

Міністерство освіти і науки України
Національний технічний університет України
"Київський політехнічний інститут імені Ігоря Сікорського"
Фізико-технічний інститут

ОПЕРАЦІЙНІ СИСТЕМИ

Комп'ютерний практикум

Робота № 5

Варіант 8

Виконав:

Студент групи ФБ-95

Прохоренко Я.Ю.

Процеси в ОС UNIX і керування ними

Мета: Оволодіння практичними навичками роботи з процесами — створення і знищення, керування процесами та їх аналіз

Operating System: Ubuntu 20.10

Kernel: Linux 5.8.0-43-generic

Architecture: x86-64

Дата виконання: 18.02.2021

```
augfitzr@ubuntu:~$ ps -u augfitzr
  PID TTY          TIME CMD
 1638 ?        00:00:00 systemd
 1639 ?        00:00:00 (sd-pam)
 1645 ?        00:00:06 pulseaudio
 1647 ?        00:00:00 tracker-miner-f
 1650 ?        00:00:00 gnome-keyring-d
 1654 ?        00:00:01 dbus-daemon
 1670 ?        00:00:00 gvfsd
 1675 ?        00:00:00 gvfsd-fuse
 1678 ?        00:00:00 gvfs-udisks2-vo
 1687 tty2      00:00:00 gdm-x-session
 1689 tty2      00:00:31 Xorg
 1692 ?        00:00:00 gvfs-goa-volume
 1697 ?        00:00:00 goa-daemon
 1704 ?        00:00:00 goa-identity-se
 1709 ?        00:00:00 gvfs-mtp-volume
 1716 ?        00:00:00 gvfs-afc-volume
 1721 ?        00:00:00 gvfs-gphoto2-vo
 1745 tty2      00:00:00 gnome-session-b
 1818 ?        00:00:00 ssh-agent
 1837 ?        00:00:00 gvfsd-metadata
 1841 ?        00:00:00 at-spi-bus-laun
 1846 ?        00:00:00 dbus-daemon
 1859 ?        00:00:00 gnome-session-c
 1866 ?        00:00:00 gnome-session-b
 1886 ?        00:00:49 gnome-shell
 1920 ?        00:00:00 ibus-daemon
 1930 ?        00:00:00 ibus-dconf
 1931 ?        00:00:02 ibus-extension-
 1935 ?        00:00:00 ibus-x11
 1937 ?        00:00:00 ibus-portal
 1956 ?        00:00:00 at-spi2-registr
 1985 ?        00:00:00 xdg-permission-
 1990 ?        00:00:00 gnome-shell-cal
 1999 ?        00:00:00 evolution-sourc
 2010 ?        00:00:00 evolution-calen
 2018 ?        00:00:00 dconf-service
```

```

augf1tzr@ubuntu:~$ ps -lxa | tee log
F  UID      PID      PPID  PRI  NI   VSZ   RSS  WCHAN  STAT TTY      TIME COMMAND
4    0         1         0   20   0 104480 13188 -        Ss   ?        0:06 /sbin/init auto noprompt
1    0         2         0   20   0     0     0 -        S    ?        0:00 [kthreadd]
1    0         3         2    0 -20     0     0 -        I<   ?        0:00 [rcu_gp]
1    0         4         2    0 -20     0     0 -        I<   ?        0:00 [rcu_par_gp]
1    0         6         2    0 -20     0     0 -        I<   ?        0:00 [kworker/0:0H-kblockd]
1    0         7         2   20   0     0     0 -        I    ?        0:00 [kworker/0:1-rcu_par_gp]
