Système UNIX
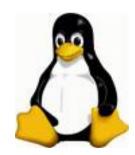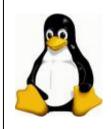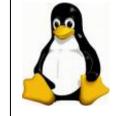
Alain NINANE - UCL/SGSI

Université catholique de Louvain

Responsable de la Sécurité du Système d'Information
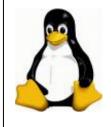
Contacts

- emails ... (liste non exhaustive)
  - alain.ninane@uclouvain.be
  - ~~alain.ninane@cern.ch~~
  - alain.ninane@ieee.org
  - alain.ninane@slashdev.be
  - alain.ninane@unixacademy.org
  - alain.ninane@uhsp.be
  - alain.ninane@me.com
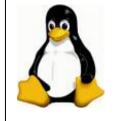 - {abuse,rssi,idm-manager}@uclouvain.be

  - …

1. Introduction

- Introduction

  a) Definition - Main Characteristics

  b) Philosophy - Spirit

  c) Architecture

  d) History - The Unix Family

  e) Unix vs. Linux

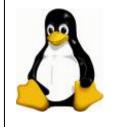 f) Command interpreters - Shells

  g) Real Life Examples

2. System Programming (I)

- System calls + I/O
  a) Systems calls
  b) Portability issues + C Pre Processor
  c) Errors handling
  d) I/O system calls + File Descriptor
  e) Open, Creat, Read, Write, Close

- Standard I/O library
  a) Streams - Stdio vs raw I/O - Buffering
  b) Output/Input functions - (un)formatted
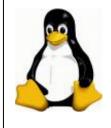 c) Good programming practices

3. System Programming (II)

- Advanced I/O

  a) Shell - kernel limits

  b) dup, dup2, mmap, munmap, msync

- File management

  a) link, symlink, unlink, ...

  b) stat, rename, ...

  c) locking: lockf, flock, ...
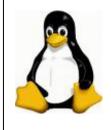
4. System Programming (III)

- Process Management
  a) Definition
  b) Environment
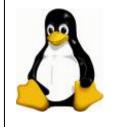 c) Fork
  d) Exit, Wait
  e) Exec
  f) Shell Process Control

5. System Programming (IV)

- IPCs - (1/3) - Common
  a) Pipes
  b) Signals

6. System Programming (V)

- IPCs - (2/3) - BSD
  a) Sockets
  b) I/O Multiplexing

7. System Programming (VI)

- IPCs - (3/3) - Sys V
  a) Message queues
  b) Semaphores
  c) Shared Memory
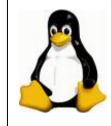
8. A Journey in the filesystem

- Files
  - a) ownership, protection modes, special modes
  - b) useradd, passwd, umask
  - c) access/change/mod times
  - d) special files
  - e) devices drivers
  - f) du, df
  - g) finding files (find, locate)

9. A Journey with processes

- Processes
  a)   /proc
  b)   state
  c)   nice, renice
  d)   lsof - open files

10. Utilities and filters

- utilities and filters

  1. awk, sort, uniq, grep, ...

  2. tail, head

- example

  1. air navigation database

11. Shell programming & Tools

- shell programming
  - scripts

12. Security & Misc

- security

- questions & answers