

Managing Jobs and Processes with Bash and Z Shell

UNDERSTANDING JOBS AND PROCESSES



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Overview



Processes, modes of processing

Carved Rock Fitness

Sessions, processes, threads

Jobs



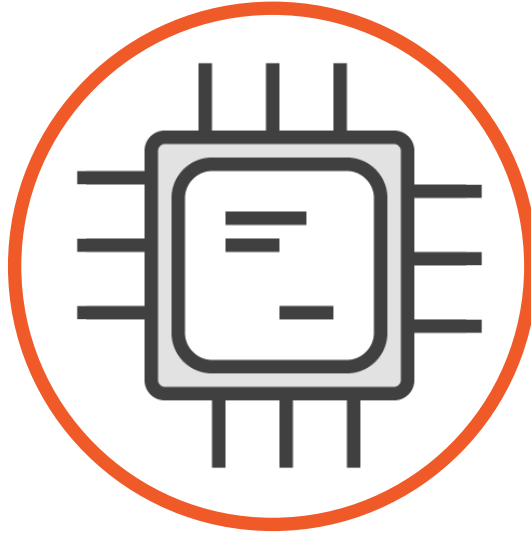
Understanding Processes



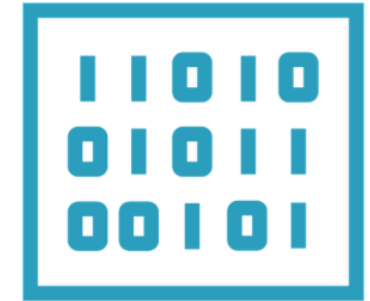
One Simple Process



Program



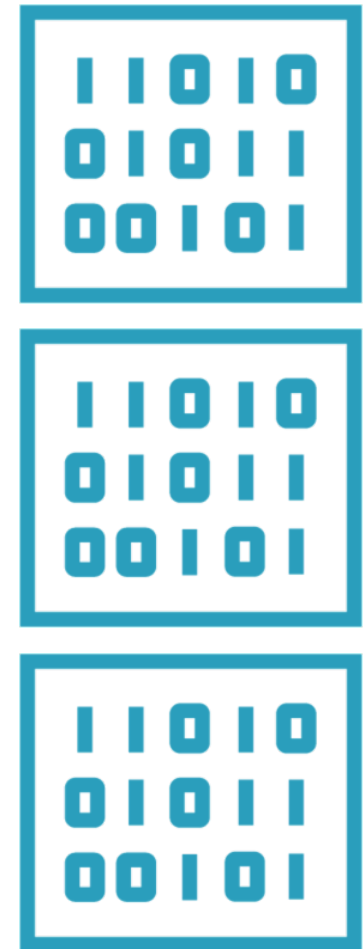
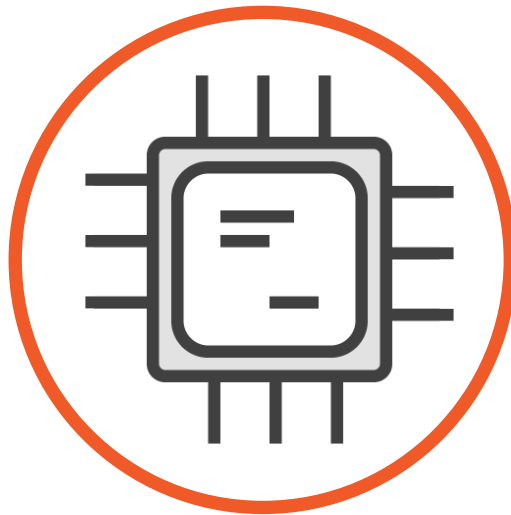
Processor



