

```

Feb 4 4:19 PM
m309@m309-BY-OEM:~ ps -aux
m309   3356  0.0  0.5 843752 41816 ?          Ssl  15:35  0:00 /usr/libexec/xdg-deskt
m309   3372  0.0  0.3 417220 25284 ?          Ssl  15:35  0:00 /usr/libexec/xdg-deskt
m309   3379  0.2  0.8 2946740 66772 ?          Sl   15:35  0:00 gjs /usr/share/gnome-sh
m309   3408  0.0  0.1 39136 11940 ?          Ss   15:35  0:00 /snap/snapd-desktop-int
m309   3492  0.0  0.3 429628 30988 ?          Sl   15:35  0:00 /snap/snapd-desktop-int
m309   3508  0.0  0.0 236304 6588 ?          Ssl  15:35  0:00 /usr/libexec/gvfsd-meta
root    3611  0.0  0.0      0 0 ?              I    15:35  0:00 [kworker/1:4]
m309   3819  0.0  0.3 568156 30992 ?          Sl   15:36  0:00 /usr/bin/update-notifie
m309   4620  0.2  0.2 31900 19168 ?          S    15:39  0:00 /usr/bin/python3 /usr/b
m309   4623  0.5  0.3 458392 28012 ?          Sl   15:39  0:00 /usr/bin/gnome-terminal
m309   4629  2.8  0.6 553464 52716 ?          Ssl  15:39  0:00 /usr/libexec/gnome-term
m309   4639  0.0  0.0 11024 5272 pts/0        Ss   15:39  0:00 bash
root    4692  1.3  0.0 17280 7472 ?          Ss   15:39  0:00 /usr/lib/systemd/system
root    4695  2.7  0.0 2892 1716 ?          Ss   15:39  0:00 /bin/sh /snap/cups/1142
root    4747  0.0  0.0 3212 1992 ?          S    15:39  0:00 sleep 1
m309   4748 100  0.0 14972 5500 pts/0        R+  15:39  0:00 ps -aux
m309@m309-BY-OEM:~$ pkill firefox
m309@m309-BY-OEM:~$ killall firefox
firefox: no process found
m309@m309-BY-OEM:~$ ps -aux | grep firefox
m309   4982  0.0  0.0 9144 2268 pts/0        S+  15:40  0:00 grep --color=auto firefox
m309@m309-BY-OEM:~$ kill 2345
bash: kill: (2345) - No such process
m309@m309-BY-OEM:~$ kill -9 2345
bash: kill: (2345) - No such process
m309@m309-BY-OEM:~$ nano orphan.c
m309@m309-BY-OEM:~$ gcc orphan.c -o orphan
In function '':  

warning: implicit declaration of function ''; did you mean ' '? [-Wimpli
cit-function-declaration]
14 |     printf("Child Process ID: %d\n",getpid());

```



Feb 4 3:56 PM

m309@m309-BY-OEM: ~

Q E - d x

```
m309      3286  0.0  0.1  609444  9188 ?          Sl   15:35  0:00 /usr/libexec/gvfsd-tras
m309      3319  0.0  0.2  734480  23544 ?          SNsl 15:35  0:00 /usr/libexec/tracker-mi
m309      3340  0.0  0.3  2588956  27020 ?          Sl   15:35  0:00 /usr/bin/gjs -m /usr/sh
m309      3351  0.0  0.1  701624  14444 ?          Ssl  15:35  0:00 /usr/libexec/xdg-deskt
m309      3356  0.0  0.5  843752  41816 ?          Ssl  15:35  0:00 /usr/libexec/xdg-deskt
m309      3372  0.0  0.3  417220  25284 ?          Ssl  15:35  0:00 /usr/libexec/xdg-deskt
m309      3379  0.2  0.8  2946740  66772 ?          Sl   15:35  0:00 gjs /usr/share/gnome-sh
m309      3408  0.0  0.1  39136  11940 ?          Ss   15:35  0:00 /snap/snapd-desktop-int
m309      3492  0.0  0.3  429628  30988 ?          Sl   15:35  0:00 /snap/snapd-desktop-int
m309      3508  0.0  0.0  236304  6588 ?          Ssl  15:35  0:00 /usr/libexec/gvfsd-meta
root     3611  0.0  0.0    0    0 ?          I    15:35  0:00 [kworker/1:4]
m309      3819  0.0  0.3  568156  30992 ?          Sl   15:36  0:00 /usr/bin/update-notifie
m309      4620  0.2  0.2  31900  19168 ?          S    15:39  0:00 /usr/bin/python3 /usr/b
m309      4623  0.5  0.3  458392  28012 ?          Sl   15:39  0:00 /usr/bin/gnome-terminal
m309      4629  2.8  0.6  553464  52716 ?          Ssl  15:39  0:00 /usr/libexec/gnome-term
m309      4639  0.0  0.0  11024  5272 pts/0        Ss   15:39  0:00 bash
root     4692  1.3  0.0  17280  7472 ?          Ss   15:39  0:00 /usr/lib/systemd/system
root     4695  2.7  0.0  2892  1716 ?          Ss   15:39  0:00 /bin/sh /snap/cups/1142
root     4747  0.0  0.0  3212  1992 ?          S    15:39  0:00 sleep 1
m309      4748  100  0.0  14972  5500 pts/0        R+  15:39  0:00 ps -aux
m309@m309-BY-OEM:~$ pkill firefox
m309@m309-BY-OEM:~$ killall firefox
firefox: no process found
m309@m309-BY-OEM:~$ ps -aux | grep firefox
m309      4982  0.0  0.0  9144  2268 pts/0        S+  15:40  0:00 grep --color=auto firefox
m309@m309-BY-OEM:~$ kill 2345
bash: kill: (2345) - No such process
m309@m309-BY-OEM:~$ kill -9 2345
bash: kill: (2345) - No such process
m309@m309-BY-OEM:~$ nano orphan.c
m309@m309-BY-OEM:~$
```

