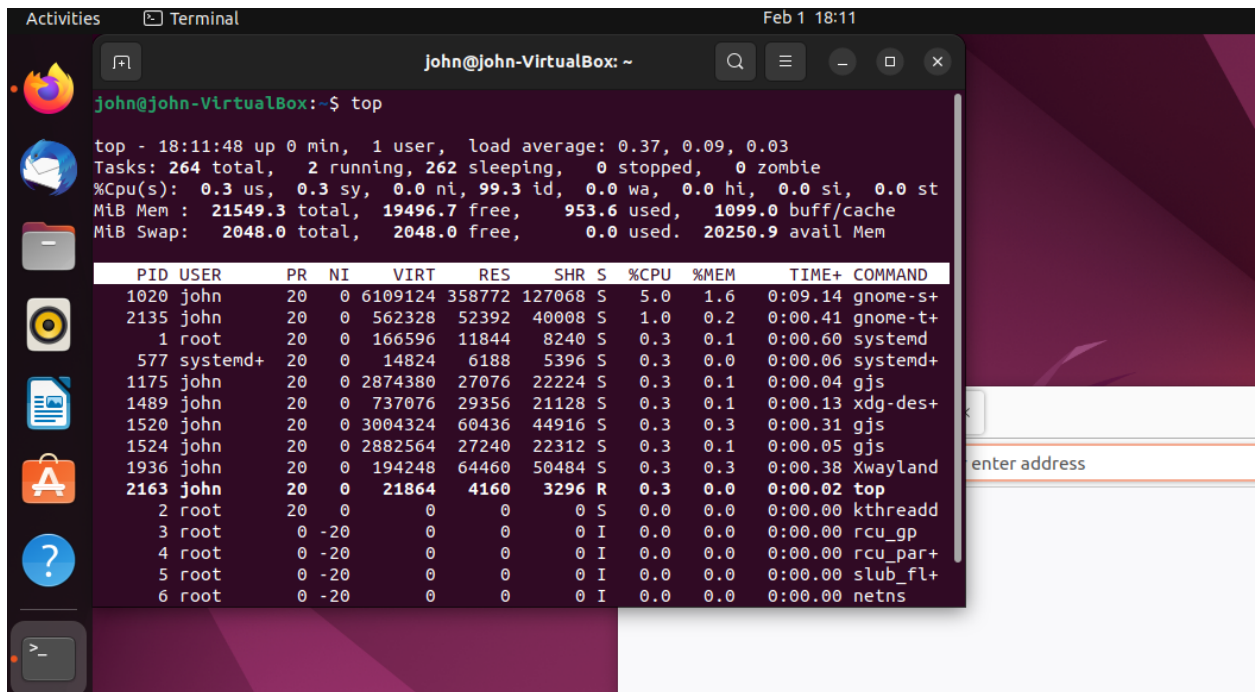


Lab 3 470 OS

- 3
- Browsers consumes memory / CPU



The screenshot shows a terminal window titled "john@john-VirtualBox: ~" with the following output from the `top` command:

```
top - 18:11:48 up 0 min, 1 user, load average: 0.37, 0.09, 0.03
Tasks: 264 total, 2 running, 262 sleeping, 0 stopped, 0 zombie
%Cpu(s): 0.3 us, 0.3 sy, 0.0 ni, 99.3 id, 0.0 wa, 0.0 hi, 0.0 si, 0.0 st
MiB Mem : 21549.3 total, 19496.7 free, 953.6 used, 1099.0 buff/cache
MiB Swap: 2048.0 total, 2048.0 free, 0.0 used. 20250.9 avail Mem
```

