

## PRACTICAL 4

Kill process by name

Kill a process based on the process name

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

```
krupa_bawane@LAPTOP-AI4V X + v
krupa_bawane@LAPTOP-AI4VE3LU:~$ top
top - 15:18:12 up 47 min, 1 user, load average: 0.00, 0.03, 0.00
Tasks: 27 total, 1 running, 26 sleeping, 0 stopped, 0 zombie
%Cpu(s): 0.0 us, 0.0 sy, 0.0 ni, 100.0 id, 0.0 wa, 0.0 hi, 0.0 si, 0.0 st
MiB Mem : 7778.2 total, 7227.9 free, 534.1 used, 173.9 buff/cache
MiB Swap: 2048.0 total, 2048.0 free, 0.0 used, 7244.1 avail Mem

  PID USER      PR  NI  VIRT  RES  SHR S %CPU  %MEM    TIME+  COMMAND
  1 root        20   0   21652 12800 9472 S   0.0   0.2   0:00.81 systemd
  2 root        20   0   3120  1920  1920 S   0.0   0.0   0:00.01 init-systemd(Ub
  7 root        20   0   3136  1796  1792 S   0.0   0.0   0:00.00 init
  53 root       19  -1  66748 15504 14480 S   0.0   0.2   0:00.33 systemd-journal
 102 root        20   0   25136 5760  4864 S   0.0   0.1   0:00.43 systemd-udev
 112 systemd+    20   0  21452 12544 10368 S   0.0   0.2   0:00.13 systemd-resolve
 113 systemd+    20   0  91020 7680  6784 S   0.0   0.1   0:00.11 systemd-timesyn
 169 root        20   0   4236  2432  2304 S   0.0   0.0   0:00.00 cron
 170 message+    20   0   9660  4864  4352 S   0.0   0.1   0:00.15 dbus-daemon
 183 root        20   0  17964  8320  7424 S   0.0   0.1   0:00.12 systemd-logind
 185 root        20   0 1755840 12416 10368 S   0.0   0.2   0:00.15 wsl-pro-service
 204 syslog      20   0  222508 5504  4352 S   0.0   0.1   0:00.10 rsyslogd
 206 root        20   0   3160  1920  1792 S   0.0   0.0   0:00.01agetty
 209 root        20   0   3116  1792  1664 S   0.0   0.0   0:00.00agetty
 224 root        20   0 107008 21888 12928 S   0.0   0.3   0:00.13 unattended-upgr
 307 root        20   0   6692  4224  3584 S   0.0   0.1   0:00.01 login
 352 krupa_b+    20   0  20308 11008 9088 S   0.0   0.1   0:00.09 systemd
 354 krupa_b+    20   0  21152  3516  1792 S   0.0   0.0   0:00.00 (sd-pam)
 411 krupa_b+    20   0   6072  4992  3456 S   0.0   0.1   0:00.00 bash
 503 root        20   0   3128   904   768 S   0.0   0.0   0:00.00 SessionLeader
 504 root        20   0  3144  1164  1024 S   0.0   0.0   0:00.00 Relay(505)
 505 krupa_b+    20   0   6072  5248  3584 S   0.0   0.1   0:00.03 bash
 941 polkitd     20   0 308160 7552  6784 S   0.0   0.1   0:00.03 polkitd
2720 root        20   0   3128   904   768 S   0.0   0.0   0:00.00 SessionLeader
2721 root        20   0  3144  1292  1152 S   0.0   0.0   0:00.00 Relay(2724)
2724 krupa_b+    20   0   6072  5248  3584 S   0.0   0.1   0:00.02 bash
2748 krupa_b+    20   0   9292  5504  3328 R   0.0   0.1   0:00.00 top
```

```
krupa_bawane@LAPTOP-AI4V X + v
2720 root        20   0   3128   904   768 S   0.0   0.0   0:00.00 SessionLeader
2721 root        20   0  3144  1292  1152 S   0.0   0.0   0:00.00 Relay(2724)
2724 krupa_b+    20   0   6072  5248  3584 S   0.0   0.1   0:00.02 bash
