# Processes and Job Control

# What You Will Learn

- List running processes.
- Foreground vs background processes.
- Launch background processes.
- Kill processes.

# Listing Processes and Information

`ps`       Display process status.

# `ps` Options

| | |
|---|---|
| `-e` | Everything, all processes. |
| `-f` | Full format listing. |
| `-u username` | Display username's processes. |
| `-p pid` | Display information for PID. |

# Common `ps` Commands

```
ps -e              Display all processes.
ps -ef             Display all processes, full.
ps -eH             Display a process tree.
ps -e --forest     Display a process tree.
ps -u username     Display user's processes.
```

# Other ways to view processes

`pstree`     Display processes in a tree format.

`top`        Interactive process viewer.

`htop`       Interactive process viewer.

# Background and Foreground Processes

| | |
|---|---|
| `command &` | Start command in background. |
| `Ctrl-c` | Kill the foreground process. |
| `Ctrl-z` | Suspend the foreground process. |

# Background and Foreground Processes

`bg [%num]`       Background a suspended
                  process.

`fg [%num]`       Foreground a background
                  process.

`kill`            Kill a process by job number
                  or PID.

`jobs [%num]`     List jobs.

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# Killing Processes

```
Ctrl-c              Kills the foreground proc.
kill [-sig] pid     Send a signal to a process.
kill -l             Display a list of signals.


kill 123
kill -15 123
kill -TERM 123      kill -9 123
```

# Summary

- `ps`
- `Ctrl-c`
- `Ctrl-Z`
- `bg`
- `fg`
- `jobs`
- `kill`