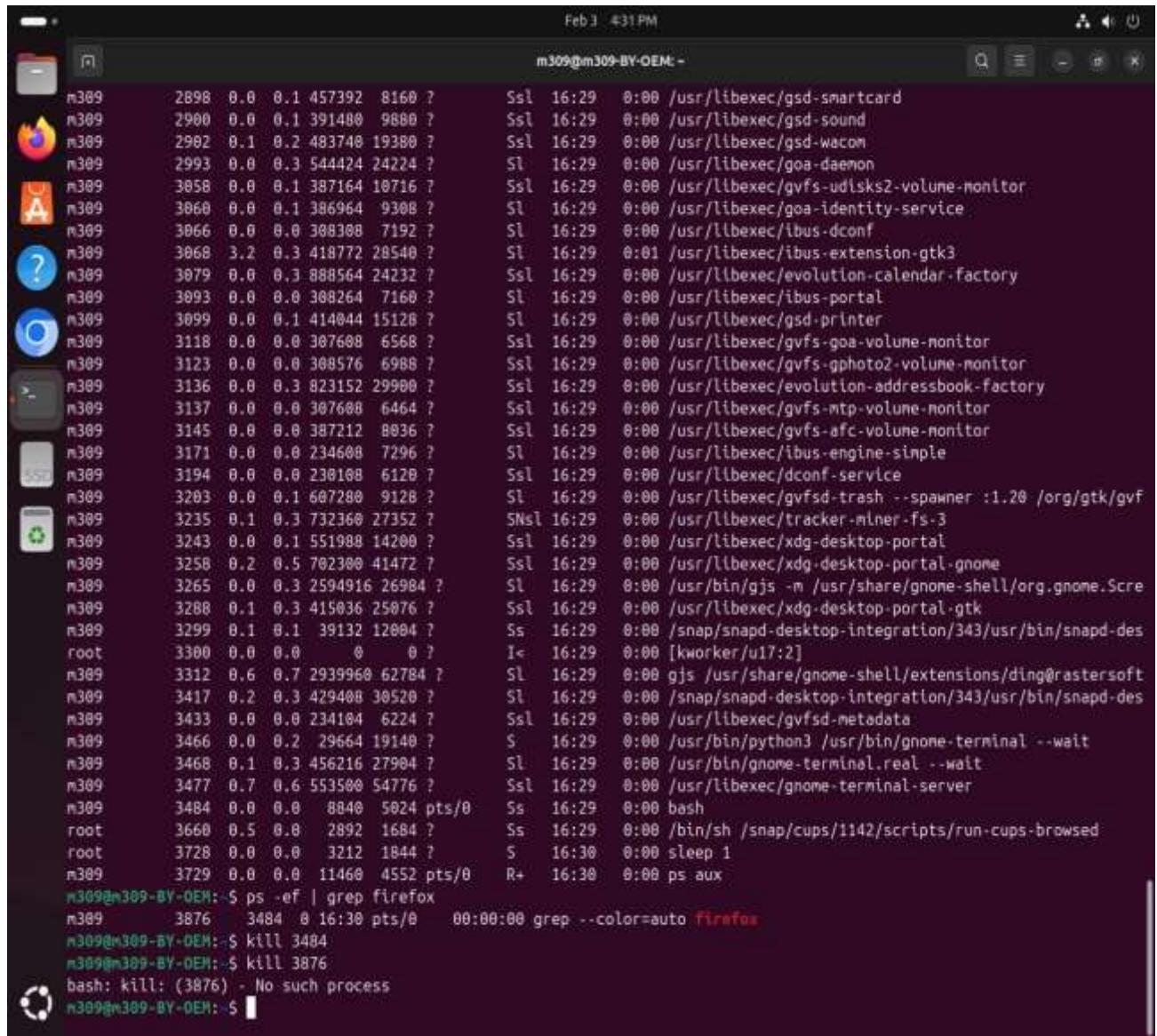


# PRACTICAL4

Adam is working in an IT company. He has been given a task to reduce the load of a system by killing some of the processes running in the LINUX operating system. Which commands will he use to complete the given task with the help of the following operation?

