Introduction to Linux

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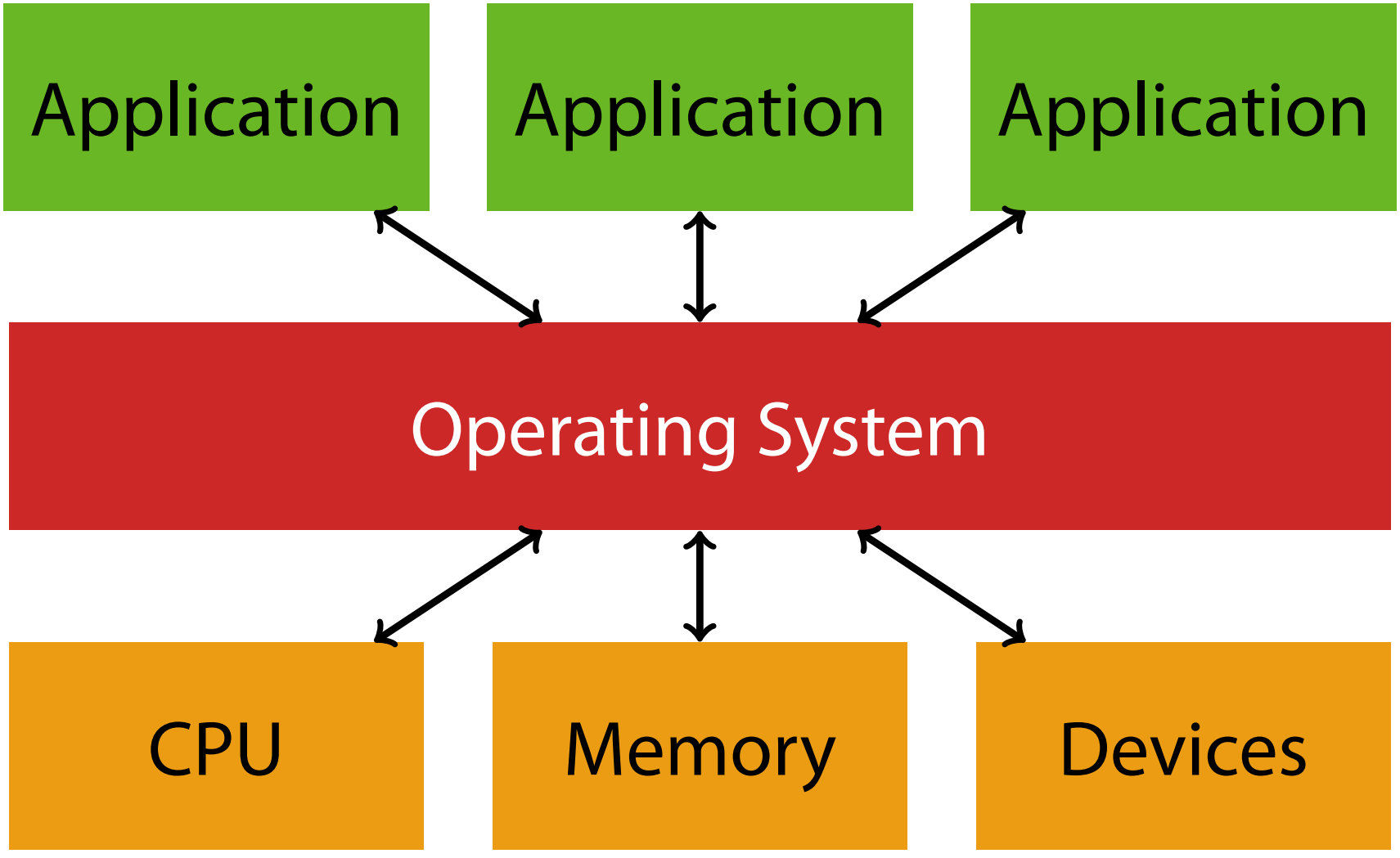
This is Tux, the Linux mascot

This is Linus Torvalds, the creator of Linux

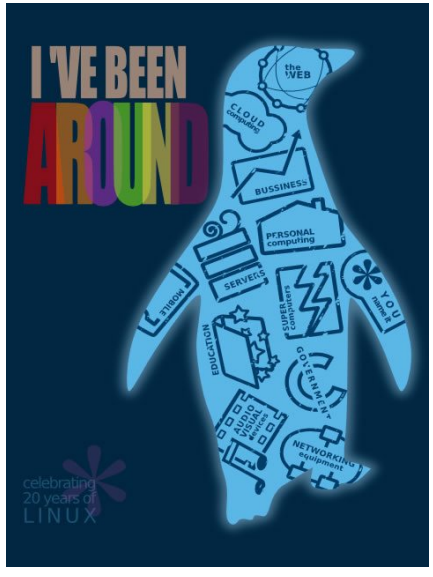
But what is Linux?

- A computer has
  - processors
  - memory/storage
  - input/output devices
- An operating system (OS)
  - manages hardware
  - provides common software services for application programs
- Linux is one such OS


Application
Application
Application
Operating System
CPU
Memory
Devices

Why use Linux?

