Don’t do this at home

ID1206 OPERATING SYSTEMS

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Signals

- Notifications sent to a process to inform that a certain event has occurred
- Causes a process to stop executing and handle the signal that has been received
- Type in ‘man 7 signal’ in the shell to list all signals and their description
Signals used in experiment

- SIGINT: interrupt a process from keyboard (Ctrl+C)
- SIGTERM: terminate a process
- SIGKILL: kill process immediately
- SIGFPE: arithmetic exception (division by 0)
- SIGSEGV: invalid memory access (segmentation fault)
Sending signals

• From the keyboard
  - Ctrl-C

• From the shell
  - kill -signal pid : sends the specified signal to the process with the specified process id

• Using system calls
  - kill(pid, signal): sends the specified signal to the process with the specified process id
Interrupt descriptor table

- Used to determine the correct response to interrupts and exceptions
- It contains pointers to different procedures that should be executed on different interrupts, each signal has its default action to be taken
- You can define your own signal handling procedures
Signal handlers

• Each signal has a default action
  - Ex: SIGINT – terminate process
• The action can be changed by using the sigaction structure
• Define a function that is invoked when the signal is received
• The default actions for SIGKILL and SIGSTOP cannot be changed
Sigaction

- sigaction(signal, action, oldaction)
  - signal – the signal we want to handle
  - action – the action that should be taken when receiving the signal
  - oldaction – needed if you want to see what the old action was,
    should be set to NULL if it is not needed
Other structures

- **siginfo_t**
  - Structure that contains information about the signal
  - For ex: the process identifier

- **uncontext_t**
  - Save the context of the process that caused the fault
  - For ex: program counter, contains address of the next instruction to be executed