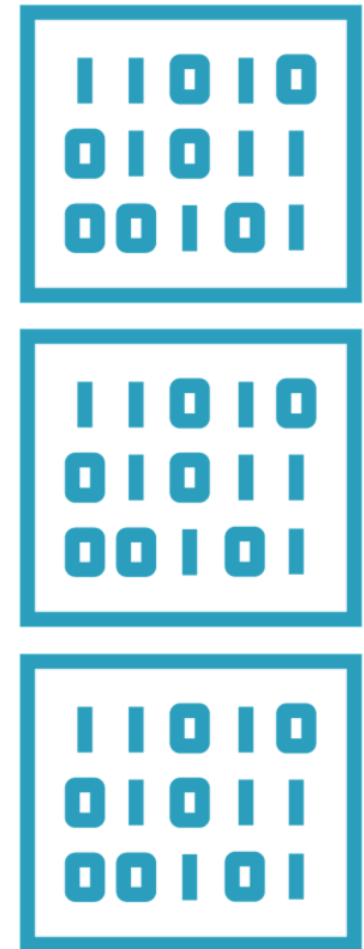
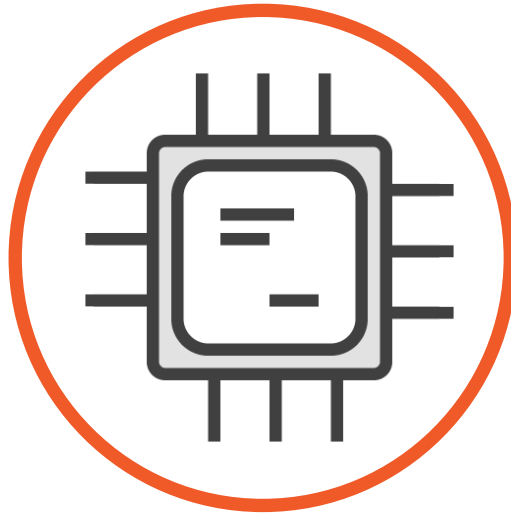
Output



