

# Random Unix Stuff



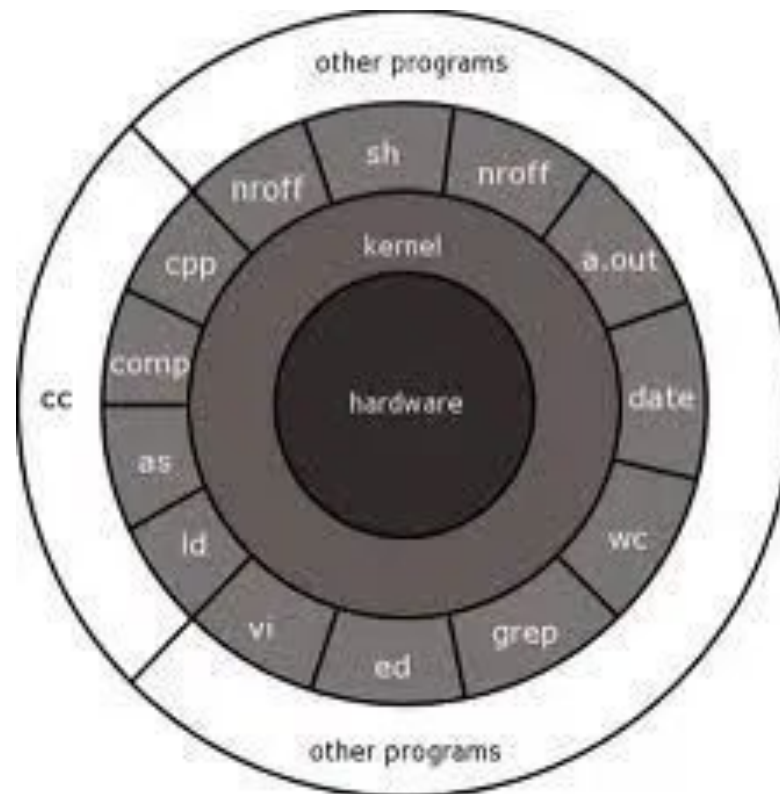
ECE 373

# Let's try something new...

- Base terminology
- Unix crash-course
- Linux Distributions - what are they?
- Various links, resources

# Basic terms and thoughts

- Kernel - Gateway between hardware and software; “the OS”



# Basic terms and thoughts, cont.

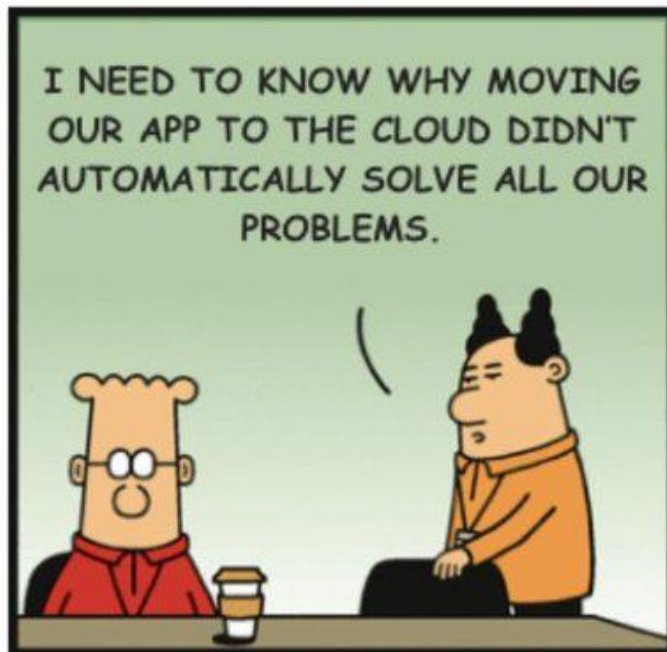
- Distribution: Collection of kernel, packages, and package management systems
  - Constitutes an installable system
  - Similar to MacOS, Windows installations
- Shell: bash, ksh, etc. What you run commands from
- Filesystem: Unix collection of disks, network mountpoints, etc., cobbled together to make a hierarchy
  - Starts at “root ( / )”
  - Similar to C: drive in Windows
- RCS: Revision Control System - tag and manage code changes
  - git - more or less defacto for code management today

