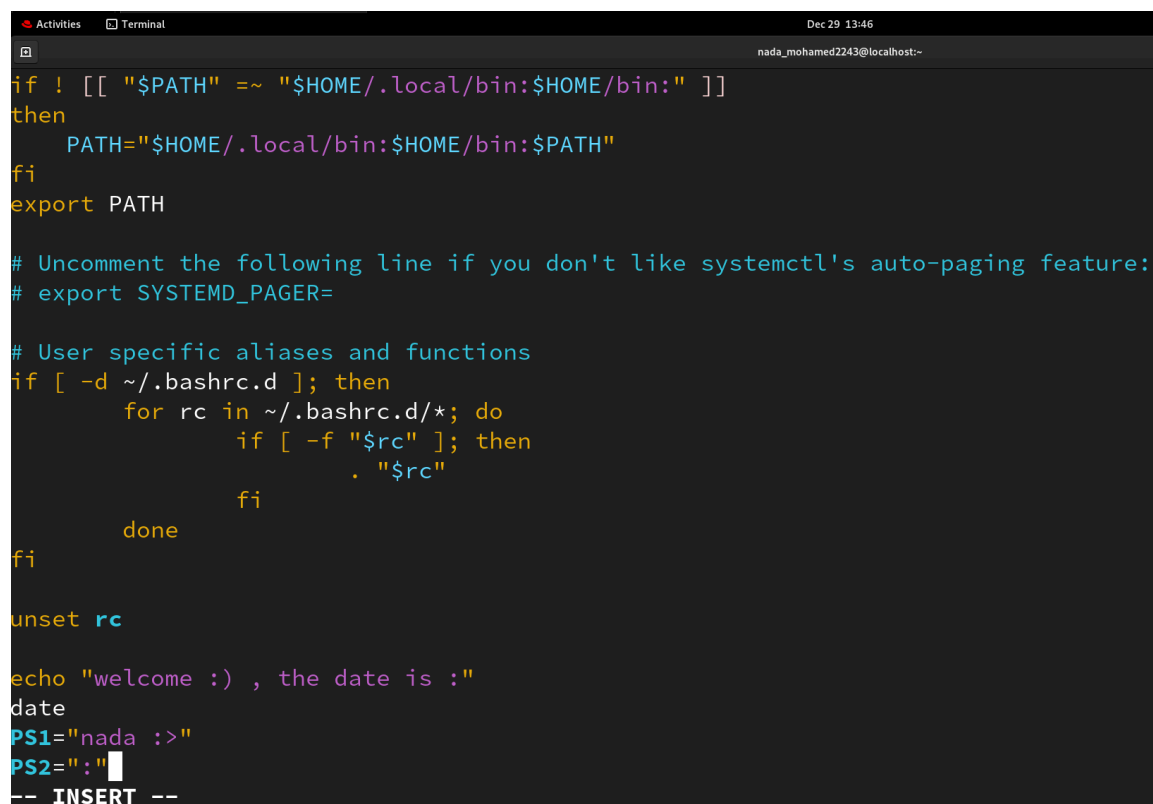
```
nada :>echo \  
>
```

Notice the prompt ">" what is that? and how can you change it from ">" to ":".

The **>** prompt indicates that the shell is waiting for more input to complete the command. This is known as the secondary prompt or continuation prompt.

We can change this using the environment variable called **PS2**

```
nada :>vi .bashrc
```



```
if ! [[ "$PATH" =~ "$HOME/.local/bin:$HOME/bin:" ]]
then
    PATH="$HOME/.local/bin:$HOME/bin:$PATH"
fi
export PATH

# Uncomment the following line if you don't like systemctl's auto-paging feature:
# export SYSTEMD_PAGER=

# User specific aliases and functions
if [ -d ~/.bashrc.d ]; then
    for rc in ~/.bashrc.d/*; do
        if [ -f "$rc" ]; then
            . "$rc"
        fi
    done
fi

unset rc

echo "welcome :) , the date is :"
date
PS1="nada :>"
PS2=":"
-- INSERT --
```

```
nada :>su -  
Password:  
[root@localhost ~]# su - nada_mohamed2243  
welcome :) , the date is :  
Sun Dec 29 01:47:24 PM EET 2024  
nada :>echo \  
:
```

