- Background Processes
- Monitoring commands – df -h, free -m, netstat, dmesg
- Process Mgmt Cmds
- Script Practise

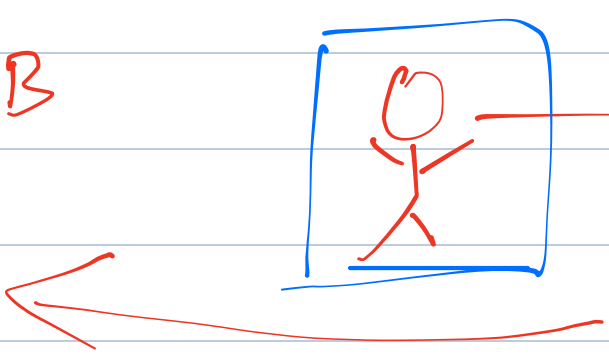
Background Processes

& – ampersand

Flag	Meaning
`-n`	Show **numeric** addresses (no DNS lookups)
`-t`	Show **TCP** connections only
`-l`	Show only **listening** sockets
`-p`	Show the **PID and program name** using the socket

Process

LIFTING BRICKS



1 Brick / trip

MULTI-TASKING
-THREADING

IMPROVE EFF ⟶ TAKE 2 BRICKS / TRIP

⟶ ADD MORE WORKERS

⟶ MULTI-PROCESSING

PROCESSES HAVE SEPARATE RESOURCES

- MEMORY USAGE
- CPU
- DISK

sleep — create an idle process

Process — ID

echo $! ⟶ gives you the PID of the previously generated process

```
root@ip-172-31-27-45:~# ps -p 1584
  PID TTY          TIME CMD
 1584 pts/1    00:00:00 sleep
```

TERMINAL ID
ID (Teletypewriter)

CPU TIME TAKEN BY PROCESS TILL NOW

kill & pkill

Purpose: KILL THE PROCESS

kill → kill -9 <PID> → FORCEFUL

kill -15 <PID>

GRACEFUL TERMINATION

pkill → pkill <process name>

pgrep

Gives you pid

pgrep screen

1659

pstree

↳ process tree

ps -ef & ps aux

User ID

Process ID

Parent Process ID

CPU Utilization

TERMINAL ID

```
root@ip-172-31-27-45:~# ps -ef
UID          PID    PPID  C STIME TTY          TIME CMD
root           1       0  0 14:38 ?        00:00:02 /sbin/init
root           2       0  0 14:38 ?        00:00:00 [kthreadd]
root           3       2  0 14:38 ?        00:00:00 [pool_workqueue_release]
root           4       2  0 14:38 ?        00:00:00 [kworker/R-rcu_gp]
```

TIME TAKEN BY CPU TILL NOW

START TIME

AMT OF MEMORY PROCESS CAN ACCESS

VIRTUAL MEMORY SIZE

MEMORY ACTUALLY USED

RESIDENT SET SIZE

PROCESS STATUS

CPU TIME

```
root@ip-172-31-27-45:~# ps aux
USER         PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND
root           1  0.0  0.0  22548 13328 ?        Ss   14:38   0:02 /sbin/init
root           2  0.0  0.0      0     0 ?        S    14:38   0:00 [kthreadd]
root           3  0.0  0.0      0     0 ?        S    14:38   0:00 [pool_workqueue_release]
root           4  0.0  0.0      0     0 ?        I<   14:38   0:00 [kworker/R-rcu_gp]
root           5  0.0  0.0      0     0 ?        I<   14:38   0:00 [kworker/R-sync_wq]
root           6  0.0  0.0      0     0 ?        I<   14:38   0:00 [kworker/R-kvfree_rcu_reclaim]
root           7  0.0  0.0      0     0 ?        I<   14:38   0:00 [kworker/R-slub_flushwq]
```

