

**NATIONAL UNIVERSITY OF MODERN LANGUAGES**

**ISLAMABAD**



OPERATING SYSTEM (LAB)

**Lab Report: 10**

**Submitted to**  
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## Question # 01

- Use top to show the processes running on your machine.

```
junaidasifdev@Joni:~$ top
top - 13:37:58 up 37 min, 1 user, load average: 0.00, 0.00, 0.00
Tasks: 35 total, 1 running, 34 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 : 6897.3 total, 6311.3 free, 417.5 used, 168.5 buff/cache
MiB Swap: 2048.0 total, 2048.0 free, 0.0 used, 6269.3 avail Mem
```

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
1	root	20	0	170104	13052	8328	S	0.0	0.2	0:02.53	systemd
2	root	20	0	2616	1440	1320	S	0.0	0.0	0:00.10	init-systemd(Ub
7	root	20	0	2628	132	132	S	0.0	0.0	0:00.02	init
73	root	19	-1	52100	14964	13952	S	0.0	0.2	0:00.28	systemd-journal
96	root	20	0	22448	7832	3924	S	0.0	0.1	0:00.35	systemd-udev
97	systemd+	20	0	19084	7684	6800	S	0.0	0.1	0:00.14	systemd-network
267	root	20	0	3756	1860	1384	S	0.0	0.0	0:00.40	snapfuse
268	root	20	0	3516	180	20	S	0.0	0.0	0:00.00	snapfuse
269	root	20	0	3832	1424	1156	S	0.0	0.0	0:00.01	snapfuse
270	root	20	0	3516	176	16	S	0.0	0.0	0:00.00	snapfuse
273	root	20	0	3516	216	52	S	0.0	0.0	0:00.00	snapfuse
274	root	20	0	3744	1780	1264	S	0.0	0.0	0:08.58	snapfuse
281	systemd+	20	0	24764	12296	8184	S	0.0	0.2	0:00.16	systemd-resolve
284	root	20	0	241040	9228	8276	S	0.0	0.1	0:00.12	accounts-daemon
286	message+	20	0	7564	4348	3816	S	0.0	0.1	0:00.06	dbus-daemon
293	root	20	0	29620	18140	10132	S	0.0	0.3	0:00.29	networkd-dispat
294	root	20	0	236428	9084	8152	S	0.0	0.1	0:00.02	polkitd
295	syslog	20	0	224352	4556	3780	S	0.0	0.1	0:00.04	rsyslogd
296	root	20	0	1394768	41788	20452	S	0.0	0.6	0:01.22	snappd
302	root	20	0	17360	7880	6992	S	0.0	0.1	0:00.13	systemd-logind
303	root	20	0	395576	15856	11792	S	0.0	0.2	0:00.16	udisksd
317	root	20	0	318812	17308	11344	S	0.0	0.2	0:00.23	ModemManager
326	root	20	0	8548	2984	2764	S	0.0	0.0	0:00.00	cron
330	daemon	20	0	3804	2252	2076	S	0.0	0.0	0:00.00	atd
345	root	20	0	7360	2180	2056	S	0.0	0.0	0:00.12	agetty
348	root	20	0	5836	1760	1648	S	0.0	0.0	0:00.00	agetty
358	root	20	0	108136	20440	12776	S	0.0	0.3	0:00.27	unattended-upgr
470	root	20	0	5704	4152	3356	S	0.0	0.1	0:00.01	login
661	junaida+	20	0	19088	9492	8032	S	0.0	0.1	0:00.12	systemd
662	junaida+	20	0	171024	3376	4	S	0.0	0.0	0:00.00	(sd-pam)
670	junaida+	20	0	10024	4952	3332	S	0.0	0.1	0:00.05	bash
976	root	20	0	2624	124	0	S	0.0	0.0	0:00.00	SessionLeader
977	root	20	0	2624	128	0	S	0.0	0.0	0:00.00	Relay(982)

- Make top sort by memory usage, so that the most memory-hungry processes appear at the top.

While inside top, press Shift+m to sort processes by **memory usage**.