2748 krupa_b+    20   0   9292  5504  3328 R   0.0   0.1   0:00.00 top

krupa_bawane@LAPTOP-AI4VE3LU:~$ ps aux
USER      PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND
root         1  0.0  0.1 21652 12800 ?        Ss   14:31   0:00 /usr/lib/systemd/systemd --system --deserialize=25
root         2  0.0  0.0   3120  1920 ?        Sl   14:31   0:00 /init
root         7  0.0  0.0   3136  1796 ?        Sl   14:31   0:00 plan9 --control-socket 7 --log-level 4 --server-fd 8 --pipe-fd 10 --log-truncate
root        53  0.0  0.1  66748 15504 ?        S<s  14:31   0:00 /usr/lib/systemd/systemd-journal
root       102  0.0  0.0   25136 5760 ?        Ss   14:31   0:00 /usr/lib/systemd/systemd-udev
systemd+   112  0.0  0.1  21452 12544 ?        Ss   14:31   0:00 /usr/lib/systemd/systemd-resolved
systemd+   113  0.0  0.0  91020 7680 ?        Ssl  14:31   0:00 /usr/lib/systemd/systemd-timesyncd
root       169  0.0  0.0   4236  2432 ?        Ss   14:31   0:00 /usr/sbin/cron -f -P
message+   170  0.0  0.0   9660  4864 ?        Ss   14:31   0:00 @dbus-daemon --system --address=systemd: --nofork --nopidfile --systemd-activation --sysl
root       183  0.0  0.1 1755840 12416 ?        Ss   14:31   0:00 /usr/lib/systemd/systemd-logind
root       185  0.0  0.1 1755840 12416 ?        Ssl  14:31   0:00 /usr/libexec/wsl-pro-service -vv
root       204  0.0  0.0  222508 5504 ?        Ssl  14:31   0:00 /usr/sbin/rsyslogd -n -iNONE
root       206  0.0  0.0   3160  1920 hvc0    Ss+  14:31   0:00 /sbin/agetty -o -p -- \u --noclear --keep-baud - 115200,38400,9600 vt220
root       209  0.0  0.0   3116  1792 tty1     Ss+  14:31   0:00 /sbin/agetty -o -p -- \u --noclear - linux
root       224  0.0  0.2 107008 21888 ?        Ssl  14:31   0:00 /usr/bin/python3 /usr/share/unattended-upgrades/unattended-upgrade-shutdown --wait-for-si
root       307  0.0  0.0   6692  4224 pts/1    Ss   14:31   0:00 /bin/login -f
krupa_b+   352  0.0  0.1  20308 11008 ?        Ss   14:31   0:00 /usr/lib/systemd/systemd --user
krupa_b+   354  0.0  0.0  21152  3516 ?        S    14:31   0:00 (sd-pam)
krupa_b+   411  0.0  0.0   6072  4992 pts/1    S+   14:31   0:00 -bash
root       503  0.0  0.0   3128   904 ?        Ss   14:35   0:00 /init
root       504  0.0  0.0   3144  1164 ?        S    14:35   0:00 /init
krupa_b+   505  0.0  0.0   6072  5248 pts/0    Ss+  14:35   0:00 -bash
polkitd    941  0.0  0.0 308160 7552 ?        Ssl  14:52   0:00 /usr/lib/polkit-1/polkitd --no-debug
root      2720  0.0  0.0   3128   904 ?        Ss   15:16   0:00 /init
root      2721  0.0  0.0   3144  1292 ?        S    15:16   0:00 /init
krupa_b+   2724  0.0  0.0   6072  5248 pts/2    Ss   15:16   0:00 -bash
krupa_b+   2753  0.0  0.0   8280  4224 pts/2    R+   15:19   0:00 ps aux
krupa_bawane@LAPTOP-AI4VE3LU:~$
```

```
krupa_bawane@LAPTOP-AI4V:~$ ps aux
USER      PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND
root         1  0.0  0.1 21652 12800 ?        Ss   14:31   0:00 /usr/lib/systemd/systemd --system --deseriali=25