root	51	0.0	0.0	0	0	?	SN	15:34	0:00	[ksmd]	
root	52	0.0	0.0	0	0	?	SN	15:34	0:00	[khugepaged]	
root	53	0.0	0.0	0	0	?	I<	15:34	0:00	[kworker/R-kintegrityd]	
root	54	0.0	0.0	0	0	?	I<	15:34	0:00	[kworker/R-kblockd]	
root	55	0.0	0.0	0	0	?	I<	15:34	0:00	[kworker/R-blkcg_punt_b]	
root	56	0.0	0.0	0	0	?	I	15:34	0:00	[kworker/1:1-cgroup_des]	
root	57	0.0	0.0	0	0	?	S	15:34	0:00	[irq/9-acpi]	
root	58	0.0	0.0	0	0	?	I	15:34	0:00	[kworker/2:1-cgroup_des]	
root	59	0.0	0.0	0	0	?	I<	15:34	0:00	[kworker/R-tpm_dev_wq]	
root	60	0.0	0.0	0	0	?	I<	15:34	0:00	[kworker/R-ata_sff]	
root	61	0.0	0.0	0	0	?	I<	15:34	0:00	[kworker/R-md]	
root	62	0.0	0.0	0	0	?	I<	15:34	0:00	[kworker/R-md_bitmap]	
root	63	0.0	0.0	0	0	?	I<	15:34	0:00	[kworker/R-edac-poller]	
root	64	0.0	0.0	0	0	?	I<	15:34	0:00	[kworker/R-devfreq_wq]	
root	65	0.0	0.0	0	0	?	S	15:34	0:00	[watchdogd]	
root	66	0.0	0.0	0	0	?	I<	15:34	0:00	[kworker/1:1H-kblockd]	
root	67	0.0	0.0	0	0	?	S	15:34	0:00	[kswapd0]	
root	68	0.0	0.0	0	0	?	S	15:34	0:00	[ecryptfs-kthread]	
root	69	0.0	0.0	0	0	?	I<	15:34	0:00	[kworker/R-kthrotld]	
root	70	0.0	0.0	0	0	?	S	15:34	0:00	[irq/121-aerdrv]	
root	71	0.0	0.0	0	0	?	I<	15:34	0:00	[kworker/R-acpi_thermal]	
root	72	0.0	0.0	0	0	?	I<	15:34	0:00	[kworker/R-mld]	
root	73	0.0	0.0	0	0	?	I<	15:34	0:00	[kworker/R-ipv6_addrcon]	
root	75	0.0	0.0	0	0	?	I	15:34	0:00	[kworker/u16:3-loop7]	
root	81	0.0	0.0	0	0	?	I<	15:34	0:00	[kworker/R-kstrp]	
root	82	0.0	0.0	0	0	?	I	15:34	0:00	[kworker/3:1-events]	
root	84	0.0	0.0	0	0	?	D<	15:34	0:00	[kworker/u17:0+i915_fli]	
root	97	0.0	0.0	0	0	?	I<	15:34	0:00	[kworker/R-charger mana]	
root	98	0.0	0.0	0	0	?	I<	15:34	0:00	[kworker/0:1H-kblockd]	
root	99	0.0	0.0	0	0	?	I	15:34	0:00	[kworker/2:2-i915-unord]	
root	122	0.0	0.0	0	0	?	I<	15:34	0:00	[kworker/3:1H-kblockd]	

```
Feb 4 3:56 PM
m309@m309-BY-OEM: ~
m309      3286  0.0  0.1 609444  9188 ?          Sl   15:35  0:00 /usr/libexec/gvfsd-tras
m309      3319  0.0  0.2 734480  23544 ?          SNSl  15:35  0:00 /usr/libexec/tracker-mi