- The most memory-hungry processes will now appear at the top.

```
junaidasifdev@Joni:~$ top
top - 13:39:49 up 39 min, 1 user, load average: 0.00, 0.00, 0.00
Tasks: 36 total, 1 running, 34 sleeping, 1 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 : 6897.3 total, 6306.7 free, 422.1 used, 168.5 buff/cache
MiB Swap: 2048.0 total, 2048.0 free, 0.0 used. 6264.7 avail Mem
```

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
296	root	20	0	1394768	41788	20452	S	0.0	0.6	0:01.23	snappd
358	root	20	0	108136	20440	12776	S	0.0	0.3	0:00.27	unattended-upgr
293	root	20	0	29620	18140	10132	S	0.0	0.3	0:00.29	networkd-dispat
317	root	20	0	318812	17308	11344	S	0.0	0.2	0:00.23	ModemManager
303	root	20	0	395576	15856	11792	S	0.0	0.2	0:00.16	udisksd
73	root	19	-1	52100	14964	13952	S	0.0	0.2	0:00.28	systemd-journal
1	root	20	0	170104	13052	8328	S	0.0	0.2	0:02.53	systemd
281	systemd+	20	0	24764	12296	8184	S	0.0	0.2	0:00.16	systemd-resolve
661	junaida+	20	0	19088	9492	8032	S	0.0	0.1	0:00.12	systemd
284	root	20	0	241040	9228	8276	S	0.0	0.1	0:00.12	accounts-daemon
294	root	20	0	236428	9084	8152	S	0.0	0.1	0:00.02	polkitd
302	root	20	0	17360	7880	6992	S	0.0	0.1	0:00.13	systemd-logind
96	root	20	0	22448	7832	3924	S	0.0	0.1	0:00.35	systemd-udevd
97	systemd+	20	0	19084	7684	6800	S	0.0	0.1	0:00.14	systemd-network
982	junaida+	20	0	10048	5016	3300	S	0.0	0.1	0:00.13	bash
670	junaida+	20	0	10024	4952	3332	S	0.0	0.1	0:00.05	bash
295	syslog	20	0	224352	4556	3780	S	0.0	0.1	0:00.04	rsyslogd
286	message+	20	0	7564	4348	3816	S	0.0	0.1	0:00.06	dbus-daemon
470	root	20	0	5704	4152	3356	S	0.0	0.1	0:00.01	login
1004	junaida+	20	0	10900	3704	3164	R	0.0	0.1	0:00.03	top
998	junaida+	20	0	11016	3672	3160	T	0.0	0.1	0:00.07	top
662	junaida+	20	0	171024	3376	4	S	0.0	0.0	0:00.00	(sd-pam)
326	root	20	0	8548	2984	2764	S	0.0	0.0	0:00.00	cron
330	daemon	20	0	3804	2252	2076	S	0.0	0.0	0:00.00	atd
345	root	20	0	7360	2180	2056	S	0.0	0.0	0:00.12	agetty
267	root	20	0	3756	1860	1384	S	0.0	0.0	0:00.40	snappfuse
274	root	20	0	3744	1780	1264	S	0.0	0.0	0:03.58	snappfuse
348	root	20	0	5836	1760	1648	S	0.0	0.0	0:00.00	agetty
2	root	20	0	2616	1440	1320	S	0.0	0.0	0:00.10	init-systemd(Ub
269	root	20	0	3832	1424	1156	S	0.0	0.0	0:00.01	snappfuse
273	root	20	0	3516	216	52	S	0.0	0.0	0:00.00	snappfuse
268	root	20	0	3516	180	20	S	0.0	0.0	0:00.00	snappfuse
270	root	20	0	3516	176	16	S	0.0	0.0	0:00.00	snappfuse
7	root	20	0	2628	132	132	S	0.0	0.0	0:00.02	init
977	root	20	0	2624	128	0	S	0.0	0.0	0:00.00	Relay(982)
976	root	20	0	2624	124	0	S	0.0	0.0	0:00.00	SessionLeader

- Restrict the display to show only processes owned by you.

```
junaidasifdev@Joni:~$ top -u junaidasifdev
top - 13:43:34 up 42 min, 1 user, load average: 0.00, 0.00, 0.00
Tasks: 36 total, 1 running, 34 sleeping, 1 stopped, 0 zombie
%Cpu(s): 0.0 us, 0.2 sy, 0.0 ni, 99.8 id, 0.0 wa, 0.0 hi, 0.0 si, 0.0 st
MiB Mem : 6897.3 total, 6306.3 free, 422.1 used, 168.9 buff/cache
MiB Swap: 2048.0 total, 2048.0 free, 0.0 used. 6264.5 avail Mem
```

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
661	junaida+	20	0	19088	9492	8032	S	0.0	0.1	0:00.12	systemd
662	junaida+	20	0	171024	3376	4	S	0.0	0.0	0:00.00	(sd-pam)
670	junaida+	20	0	10024	4952	3332	S	0.0	0.1	0:00.05	bash
982	junaida+	20	0	10048	5016	3300	S	0.0	0.1	0:00.15	bash
998	junaida+	20	0	11016	3672	3160	T	0.0	0.1	0:00.07	top
1015	junaida+	20	0	10904	3784	3216	R	0.0	0.1	0:00.00	top

