

Operating Systems

COMS W4118

Lecture 4

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`signal`

- `signal` is the typical introduction to asynchronous operation in the kernel.
- `signal` takes two arguments, which signal it is, and a pointer to a function.
- The function pointer takes one integer and returns nothing.
- `signal` returns `SIG_ERR` if something goes wrong.
- The signal handler can be any function that takes one integer and returns nothing.
- The return value of `signal` is the previous signal handler.
- We include the `perror` block for when we register our signal handler.
- Signal Handler must be written in a very careful manner so it does not interrupt what is currently happening in the machine.
- `printf` is a non-reentrant function.
- Signal handlers are concept that belong to processes, not functions.
- `kill` sends a signal to a process.
- You can catch any signal and not die.

X Session

- When you boot up a virtual console, you have to start `xfce4`
- `xinit` reads the window configurations and overall configurations for the machine.

- `Xorg.bin` takes control of the graphics card and draw in the objects.
- Old name for `Xorg` was just `X`.
- X windows system controls the graphical interface.
- The terminal program is a program that makes a connection to the X server. It is a network application.
- Google X forwarding.
- Window manager is responsible for resizing windows and all that jazz.
- Things are pretty modular in unix systems.
- Remember to take snapshots and how to work with the virtual box.
- Key idea: Having a layer of systems versus having direct access to the system.

Kernel Modules

- `insmod` - inserts modules into the system.

File System

- Equivalent system calls to the user-space function calls.
- `open` is system; `fopen` in the user-space.
- `mode` is the permissions for the file.
- `fopen` does not set the permission explicitly (i.e., there is no parameter that needs to be set).
- `fopen` is system dependent. It is not a system call, it's a cross- platform library.
- `mode` is a very unix-specific method to control file permissions.
- `O_EXCL` with `O_CREAT` means “please create this file and only create this file if this file is not there.”
- Guarantees mutual exclusion to a given file.