m309      3340  0.0  0.3 2588956  27020 ?          Sl   15:35  0:00 /usr/bin/gjs -m /usr/sh
m309      3351  0.0  0.1 701624  14444 ?          Ssl  15:35  0:00 /usr/libexec/xdg-desktop
m309      3356  0.0  0.5 843752  41816 ?          Ssl  15:35  0:00 /usr/libexec/xdg-desktop
m309      3372  0.0  0.3 417220  25284 ?          Ssl  15:35  0:00 /usr/libexec/xdg-desktop
m309      3379  0.2  0.8 2946740  66772 ?          Sl   15:35  0:00 gjs /usr/share/gnome-sh
m309      3408  0.0  0.1 39136  11940 ?          Ss   15:35  0:00 /snap/snapd-desktop-int
m309      3492  0.0  0.3 429628  30988 ?          Sl   15:35  0:00 /snap/snapd-desktop-int
m309      3508  0.0  0.0 236304  6588 ?          Ssl  15:35  0:00 /usr/libexec/gvfsd-meta
root      3611  0.0  0.0    0    0 ?          I    15:35  0:00 [kworker/1:4]
m309      3819  0.0  0.3 568156  30992 ?          Sl   15:36  0:00 /usr/bin/update-notifier
m309      4620  0.2  0.2 31900  19168 ?          S    15:39  0:00 /usr/bin/python3 /usr/b
m309      4623  0.5  0.3 458392  28012 ?          Sl   15:39  0:00 /usr/bin/gnome-terminal
m309      4629  2.8  0.6 553464  52716 ?          Ssl  15:39  0:00 /usr/libexec/gnome-term
m309      4639  0.0  0.0 11024  5272 pts/0        Ss   15:39  0:00 bash
root      4692  1.3  0.0 17280  7472 ?          Ss   15:39  0:00 /usr/lib/systemd/system
root      4695  2.7  0.0 2892  1716 ?          Ss   15:39  0:00 /bin/sh /snap/cups/1142
root      4747  0.0  0.0 3212  1992 ?          S    15:39  0:00 sleep 1
m309      4748  100  0.0 14972  5500 pts/0        R+  15:39  0:00 ps -aux
m309@m309-BY-OEM:~$ pkill firefox
m309@m309-BY-OEM:~$ killall firefox
firefox: no process found
m309@m309-BY-OEM:~$ ps -aux | grep firefox
m309      4982  0.0  0.0  9144  2268 pts/0        S+   15:40  0:00 grep --color=auto firefox
m309@m309-BY-OEM:~$ kill 2345
bash: kill: (2345) - No such process
m309@m309-BY-OEM:~$ kill -9 2345
bash: kill: (2345) - No such process
m309@m309-BY-OEM:~$ nano orphan.c
m309@m309-BY-OEM:~$
```