- Try killing one of your processes (make sure it's nothing important).

```
junaidasifdev@Joni:~$ kill 982
junaidasifdev@Joni:~$ |
```

- Display a list of all the processes running on the machine using ps (displaying the full command line for them).

```
junaidasifdev@Joni:~$ ps -ef
UID          PID    PPID  C STIME TTY          TIME CMD
root         1        0  0 13:05 ?        00:00:02 /sbin/init
root         2        1  0 13:05 ?        00:00:00 /init
root         7        2  0 13:05 ?        00:00:00 plan9 --control-socket 6 --log-level 4 --server-fd 7 --pipe-fd 9 --log-truncate
root        73        1  0 13:06 ?        00:00:00 /lib/systemd/systemd-journald
root        96        1  0 13:06 ?        00:00:00 /lib/systemd/systemd-udev
systemd+    97        1  0 13:06 ?        00:00:00 /lib/systemd/systemd-networkd
root       267        1  0 13:06 ?        00:00:00 snapfuse /var/lib/snapd/snaps/core20_2434.snap /snap/core20/2434 -o ro,nodev,allow_other,suid
root       268        1  0 13:06 ?        00:00:00 snapfuse /var/lib/snapd/snaps/snapd_21759.snap /snap/snapd/21759 -o ro,nodev,allow_other,suid
root       269        1  0 13:06 ?        00:00:00 snapfuse /var/lib/snapd/snaps/lxd_29619.snap /snap/lxd/29619 -o ro,nodev,allow_other,suid
root       270        1  0 13:06 ?        00:00:00 snapfuse /var/lib/snapd/snaps/lxd_24061.snap /snap/lxd/24061 -o ro,nodev,allow_other,suid
root       273        1  0 13:06 ?        00:00:00 snapfuse /var/lib/snapd/snaps/core20_1891.snap /snap/core20/1891 -o ro,nodev,allow_other,suid
root       274        1  0 13:06 ?        00:00:00 snapfuse /var/lib/snapd/snaps/snapd_23258.snap /snap/snapd/23258 -o ro,nodev,allow_other,suid
systemd+   281        1  0 13:06 ?        00:00:00 /lib/systemd/systemd-resolved
root       284        1  0 13:06 ?        00:00:00 /usr/lib/accounts-service/accounts-daemon
message+   286        1  0 13:06 ?        00:00:00 /usr/bin/dbus-daemon --system --address=systemd: --nofork --nopidfile --systemd-activation --syslog-only
root       293        1  0 13:06 ?        00:00:00 /usr/bin/python3 /usr/bin/networkd-dispatcher --run-startup-triggers
root       294        1  0 13:06 ?        00:00:00 /usr/lib/policykit-1/polkitd --no-debug
syslog     295        1  0 13:06 ?        00:00:00 /usr/sbin/rsyslogd -n -iNONE
root       296        1  0 13:06 ?        00:00:01 /usr/lib/snapd/snapd
root       302        1  0 13:06 ?        00:00:00 /lib/systemd/systemd-logind
root       303        1  0 13:06 ?        00:00:00 /usr/lib/udisks2/udisksd
root       317        1  0 13:06 ?        00:00:00 /usr/sbin/ModemManager
root       326        1  0 13:06 ?        00:00:00 /usr/sbin/cron -f
daemon     330        1  0 13:06 ?        00:00:00 /usr/sbin/atd -f
root       345        1  0 13:06 hvc0    00:00:00 /sbin/agetty -o -p -- \u --noclear --keep-baud console 115200,38400,9600 vt220
root       348        1  0 13:06 ttyl    00:00:00 /sbin/agetty -o -p -- \u --noclear ttyl linux
root       358        1  0 13:06 ?        00:00:00 /usr/bin/python3 /usr/share/unattended-upgrades/unattended-upgrade-shutdown --wait-for-signal
root       470        2  0 13:06 pts/1    00:00:00 /bin/login -f
junaida+   661        1  0 13:06 ?        00:00:00 /lib/systemd/systemd --user
junaida+   670        1  0 13:06 pts/1    00:00:00 (sd-pam)
root       976        2  0 13:42 ?        00:00:00 /init
root       977        2  0 13:42 ?        00:00:00 /init
junaida+   982        1  0 13:42 pts/0    00:00:00 -bash
junaida+   998        1  0 13:42 pts/0    00:00:00 top
junaida+  1025        1  0 13:52 pts/0    00:00:00 ps -ef
```