1    0         9         2    0 -20     0     0 -        I<   ?        0:00 [mm_percpu_wq]
1    0        10         2   20   0     0     0 -        S    ?        0:00 [ksoftirqd/0]
1    0        11         2   20   0     0     0 -        I    ?        0:01 [rcu_sched]
1    0        12         2  -100  -     0     0 -        S    ?        0:00 [migration/0]
5    0        13         2  -51  -     0     0 -        S    ?        0:00 [idle_inject/0]
1    0        14         2   20   0     0     0 -        S    ?        0:00 [cpuhp/0]
1    0        15         2   20   0     0     0 -        S    ?        0:00 [cpuhp/1]
5    0        16         2  -51  -     0     0 -        S    ?        0:00 [idle_inject/1]
1    0        17         2  -100  -     0     0 -        S    ?        0:00 [migration/1]
1    0        18         2   20   0     0     0 -        S    ?        0:00 [ksoftirqd/1]
1    0        20         2    0 -20     0     0 -        I<   ?        0:00 [kworker/1:0H-kblockd]
5    0        21         2   20   0     0     0 -        S    ?        0:00 [kdevtmpfs]
1    0        22         2    0 -20     0     0 -        I<   ?        0:00 [netns]
1    0        23         2   20   0     0     0 -        S    ?        0:00 [rcu_tasks_kthre]
1    0        24         2   20   0     0     0 -        S    ?        0:00 [rcu_tasks_rude_]
1    0        25         2   20   0     0     0 -        S    ?        0:00 [rcu_tasks_trace]
1    0        26         2   20   0     0     0 -        S    ?        0:00 [kauditd]
1    0        27         2   20   0     0     0 -        I    ?        0:00 [kworker/0:2-events]
1    0        28         2   20   0     0     0 -        S    ?        0:00 [khungtaskd]
1    0        29         2   20   0     0     0 -        S    ?        0:00 [oom_reaper]
1    0        30         2    0 -20     0     0 -        I<   ?        0:00 [writeback]
1    0        31         2   20   0     0     0 -        S    ?        0:00 [kcompactd0]
1    0        32         2   25   5     0     0 -        SN   ?        0:00 [ksmd]
1    0        33         2   39  19     0     0 -        SN   ?        0:00 [khugepaged]
1    0        80         2    0 -20     0     0 -        I<   ?        0:00 [kintegrityd]
1    0        81         2    0 -20     0     0 -        I<   ?        0:00 [kblockd]
1    0        82         2    0 -20     0     0 -        I<   ?        0:00 [blkcg_punt_bio]
1    0        83         2    0 -20     0     0 -        I<   ?        0:00 [tpm_dev_wq]
1    0        84         2    0 -20     0     0 -        I<   ?        0:00 [ata_sff]
1    0        85         2    0 -20     0     0 -        I<   ?        0:00 [md]