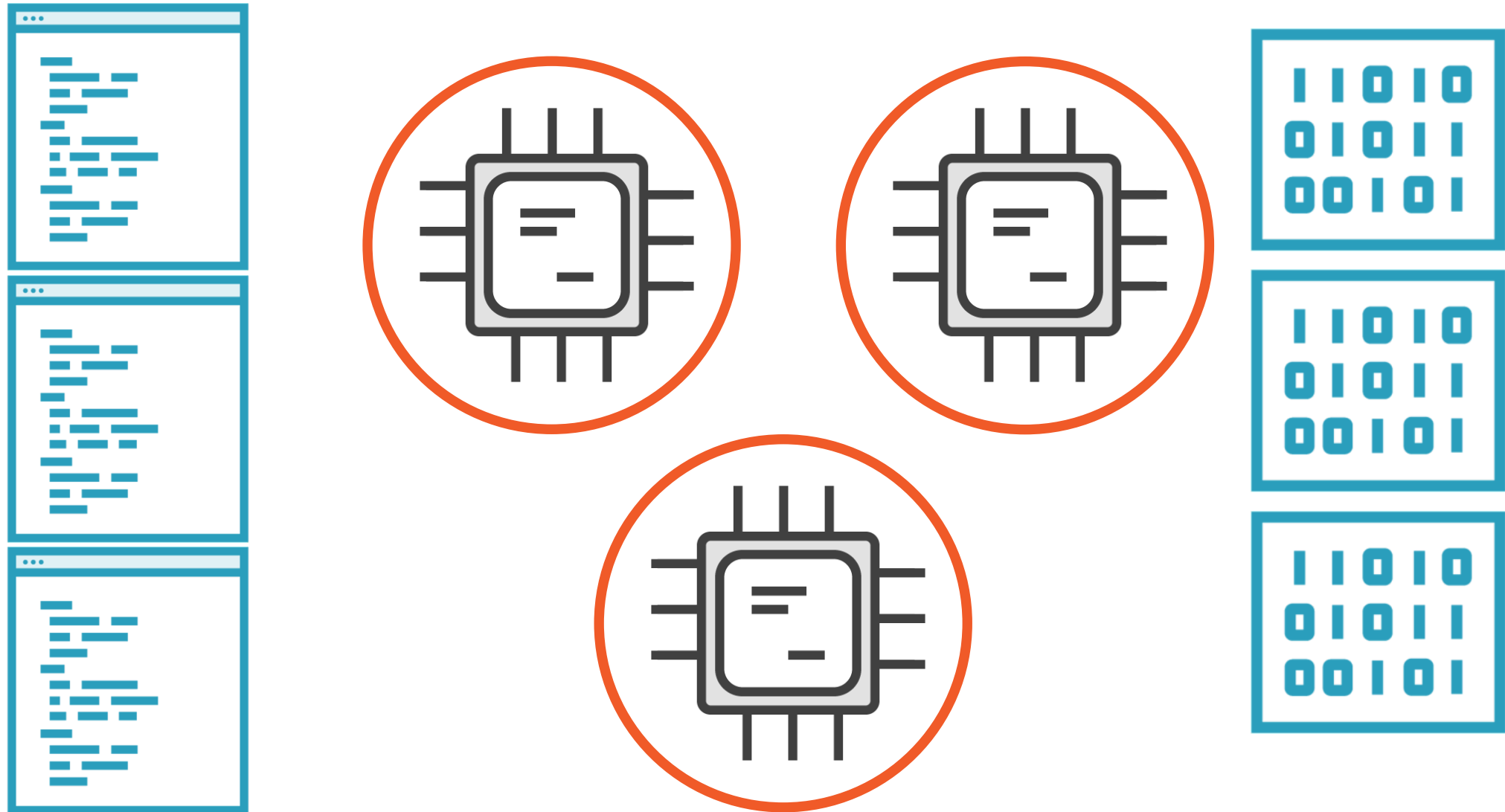
Many Processes: Serial Processing



Many Processes: Concurrent Processing



Many Processes: Parallel Processing



Anatomy of a Process: Process ID (PID)



