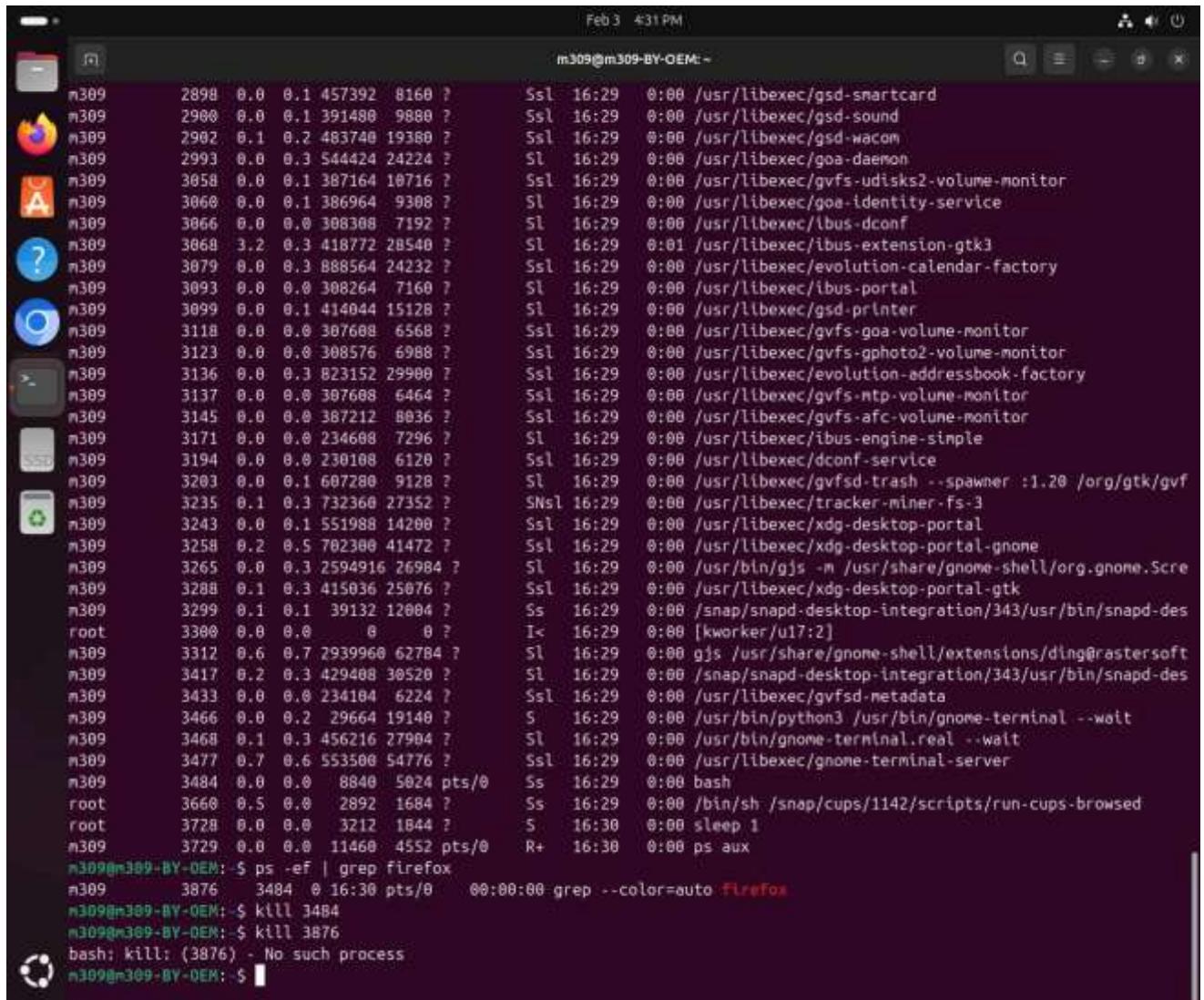


# PRACTICAL4

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 Linux terminal window with a process list and command history. The terminal title is "m309@m309-BY-DEM:~". The process list includes various system daemons and application processes. The command history at the bottom shows the user running "ps -ef | grep firefox", "kill 3484", and "kill 3876", followed by a "bash: kill: (3876) - No such process" error message.

```
m309@m309-BY-DEM:~
```

```
Feb 3 16:29 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 3068 0.0 0.1 386964 9308 ? Sl 16:29 0:00 /usr/libexec/goe-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 308264 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-ntp-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 234688 7296 ? Sl 16:29 0:00 /usr/libexec/ibus-engine-simple
m309 3194 0.0 0.0 230108 6128 ? Ssl 16:29 0:00 /usr/libexec/dconf-service
m309 3203 0.0 0.1 607280 9128 ? Sl 16:29 0:00 /usr/libexec/gvfsd-trash --spawner :1.20 /org/gtk/gvfs
m309 3235 0.1 0.3 732360 27352 ? SNSl 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/bln/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 429488 30520 ? Sl 16:29 0:00 /snap/snapd-desktop-integration/343/usr/bin/snapd-des
