

# ISA 563: Fundamentals of Systems Programming

Daemon Processes

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# Daemons

- Processes that run in the background
- Normally have init (pid = 1) as their parent
- Program name ends with “d” by convention:
  - syslogd
  - sshd
  - ftpd
  - httpd
  - ...

# Daemon Prerequisites

- Opening a new session:
  - Becoming a session leader
  - Becoming a process group leader
  - Disassociating from controlling terminal
- Staying in the background
  - Fork off and die
- Changing working directory to “/”
- Closing inherited file descriptors
  - Use log files (or /dev/null) instead of stdin/stdout/stderr

# Demo

`simple_daemon.c`

# Daemon Conventions

- If a lock file is used, it is normally put under
  - `/var/run/xyzd.pid` (normally privileged)
  - If unprivileged daemons may use `/var/tmp`
- Configuration files are kept under `/etc`:
  - `/etc/xyz.conf`
- System level daemons are normally located at:
  - `/etc/init.d/`
  - `/etc/rc*`
- Prepare to receive `SIGHUP` to reload configuration file(s) (reload dictionary for HW3)

# Logging

- No stdout/stderr, use system logging or custom logging:

```
#include <syslog.h>
```

```
void openlog(char *ident, int option, int facility)
```

```
void syslog(int priority, char *format, ...)
```

```
void closelog(void);
```

# Demo

`advanced_daemon.c`