- It is a free, multi-user, multitasking, Unix-like OS
  - Mature technology . . . 40 years
  - But at the forefront of new ideas
- It runs on everything from supercomputers to cellphones
- Lots of programs and tools



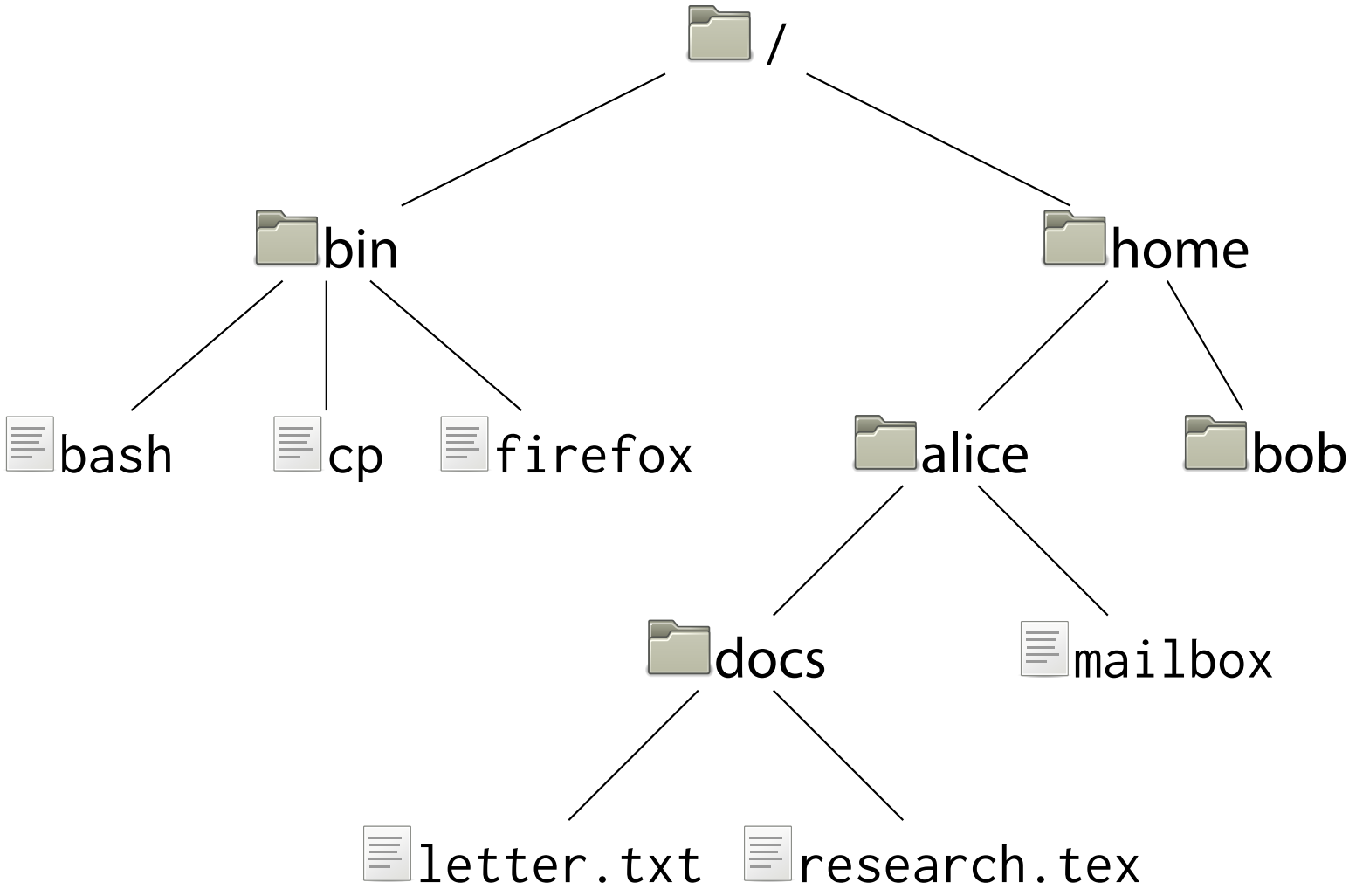
The Unix/Linux philosophy

- Linux is the kernel
- Process management
- Memory & storage management
- Command-line interpreter (CLI)
  a.k.a. the shell
- Lots of little programs & tools

Almost everything in Linux is a file;
everything that is not a file is a process.

File systems

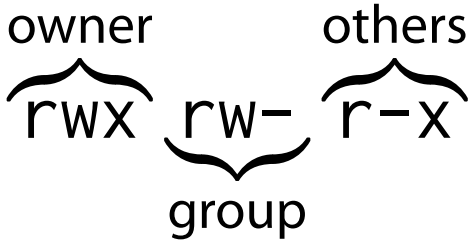
- Files
  - Programs, documents, media, etc.
- Directories & tree structure
- Paths
  - Relative
  - Absolute
- A single, unified local file system
- Mounting & unmounting
- Networked file systems


/
bin
home
bash
cp
firefox
alice
bob
docs
mailbox
letter.txt
research.tex

Users

- Every file/process belongs to a **user**, the **owner**
- Every user belongs to a **group**
- **File permissions** specify who can access and do what
- The privileged user **root**

Example (File permissions)



r = Read, w = Write, x = eXecute

Standard I/O streams

- `stdin` for input (keyboard)
- `stdout` for output (monitor)
- `stderr` for errors (monitor)