root         2  0.0  0.0   3120  1920 ?        Sl   14:31   0:00 /init
root         7  0.0  0.0   3136  1796 ?        Sl   14:31   0:00 plan9 --control-socket 7 --log-level 4 --server-fd 8 --pipe-fd 10 --log-truncate
root        53  0.0  0.1  66748 15504 ?        S<s  14:31   0:00 /usr/lib/systemd/systemd-journald
root       102  0.0  0.0  25136  5760 ?        Ss   14:31   0:00 /usr/lib/systemd/systemd-udev
systemd+   112  0.0  0.1  21452 12544 ?        Ss   14:31   0:00 /usr/lib/systemd/systemd-resolved
systemd+   113  0.0  0.0  91020  7680 ?        Ssl  14:31   0:00 /usr/lib/systemd/systemd-timesyncd
root       169  0.0  0.0   4236  2432 ?        Ss   14:31   0:00 /usr/sbin/cron -f -p
message+   170  0.0  0.0   9660  4864 ?        Ss   14:31   0:00 @dbus-daemon --system --address=systemd: --nofork --nopidfile --systemd-activation --sysl
root       183  0.0  0.1  17964  8320 ?        Ss   14:31   0:00 /usr/lib/systemd/systemd-logind
root       185  0.0  0.1 1755840 12416 ?       Ssl  14:31   0:00 /usr/libexec/wsl-pro-service -vv
syslog     204  0.0  0.0  222508  5504 ?        Ssl  14:31   0:00 /usr/sbin/rsyslogd -n -iNONE
root       206  0.0  0.0   3160  1920 hvc0     Ss+  14:31   0:00 /sbin/agetty -o -p -- \u --noclear --keep-baud - 115200,38400,9600 vt220
root       209  0.0  0.0   3116  1792 tty1     Ss+  14:31   0:00 /sbin/agetty -o -p -- \u --noclear - linux
root       224  0.0  0.2 107008 21888 ?        Ssl  14:31   0:00 /usr/bin/python3 /usr/share/unattended-upgrades/unattended-upgrade-shutdown --wait-for-si
root       307  0.0  0.0   6692  4224 pts/1    Ss   14:31   0:00 /bin/login -f
krupa_b+   352  0.0  0.1  20308 11008 ?        Ss   14:31   0:00 /usr/lib/systemd/systemd --user
krupa_b+   354  0.0  0.0   21152  3516 ?        Ss   14:31   0:00 (sd-pam)
krupa_b+   411  0.0  0.0   6072  4992 pts/1    S+   14:31   0:00 -bash
root       503  0.0  0.0   3128   904 ?        Ss   14:35   0:00 /init
root       504  0.0  0.0   3144  1164 ?        Ss   14:35   0:00 /init
krupa_b+   505  0.0  0.0   6072  5248 pts/0     Ss+  14:35   0:00 -bash
polkitd    901  0.0  0.0 308160  7552 ?        Ssl  14:52   0:00 /usr/lib/polkit-1/polkitd --no-debug
root      2720  0.0  0.0   3128   904 ?        Ss   15:16   0:00 /init
root      2721  0.0  0.0   3144  1292 ?        Ss   15:16   0:00 /init
krupa_b+   2724  0.0  0.0   6072  5248 pts/2     Ss   15:16   0:00 -bash
krupa_b+   2753  0.0  0.0   8280  4224 pts/2     R+   15:19   0:00 ps aux
krupa_bawane@LAPTOP-AI4VE3LU:~$ ps aux | grep firefox
krupa_b+   2759  0.0  0.0   4088  2048 pts/2     S+   15:20   0:00 grep --color=auto firefox
krupa_bawane@LAPTOP-AI4VE3LU:~$ kill 2759
-bash: kill: (2759) - No such process
krupa_bawane@LAPTOP-AI4VE3LU:~$ kill PID
-bash: kill: PID: arguments must be process or job IDs
krupa_bawane@LAPTOP-AI4VE3LU:~$ kill 2724
krupa_bawane@LAPTOP-AI4VE3LU:~$ pkill firefox
krupa_bawane@LAPTOP-AI4VE3LU:~$
```