m309 3433 0.0 0.0 234184 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 5533580 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-DEM:~$ ps -ef | grep firefox
m309 3876 3484 0 16:30 pts/0 00:00:00 grep --color=auto Firefox
m309@m309-BY-DEM:~$ kill 3484
m309@m309-BY-DEM:~$ kill 3876
bash: kill: (3876) - No such process
m309@m309-BY-DEM:~$
```

- Kill a process based on the process name

```

m309@m309-By-DEMI:~$ ps -ef | grep firefox
m309 4168 3484 0 16:31 pts/0 00:00:00 grep --color=auto firefox
m309@m309-By-DEMI:~$ killall firefox
Firefox: no process found
m309@m309-By-DEMI:~$ 

```

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

```

m309@m309-By-DEMI:~$ ps -ef | grep chrome
m309 4692 0.0 0.0 234188 6336 pts/0 S+ 16:34 0:06 grep --color=auto chrome
m309@m309-By-DEMI:~$ kill 4692
bash: kill: (4692) - No such process
m309@m309-By-DEMI:~$ 

```

## 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 4:40PM m309@m309-BY-OEM: ~
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 with light-colored text. It includes standard nano editor navigation keys at the bottom.

### Output:

```
m309@m309-BY-OEM: ~$ nano orphan.c
[1]+  Terminated                  sleep 1000
m309@m309-BY-OEM: ~$ gcc orphan.c -o orphan
m309@m309-BY-OEM: ~$ ./orphan
Parent process exiting
m309@m309-BY-OEM: ~$ Child process running
```

