CMPSC 311 - Introduction to Systems Programming

UNIX Essentials

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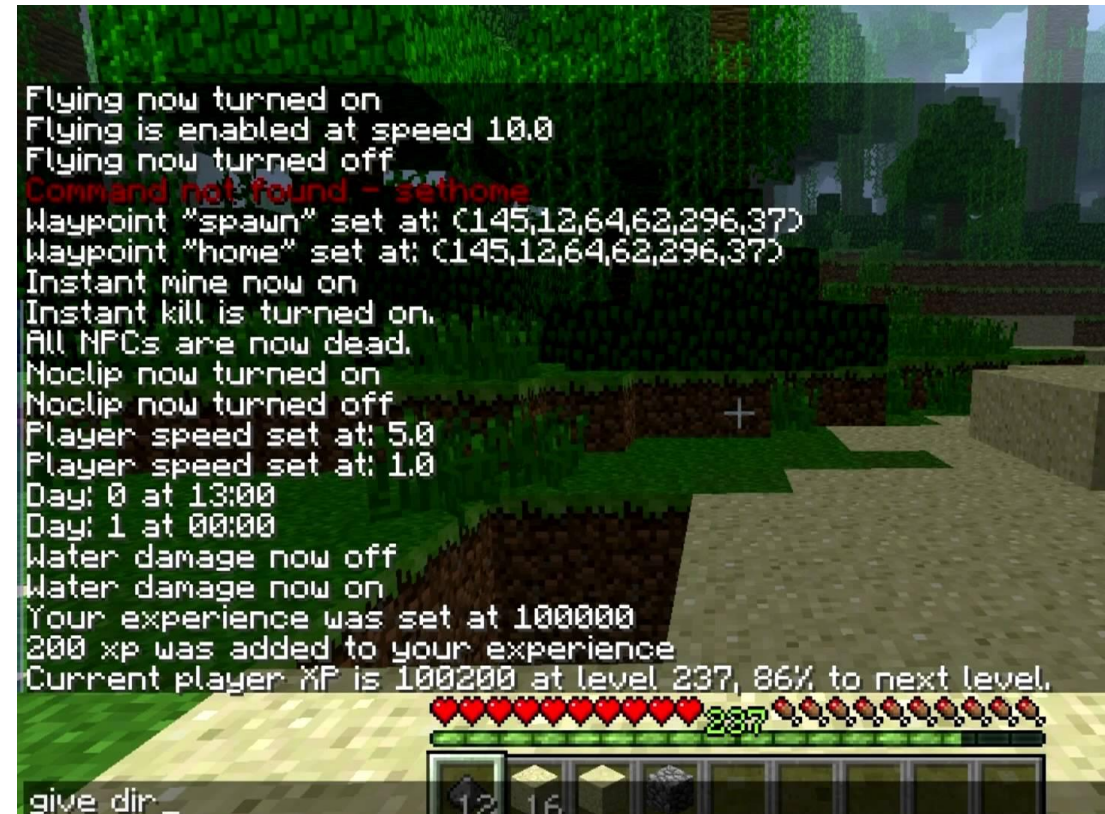
(Slides are mostly by Professor Patrick McDaniel)

The UNIX Philosophy

- Write programs that do one thing and do it well.

- Write programs to work together.

- Write programs to handle text streams, because that is a universal interface.
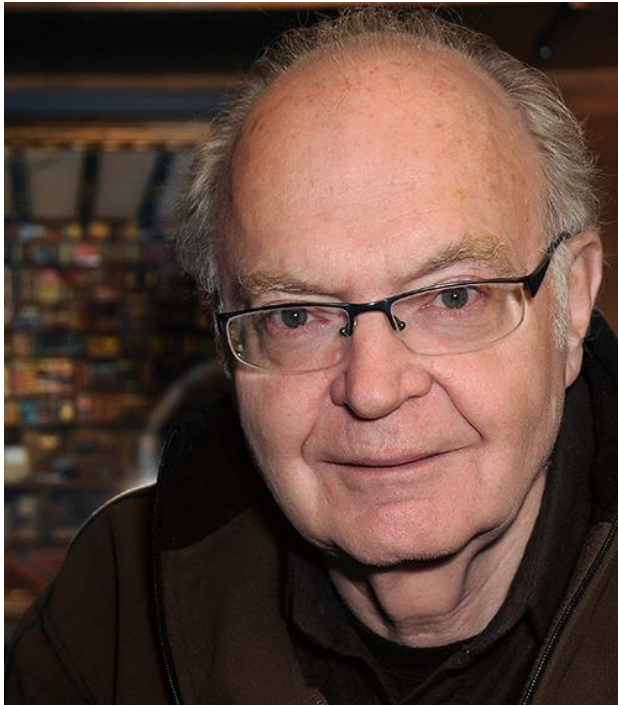
  - Doug McIlroy, Unix patriarch

Command line interface

- **Command line? Why?**
  - Efficient and powerful
  - Scriptable
  - Simple and reliable
    - Always works... even if everything else is b0rked!
- What is it?
  - Shell program ("bash" on Linux)
  - Interprets built-in commands
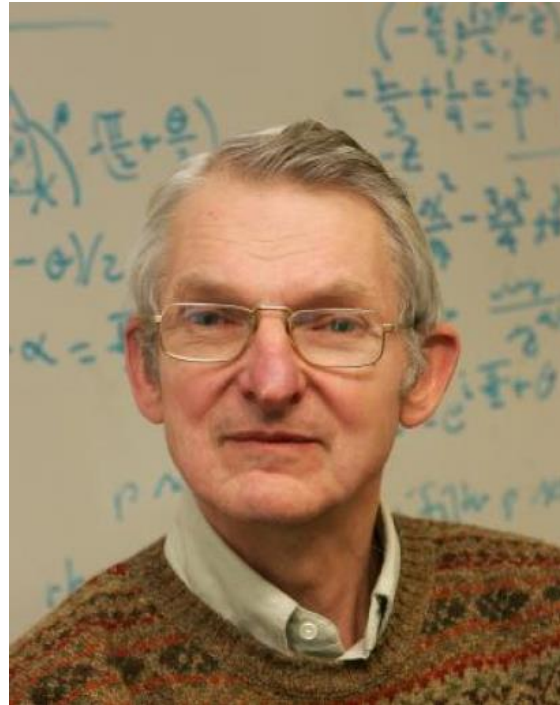 - Runs other programs
  - Runs shell scripts

Power of shell

- Challenge: print out the top K most-used words in a text

Donald Knuth

Douglas McIlroy

```
tr -cs A-Za-z '\n' |
tr A-Z a-z |
sort |
uniq -c |
sort -rn |
sed ${1}q
```

Getting started

- Boot the VM

- Log into the GUI

- Open the Terminal app

- You are now typing input for the shell

OPERATOR : MAIN SCREEN TURN ON.