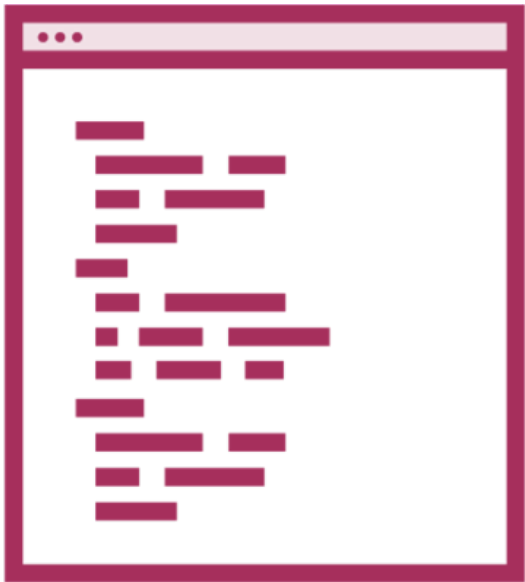
Reference for a process

Unique at the time

Reused eventually



Anatomy of a Process: Code & Data

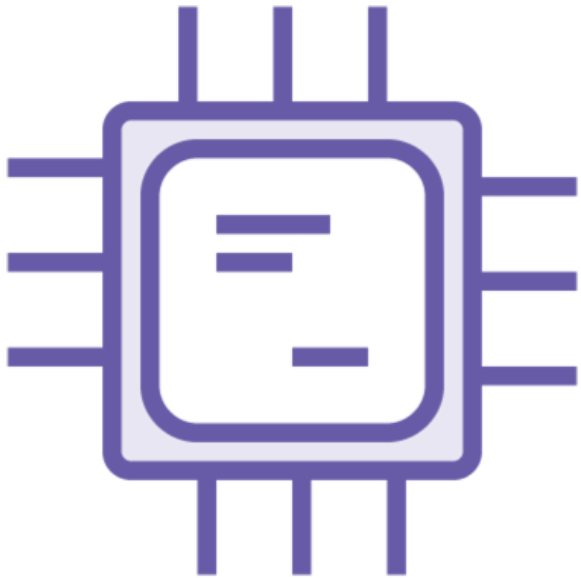


Code & data duality

We want to know the command



Anatomy a Process: CPU



Expressed in absolute time

Also expressed as a relative percentage

Seemingly impossible values

Anatomy of a Process: Memory, RAM



Fast storage for data

Volatile, managed by the operating system

Measured in MB, GB or a percentage





**CARVED
ROCK**
FITNESS



Demo



Basic command line tools

- ps
- pgrep

Fancier command line tools

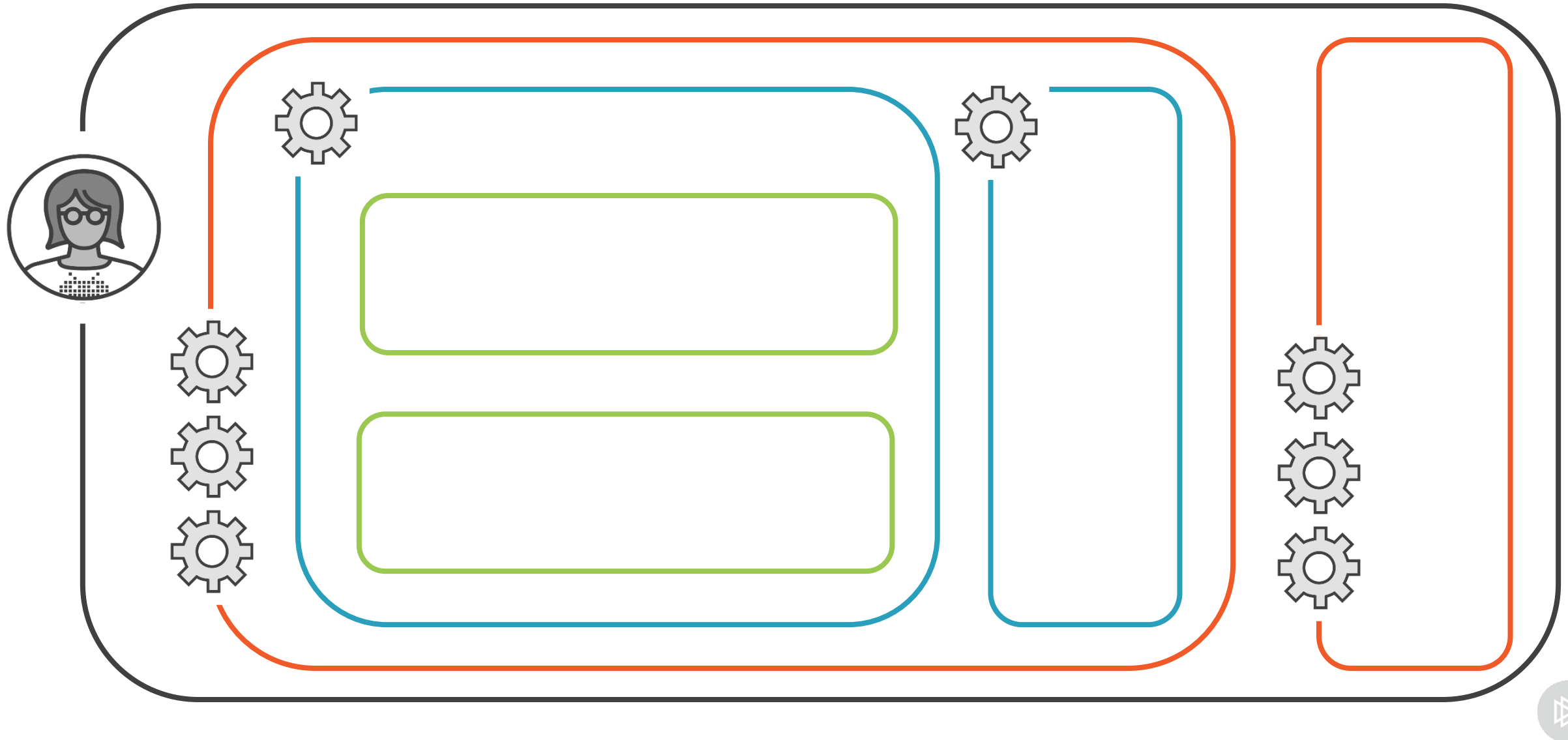
- top
- htop



Processes in Context



Processes in Context



Demo



More IDs

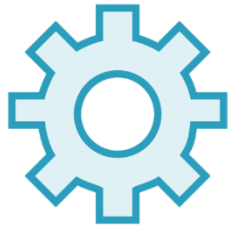
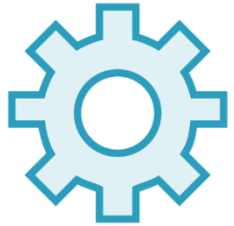
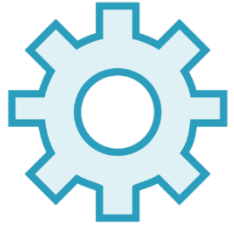
- Process Group ID (PGID)
- Session ID (SID)
- Parent Process ID (PPID)



Understanding Jobs



Process Group vs Job



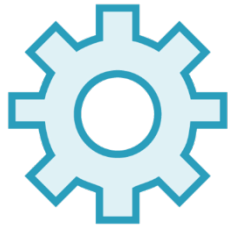
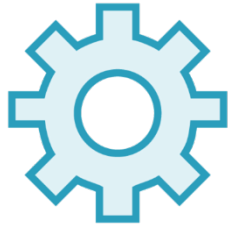
Jobs are equivalent to process groups