- **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;
}
```

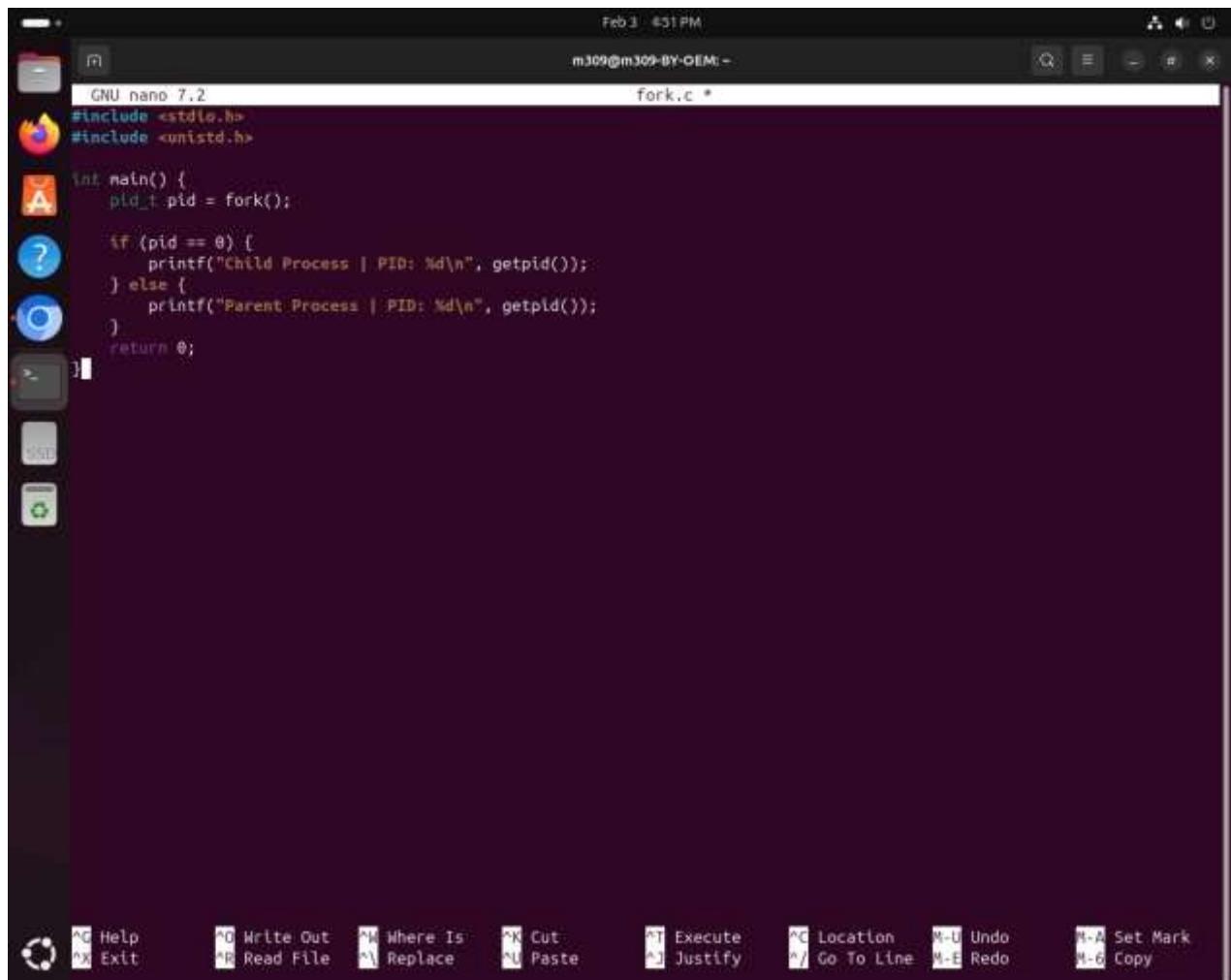
The terminal window has a dark background and light-colored text. It includes a menu bar at the top with icons for file operations like Open, Save, and Exit. Below the menu is a toolbar with various keyboard shortcut keys. The bottom of the window features a status bar with the current line count of 12 lines.

**Output:**

```
m309@m309-BY-OEM:~$ nano zombie.c
m309@m309-BY-OEM:~$ gcc zombie.c -o zombie
m309@m309-BY-OEM:~$ ./zombie
Child process exiting
Parent process
```

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

- Child Process creation
- Parent Process creation PPID and PID



```
Feb 3 06:51 PM
m309@m309-BY-OEM: ~
GNU nano 7.2          fork.c *
#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;
}

^C Help      ^O Write Out  ^W Where Is   ^K Cut       ^T Execute   ^C Location   M-U Undo
^X Exit      ^R Read File  ^L Replace    ^U Paste     ^J Justify   ^I Go To Line  M-E Redo
                                         M-A Set Mark
                                         M-G Copy
```

```
m309@m309-BY-OEM: ~$ nano fork.c
m309@m309-BY-OEM: ~$ gcc fork.c -o fork
m309@m309-BY-OEM: ~$ ./fork
Parent Process
PID = 3442
Child Process
PID = 3443
PPID = 3442
```