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
1020	john	20	0	6109124	358772	127068	S	5.0	1.6	0:09.14	gnome-s+
2135	john	20	0	562328	52392	40008	S	1.0	0.2	0:00.41	gnome-t+
1	root	20	0	166596	11844	8240	S	0.3	0.1	0:00.60	systemd
577	systemd+	20	0	14824	6188	5396	S	0.3	0.0	0:00.06	systemd+
1175	john	20	0	2874380	27076	22224	S	0.3	0.1	0:00.04	gjs
1489	john	20	0	737076	29356	21128	S	0.3	0.1	0:00.13	xdg-des+
1520	john	20	0	3004324	60436	44916	S	0.3	0.3	0:00.31	gjs
1524	john	20	0	2882564	27240	22312	S	0.3	0.1	0:00.05	gjs
1936	john	20	0	194248	64460	50484	S	0.3	0.3	0:00.38	Xwayland
2163	john	20	0	21864	4160	3296	R	0.3	0.0	0:00.02	top
2	root	20	0	0	0	0	S	0.0	0.0	0:00.00	kthreadd
3	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	rcu_gp
4	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	rcu_par+
5	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	slub_fl+
6	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	netns

- 3
- Browsers consumes memory / CPU
- ```
john@john-VirtualBox:~$ grep MemTotal /proc/meminfo
MemTotal: 22066516 kB
john@john-VirtualBox:~$
```

- 4.

4.

```
john@john-VirtualBox:~$ ps aux
```

| USER | PID | %CPU | %MEM | VSZ    | RSS   | TTY | STAT | START | TIME | COMMAND        |
|------|-----|------|------|--------|-------|-----|------|-------|------|----------------|
| root | 1   | 0.3  | 0.0  | 166584 | 11600 | ?   | Ss   | 16:34 | 0:00 | /sbin/init sp  |
| root | 2   | 0.0  | 0.0  | 0      | 0     | ?   | S    | 16:34 | 0:00 | [kthreadd]     |
| root | 3   | 0.0  | 0.0  | 0      | 0     | ?   | I<   | 16:34 | 0:00 | [rcu_gp]       |
| root | 4   | 0.0  | 0.0  | 0      | 0     | ?   | I<   | 16:34 | 0:00 | [rcu_par_gp]   |
| root | 5   | 0.0  | 0.0  | 0      | 0     | ?   | I<   | 16:34 | 0:00 | [slub_flushwq] |
| root | 6   | 0.0  | 0.0  | 0      | 0     | ?   | I<   | 16:34 | 0:00 | [netns]        |
| root | 7   | 0.0  | 0.0  | 0      | 0     | ?   | I    | 16:34 | 0:00 | [kworker/0:0-  |
| root | 8   | 0.0  | 0.0  | 0      | 0     | ?   | I<   | 16:34 | 0:00 | [kworker/0:0H  |
| root | 9   | 0.2  | 0.0  | 0      | 0     | ?   | I    | 16:34 | 0:00 | [kworker/u18:  |
| root | 10  | 0.0  | 0.0  | 0      | 0     | ?   | I<   | 16:34 | 0:00 | [mm_percpu_wq  |
| root | 11  | 0.0  | 0.0  | 0      | 0     | ?   | S    | 16:34 | 0:00 | [rcu_tasks_ru  |
| root | 12  | 0.0  | 0.0  | 0      | 0     | ?   | S    | 16:34 | 0:00 | [rcu_tasks_tr  |
| root | 13  | 0.0  | 0.0  | 0      | 0     | ?   | S    | 16:34 | 0:00 | [ksoftirqd/0]  |
| root | 14  | 0.0  | 0.0  | 0      | 0     | ?   | I    | 16:34 | 0:00 | [rcu_sched]    |
| root | 15  | 0.0  | 0.0  | 0      | 0     | ?   | S    | 16:34 | 0:00 | [migration/0]  |