## Orphan Process:

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

int main()
{
    pid_t pid = fork();
    if(pid>0){
        printf("Parent existing...\n");
        exit(0);
    }
    else if(pid==0){
        sleep(5);
        printf("Child is now an Orphan Process. PID:%d\n",getpid());
    }
    return 0;
}
```

```
krupa_bawane@LAPTOP-AI4V: ~$ ps aux | grep firefox
krupa_b+ 2759 0.0 0.0 4088 2048 pts/2 S+ 15:20 0:00 grep --color=auto firefox
krupa_bawane@LAPTOP-AI4VE3LU: ~$ kill 2759
-bash: kill: (2759) - No such process
krupa_bawane@LAPTOP-AI4VE3LU: ~$ kill PID
-bash: kill: PID: arguments must be process or job IDs
krupa_bawane@LAPTOP-AI4VE3LU: ~$ kill 2724
krupa_bawane@LAPTOP-AI4VE3LU: ~$ pkill firefox
krupa_bawane@LAPTOP-AI4VE3LU: ~$ nano orphan.c
krupa_bawane@LAPTOP-AI4VE3LU: ~$ gcc orphan.c -o orphan
krupa_bawane@LAPTOP-AI4VE3LU: ~$ ./orphan
Parent existing...
krupa_bawane@LAPTOP-AI4VE3LU: ~$ Child is now an Orphan Process. PID:2775
```

## Zombie Process:

```
GNU nano 7.2 zombie.c
#include <stdio.h>
#include <unistd.h>
#include <stdlib.h>
int main(){
    int pid = fork();
    if(pid>0){
        printf("Parent sleeping... Look for Zombie now!\n");
        sleep(30);
    }
    else{
        printf("Child dying...\n");
        exit(0);
    }
    return 0;
}
```