- Kill Processes by name



The screenshot shows a terminal window titled "m309@m309-BY-OEM: ~" with a timestamp of "Feb 3 16:29PM". The window displays a list of processes from the "ps -ef" command, showing columns for Process ID (PID), User, CPU usage, Memory usage, Command, and Start Time. A scroll bar is visible on the right side of the terminal window.

```
m309 2898 0.0 0.1 457392 8160 ? Ssl 16:29 0:00 /usr/libexec/gsd-smartcard
m309 2900 0.0 0.1 391480 9880 ? Ssl 16:29 0:00 /usr/libexec/gsd-sound
m309 2902 0.1 0.2 483740 19380 ? Ssl 16:29 0:00 /usr/libexec/gsd-wacom
m309 2993 0.0 0.3 544424 24224 ? Sl 16:29 0:00 /usr/libexec/goa-daemon
m309 3058 0.0 0.1 387164 10716 ? Ssl 16:29 0:00 /usr/libexec/gvfs-udisks2-volume-monitor
m309 3060 0.0 0.1 386964 9308 ? Sl 16:29 0:00 /usr/libexec/goa-identity-service
m309 3066 0.0 0.0 308308 7192 ? Sl 16:29 0:00 /usr/libexec/ibus-dconf
m309 3068 3.2 0.3 418772 28540 ? Sl 16:29 0:01 /usr/libexec/ibus-extension-gtk3
m309 3079 0.0 0.3 888564 24232 ? Ssl 16:29 0:00 /usr/libexec/evolution-calendar-factory
m309 3093 0.0 0.0 388264 7160 ? Sl 16:29 0:00 /usr/libexec/ibus-portal
m309 3099 0.0 0.1 414044 15128 ? Sl 16:29 0:00 /usr/libexec/gsd-printer
m309 3118 0.0 0.0 307608 6568 ? Ssl 16:29 0:00 /usr/libexec/gvfs-goa-volume-monitor
m309 3123 0.0 0.0 308576 6988 ? Ssl 16:29 0:00 /usr/libexec/gvfs-gphoto2-volume-monitor
m309 3136 0.0 0.3 823152 29900 ? Ssl 16:29 0:00 /usr/libexec/evolution-addressbook-factory
m309 3137 0.0 0.0 307608 6464 ? Ssl 16:29 0:00 /usr/libexec/gvfs-ftp-volume-monitor
m309 3145 0.0 0.0 387212 8036 ? Ssl 16:29 0:00 /usr/libexec/gvfs-afc-volume-monitor
m309 3171 0.0 0.0 234608 7296 ? Sl 16:29 0:00 /usr/libexec/ibus-engine-simple
m309 3194 0.0 0.0 230108 6120 ? Ssl 16:29 0:00 /usr/libexec/dconf-service
m309 3203 0.0 0.1 607200 9128 ? Sl 16:29 0:00 /usr/libexec/gvfsd-trash --spawner :1.20 /org/gtk/gvfs
m309 3235 0.1 0.3 732360 27352 ? SNsI 16:29 0:00 /usr/libexec/tracker-miner-fs-3
m309 3243 0.0 0.1 551988 14200 ? Ssl 16:29 0:00 /usr/libexec/xdg-desktop-portal
m309 3258 0.2 0.5 702300 41472 ? Ssl 16:29 0:00 /usr/libexec/xdg-desktop-portal-gnome
m309 3265 0.0 0.3 2594916 26984 ? Sl 16:29 0:00 /usr/bin/gjs -m /usr/share/gnome-shell/org.gnome.Scre
m309 3288 0.1 0.3 415036 25076 ? Ssl 16:29 0:00 /usr/libexec/xdg-desktop-portal-gtk
m309 3299 0.1 0.1 39132 12004 ? Ss 16:29 0:00 /snap/snapd-desktop-integration/343/usr/bin/snapd-des
root 3300 0.0 0.0 0 0 ? I< 16:29 0:00 [kworker/u17:2]
m309 3312 0.6 0.7 2939960 62784 ? Sl 16:29 0:00 gjs /usr/share/gnome-shell/extensions/ding@rastersoft
m309 3417 0.2 0.3 4294008 30520 ? Sl 16:29 0:00 /snap/snapd-desktop-integration/343/usr/bin/snapd-des
m309 3433 0.0 0.0 234104 6224 ? Ssl 16:29 0:00 /usr/libexec/gvfsd-metadata
m309 3466 0.0 0.2 29664 19140 ? S 16:29 0:00 /usr/bin/python3 /usr/bin/gnome-terminal --wait
m309 3468 0.1 0.3 456216 27904 ? Sl 16:29 0:00 /usr/bin/gnome-terminal.real --wait
m309 3477 0.7 0.6 553500 54776 ? Ssl 16:29 0:00 /usr/libexec/gnome-terminal-server
m309 3484 0.0 0.0 8840 5024 pts/0 Ss 16:29 0:00 bash
root 3660 0.5 0.0 2892 1684 ? Ss 16:29 0:00 /bin/sh /snap/cups/1142/scripts/run-cups-browsed
root 3728 0.0 0.0 3212 1844 ? S 16:30 0:00 sleep 1
m309 3729 0.0 0.0 11460 4552 pts/0 R+ 16:30 0:00 ps aux
m309@m309-BY-OEM: ~ ps -ef | grep firefox
m309 3876 3484 0 16:30 pts/0 00:00:00 grep --color=auto firefox
m309@m309-BY-OEM: ~ kill 3484
m309@m309-BY-OEM: ~ kill 3876
bash: kill: (3876) - No such process
m309@m309-BY-OEM: ~
```