PID 1

6.

```
john@john-VirtualBox:~$ ps aux --sort=%mem | head
```

| USER              | PID | %CPU | %MEM | VSZ | RSS | TTY | STAT | START | TIME | COMMAND        |
|-------------------|-----|------|------|-----|-----|-----|------|-------|------|----------------|
| root              | 2   | 0.0  | 0.0  | 0   | 0   | ?   | S    | 16:34 | 0:00 | [kthreadd]     |
| root              | 3   | 0.0  | 0.0  | 0   | 0   | ?   | I<   | 16:34 | 0:00 | [rcu_gp]       |
| root              | 4   | 0.0  | 0.0  | 0   | 0   | ?   | I<   | 16:34 | 0:00 | [rcu_par_gp]   |
| root              | 5   | 0.0  | 0.0  | 0   | 0   | ?   | I<   | 16:34 | 0:00 | [slub_flushwq] |
| root              | 6   | 0.0  | 0.0  | 0   | 0   | ?   | I<   | 16:34 | 0:00 | [netns]        |
| root              | 7   | 0.0  | 0.0  | 0   | 0   | ?   | I    | 16:34 | 0:00 | [kworker/0:0-  |
| events]           |     |      |      |     |     |     |      |       |      |                |
| root              | 8   | 0.0  | 0.0  | 0   | 0   | ?   | I<   | 16:34 | 0:00 | [kworker/0:0H  |
| -events_highpri]  |     |      |      |     |     |     |      |       |      |                |
| root              | 9   | 0.1  | 0.0  | 0   | 0   | ?   | I    | 16:34 | 0:00 | [kworker/u18:  |
| 0-events_unbound] |     |      |      |     |     |     |      |       |      |                |
| root              | 10  | 0.0  | 0.0  | 0   | 0   | ?   | I<   | 16:34 | 0:00 | [mm_percpu_wq] |
| ]                 |     |      |      |     |     |     |      |       |      |                |

```
john@john-VirtualBox:~$
```

PID 2 most memory

7.

```
john@john-VirtualBox:~$ gcc call.c -o call
john@john-VirtualBox:~$./call
am the parent process
am the parent process
am the parent process
am the parent process
am the parent process
am the parent process
am the parent process
am the parent process
am the parent process
am the parent process
am the parent process
am the parent process
am the parent process
am the parent process
am the parent process
am the parent process
am the parent process
am the parent process
am the parent process
am the parent process
am the parent process
am the parent process
am the child process
am the parent process
am the child process
am the parent process
am the child process
am the parent process
am the child process
am the parent process
am the child process
```

Firefox Web Browser

```
1 // ...d.h>
2 #include <stdio.h>
3
4
5 int main()
6 {
7 int pid;
8 pid = fork();
9 for (int i = 0; i < 200; i++)
10 {
11 if (pid < 0)
12 {
13 printf("Fork failed \n");
14 return 1;
15 }
16
17 else if (pid == 0)
18 {
19 printf("I am the child process\n");
20
21 }
22 else
23 {
24 printf("I am the parent process \n");
25 }
26 }
27 return 0;
28 }
29
30
```

8.

john@john-VirtualBox: ~

```
john@john-VirtualBox:~$ gcc call.c -o call
john@john-VirtualBox:~$./call
I am the parent!
I am the Child!
john@john-VirtualBox:~$
```

```

1 #include <unistd.h>
2 #include <stdio.h>
3
4
5 int main()
6 {
7 if (fork() == 0)
8 printf("I am the Child! \n");
9 else
10 printf("I am the parent! \n");
11 }

```

9.

```

1 #include <unistd.h>
2 #include <stdio.h>
3
4
5 int main()
6 {
7 pid_t pid;
8 pid = fork();
9 if (pid == 0)
10 {
11 printf("pid in child=%d and parent =%d\n", getpid(),getppid());
12 }
13 else
14 {
15 printf("pid in parent=%d and child=%d\n", getpid(),pid);
16 }
17 }

```

```

john@john-VirtualBox:~$ gcc call.c -o call
john@john-VirtualBox:~$./call
pid in parent=5521 and child=5522
pid in child=5522 and parent =5521
john@john-VirtualBox:~$

```