

# Signals and Signal Handling

UNIX511 Week 6 Class 2

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# Outline

Signals – Let's Review

Programming and Signals

## Signals – Let's Review

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# Signals – Let's Review

- Programs (commands) run in processes
- Signals can be sent to processes – often with the `kill(1)` command
  - A rudimentary form of inter-process communication (IPC)
- Control-C sends an interrupt signal – SIGINT
- Control-Z sends a terminal stop signal – SIGTSTP
- See `signal(7)` – different signals and default actions
  - Note that SIGKILL and SIGSTOP cannot be caught, blocked, or ignored
- Signals references – see:  
<https://github-pages.senecapolytechnic.ca/unx511/Week6/Week6.html>

## Programming and Signals

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# Signal Actions and Handlers

- Programs can change the default actions for signals
  - e.g. `SIG_IGN` (ignore) or `SIG_DFL` (reset to default)
- Programs can arrange for a function to run when a signal is received
  - We call such a function a “signal handler”
- See the system calls
  - `signal(2)` – older, simpler, inconsistent implementations
  - `sigaction(2)` – newer, better, consistent implementations
- The `kill(2)` system call sends signals to processes
  - Subject to permissions – e.g. you can’t signal someone else’s process
- Processes exist in “process groups” – if you’re interested:  
[https://en.wikipedia.org/wiki/Process\\_group](https://en.wikipedia.org/wiki/Process_group)

# What Do Signal Handlers Do?

- Whatever you want (more or less)
- Could tidy up and exit
  - e.g. `vim(1)` saves changes to recovery file
- Perhaps restart and/or re-read configuration settings
- Log status to a log file
- Start an action e.g. look for work to do
- Any number of other things

# Signal Code Samples

- `1_sendrecv` – simple signal receivers and sender
- `2_sigact` – fork child processes, then signal them
- `3_uninterrupt` – block/ignore ctrl-C (INT) and ctrl-Z (TSTP)
- Let's have a look ...



- Signals are a fundamental part of Linux/UNIX systems
- Shell job control, simple IPC, interrupting, suspending
- Another system programming “necessary tool”