# Basic terms and thoughts, cont.

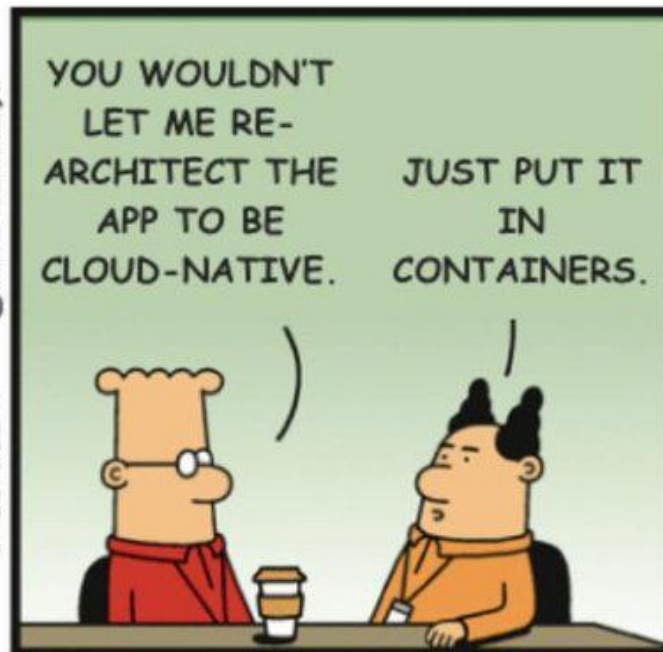
- Upstream: refers to development model for many open source projects
  - Rolling development model
  - Releases carved off rolling train model
- Patches: how changes get made to ongoing projects
  - Uses diff-format
  - Applies incremental changes to central tree
- Maintainer: person responsible for applying patches to project
  - Usually has final say, authoritative say
  - Linux kernel project full of hierarchy of maintainers
  - Linus Torvalds ultimately top maintainer, defers other decisions to sub-maintainers

# Basic terms and thoughts, cont.

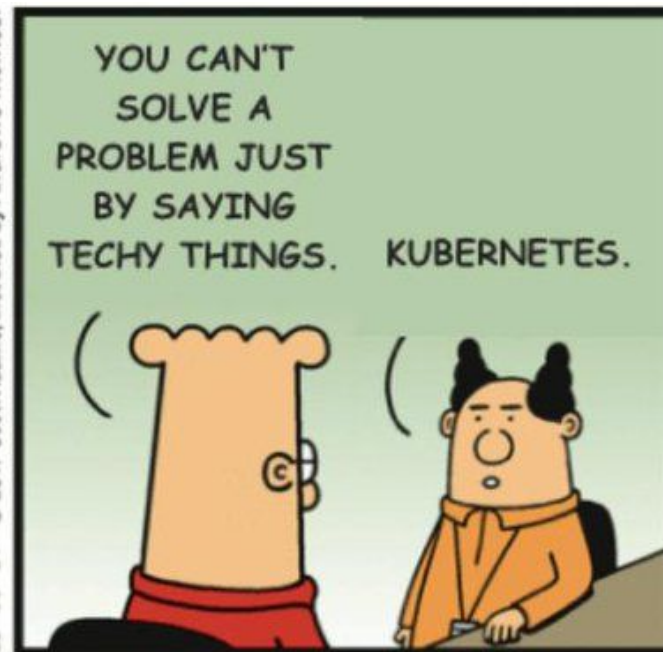
- Containers: the new “hot thing”
  - Mechanism to isolate processes, files, and/or networking
  - Much lighter-weight than a virtual machine
  - Utilizes OS/kernel knobs and hooks to achieve isolation
- Kubernetes: the \*really\* new “hot thing”
  - Orchestration framework to manage containers



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# Crash-course

## Commands:

`man` - show the manual pages (man pages)

`ls` - list contents of a directory

`pwd` - print working directory

`systemctl` - systemd control application

`bash` - your shell, along with scripting language

`dmesg` - Linux kernel log display

`watch` - useful to repeat commands, such as log counters

`tar` - “Tape ARchive”, Unix way to collect files into single one

# Linux Distributions

- Companies created around building different distributions
- Different goals, different use cases
- The old days...
  - SuSE - German-based distribution, known for X Windows advancements before others did
  - Red Hat - based in Boston, known mostly for RPM manager (package manager)
  - Slackware - Peter Volkerding, bare-bones Linux distribution based on tarballs



# Linux Distributions, cont.

- Companies evolved to enterprise needs
- Making money on free software?!?!
  - All about the support...
- Red Hat
  - Fedora Project: non-enterprise distribution, used for testing and hardening enterprise packages
  - RHEL: Red Hat Enterprise Linux
- SuSE
  - OpenSuSE: similar to Fedora for SuSE
  - SLES: SuSE Linux Enterprise Server
- Canonical
  - Ubuntu: Releases YYMM (e.g. 18.04, 19.10, etc.)
  - Can pay for support
  - LTS - long-term support

# Linux Distributions, cont.

- Many derivatives
  - CentOS - “free” RHEL (it’s dead, Jim)
  - Oracle Linux (unbreakable) - RHEL derivative
- The Cloud!
  - CoreOS, Fedora CoreOS
  - Project Atomic
  - Clear Linux
  - Alpine

# Links, resources

- LWN.net - Linux Weekly News; great resource for open source news in general (subscription-based)
- Email archives - many archives exist, great to see how developers operate and treat code
  - [vger.kernel.org](http://vger.kernel.org)
  - [lore.kernel.org](http://lore.kernel.org)
  - [spinics.net](http://spinics.net)
- Linux Foundation
  - Large amounts of sponsorship of many projects and conferences for open source
  - Many formal classes, certifications available

# Links, resources, cont

- IRC channels: freenode.net, popular IRC server
  - Internet Relay Chat (the original Slack...)
  - Rooms filled with people usually fairly helpful
  - Be respectful, be mindful of server rules
- Conferences
  - Many tech conferences sponsor students
  - Might be hard in today's environment...
  - Great opportunities for collaboration and learning
  - See new innovations, chat with people in the trenches