## Signals and Signal Handling

UNX511 Week 6 Class 2

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#### Outline

Signals – Let's Review

Programming and Signals

# 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
  - $\cdot\,$  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

### 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"
- $\cdot$  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

### 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
- $\cdot\,$  Log status to a log file
- $\cdot\,$  Start an action e.g. look for work to do
- Any number of other things

- 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 ...

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