```

```
augf1tzr@ubuntu:~$ ps aux
```

USER	PID	%CPU	%MEM	VSZ	RSS	TTY	STAT	START	TIME	COMMAND
root	1	0.9	0.3	104480	13188	?	Ss	14:26	0:06	/sbin/init au
root	2	0.0	0.0	0	0	?	S	14:26	0:00	[kthreadd]
root	3	0.0	0.0	0	0	?	I<	14:26	0:00	[rcu_gp]
root	4	0.0	0.0	0	0	?	I<	14:26	0:00	[rcu_par_gp]
root	6	0.0	0.0	0	0	?	I<	14:26	0:00	[kworker/0:0H
root	7	0.0	0.0	0	0	?	I	14:26	0:00	[kworker/0:1-
root	9	0.0	0.0	0	0	?	I<	14:26	0:00	[mm_percpu_wq
root	10	0.0	0.0	0	0	?	S	14:26	0:00	[ksoftirqd/0]
root	11	0.1	0.0	0	0	?	I	14:26	0:01	[rcu_sched]
root	12	0.0	0.0	0	0	?	S	14:26	0:00	[migration/0]
root	13	0.0	0.0	0	0	?	S	14:26	0:00	[idle_inject/
root	14	0.0	0.0	0	0	?	S	14:26	0:00	[cpuhp/0]
root	15	0.0	0.0	0	0	?	S	14:26	0:00	[cpuhp/1]
root	16	0.0	0.0	0	0	?	S	14:26	0:00	[idle_inject/
root	17	0.0	0.0	0	0	?	S	14:26	0:00	[migration/1]
root	18	0.0	0.0	0	0	?	S	14:26	0:00	[ksoftirqd/1]
root	20	0.0	0.0	0	0	?	I<	14:26	0:00	[kworker/1:0H
root	21	0.0	0.0	0	0	?	S	14:26	0:00	[kdevtmpfs]
root	22	0.0	0.0	0	0	?	I<	14:26	0:00	[netns]
root	23	0.0	0.0	0	0	?	S	14:26	0:00	[rcu_tasks_kt
root	24	0.0	0.0	0	0	?	S	14:26	0:00	[rcu_tasks_ru
root	25	0.0	0.0	0	0	?	S	14:26	0:00	[rcu_tasks_tr
root	26	0.0	0.0	0	0	?	S	14:26	0:00	[kauditd]
root	27	0.0	0.0	0	0	?	I	14:26	0:00	[kworker/0:2-
root	28	0.0	0.0	0	0	?	S	14:26	0:00	[khungtaskd]
root	29	0.0	0.0	0	0	?	S	14:26	0:00	[oom_reaper]
root	30	0.0	0.0	0	0	?	I<	14:26	0:00	[writeback]
root	31	0.0	0.0	0	0	?	S	14:26	0:00	[kcompactd0]
root	32	0.0	0.0	0	0	?	SN	14:26	0:00	[ksmd]
root	33	0.0	0.0	0	0	?	SN	14:26	0:00	[khugepaged]
root	80	0.0	0.0	0	0	?	I<	14:26	0:00	[kintegrityd]
root	81	0.0	0.0	0	0	?	I<	14:26	0:00	[kblockd]
root	82	0.0	0.0	0	0	?	I<	14:26	0:00	[blkcg_punt_b
root	83	0.0	0.0	0	0	?	I<	14:26	0:00	[tpm_dev_wq]
root	84	0.0	0.0	0	0	?	I<	14:26	0:00	[ata_sff]
root	85	0.0	0.0	0	0	?	I<	14:26	0:00	[md]

```
augf1tzr@ubuntu:~$ kill -9 9577
```


