

Chapter 2: Working with Processes

```
root@localhost:~# ps aux
```

USER	PID	%CPU	%MEM	VSZ	RSS	TTY	STAT	START	TIME	COMMAND
root	1	0.2	0.3	167308	12816	?	Ss	18:55	0:01	/sbin/init
root	2	0.0	0.0	0	0	?	S	18:55	0:00	[kthreadd]
root	3	0.0	0.0	0	0	?	I<	18:55	0:00	[rcu_gp]
root	4	0.0	0.0	0	0	?	I<	18:55	0:00	[rcu_par_gp]
root	5	0.0	0.0	0	0	?	I<	18:55	0:00	[slub_flushwq]
root	6	0.0	0.0	0	0	?	I<	18:55	0:00	[netns]
root	8	0.0	0.0	0	0	?	I<	18:55	0:00	[kworker/0:0H-eva
root	10	0.0	0.0	0	0	?	I<	18:55	0:00	[mm_percpu_wq]
root	11	0.0	0.0	0	0	?	S	18:55	0:00	[rcu_tasks_rude_]
root	12	0.0	0.0	0	0	?	S	18:55	0:00	[rcu_tasks_trace]
root	13	0.0	0.0	0	0	?	S	18:55	0:00	[ksoftirqd/0]
root	14	0.0	0.0	0	0	?	I	18:55	0:00	[rcu_sched]
root	15	0.0	0.0	0	0	?	S	18:55	0:00	[migration/0]
root	16	0.0	0.0	0	0	?	S	18:55	0:00	[idle_inject/0]
root	17	0.0	0.0	0	0	?	I	18:55	0:00	[kworker/0:1-cgrou
root	18	0.0	0.0	0	0	?	S	18:55	0:00	[cpuhp/0]
root	19	0.0	0.0	0	0	?	S	18:55	0:00	[cpuhp/1]
root	20	0.0	0.0	0	0	?	S	18:55	0:00	[idle_inject/1]
root	21	0.0	0.0	0	0	?	S	18:55	0:00	[migration/1]
root	22	0.0	0.0	0	0	?	S	18:55	0:00	[ksoftirqd/1]
root	23	0.0	0.0	0	0	?	I	18:55	0:00	[kworker/1:0-event

```
root@40086047ef36:/# ps -eLf
```

UID	PID	PPID	LWP	C	NLWP	STIME	TTY	TIME	CMD
root	1	0	1	0	1	22:30	pts/0	00:00:00	/bin/bash
root	9	1	9	0	1	22:31	pts/0	00:00:00	ps -eLf

```
root@40086047ef36:/# ps -ejH
```

PID	PGID	SID	TTY	TIME	CMD
1	1	1	pts/0	00:00:00	bash
10	10	1	pts/0	00:00:00	ps

```
root@localhost:~# pgrep nginx
1589
1592
1593
root@localhost:~# pgrep ^n
6
584
1589
1592
1593
root@localhost:~# █
```

Total DISK READ:			0.00 B/s			Total DISK WRITE:			0.00 B/s		
Current DISK READ:			0.00 B/s			Current DISK WRITE:			0.00 B/s		
TID	PRI	USER	DISK READ	DISK WRITE	SWAPIN	IO>	COMMAND				
1	be/4	root	0.00 B/s	0.00 B/s	?unavailable?		init				
2	be/4	root	0.00 B/s	0.00 B/s	?unavailable?		[kthreadd]				
3	be/0	root	0.00 B/s	0.00 B/s	?unavailable?		[rcu_gp]				
4	be/0	root	0.00 B/s	0.00 B/s	?unavailable?		[rcu_par_gp]				
5	be/0	root	0.00 B/s	0.00 B/s	?unavailable?		[slub_flushwq]				
6	be/0	root	0.00 B/s	0.00 B/s	?unavailable?		[netns]				
8	be/0	root	0.00 B/s	0.00 B/s	?unavailable?		[kworker~_highpri]				
10	be/0	root	0.00 B/s	0.00 B/s	?unavailable?		[mm_percpu_wq]				
11	be/4	root	0.00 B/s	0.00 B/s	?unavailable?		[rcu_tasks_rude_]				
12	be/4	root	0.00 B/s	0.00 B/s	?unavailable?		[rcu_tasks_trace]				
13	be/4	root	0.00 B/s	0.00 B/s	?unavailable?		[ksoftirqd/0]				
14	be/4	root	0.00 B/s	0.00 B/s	?unavailable?		[rcu_sched]				
15	rt/4	root	0.00 B/s	0.00 B/s	?unavailable?		[migration/0]				
16	rt/4	root	0.00 B/s	0.00 B/s	?unavailable?		[idle_inject/0]				
18	be/4	root	0.00 B/s	0.00 B/s	?unavailable?		[cpuhp/0]				
19	be/4	root	0.00 B/s	0.00 B/s	?unavailable?		[cpuhp/1]				
20	rt/4	root	0.00 B/s	0.00 B/s	?unavailable?		[idle_inject/1]				
21	rt/4	root	0.00 B/s	0.00 B/s	?unavailable?		[migration/1]				
22	be/4	root	0.00 B/s	0.00 B/s	?unavailable?		[ksoftirqd/1]				
23	be/4	root	0.00 B/s	0.00 B/s	?unavailable?		[kworker~ercpu_wq]				
keys: any: refresh q: quit i: ionice o: active p: procs a: accum											
sort: r: asc left: SWAPIN right: COMMAND home: TID end: COMMAND											
CONFIG_TASK_DELAY_ACCT not enabled in kernel, cannot determine SWAPIN and IO %											