- Kill a process based on the process name

```

Feb 3 16:33PM
m309@n309:~$ ps aux | grep firefox
m309 4168 3484 0 16:31 pts/0 0:00:00 grep --color=auto firefox
m309@n309:~$ killall firefox
firefox: no process found
m309@n309:~$ 

```

- Kill a single process at a time with the given process ID

```

Feb 3 16:33PM
m309@n309:~$ ps aux | grep chrome
m309 4692 4692 0 16:31 pts/0 0:00:00 grep --color=auto chrome
m309@n309:~$ kill 4692
bash: kill: (4692) - No such process
m309@n309:~$ 

```

## 2. Write a program for process creation using C

- Orphan Process

The screenshot shows a terminal window titled "orphan.c" with the following code:

```
Feb 3 14:46 PM
m309@m309-BY-OEM:~$ nano orphan.c
GNU nano 7.2
#include <stdio.h>
#include <unistd.h>

int main() {
    pid_t pid = fork();

    if (pid > 0) {
        printf("Parent process exiting\n");
    } else if (pid == 0) {
        sleep(10);
        printf("Child process running. Parent PID: %d\n", getppid());
    }
    return 0;
}
```

The terminal window has a dark background and light-colored text. The bottom bar contains various keyboard shortcuts for file operations like Help, Exit, Read File, Replace, Cut, Paste, Execute, Justify, Location, Go To Line, Undo, Redo, Set Mark, and Copy.

### Output:

The screenshot shows a terminal window with the following output:

```
302 packages can be upgraded. Run 'apt list --upgradable' to see them.
m309@m309-BY-OEM:~$ sudo apt install gcc
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
gcc is already the newest version (4:13.2.0-7ubuntu1).
0 upgraded, 0 newly installed, 0 to remove and 302 not upgraded.
m309@m309-BY-OEM:~$ nano orphan.c
m309@m309-BY-OEM:~$ [REDACTED]
```

The terminal window has a dark background and light-colored text. The bottom bar contains various keyboard shortcuts for file operations like Help, Exit, Read File, Replace, Cut, Paste, Execute, Justify, Location, Go To Line, Undo, Redo, Set Mark, and Copy.