Feb 4 4:06 PM

m309@m309-BY-OEM: ~

```
m309      4629  2.8  0.6  553464  52716 ?          Ssl   15:39  0:00 /usr/libexec/gnome-term
m309      4639  0.0  0.0  11024   5272 pts/0     Ss   15:39  0:00 bash
root     4692  1.3  0.0  17280   7472 ?          Ss   15:39  0:00 /usr/lib/systemd/system
root     4695  2.7  0.0  2892    1716 ?          Ss   15:39  0:00 /bin/sh /snap/cups/1142
root     4747  0.0  0.0  3212    1992 ?          S    15:39  0:00 sleep 1
m309      4748  100  0.0  14972   5500 pts/0     R+   15:39  0:00 ps -aux
m309@m309-BY-OEM:~$ pkill firefox
m309@m309-BY-OEM:~$ killall firefox
firefox: no process found
m309@m309-BY-OEM:~$ ps -aux | grep firefox
m309      4982  0.0  0.0   9144   2268 pts/0     S+   15:40  0:00 grep --color=auto firefox
m309@m309-BY-OEM:~$ kill 2345
bash: kill: (2345) - No such process
m309@m309-BY-OEM:~$ kill -9 2345
bash: kill: (2345) - No such process
m309@m309-BY-OEM:~$ nano orphan.c
m309@m309-BY-OEM:~$ gcc orphan.c -o orphan
      In function 'main':
      warning: implicit declaration of function 'getpaid' [-Wimplicit-function-declaration]
14 |         printf("Child Process ID: %d\n",getpaid());
|             ^
|             getpgid
/usr/bin/ld: /tmp/cc3sMs59.o: in function 'main':
orphan.c:(.text+0x47): undefined reference to 'getpaid'
/usr/bin/ld: orphan.c:(.text+0x67): undefined reference to 'getpaid'
collect2: error: ld returned 1 exit status
m309@m309-BY-OEM:~$ ./orphan
bash: ./orphan: No such file or directory
m309@m309-BY-OEM:~$ nano zombie.c
m309@m309-BY-OEM:~$
```



Feb 4 4:16 PM  
m309@m309-BY-OEM: ~

```
GNU nano 7.2          fork.c *
```

```
#include<stdio.h>
#include<unistd.h>

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

^G Help ^O Write Out ^W Where Is ^K Cut ^T Execute M-U Undo  
^X Exit ^R Read File ^V Replace ^U Paste ^J Justify ^C Location M-E Redo

```
Feb 4 4:18 PM
m309@m309-BY-OEM:~
```

bash: kill: (2345) - No such process

```
m309@m309-BY-OEM:~$ nano orphan.c
m309@m309-BY-OEM:~$ gcc orphan.c -o orphan
    In function 'main':
      warning: implicit declaration of function 'getpaid' [-Wimplicit-function-declaration]
14 |     printf("Child Process ID: %d\n", getpaid());
   |           ^~~~~
   |           getpid
/usr/bin/ld: /tmp/cc3sMs59.o: in function `main':
orphan.c:(.text+0x47): undefined reference to `getpaid'
/usr/bin/ld: orphan.c:(.text+0x67): undefined reference to `getpaid'
collect2: error: ld returned 1 exit status
m309@m309-BY-OEM:~$ ./orphan
bash: ./orphan: No such file or directory
m309@m309-BY-OEM:~$ nano zombie.c
m309@m309-BY-OEM:~$ gcc zombie.c -o zombie
m309@m309-BY-OEM:~$ ./zombie
Child Exit
m309@m309-BY-OEM:~$ ps -aux | grep Z
USER          PID %CPU %MEM    VSZ   RSS TTY      STAT START  TIME COMMAND
m309          11583  0.0  0.0   9144  2272 pts/0    S+   16:09   0:00 grep --color=auto Z
m309@m309-BY-OEM:~$ nano fork.c
m309@m309-BY-OEM:~$ gcc fork.c -o fork
m309@m309-BY-OEM:~$ ./fork
Child Process
PID: 13291
PPID: 13291
Parent Process
PID: 13290
m309@m309-BY-OEM:~$
```

Feb 4 4:16 PM

m309@m309-BY-OEM: ~

```
(GNU nano 7.2                               fork.c ~
#include<stdio.h>
#include<unistd.h>

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

^G Help ^O Write Out ^W Where Is ^X Cut ^T Execute  
^X Exit ^R Read File ^\ Replace ^V Paste ^C Location M-U Undo  
^/ Go To Line M-E Redo