augfitzr@ubuntu:~\$ ps -lu augfitzr

F	S	UID	PID	PPID	C	PRI	NI	ADDR	SZ	WCHAN	TTY	TIME	CMD
4	S	1000	1638	1	0	80	0	- 5096	ep_pol	?		00:00:00	systemd
5	S	1000	1639	1638	0	80	0	- 26489	-	?		00:00:00	(sd-pam)
0	S	1000	1645	1638	1	69	-11	- 944460	do_pol	?		00:00:15	pulseaudio
0	S	1000	1647	1638	0	99	-	- 216744	do_pol	?		00:00:00	tracker-mi
1	S	1000	1650	1	0	80	0	- 62214	-	?		00:00:00	gnome-keyr
0	S	1000	1654	1638	0	80	0	- 2524	ep_pol	?		00:00:01	dbus-daemo
0	S	1000	1670	1638	0	80	0	- 62097	do_pol	?		00:00:00	gvfsd
0	S	1000	1675	1638	0	80	0	- 94586	futex_	?		00:00:00	gvfsd-fuse
0	S	1000	1678	1638	0	80	0	- 80924	do_pol	?		00:00:00	gvfs-udisk
4	S	1000	1687	1497	0	80	0	- 43381	do_pol	tty2		00:00:00	gdm-x-sess
4	S	1000	1689	1687	7	80	0	- 106153	ep_pol	tty2		00:01:05	Xorg
0	S	1000	1692	1638	0	80	0	- 61129	do_pol	?		00:00:00	gvfs-goa-v
0	S	1000	1697	1638	0	80	0	- 138889	do_pol	?		00:00:00	goa-daemon
0	S	1000	1704	1638	0	80	0	- 80860	do_pol	?		00:00:00	goa-identi
0	S	1000	1709	1638	0	80	0	- 61080	do_pol	?		00:00:00	gvfs-mtp-v
0	S	1000	1716	1638	0	80	0	- 80741	do_pol	?		00:00:00	gvfs-afc-v
0	S	1000	1721	1638	0	80	0	- 61681	do_pol	?		00:00:00	gvfs-gphot
0	S	1000	1745	1687	0	80	0	- 49508	do_pol	tty2		00:00:00	gnome-sess
1	S	1000	1818	1745	0	80	0	- 1509	-	?		00:00:00	ssh-agent
0	S	1000	1837	1638	0	80	0	- 42737	do_pol	?		00:00:00	gvfsd-meta
0	S	1000	1841	1638	0	80	0	- 76350	do_pol	?		00:00:00	at-spi-bus
0	S	1000	1846	1841	0	80	0	- 2070	ep_pol	?		00:00:00	dbus-daemo
0	S	1000	1859	1638	0	80	0	- 24891	do_pol	?		00:00:00	gnome-sess
0	S	1000	1866	1638	0	80	0	- 174715	do_pol	?		00:00:00	gnome-sess
0	S	1000	1886	1638	10	80	0	- 1022678	do_pol	?		00:01:30	gnome-shel
0	S	1000	1920	1886	0	80	0	- 99178	do_pol	?		00:00:00	ibus-daemo
0	S	1000	1930	1920	0	80	0	- 61294	do_pol	?		00:00:00	ibus-dconf
0	S	1000	1931	1920	0	80	0	- 71171	do_pol	?		00:00:02	ibus-exten
0	S	1000	1935	1638	0	80	0	- 51640	do_pol	?		00:00:00	ibus-x11
0	S	1000	1937	1638	0	80	0	- 79723	do_pol	?		00:00:00	ibus-porta
0	S	1000	1956	1638	0	80	0	- 40925	do_pol	?		00:00:00	at-spi2-re
0	S	1000	1985	1638	0	80	0	- 61060	do_pol	?		00:00:00	xdg-permis
0	S	1000	1990	1638	0	80	0	- 145432	do_pol	?		00:00:00	gnome-shel
0	S	1000	1999	1638	0	80	0	- 100123	do_pol	?		00:00:00	evolution-
0	S	1000	2010	1638	0	80	0	- 212263	do_pol	?		00:00:00	evolution-
0	S	1000	2018	1638	0	80	0	- 39048	do_pol	?		00:00:00	dconf-serv
0	S	1000	2021	1638	0	80	0	- 307555	do_pol	?		00:00:00	gnome-shel


```

augfitzr@ubuntu:~$ find / -name "*c*" -print > file 2> /dev/null &
[1] 9839
augfitzr@ubuntu:~$ dd if=/dev/urandom of=/dev/null &
[2] 9842
augfitzr@ubuntu:~$ kill -STOP 9842
[1]   Exit 1                  find / -name "*c*" -print > file 2> /dev/null

[2]+  Stopped                  dd if=/dev/urandom of=/dev/null
augfitzr@ubuntu:~$ jobs
[2]+  Stopped                  dd if=/dev/urandom of=/dev/null
augfitzr@ubuntu:~$ kill -cont 9842
augfitzr@ubuntu:~$ jobs
[2]+  Running                  dd if=/dev/urandom of=/dev/null &
augfitzr@ubuntu:~$ fg 2
dd if=/dev/urandom of=/dev/null
^Z
[2]+  Stopped                  dd if=/dev/urandom of=/dev/null
augfitzr@ubuntu:~$ renice -n 5 9842
9842 (process ID) old priority 0, new priority 5
augfitzr@ubuntu:~$ █

```

```

top - 14:47:25 up 21 min,  1 user,  load average: 0.50, 0.67, 0.74
Tasks: 295 total,  5 running, 289 sleeping,  1 stopped,  0 zombie
%Cpu(s): 10.1 us,  7.6 sy,  0.0 ni, 81.9 id,  0.0 wa,  0.0 hi,  0.4 si,  0.0 st
MiB Mem :  3903.7 total,  164.0 free,  1844.0 used,  1895.7 buff/cache
MiB Swap:  1873.3 total,  1854.7 free,   18.6 used,  1759.6 avail Mem