NetHogs version 0.8.6-3

PID	USER	PROGRAM	DEV	SENT	RECEIVED
2064	root	curl	eth0	0.580	8.730 KB/sec
719	root	sshd: root@pts/0	eth0	11.067	0.412 KB/sec
?	root	45.33.83.163:445-201.91..		0.021	0.024 KB/sec
?	root	45.33.83.163:6379-47.57..		0.011	0.014 KB/sec
?	root	45.33.83.163:7777-139.1..		0.000	0.000 KB/sec
2062	root	curl	eth0	0.000	0.000 KB/sec
?	root	45.33.83.163:9010-79.12..		0.000	0.000 KB/sec
2060	root	curl	eth0	0.000	0.000 KB/sec
?	root	45.33.83.163:50153-66.7..		0.000	0.000 KB/sec
?	root	45.33.83.163:36198-35.2..		0.000	0.000 KB/sec
?	root	45.33.83.163:37464-35.2..		0.000	0.000 KB/sec
?	root	45.33.83.163:2443-66.29..		0.000	0.000 KB/sec
?	root	45.33.83.163:57240-23.2..		0.000	0.000 KB/sec
?	root	unknown TCP		0.000	0.000 KB/sec
TOTAL				11.679	9.181 KB/sec

	Name	Default Action	Description
1	SIGHUP	terminate process	terminal line hangup
2	SIGINT	terminate process	interrupt program
3	SIGQUIT	create core image	quit program
4	SIGILL	create core image	illegal instruction
5	SIGTRAP	create core image	trace trap
6	SIGABRT	create core image	abort program (formerly SIGIOT)
7	SIGEMT	create core image	emulate instruction executed
8	SIGFPE	create core image	floating-point exception
9	SIGKILL	terminate process	kill program
10	SIGBUS	create core image	bus error
11	SIGSEGV	create core image	segmentation violation
12	SIGSYS	create core image	non-existent system call invoked
13	SIGPIPE	terminate process	write on a pipe with no reader
14	SIGALRM	terminate process	real-time timer expired
15	SIGTERM	terminate process	software termination signal
16	SIGURG	discard signal	urgent condition present on socket
17	SIGSTOP	stop process	stop (cannot be caught or ignored)
18	SIGTSTP	stop process	stop signal generated from keyboard
19	SIGCONT	discard signal	continue after stop
20	SIGCHLD	discard signal	child status has changed
21	SIGTTIN	stop process	background read attempted from control terminal
22	SIGTTOU	stop process	background write attempted to control terminal
23	SIGIO	discard signal	I/O is possible on a descriptor (see fcntl(2))
24	SIGXCPU	terminate process	cpu time limit exceeded (see setrlimit(2))
25	SIGXFSZ	terminate process	file size limit exceeded (see setrlimit(2))
26	SIGVTALRM	terminate process	virtual time alarm (see setitimer(2))
27	SIGPROF	terminate process	profiling timer alarm (see setitimer(2))
28	SIGWINCH	discard signal	Window size change
29	SIGINFO	discard signal	status request from keyboard
30	SIGUSR1	terminate process	User defined signal 1
31	SIGUSR2	terminate process	User defined signal 2

```

root@localhost:~# lsof -p 1589
COMMAND PID USER  FD  TYPE             DEVICE SIZE/OFF  NODE NAME
nginx   1589 root   cwd   DIR                8,0    4096      2 /
nginx   1589 root   rtd   DIR                8,0    4096      2 /
nginx   1589 root   txt   REG               8,0 1240136 78096 /usr/sbin/nginx
nginx   1589 root   mem   REG               8,0 184904 262503 /usr/lib/nginx/modules/nginx_stream_module.so
nginx   1589 root   mem   REG               8,0 112264 262494 /usr/lib/nginx/modules/nginx_mail_module.so
nginx   1589 root   mem   REG               8,0 149760 867 /usr/lib/x86_64-linux-gnu/libgpg-error.so.0.32.1
nginx   1589 root   mem   REG               8,0 125488 1035 /usr/lib/x86_64-linux-gnu/libgcc_s.so.1
nginx   1589 root   mem   REG               8,0 2252096 837 /usr/lib/x86_64-linux-gnu/libstdc++.so.6.0.30
nginx   1589 root   mem   REG               8,0 29476472 8427 /usr/lib/x86_64-linux-gnu/libcudata.so.70.1
nginx   1589 root   mem   REG               8,0 1296312 840 /usr/lib/x86_64-linux-gnu/libcrypt.so.2.0.3.4
nginx   1589 root   mem   REG               8,0 2062664 8432 /usr/lib/x86_64-linux-gnu/libcuc.so.70.1
nginx   1589 root   mem   REG               8,0 96416 17716 /usr/lib/x86_64-linux-gnu/libexslt.so.0.8.20
nginx   1589 root   mem   REG               8,0 264632 17717 /usr/lib/x86_64-linux-gnu/libxslt.so.1.1.34
nginx   1589 root   mem   REG               8,0 1967384 5818 /usr/lib/x86_64-linux-gnu/libxml2.so.2.9.13
nginx   1589 root   mem   REG               8,0 27672 262485 /usr/lib/nginx/modules/nginx_http_xslt_filter_module.so