- **Zombie Process**

The screenshot shows a terminal window titled "zombie.c" with the following code:

```
GNU-nano 7.2
#include <stdio.h>
#include <unistd.h>

int main() {
    if (fork() == 0) {
        printf("Child exiting\n");
    } else {
        sleep(20);
        printf("Parent alive\n");
    }
    return 0;
}
```

The terminal window has a dark background and light-colored text. It includes standard nano editor navigation keys at the bottom.

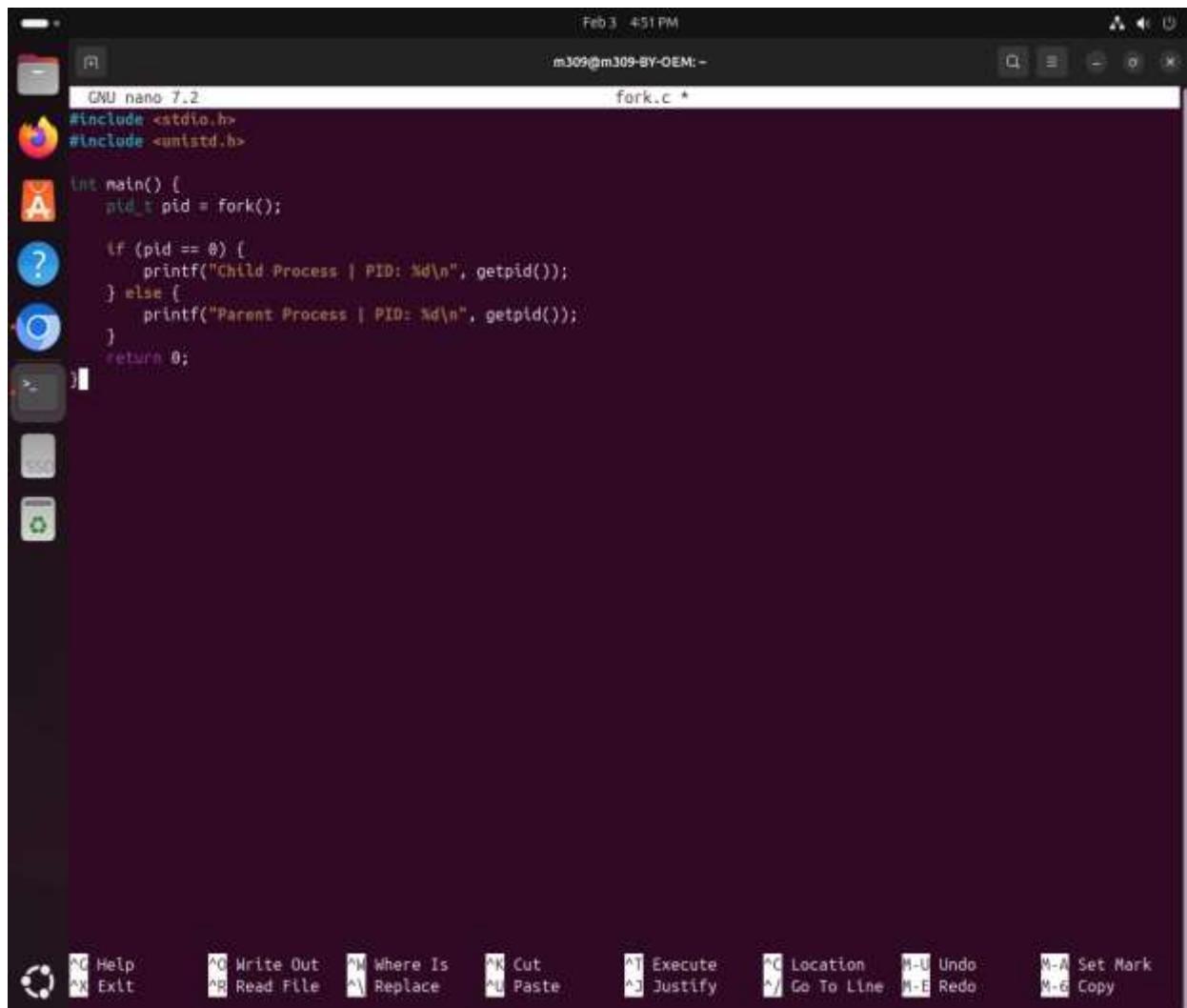
## Output:

```
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
gcc is already the newest version (4:13.2.0-7ubuntu1).
0 upgraded, 0 newly installed, 0 to remove and 302 not upgraded.
m309@m309-BY-OEM:~$ nano orphan.c
m309@m309-BY-OEM:~$ nano orphan.c
m309@m309-BY-OEM:~$ nano zombie.c
m309@m309-BY-OEM:~$
```

```
m309@m309-BY-OEM:~$ nano zombie.c
m309@m309-BY-OEM:~$ ps -ef | grep z
m309     8223  8146  0 16:43 ?    00:00:00 /snap/chromium/3125/usr/lib/chromium-browser/chrome --type=zygote --no-zygote-sandbox --crashpad-handler-pid=8217 --enable-crash-reporter=snap --change-stack-guard-on-fork=enable
m309     8224  8146  0 16:43 ?    00:00:00 /snap/chromium/3125/usr/lib/chromium-browser/chrome --type=zygote --crashpad-handler-pid=8217 --enable-crash-reporter=snap --change-stack-guard-on-fork=enable
m309     8226  8224  0 16:43 ?    00:00:00 /snap/chromium/3125/usr/lib/chromium-browser/chrome --type=zygote --crashpad-handler-pid=8217 --enable-crash-reporter=snap --change-stack-guard-on-fork=enable
m309    10071  3484  0 16:50 pts/0   00:00:00 grep --color=auto .
m309@m309-BY-OEM:~$
```