11. Create a Bash shell alias named ls for the “ls -l” command

```
nada :>alias ls='ls -l'  
nada :>alias  
alias egrep='egrep --color=auto'  
alias fgrep='fgrep --color=auto'  
alias grep='grep --color=auto'  
alias l.='ls -d .* --color=auto'  
alias ll='ls -l --color=auto'  
alias ls='ls -l'  
alias xzegrep='xzegrep --color=auto'  
alias xzfgrep='xzfgrep --color=auto'  
alias xzgrep='xzgrep --color=auto'  
alias zegrep='zegrep --color=auto'  
alias zfgrep='zfgrep --color=auto'  
alias zgrep='zgrep --color=auto'  
nada :>
```



```
nada :>ls
total 4
drwxr-xr-x. 2 nada_mohamed2243 nada_mohamed2243 6 Dec 25 13:10 Desktop
drwxr-xr-x. 2 nada_mohamed2243 nada_mohamed2243 6 Dec 25 13:10 Documents
drwxr-xr-x. 2 nada_mohamed2243 nada_mohamed2243 6 Dec 25 13:10 Downloads
----- 1 nada_mohamed2243 nada_mohamed2243 0 Dec 25 13:53 file
drwxr-xr-x. 2 nada_mohamed2243 nada_mohamed2243 6 Dec 25 13:10 Music
-rw-r--r--. 1 nada_mohamed2243 nada_mohamed2243 327 Dec 28 22:32 mycv
dr--r-xr-x. 2 nada_mohamed2243 nada_mohamed2243 6 Dec 25 13:14 myteam
-rw--wx--x. 1 nada_mohamed2243 nada_mohamed2243 0 Dec 25 13:57 oldpasswd
drwxr-xr-x. 2 nada_mohamed2243 nada_mohamed2243 6 Dec 25 13:10 Pictures
drwxr-xr-x. 2 nada_mohamed2243 nada_mohamed2243 6 Dec 25 13:10 Public
drwxr-xr-x. 2 nada_mohamed2243 nada_mohamed2243 6 Dec 25 13:10 Templates
d----- 2 nada_mohamed2243 nada_mohamed2243 6 Dec 25 13:53 test
drwxr-xr-x. 2 nada_mohamed2243 nada_mohamed2243 6 Dec 25 13:10 Videos
nada :>
```

If you want to make it permanent put in `.bashrc` or `/etc/profile` or `.bash_profile`

Lab 4

10. Issue the command sleep 100.

```
nada :>sleep 100
```

The terminal wait it until finish

11. Stop the last command.

To stop this press : ctrl + z

```
nada :>sleep 100
^Z
[1]+  Stopped                  sleep 100
nada :> 
```

12. Resume the last command in the background.

We can use **bg %[job no.]** or **kill _cont %[job no.]**

```
nada :>jobs
[1]+  Stopped                  sleep 100
nada :>bg %1
[1]+  sleep 100 &
nada :>ls
```

13. Issue the jobs command and see its output.

```
nada :>sleep 100&
[2] 4083
nada :>jobs
[1]+  Stopped                  sleep 100
[2]-  Running                  sleep 100 &
nada :> 
```

This lists all the background jobs currently existing.

14. Send the sleep command to the foreground and send it again to the background.

fg %[job no.]

bg %[job no.]

```
nada_mohamed2243@localhost:~  
nada :>sleep 400  
^Z  
[5]+  Stopped                  sleep 400  
nada :>jobs  
[3]   Stopped                  sleep 100  
[4]-  Stopped                  sleep 100  
[5]+  Stopped                  sleep 400  
nada :>bg %5  
[5]+  sleep 400 &  
nada :>fg %5  
sleep 400  
^Z  
[5]+  Stopped                  sleep 400  
nada :>bg %5  
[5]+  sleep 400 &  
nada :>jobs  
[3]-  Stopped                  sleep 100  
[4]+  Stopped                  sleep 100  
[5]   Running                  sleep 400 &  
nada :>
```

15. Kill the sleep command.

kill -KILL %[job no.]

```
nada :>sleep 400&
[6] 4134
nada :>jobs
[3]  Stopped                  sleep 100
[4]-  Stopped                  sleep 100
[5]+  Stopped                  sleep 400
[6]  Running                   sleep 400 &
nada :>kill -KILL %6
nada :>jobs
[3]  Stopped                  sleep 100
[4]-  Stopped                  sleep 100
[5]+  Stopped                  sleep 400
[6]  Killed                   sleep 400
nada :>
```