```

```

nginx 1589 root DEL REG 0,1 11 /dev/zero
nginx 1589 root 0u CHR 1,3 0t0 5 /dev/null
nginx 1589 root 1u CHR 1,3 0t0 5 /dev/null
nginx 1589 root 2w REG 8,0 76 262197 /var/log/nginx/error.log
nginx 1589 root 3u unix 0xffff8da007507300 0t0 23207 type=STREAM
nginx 1589 root 4w REG 8,0 2910 262196 /var/log/nginx/access.log
nginx 1589 root 5w REG 8,0 76 262197 /var/log/nginx/error.log
nginx 1589 root 6u IPv4 23965 0t0 TCP *:http (LISTEN)
nginx 1589 root 7u IPv6 23966 0t0 TCP *:http (LISTEN)
nginx 1589 root 8u unix 0xffff8da007505540 0t0 23208 type=STREAM
nginx 1589 root 9u unix 0xffff8da007504000 0t0 29795 type=STREAM
nginx 1589 root 10u unix 0xffff8da007505dc0 0t0 29796 type=STREAM

```

```

top - 19:06:27 up 10 min, 2 users, load average: 0.08, 0.03, 0.01
Tasks: 108 total, 3 running, 105 sleeping, 0 stopped, 0 zombie
%Cpu(s): 46.8 us, 2.0 sy, 0.0 ni, 48.8 id, 2.3 wa, 0.0 hi, 0.0 si, 0.0 st
MiB Mem : 3924.0 total, 3260.3 free, 145.5 used, 518.2 buff/cache
MiB Swap: 512.0 total, 512.0 free, 0.0 used. 3552.6 avail Mem

```

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
1763	root	20	0	10168	7820	1436	R	94.7	0.2	0:03.14	bzip2
1761	root	20	0	7324	3100	2872	S	3.0	0.1	0:00.11	tar
1	root	20	0	167308	12816	8300	S	0.0	0.3	0:01.82	systemd
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_gp
5	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	slub_flushwq
6	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	netns
8	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworker/0:0H-events_highpri
10	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	mm_percpu_wq
11	root	20	0	0	0	0	S	0.0	0.0	0:00.00	rcu_tasks_rude_
12	root	20	0	0	0	0	S	0.0	0.0	0:00.00	rcu_tasks_trace
13	root	20	0	0	0	0	S	0.0	0.0	0:00.02	ksoftirqd/0
14	root	20	0	0	0	0	R	0.0	0.0	0:00.03	rcu_sched
15	root	rt	0	0	0	0	S	0.0	0.0	0:00.00	migration/0
16	root	-51	0	0	0	0	S	0.0	0.0	0:00.00	idle_inject/0
17	root	20	0	0	0	0	I	0.0	0.0	0:00.33	kworker/0:1-mm_percpu_wq
18	root	20	0	0	0	0	S	0.0	0.0	0:00.00	cpuhp/0
19	root	20	0	0	0	0	S	0.0	0.0	0:00.00	cpuhp/1