Feb 4 4:18 PM

m309@m309-BY-OEM:~

```
m309@m309-BY-OEM:~$ ps -aux
USER      PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND
root        1  0.5  0.1  23652 14748 ?
root        2  0.0  0.0      0     0 ?          Ss  15:34  0:01 /sbin/init splash
root        3  0.0  0.0      0     0 ?          S  15:34  0:00 [kthreadd]
root        4  0.0  0.0      0     0 ?          I< 15:34  0:00 [kworker/R-rcu_gp]
root        5  0.0  0.0      0     0 ?          I< 15:34  0:00 [kworker/R-sync_wq]
root        6  0.0  0.0      0     0 ?          I< 15:34  0:00 [kworker/R-kvfree_rcu_r]
root        7  0.0  0.0      0     0 ?          I< 15:34  0:00 [kworker/R-slub_flushwq]
root        8  0.0  0.0      0     0 ?          I< 15:34  0:00 [kworker/R-netns]
root        9  0.0  0.0      0     0 ?          I  15:34  0:00 [kworker/0:0-rcu_gp]
root       10  0.0  0.0      0     0 ?          I< 15:34  0:00 [kworker/0:0H-events_hi]
root       11  0.0  0.0      0     0 ?          I  15:34  0:00 [kworker/0:1-cgroup_des]
root       12  0.0  0.0      0     0 ?          I  15:34  0:00 [kworker/u16:0-loop11]
root       13  0.0  0.0      0     0 ?          I< 15:34  0:00 [kworker/R-mm_percpu_wq]
root       14  0.0  0.0      0     0 ?          I  15:34  0:00 [rcu_tasks_kthread]
root       15  0.0  0.0      0     0 ?          I  15:34  0:00 [rcu_tasks_rude_kthread]
root       16  0.0  0.0      0     0 ?          I  15:34  0:00 [rcu_tasks_trace_kthrea
root       17  0.0  0.0      0     0 ?          S  15:34  0:00 [ksoftirqd/0]
root       18  0.0  0.0      0     0 ?          I  15:34  0:00 [rcu_preempt]
root       19  0.0  0.0      0     0 ?          S  15:34  0:00 [rcu_exp_par_gp_kthread]
root       20  0.0  0.0      0     0 ?          S  15:34  0:00 [rcu_exp_gp_kthread_wor
root       21  0.0  0.0      0     0 ?          S  15:34  0:00 [migration/0]
root       22  0.0  0.0      0     0 ?          S  15:34  0:00 [idle_inject/0]
root       23  0.0  0.0      0     0 ?          S  15:34  0:00 [cpuhp/0]
root       24  0.0  0.0      0     0 ?          S  15:34  0:00 [cpuhp/1]
root       25  0.0  0.0      0     0 ?          S  15:34  0:00 [idle_inject/1]
root       26  0.0  0.0      0     0 ?          S  15:34  0:00 [migration/1]
root       27  0.0  0.0      0     0 ?          S  15:34  0:00 [ksoftirqd/1]
root       28  0.0  0.0      0     0 ?          I  15:34  0:00 [kworker/1:0-events]
root       29  0.0  0.0      0     0 ?          I< 15:34  0:00 [kworker/1:0H-events_hi]
```

Feb 4 3:57 PM

m309@m309-BY-OEM:~

```
m309      4623  0.5  0.3 458392 28012 ?          Sl    15:39  0:00 /usr/bin/gnome-terminal
m309      4629  2.8  0.6 553464 52716 ?          Ssl   15:39  0:00 /usr/libexec/gnome-term
m309      4639  0.0  0.0 11024  5272 pts/0        Ss    15:39  0:00 bash
root     4692  1.3  0.0 17280  7472 ?          Ss    15:39  0:00 /usr/lib/systemd/system
root     4695  2.7  0.0 2892   1716 ?          Ss    15:39  0:00 /bin/sh /snap/cups/1142
root     4747  0.0  0.0 3212   1992 ?          S     15:39  0:00 sleep 1
m309      4748  100 0.0 14972  5500 pts/0        R+   15:39  0:00 ps -aux
m309@m309-BY-OEM:~$ pkill firefox
m309@m309-BY-OEM:~$ killall firefox
firefox: no process found
m309@m309-BY-OEM:~$ ps -aux | grep firefox
m309      4982  0.0  0.0  9144  2268 pts/0      S+   15:40  0:00 grep --color=auto firefox
m309@m309-BY-OEM:~$ kill 2345
bash: kill: (2345) - No such process
m309@m309-BY-OEM:~$ kill -9 2345
bash: kill: (2345) - No such process
m309@m309-BY-OEM:~$ nano orphan.c
m309@m309-BY-OEM:~$ gcc orphan.c -o orphan
In function '':  
warning: implicit declaration of function 'getpaid'; did you mean 'getpgid'? [-Wimplicit-function-declaration]
14 |     printf("Child Process ID: %d\n",getpaid());
|           ^
|           getpgid
/usr/bin/ld: /tmp/cc3sMs59.o: in function `main':
orphan.c:(.text+0x47): undefined reference to `getpaid'
/usr/bin/ld: orphan.c:(.text+0x67): undefined reference to `getpaid'
collect2: error: ld returned 1 exit status
m309@m309-BY-OEM:~$ ./orphan
bash: ./orphan: No such file or directory
m309@m309-BY-OEM:~$
```