### 3. Create the process using fork ()system call

- Child Process creation
- Parent Process creation PPID and PID



```
Feb 3 4:51PM m309@m309-BY-OEM: ~ fork.c *
```

```
GNU nano 7.2
#include <stdio.h>
#include <unistd.h>

int main() {
    pid_t pid = fork();

    if (pid == 0) {
        printf("Child Process | PID: %d\n", getpid());
    } else {
        printf("Parent Process | PID: %d\n", getpid());
    }
    return 0;
}
```

The screenshot shows a terminal window titled "fork.c \*". The file contains a C program that demonstrates process creation using the `fork()` system call. It prints "Child Process | PID: %d\n" if it is a child process, and "Parent Process | PID: %d\n" if it is a parent process. The terminal window has a dark background and includes a menu bar with options like Help, Exit, Write Out, Read File, Cut, Paste, Execute, Location, Go To Line, Undo, Redo, Set Mark, and Copy.

```
m309      8223  8146  0 16:43 ?    00:00:00 /snap/chromium/3125/usr/lib/chromium-browser/chrome --type=zygote --no-zygote-sandbox --crashpad-handler-pid=8217 --enable-crash-reporter=snap --change-stack-guard-on-fork=enable
m309      8224  8146  0 16:43 ?    00:00:00 /snap/chromium/3125/usr/lib/chromium-browser/chrome --type=zygote --crashpad-handler-pid=8217 --enable-crash-reporter=snap --change-stack-guard-on-fork=enable
m309      8226  8224  0 16:43 ?    00:00:00 /snap/chromium/3125/usr/lib/chromium-browser/chrome --type=zygote --crashpad-handler-pid=8217 --enable-crash-reporter=snap --change-stack-guard-on-fork=enable
m309      10071  3484  0 16:50 pts/0  00:00:00 grep --color=auto z
m309@m309-BY-OEM: $ nano fork.c
m309@m309-BY-OEM: $ nano fork.c
m309@m309-BY-OEM: $
```