Sleep

HIGH PRIORITY

IDLE

R — Running

- ANOMALOUSLY HIGH VSZ = INDICATOR OF MEMORY LEAK

top & htop

Obj — Check Real Time System Resource Usage

top - 17:05:34 up 2:27, 1 user, load average: 0.01, 0.01, 0.00

Tasks: 138 total,   1 running, 137 sleeping,   0 stopped,   0 zombie

%Cpu(s): 0.0 us, 0.1 sy, 0.0 ni, 64.4 id, 0.0 wa, 0.0 hi, 0.0 si, 35.6 st

MiB Mem : 15990.1 total, 15283.2 free,   515.5 used,   470.9 buff/cache

MiB Swap: 0.0 total,   0.0 free,   0.0 used. 15474.6 avail Mem

PRIORITY NICE VALUE Shared Memory STATUS

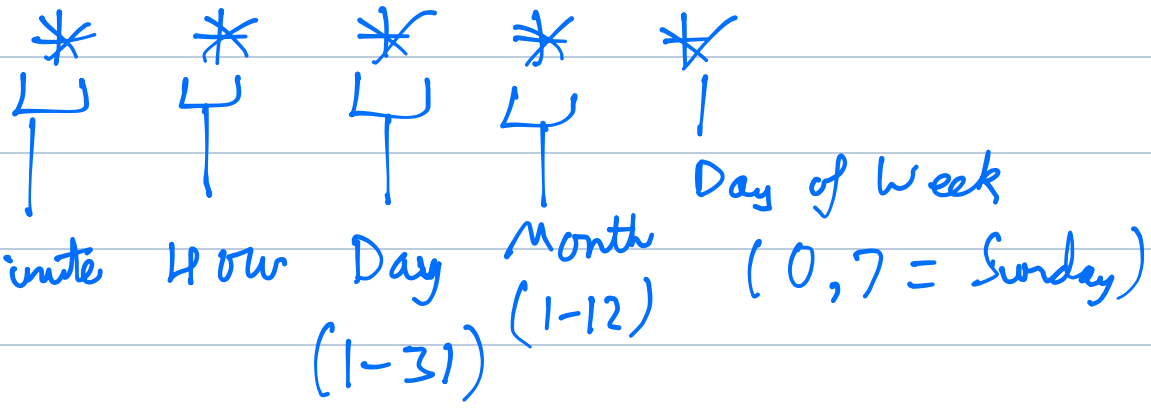
PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
				VSZ	RSS						
1	root	20	0	22548	13328	9360	S	0.0	0.1	0:02.70	systemd
2	root	20	0	0	0	0	S	0.0	0.0	0:00.00	kthreadd
3	root	20	0	0	0	0	S	0.0	0.0	0:00.00	pool_workqueue_release
4	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworker/R-rcu_gp
5	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworker/R-sync_wq
6	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworker/R-kvfree_rcu_reclaim
7	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworker/R-slub_flushwq

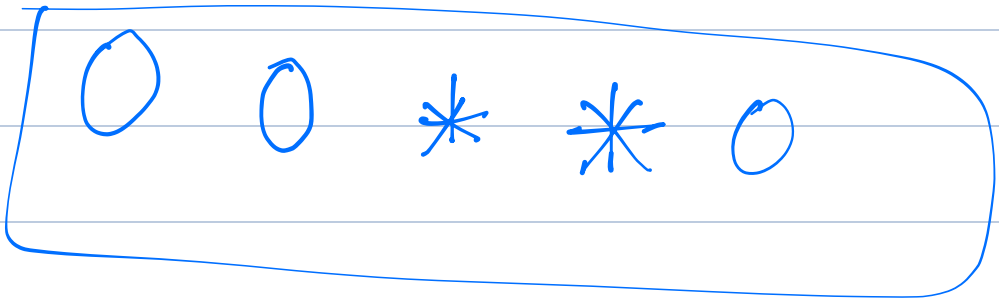
Less nice, more CPU
Too nice, less CPU

— vmstat — look at different variations of CPU/MEM/IO

— IO — INPUT/OUTPUT

— cron — scheduling a process





* — any or every

0 0 * * 0 sleep 60