```
krupa_bawane@LAPTOP-AI4V: ~  
root      169  0.0  0.0  4236 2432 ?        Ss   14:31   0:00 /usr/sbin/cron -f -P  
message+ 170  0.0  0.0  9660 4864 ?        Ss   14:31   0:00 @dbus-daemon --system --address=systemd: --nofork --nopidfile --systemd-activation --sysl  
root      183  0.0  0.1  17964 8320 ?        Ss   14:31   0:00 /usr/lib/systemd/systemd-logind  
root      185  0.0  0.1 1755840 12416 ?       Ssl  14:31   0:00 /usr/libexec/wsl-pro-service -vv  
syslog    204  0.0  0.0  222508 5304 ?        Ssl  14:31   0:00 /usr/sbin/rsyslogd -n -iNONE  
root      206  0.0  0.0   3160 1920 hvc0     Ss+  14:31   0:00 /sbin/agetty -o -p -- \u --noclear --keep-baud - 115200,38400,9600 vt220  
root      209  0.0  0.0   3116 1792 tty1     Ss+  14:31   0:00 /sbin/agetty -o -p -- \u --noclear - linux  
root      224  0.0  0.2 107808 21888 ?       Ssl  14:31   0:00 /usr/bin/python3 /usr/share/unattended-upgrades/unattended-upgrade-shutdown --wait-for-si  
root      307  0.0  0.0   6692 4224 pts/1    Ss   14:31   0:00 /bin/login -f  
krupa_b+  352  0.0  0.1  20308 11008 ?       Ss   14:31   0:00 /usr/lib/systemd/systemd --user  
krupa_b+  354  0.0  0.0  21152 3516 ?        S    14:31   0:00 (sd-pam)  
krupa_b+  411  0.0  0.0   6072 4992 pts/1    S+   14:31   0:00 -bash  
root      503  0.0  0.0   3128  904 ?        Ss   14:35   0:00 /init  
root      504  0.0  0.0   3144 1164 ?        S    14:35   0:00 /init  
krupa_b+  505  0.0  0.0   6072 5248 pts/0    Ss+  14:35   0:00 -bash  
polkitd   941  0.0  0.0  308160 7552 ?       Ssl  14:52   0:00 /usr/lib/polkit-1/polkitd --no-debug  
root      2720 0.0  0.0   3128  904 ?        Ss   15:16   0:00 /init  
root      2721 0.0  0.0   3144 1292 ?        S    15:16   0:00 /init  
krupa_b+  2724 0.0  0.0   6072 5248 pts/2    Ss   15:16   0:00 -bash  
krupa_b+  2753 0.0  0.0   8280 4224 pts/2    R+   15:19   0:00 ps aux  
krupa_bawane@LAPTOP-AI4VE3LU:~$ ps aux | grep firefox  
krupa_b+  2759  0.0  0.0   4088 2048 pts/2    S+   15:20   0:00 grep --color=auto firefox  
krupa_bawane@LAPTOP-AI4VE3LU:~$ kill 2759  