- Get the same listing as a tree, using both ps and pstree.

```
junaidasifdev@Joni:~$ ps -e --forest
PID TTY          TIME CMD
  1 ?            00:00:02 systemd
  2 ?            00:00:00 init-systemd(Ub
  7 ?            00:00:00 \_ init
470 pts/1        00:00:00 \_ login
670 pts/1        00:00:00 | \_ bash
976 ?            00:00:00 \_ SessionLeader
977 ?            00:00:00 \_ Relay(982)
982 pts/0        00:00:00 \_ bash
998 pts/0        00:00:00 \_ top
1030 pts/0       00:00:00 \_ ps
 73 ?            00:00:00 systemd-journal
 96 ?            00:00:00 systemd-udev
 97 ?            00:00:00 systemd-network
267 ?            00:00:00 snapfuse
268 ?            00:00:00 snapfuse
269 ?            00:00:00 snapfuse
270 ?            00:00:00 snapfuse
273 ?            00:00:00 snapfuse
274 ?            00:00:08 snapfuse
281 ?            00:00:00 systemd-resolve
284 ?            00:00:00 accounts-daemon
286 ?            00:00:00 dbus-daemon
293 ?            00:00:00 networkd-dispat
294 ?            00:00:00 polkitd
295 ?            00:00:00 rsyslogd
296 ?            00:00:01 snapd
302 ?            00:00:00 systemd-logind
303 ?            00:00:00 udisksd
317 ?            00:00:00 ModemManager
326 ?            00:00:00 cron
330 ?            00:00:00 atd
345 hvc0          00:00:00 atetty
348 ttyl          00:00:00 atetty
358 ?            00:00:00 unattended-upgr
661 ?            00:00:00 systemd
662 ?            00:00:00 \_ (sd-pam)
```

```
junaidasifdev@Joni:~$ pstree
systemd--ModemManager--2*[{ModemManager}]
--accounts-daemon--2*[{accounts-daemon}]
--2*[agetty]
--atd
--cron
--dbus-daemon
--init-systemd(Ub--SessionLeader--Relay(982)--bash--pstree
--init--{init}
--login--bash
--{init-systemd(Ub}
--networkd-dispat
--polkitd--2*[{polkitd}]
--rsyslogd--3*[{rsyslogd}]
--snapd--9*[{snapd}]
--6*[snapfuse]
--systemd--(sd-pam)
--systemd-journal
--systemd-logind
--systemd-network
--systemd-resolve
--systemd-udev
--udisksd--4*[{udisksd}]
--unattended-upgr--{unattended-upgr}
```

```
junaidasifdev@Joni:~$ pstree junaidasifdev
bash--pstree
--top

bash

systemd--(sd-pam)
```

- Have ps sort the output by system time used.

```
junaidasifdev@Joni:~$ ps -eo pid,user,comm,etime,%cpu --sort=-etime
PID USER      COMMAND      ELAPSED %CPU
1 root      systemd      51:21 0.0
2 root      init-systemd(Ub  51:21 0.0
7 root      init          51:20 0.0
73 root     systemd-journal  51:17 0.0
96 root     systemd-udev  51:17 0.0
97 systemd+ systemd-network  51:17 0.0
267 root     snapfuse     51:15 0.0
268 root     snapfuse     51:15 0.0
269 root     snapfuse     51:15 0.0
270 root     snapfuse     51:15 0.0
272 root     snapfuse     51:15 0.0
274 root     snapfuse     51:15 0.2
281 systemd+ systemd-resolve  51:15 0.0
284 root     accounts-daemon  51:15 0.0
286 message+ dbus-daemon   51:15 0.0
293 root     networkd-dispat  51:15 0.0
294 root     polkitd      51:15 0.0
295 syslog  rsyslogd     51:15 0.0
296 root     snapd        51:15 0.0
302 root     systemd-logind  51:15 0.0
303 root     udisksd      51:15 0.0
317 root     ModemManager  51:15 0.0
326 root     cron         51:15 0.0
330 daemon  atd          51:15 0.0
345 root     agetty       51:15 0.0
348 root     agetty       51:15 0.0
358 root     unattended-upgr  51:15 0.0
470 root     login        51:15 0.0
661 junaida+ systemd      51:07 0.0
662 junaida+ (sd-pam)     51:07 0.0
670 junaida+ bash         51:07 0.0
676 root     SessionLeader 14:42 0.0
977 root     Relay(982)    14:42 0.0
982 junaida+ bash         14:42 0.0
990 junaida+ top          14:39 0.0
1037 junaida+ ps           00:00 0.0
```

