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

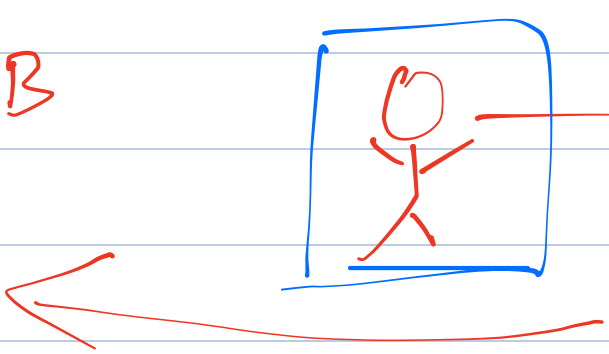
## Background Processes

& – 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

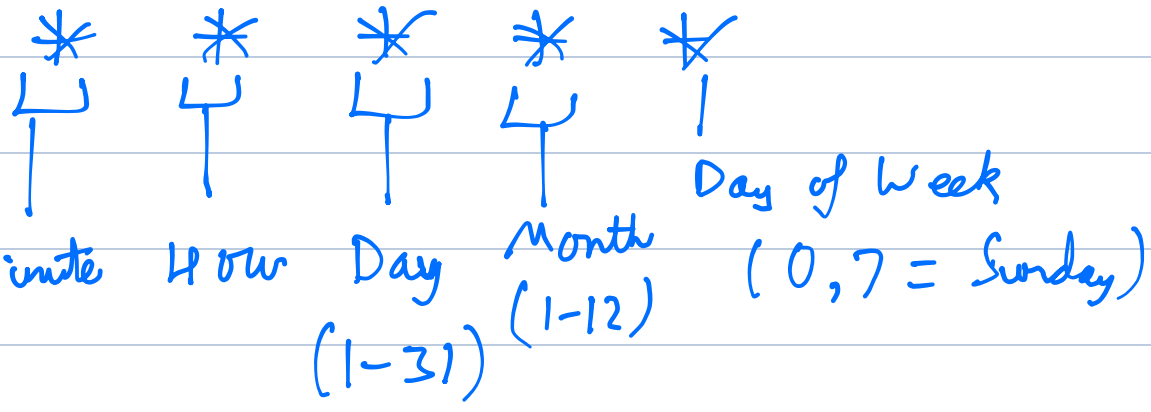
| PID | USER | PR | NI | VIRT | RES | SHR | S | %CPU | %MEM | TIME+ | COMMAND |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | VSZ | RSS | | | | | | |
| 1 | root | 20 | 0 | 22548 | 13328 | 9360 | S | 0.0 | 0.1 | 0:02.70 | systemd |
| 2 | root | 20 | 0 | 0 | 0 | 0 | S | 0.0 | 0.0 | 0:00.00 | 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 |

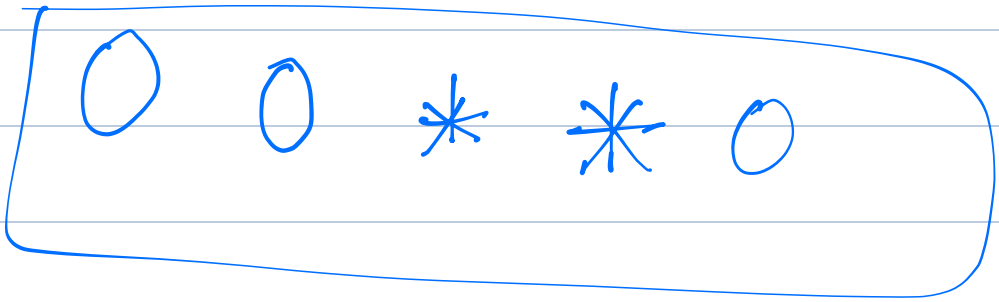
Less nice, more CPU
Too nice, less CPU

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

— IO — INPUT/OUTPUT

— cron — scheduling a process



* — any or every

0 0 * * 0 sleep 60