-bash: kill: (2759) - No such process  
krupa_bawane@LAPTOP-AI4VE3LU:~$ kill PID  
-bash: kill: PID: arguments must be process or job IDs  
krupa_bawane@LAPTOP-AI4VE3LU:~$ kill 2724  
krupa_bawane@LAPTOP-AI4VE3LU:~$ pkill firefox  
krupa_bawane@LAPTOP-AI4VE3LU:~$ nano orphan.c  
krupa_bawane@LAPTOP-AI4VE3LU:~$ gcc orphan.c -o orphan  
krupa_bawane@LAPTOP-AI4VE3LU:~$ ./orphan  
Parent existing...  
krupa_bawane@LAPTOP-AI4VE3LU:~$ Child is now an Orphan Process. PID:2775  
krupa_bawane@LAPTOP-AI4VE3LU:~$ nano zombie.c  
krupa_bawane@LAPTOP-AI4VE3LU:~$ gcc zombie.c -o zombie  
krupa_bawane@LAPTOP-AI4VE3LU:~$ ./zombie &  
[1] 2792  
krupa_bawane@LAPTOP-AI4VE3LU:~$ Child process existing...
```

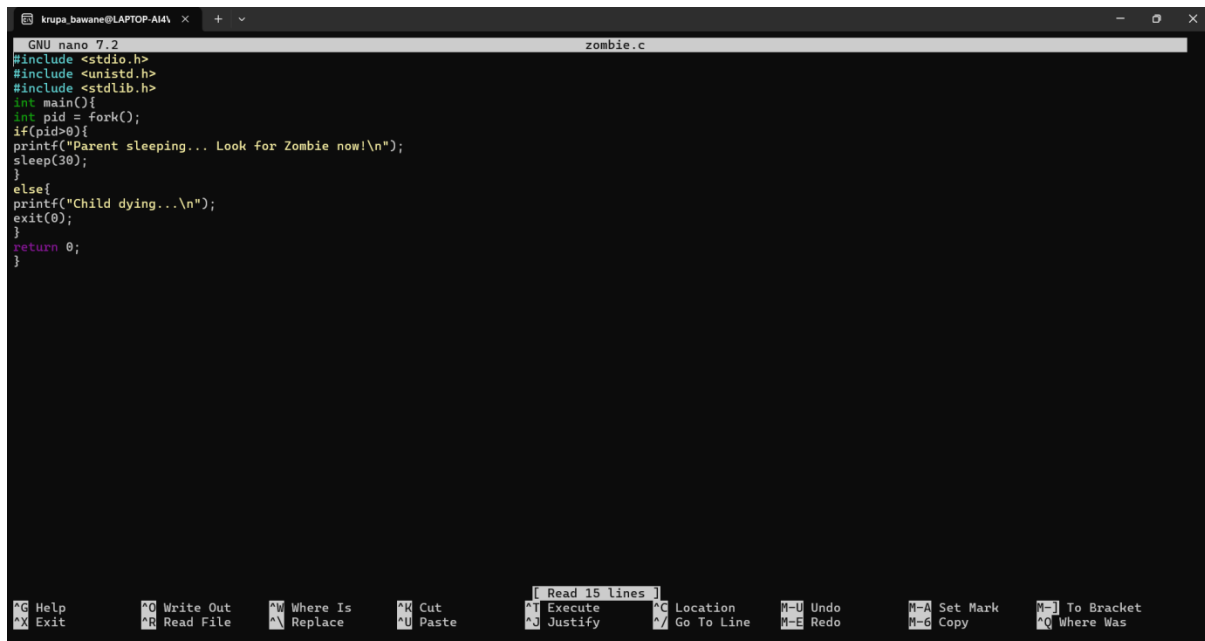
```
krupa_bawane@LAPTOP-AI4V: ~  
[1]+  Done                  ./zombie  
krupa_bawane@LAPTOP-AI4VE3LU:~$ ps -l | grep Z  
error: garbage option  
Usage:  
ps [options]  
Try 'ps --help <simple>|list|output|threads|misc|all>'  
or 'ps --help <s|l|o|t|m|a>'  
for additional help text.  
For more details see ps(1).  
krupa_bawane@LAPTOP-AI4VE3LU:~$ nano zombie.c  
krupa_bawane@LAPTOP-AI4VE3LU:~$ gcc zombie.c -o zombie  
krupa_bawane@LAPTOP-AI4VE3LU:~$ ./zombie &  
[1] 2809  
krupa_bawane@LAPTOP-AI4VE3LU:~$ Parent sleeping... Look for Zombie now!  
Child dying...  
ps -l | grep Z  
error: garbage option  
Usage:  
ps [options]  
Try 'ps --help <simple>|list|output|threads|misc|all>'  
or 'ps --help <s|l|o|t|m|a>'  
for additional help text.  
For more details see ps(1).  
krupa_bawane@LAPTOP-AI4VE3LU:~$ ps -el | grep Z  
F S UID PID PPID C PRI NI ADDR SZ WCHAN TTY TIME CMD  
[1]+  Done                  ./zombie  
krupa_bawane@LAPTOP-AI4VE3LU:~$ ./zombie &  
[1] 2821  
krupa_bawane@LAPTOP-AI4VE3LU:~$ Parent sleeping... Look for Zombie now!  
Child dying...  
ps -el | grep Z  
F S UID PID PPID C PRI NI ADDR SZ WCHAN TTY TIME CMD  
1 Z 1000 2822 2821 0 80 0 - 0 - pts/2 00:00:00 zombie  
krupa_bawane@LAPTOP-AI4VE3LU:~$
```

Using fork() system:

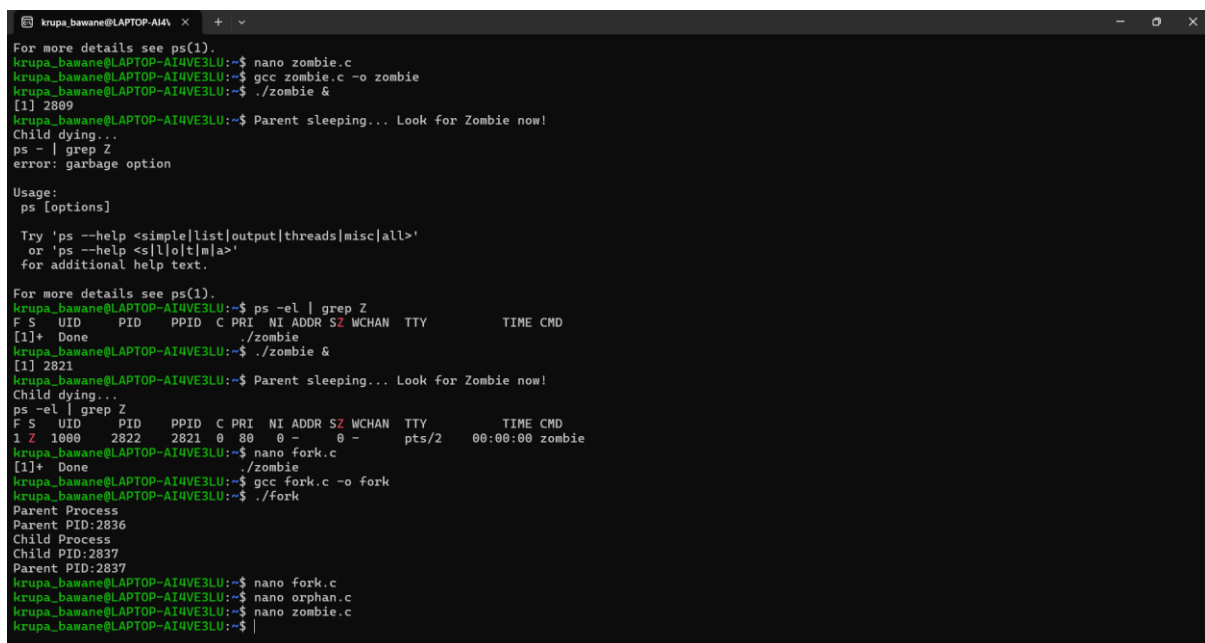
Child Process creation

Parent process creation

PPID AND PID