Chapter 3: Service Management with system

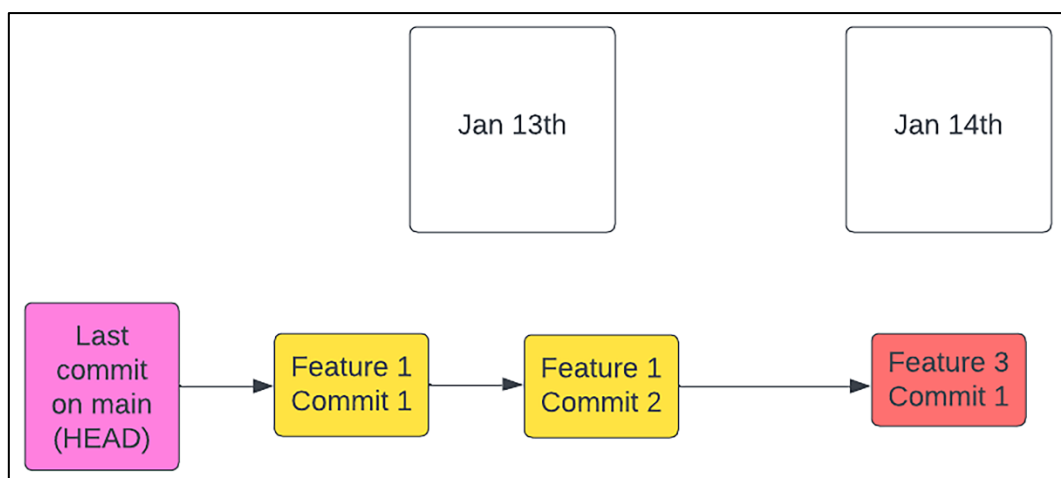
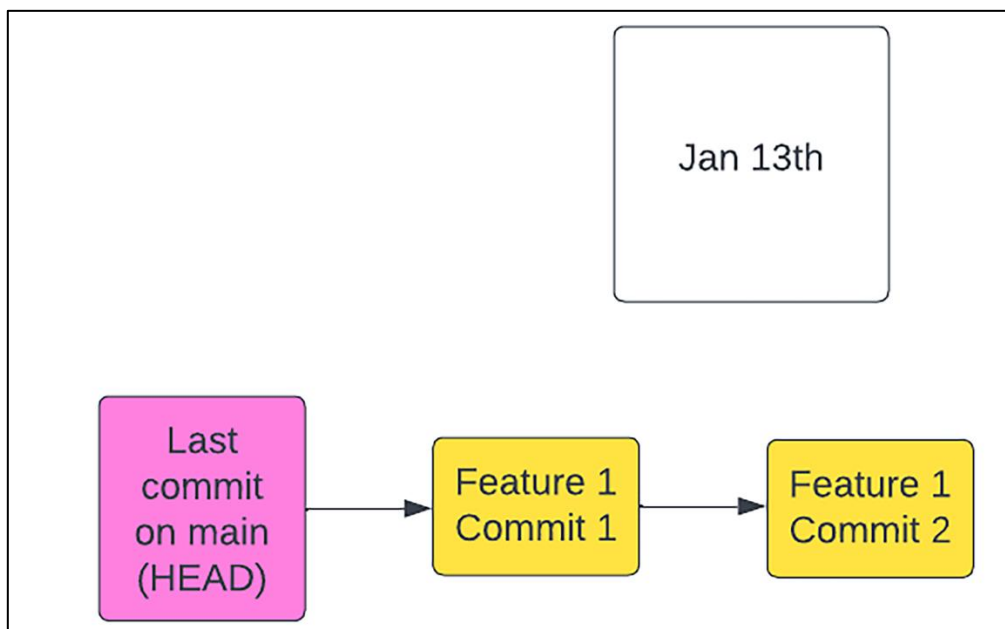
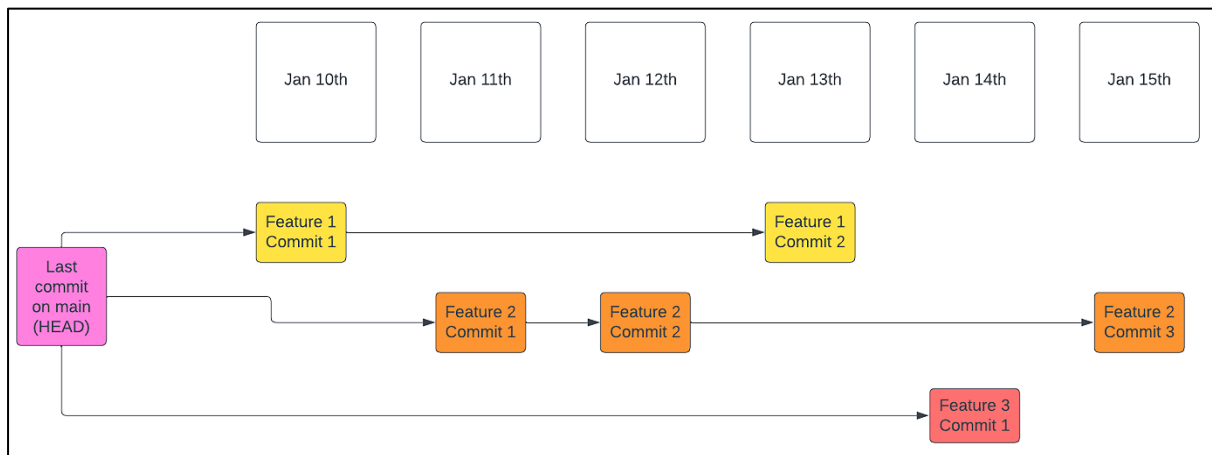
```

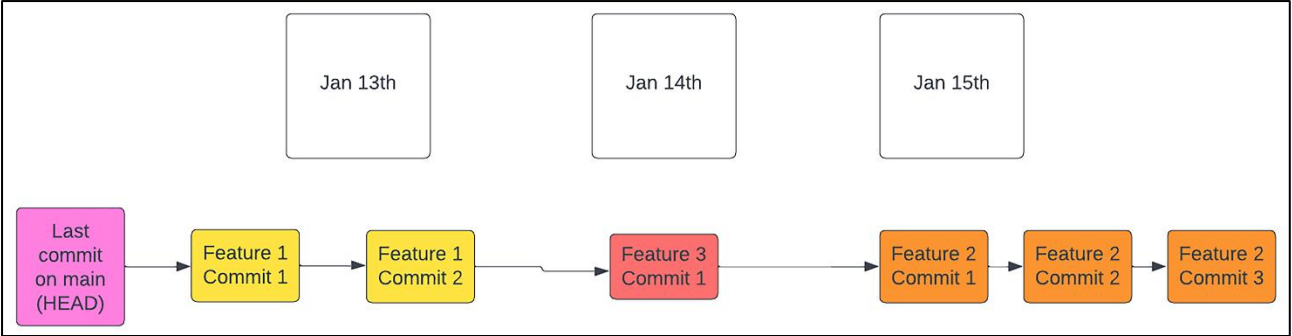
root@localhost:~# systemctl status nginx
● nginx.service - A high performance web server and a reverse proxy server
   Loaded: loaded (/lib/systemd/system/nginx.service; enabled; vendor preset: enabled)
   Active: active (running) since Mon 2023-02-06 21:47:43 UTC; 3min 54s ago
     Docs: man:nginx(8)
   Process: 1503 ExecStartPre=/usr/sbin/nginx -t -q -g daemon on; master_process on; (code=exited, status=0/SUCCESS)
   Process: 1504 ExecStart=/usr/sbin/nginx -g daemon on; master_process on; (code=exited, status=0/SUCCESS)
  Main PID: 1598 (nginx)
    Tasks: 3 (limit: 4575)
   Memory: 5.4M
      CPU: 20ms
   CGroup: /system.slice/nginx.service
           └─1598 "nginx: master process /usr/sbin/nginx -g daemon on; master_process on;"
             └─1601 "nginx: worker process"
               └─1602 "nginx: worker process"

Feb 06 21:47:43 localhost systemd[1]: Starting A high performance web server and a reverse proxy server...
Feb 06 21:47:43 localhost systemd[1]: Started A high performance web server and a reverse proxy server.

```

Chapter 14: Version Control with Git





Chapter 16: Monitoring Application Logs

