

1. 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
- Kill a process based on the process name
- Kill a single process at a time with the given process ID

```
kashish@LAPTOP-K3596DKL: ~$ ps -u
USER      PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND
kashish   429  0.0  0.0   6072 4992 pts/1    S+   16:39   0:00 -bash
kashish   632  0.3  0.0   6072 5248 pts/0    Ss   16:48   0:00 -bash
kashish   647  0.0  0.0   8280 4896 pts/0    R+   16:48   0:00 ps -u
kashish@LAPTOP-K3596DKL:~$ mkdir practical_test
kashish@LAPTOP-K3596DKL:~$ cd practical_test
kashish@LAPTOP-K3596DKL:~/practical_test$ nano main.c
kashish@LAPTOP-K3596DKL:~/practical_test$ gcc main.c -o output
kashish@LAPTOP-K3596DKL:~/practical_test$ ./output

[PARENT] My PID: 675, My Child's PID: 676
[PARENT] Exiting now so child becomes orphan...

[CHILD] My PID: 676, My Parent PID: 675
[CHILD] Sleeping for 10 seconds to become an ORPHAN...
kashish@LAPTOP-K3596DKL:~/practical_test$
[CHILD] I am an ORPHAN now. My new Parent PID: 631
./mylab
-bash: ./mylab: No such file or directory
kashish@LAPTOP-K3596DKL:~/practical_test$ ./output

[PARENT] My PID: 780, My Child's PID: 781
[PARENT] Exiting now so child becomes orphan...

[CHILD] My PID: 781, My Parent PID: 780
[CHILD] Sleeping for 10 seconds to become an ORPHAN...
kashish@LAPTOP-K3596DKL:~/practical_test$
[CHILD] I am an ORPHAN now. My new Parent PID: 631
nano main.c
kashish@LAPTOP-K3596DKL:~/practical_test$ gcc main.c -o zombie_run
kashish@LAPTOP-K3596DKL:~/practical_test$ ./zombie_run
[PARENT] child PID is: 721
[PARENT] I am sleeping for 30 seconds. Check for Zombie NOW!
[CHILD] I am exiting now to become a Zombie...
[PARENT] Parent is waking up and exiting.
kashish@LAPTOP-K3596DKL:~/practical_test$ |
```

```
kashish@LAPTOP-K3596DKL: ~$ ps -l
F S  UID      PID     PPID    C PRI  NI ADDR SZ WCHAN  TTY      TIME CMD
4 S  1000    1163     1160    1 80   0  -  1518 do_wai pts/3    00:00:00 bash
0 R  1000    1176     1163    0 80   0  -  2078 -      pts/3    00:00:00 ps
kashish@LAPTOP-K3596DKL: ~$ kill 1163
kashish@LAPTOP-K3596DKL: ~$ ps -ax
PID TTY      STAT   TIME COMMAND
1 ?        Ss      0:00 /sbin/init
2 ?        Sl      0:00 /init
7 ?        Sl      0:00 plan9 --control-socket 7 --log-level 4 --server-fd 8 --pipe-fd 10 --log-truncate
43 ?       S<s     0:00 /usr/lib/systemd/systemd-journald
93 ?       Ss      0:00 /usr/lib/systemd/systemd-udev
108 ?      Ss      0:00 /usr/lib/systemd/systemd-resolved
109 ?      Ssl     0:00 /usr/lib/systemd/systemd-timesyncd
169 ?      Ss      0:00 /usr/sbin/cron -f -P
170 ?      Ss      0:00 @dbus-daemon --system --address=systemd: --nofork --nopidfile --systemd-activation --syslog-only
189 ?      Ss      0:00 /usr/lib/systemd/systemd-logind
194 ?      Ssl     0:00 /usr/libexec/wsl-pro-service -vv
218 ?      Ssl     0:00 /usr/sbin/rsyslogd -n -tNONE
221 hvc0    Ss+    0:00 /sbin/agetty -o -p -- \u --noclear - linux
225 tty1   Ss+    0:00 /sbin/agetty -o -p -- \u --noclear - linux
255 ?      Ssl     0:00 /usr/bin/python3 /usr/share/unattended-upgrades/unattended-upgrade-shutdown --wait-for-signal
356 pts/1   Ss      0:00 /bin/login -f
402 ?      Ss      0:00 /usr/lib/systemd/systemd --user
403 ?      S        0:00 (sd-pam)
429 pts/1   S+      0:00 -bash
926 ?      Ss      0:00 /init
927 ?      S        0:00 /init
928 pts/0    Ss+    0:00 -bash
967 ?      Ss      0:00 /init
969 ?      S        0:00 /init
971 pts/2    Ss+    0:00 -bash
1159 ?      Ss      0:00 /init
1160 ?      S        0:00 /init
1163 pts/3     Ss      0:00 -bash
1182 pts/3     R+      0:00 ps -ax
kashish@LAPTOP-K3596DKL: ~$
```