```
GNU nano 7.2 zombie.c
#include <stdio.h>
#include <unistd.h>
#include <stdlib.h>
int main(){
    int pid = fork();
    if(pid>0){
        printf("Parent sleeping... Look for Zombie now!\n");
        sleep(30);
    }
    else{
        printf("Child dying...\n");
        exit(0);
    }
    return 0;
}
```



```
For more details see ps(1).
krupa_bawane@LAPTOP-AI4V:~$ nano zombie.c
krupa_bawane@LAPTOP-AI4V:~$ gcc zombie.c -o zombie
krupa_bawane@LAPTOP-AI4V:~$ ./zombie &
[1] 2809
krupa_bawane@LAPTOP-AI4V:~$ Parent sleeping... Look for Zombie now!
Child dying...
ps -l | grep Z
error: garbage option

Usage:
ps [options]

Try 'ps --help <simple|list|output|threads|misc|all>'
or 'ps --help <s|l|o|t|m|a>'
for additional help text.

For more details see ps(1).
krupa_bawane@LAPTOP-AI4V:~$ ps -el | grep Z
F S UID PID PPID C PRI NI ADDR SZ WCHAN TTY TIME CMD
[1]+  Done                ./zombie
krupa_bawane@LAPTOP-AI4V:~$ ./zombie &
[1] 2821
krupa_bawane@LAPTOP-AI4V:~$ Parent sleeping... Look for Zombie now!
Child dying...
ps -el | grep Z
F S UID PID PPID C PRI NI ADDR SZ WCHAN TTY TIME CMD
1 Z 1000 2822 2821 0 80 0 - 0 - pts/2 00:00:00 zombie
krupa_bawane@LAPTOP-AI4V:~$ nano fork.c
[1]+  Done                ./zombie
krupa_bawane@LAPTOP-AI4V:~$ gcc fork.c -o fork
krupa_bawane@LAPTOP-AI4V:~$ ./fork
Parent Process
Parent PID:2836
Child Process
Child PID:2837
Parent PID:2837
krupa_bawane@LAPTOP-AI4V:~$ nano fork.c
krupa_bawane@LAPTOP-AI4V:~$ nano orphan.c
krupa_bawane@LAPTOP-AI4V:~$ nano zombie.c
krupa_bawane@LAPTOP-AI4V:~$
```