16. Display your processes only.

ps -lu userName

```
nada :>ps -lu nada_mohamed2243
F S  UID      PID     PPID  C  PRI  NI ADDR SZ WCHAN  TTY          TIME CMD
4 S  1000     2313        1  0   80   0 -  6161 ep_pol ?           00:00:00 systemd
5 S  1000     2315      2313  0   80   0 -  43878 -      ?           00:00:00 (sd-pam)
1 S  1000     2331        1  0   80   0 - 113244 -      ?           00:00:00 gnome-keyring-d
4 S  1000     2335     2285  0   80   0 -  93538 do_pol tty2       00:00:00 gdm-wayland-ses
0 S  1000     2338     2313  0   80   0 -  2674 ep_pol ?           00:00:00 dbus-broker-lau
0 S  1000     2340     2338  0   80   0 -  1684 ep_pol ?           00:00:00 dbus-broker
0 S  1000     2344     2335  0   80   0 - 128288 do_pol tty2       00:00:00 gnome-session-b
0 S  1000     2376     2313  0   80   0 -  75952 do_pol ?           00:00:00 gnome-session-c
0 S  1000     2378     2313  0   80   0 -  202152 do_pol ?           00:00:00 gnome-session-b
0 S  1000     2394     2313  0   80   0 - 1034097 do_pol ?           00:00:26 gnome-shell
0 S  1000     2402     2313  0   80   0 - 113147 do_pol ?           00:00:00 gvfsd
0 S  1000     2407     2313  0   80   0 -  94982 futex_ ?           00:00:00 gvfsd-fuse
0 S  1000     2415     2313  0   80   0 -  77147 do_pol ?           00:00:00 at-spi-bus-laun
0 S  1000     2420     2415  0   80   0 -  2642 ep_pol ?           00:00:00 dbus-broker-lau
0 S  1000     2421     2420  0   80   0 -  1251 ep_pol ?           00:00:00 dbus-broker
0 S  1000     2437     2313  0   80   0 - 112024 do_pol ?           00:00:00 xdg-permission-
0 S  1000     2441     2313  0   80   0 - 146663 do_pol ?           00:00:00 gnome-shell-cal
0 S  1000     2455     2313  0   80   0 -  321895 do_pol ?           00:00:00 evolution-sourc
0 S  1000     2456     2313  0   80   0 -  81900 ep_pol ?           00:00:04 pipewire
0 S  1000     2457     2313  0   80   0 - 136720 do_pol ?           00:00:00 wireplumber
0 S  1000     2458     2313  0   80   0 -  80794 ep_pol ?           00:00:00 pipewire-pulse
0 S  1000     2478     2313  0   80   0 - 205111 do_pol ?           00:00:00 goa-daemon
0 S  1000     2483     2313  0   80   0 - 150358 do_pol ?           00:00:00 gvfs-udisks2-vo
```

17. Display all processes except yours.

```
[root@localhost ~]# ps -U root -u nada_mohamed2243 --deselect
  PID TTY          TIME CMD
   906 ?            00:00:00 dbus-broker-lau
   907 ?            00:00:01 dbus-broker
   908 ?            00:00:00 avahi-daemon
   912 ?            00:00:00 lsmd
   914 ?            00:00:03 polkitd
   915 ?            00:00:00 rtkit-daemon
   932 ?            00:00:00 avahi-daemon
   952 ?            00:00:00 chronyd
  1962 ?            00:00:00 geoclue
  2175 ?            00:00:00 colord
 10249 ?            00:00:00 fusermount
 10951 pts/0          00:00:00 su
 10962 pts/0          00:00:00 bash
 10988 pts/0          00:00:00 sleep
 10989 pts/0          00:00:00 sleep
 11005 pts/0          00:00:00 su
 11054 pts/0          00:00:00 su
```

18. Use the pgrep command to list your processes only.

With only process numbers we can use :

pgrep -u nada_mohamed2243

With no. and name

pgrep -lu nada_mohamed2243

```
nada :>pgrep -lu nada_mohamed2243
2313 systemd
2315 (sd-pam)
2331 gnome-keyring-d
2335 gdm-wayland-ses
2338 dbus-broker-lau
2340 dbus-broker
2344 gnome-session-b
2376 gnome-session-c
2378 gnome-session-b
2394 gnome-shell
2402 gvfsd
2407 gvfsd-fuse
2415 at-spi-bus-laun
2420 dbus-broker-lau
2421 dbus-broker
2437 xdg-permission-
2441 gnome-shell-cal
2455 evolution-sourc
2456 pipewire
2457 wireplumber
2458 pipewire-pulse
2478 goa-daemon
2483 gvfs-udisks2-vo
2495 goa-identity-se
2499 evolution-calen
```

19. Kill your processes only.

```
nada :>kill -KILL -u nada_mohamed2243
```