2. Write a program for process creation using C

- Orphan Process
- Zombie Process

```
kashish@LAPTOP-K3596DKL:~$ nano zombie_code.c
kashish@LAPTOP-K3596DKL:~$ gcc zombie_code.c -o zombie_exe
kashish@LAPTOP-K3596DKL:~$ ./zombie_exe
[PARENT] My Child is PID 1006. I am sleeping for 100s.
[PARENT] GO TO THE OTHER TAB NOW AND TYPE 'ps -l'
[CHILD] I am dead now. My PID was: 1006
kashish@LAPTOP-K3596DKL:~$ |
```

```
GNU nano 7.2 zombie_code.c
#include <stdio.h>
#include <stdlib.h>
#include <unistd.h>
#include <sys/types.h>

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

    if (pid == 0) {
        // Child process finishes immediately
        printf("[CHILD] I am dead now. My PID was: %d\n", getpid());
        exit(0);
    }
    else {
        // Parent process sleeps for 100 seconds
        printf("[PARENT] My Child is PID %d. I am sleeping for 100s.\n", pid);
        printf("[PARENT] GO TO THE OTHER TAB NOW AND TYPE 'ps -l'\n");
        sleep(100);
        exit(0);
    }
}
```

```
kashish@LAPTOP-K3596DKL: ~  
188 ?    Ss   0:00 /usr/lib/systemd/systemd-resolved  
189 ?    Ss   0:00 /usr/lib/systemd/systemd-timesyncd  
169 ?    Ss   0:00 /usr/sbin/cron -f -p  
170 ?    Ss   0:00 @dbus-daemon --system --address=systemd: --nofork --nopidfile --systemd-activation --syslog-only  
189 ?    Ss   0:00 /usr/lib/systemd/systemd-logind  
194 ?    Ss   0:00 /usr/libexec/wsl-pro-service -vv  
218 ?    Ss   0:00 /usr/sbin/rsyslogd -n -lNONE  
221 hvc0   Ss+  0:00 /sbin/agetty -o -p --u --noclear - linux vt220  
225 tty1  Ss+  0:00 /usr/sbin/agetty -o -p --u --noclear - linux  
255 ?    Ss   0:00 /usr/bin/python3 /usr/share/unattended-upgrades/unattended-upgrade-shutdown --wait-for-signal  
356 pts/1 Ss   0:00 /bin/login -f  
402 ?    Ss   0:00 /usr/lib/systemd/systemd --user  
403 ?    Ss   0:00 (sd-pam)  
429 pts/1 Ss   0:00 -bash  
926 ?    Ss   0:00 /init  
927 ?    Ss   0:00 /init  
928 pts/0 Ss+  0:00 -bash  
967 ?    Ss   0:00 /init  
969 ?    Ss   0:00 /init  
971 pts/2 Ss+  0:00 -bash  
1159 ?   Ss   0:00 /init  
1160 ?   Ss   0:00 /init  
1163 pts/3 Ss   0:00 -bash  
1182 pts/3 R+   0:00 ps -ax  
kashish@LAPTOP-K3596DKL: ~$ ps -u  
USER      PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND  
kashish   429  0.0  0.0   6072 4992 pts/1    S+   16:39   0:00 -bash  
kashish   926  0.0  0.0   6072 5248 pts/0    Ss+  17:16   0:00 -bash  
kashish   971  0.0  0.0   6072 5248 pts/2    Ss+  17:17   0:00 -bash  
kashish  1163  0.0  0.0   6072 5248 pts/3    Ss   17:34   0:00 -bash  
kashish  1202  0.0  0.0   8288 4096 pts/3    R+   17:38   0:00 ps -u  
kashish@LAPTOP-K3596DKL: ~$ ps -u  
USER      PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND  
kashish   429  0.0  0.0   6072 4992 pts/1    S+   16:39   0:00 -bash  
kashish   926  0.0  0.0   6072 5248 pts/0    Ss+  17:16   0:00 -bash  
kashish   971  0.0  0.0   6072 5248 pts/2    Ss+  17:17   0:00 -bash  
kashish  1163  0.0  0.0   6072 5248 pts/3    Ss   17:34   0:00 -bash  
kashish  1211  0.0  0.0   8288 4096 pts/3    R+   17:40   0:00 ps -u  
kashish@LAPTOP-K3596DKL: ~$
```

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

- Child Process creation
- Parent process creation
- PPID and PID

```
kashish@LAPTOP-K3596DKL: ~  
kashish@LAPTOP-K3596DKL:~$ nano task3.c  
kashish@LAPTOP-K3596DKL:~$ gcc task3.c -o task3_output  
kashish@LAPTOP-K3596DKL:~$ ./task3_output  
--- PARENT PROCESS ---  
My PID (Process ID): 1725  
My Child's PID: 1726  
--- CHILD PROCESS ---  
My PID (Process ID): 1726  
My Parent's PID (PPID): 1725  
kashish@LAPTOP-K3596DKL:~$ |
```

```
GNU nano 7.2 task3.c
#include <stdio.h>
#include <unistd.h>
#include <sys/types.h>

int main() {
    pid_t p;
    p = fork(); // Creating the child process

    if (p < 0) {
        printf("Fork Failed\n");
    }
    else if (p == 0) {
        // This block is executed by the CHILD
        printf("\n--- CHILD PROCESS ---");
        printf("\nMy PID (Process ID): %d", getpid());
        printf("\nMy Parent's PID (PPID): %d\n", getppid());
    }
    else {
        // This block is executed by the PARENT
        printf("\n--- PARENT PROCESS ---");
        printf("\nMy PID (Process ID): %d", getpid());
        printf("\nMy Child's PID: %d\n", p);
    }

    return 0;
}
```

Help Exit Write Out Read File Where Is Replace Cut Paste Read 26 lines Execute Justify Location Go To Line Undo Redo Set Mark Copy To Bracket Where Was

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