```

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
1886	augfitzr	20	0	4091164	244396	99884	R	19.2	6.1	1:48.84	gnome-shell
1689	augfitzr	20	0	426580	143960	56608	S	9.6	3.6	1:19.01	Xorg
3274	augfitzr	20	0	829804	51440	38308	R	3.0	1.3	0:14.38	gnome-terminal-
1645	augfitzr	9	-11	3777840	19764	15980	S	1.7	0.5	0:22.91	pulseaudio
2865	augfitzr	20	0	1562140	279496	110696	S	1.7	7.0	0:40.81	Telegram
8808	augfitzr	20	0	1289660	219720	44500	R	1.7	5.5	0:44.80	shutter
3087	augfitzr	20	0	2714728	220596	151584	S	0.7	5.5	0:19.87	Web Content
9973	augfitzr	20	0	21508	4172	3368	R	0.7	0.1	0:00.30	top
676	systemd+	20	0	91408	6576	5700	S	0.3	0.2	0:00.19	systemd-timesyn
2883	augfitzr	20	0	501904	29060	20480	S	0.3	0.7	0:00.99	xdg-desktop-por
675	systemd+	20	0	25096	12236	8564	S	0.0	0.3	0:00.37	systemd-resolve
735	avahi	20	0	9460	3456	3104	S	0.0	0.1	0:00.09	avahi-daemon
737	message+	20	0	10740	6112	3804	S	0.0	0.2	0:01.88	dbus-daemon
768	syslog	20	0	221176	4960	3492	S	0.0	0.1	0:00.28	rsyslogd
785	avahi	20	0	9276	344	0	S	0.0	0.0	0:00.00	avahi-daemon
869	whoopsie	20	0	254180	15192	13408	S	0.0	0.4	0:00.05	whoopsie
875	kernoops	20	0	12136	416	0	S	0.0	0.0	0:00.00	kerneloops
880	kernoops	20	0	12136	444	0	S	0.0	0.0	0:00.00	kerneloops
1166	rtkit	21	1	153796	2960	2708	S	0.0	0.1	0:00.03	rtkit-daemon
1449	colord	20	0	255820	14212	9552	S	0.0	0.4	0:00.26	colord
1638	augfitzr	20	0	20384	9680	8264	S	0.0	0.2	0:00.85	systemd
1639	augfitzr	20	0	105956	3304	0	S	0.0	0.1	0:00.00	(sd-pam)
1647	augfitzr	39	19	866976	26052	16716	S	0.0	0.7	0:00.68	tracker-miner-f
1650	augfitzr	20	0	248856	6864	6468	S	0.0	0.2	0:00.12	gnome-keyring-d
1654	augfitzr	20	0	10096	6176	3836	S	0.0	0.2	0:01.75	dbus-daemon
1670	augfitzr	20	0	248388	7312	6852	S	0.0	0.2	0:00.11	gvfsd
1675	augfitzr	20	0	378344	5940	5940	S	0.0	0.1	0:00.01	gvfsd-fuse
1678	augfitzr	20	0	323696	8936	8076	S	0.0	0.2	0:00.26	gvfs-udisks2-vo
1687	augfitzr	20	0	173524	6300	6060	S	0.0	0.2	0:00.01	gdm-x-session
1692	augfitzr	20	0	244516	5800	5532	S	0.0	0.1	0:00.06	gvfs-goa-volume
1697	augfitzr	20	0	555556	33916	30492	S	0.0	0.8	0:00.08	goa-daemon

```
augfitzr@ubuntu:~$ at now +1 min
warning: commands will be executed using /bin/sh
at> cal 2018
at> <EOT>
job 14 at Fri Feb 19 07:07:00 2021
```

```
# Edit this file to introduce tasks to be run by cron.
#
# Each task to run has to be defined through a single line
# indicating with different fields when the task will be run
# and what command to run for the task
#
# To define the time you can provide concrete values for
# minute (m), hour (h), day of month (dom), month (mon),
# and day of week (dow) or use '*' in these fields (for 'any').
#
# Notice that tasks will be started based on the cron's system
# daemon's notion of time and timezones.
#
# Output of the crontab jobs (including errors) is sent through
# email to the user the crontab file belongs to (unless redirected).
#
# For example, you can run a backup of all your user accounts
# at 5 a.m every week with:
# 0 5 * * 1 tar -zcf /var/backups/home.tgz /home/
#
# For more information see the manual pages of crontab(5) and cron(8)
#
# m h  dom mon dow   command
0 0 * * 0 rm /home/augfitzr/*.profilebak
0 0 * * 0 rm /home/augfitzr/*.profiletmp
```

Висновки: о даній системі дуже зручно реалізована робота з процесами, там керування ними, завдяки чому дуже зручно контролювати запущені процеси. Також є можливість запускати певні дії через деякий час.