Foreground jobs

Background jobs

Suspended jobs

Foreground Job



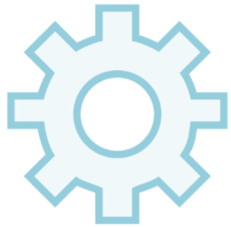
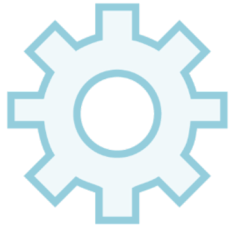
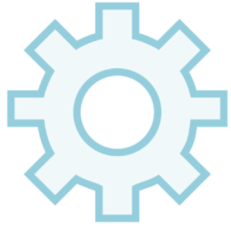
Always a foreground job

Interactive

Takes commands as usual

fg to bring a job to the foreground

Background Job



Created from the foreground

Single ampersand at the end

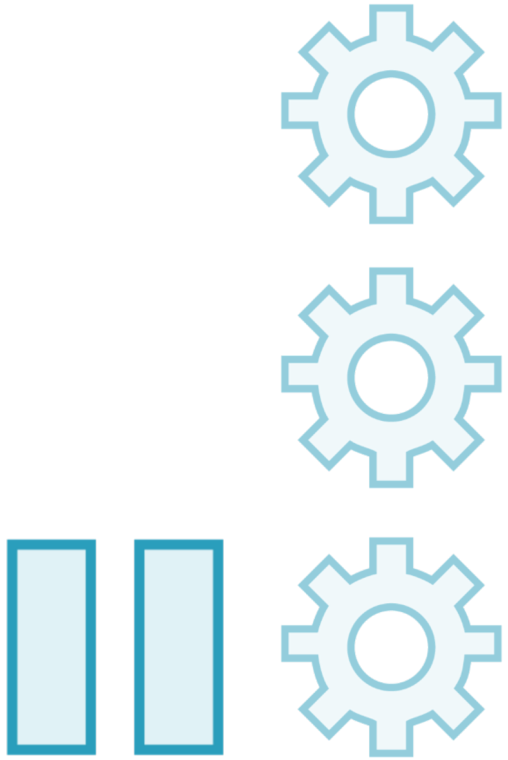
Continues executing

Default output is spawning shell

bg to background a suspended job



Suspended Job

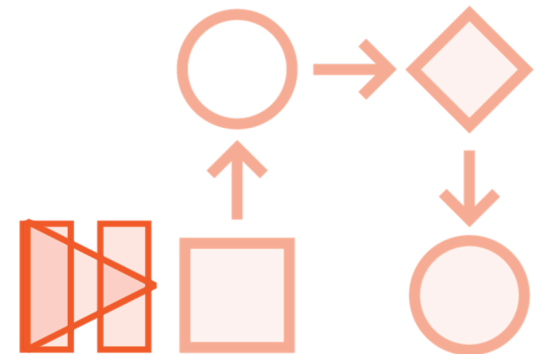
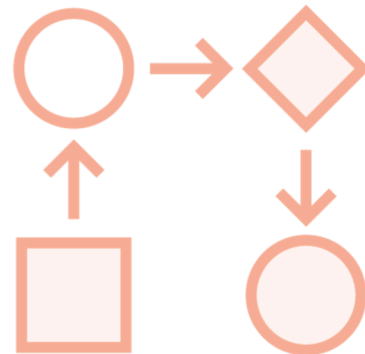
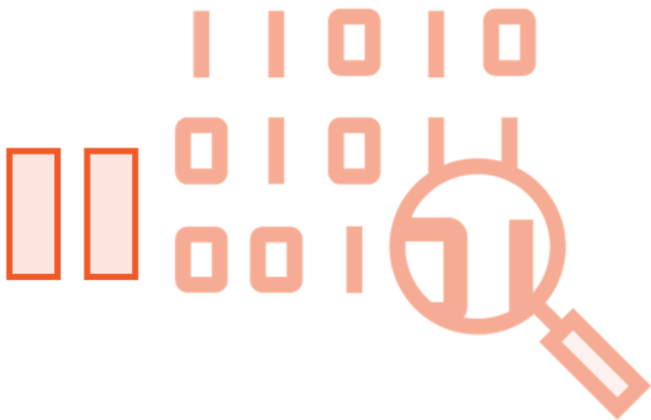


Pause execution

Generally suspend foreground jobs

Ctrl + Z

Suspend or Background?



Demo



Suspending jobs

Starting background jobs

Switching jobs



Review



Understand processes

- Identify
- Quantify resource usage
- Wider context

Understand Jobs

- States
- Advantageous use

