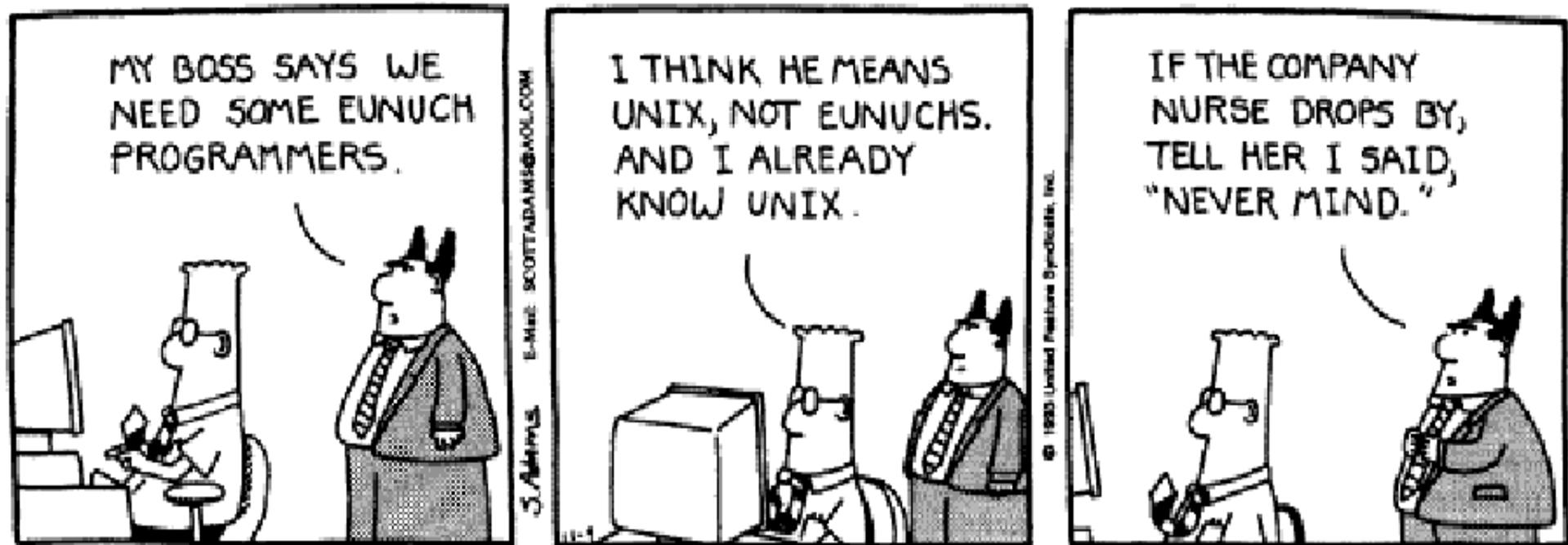




# Unix Background



# Introducing Unix



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# Brief Unix History

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- ◆ In 1969, Ken Thompson at AT&T Bell Labs began developing Unix.
  - First done in assembly language.
  - Ran on DEC PDP-7 with 8K words of memory.
- ◆ In 1974, Unix was rewritten in C.
  - By writing C compilers, Unix can be ported to other computers.
- ◆ BSD UNIX
  - BSD: Berkeley Software Distribution
  - UCB put the Internet Protocols (IP) into UNIX
  - 4.4BSD (Berkeley): 1994

# Brief Unix History

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- ◆ System V
  - AT&T System V (1984)
  - SVR4: System V Release 4 (current version)
- ◆ POSIX:
  - Portable Operating System Interface for Computer Environments (1984)
  - Most Unix systems try to conform with POSIX to a certain extent
- ◆ This course is based on SVR4.
  - Most of the things you will learn in this course work in different Unix systems with small differences

# The Unix Philosophy

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- ◆ Unix was not meant to be a user-friendly operating system
  - Instead, meant to be “user-helpful” and **very** powerful
- ◆ The Unix operating system protects users from other users but not necessarily from themselves
- ◆ It provides the necessary tools then gets out of your way

# The Unix Philosophy

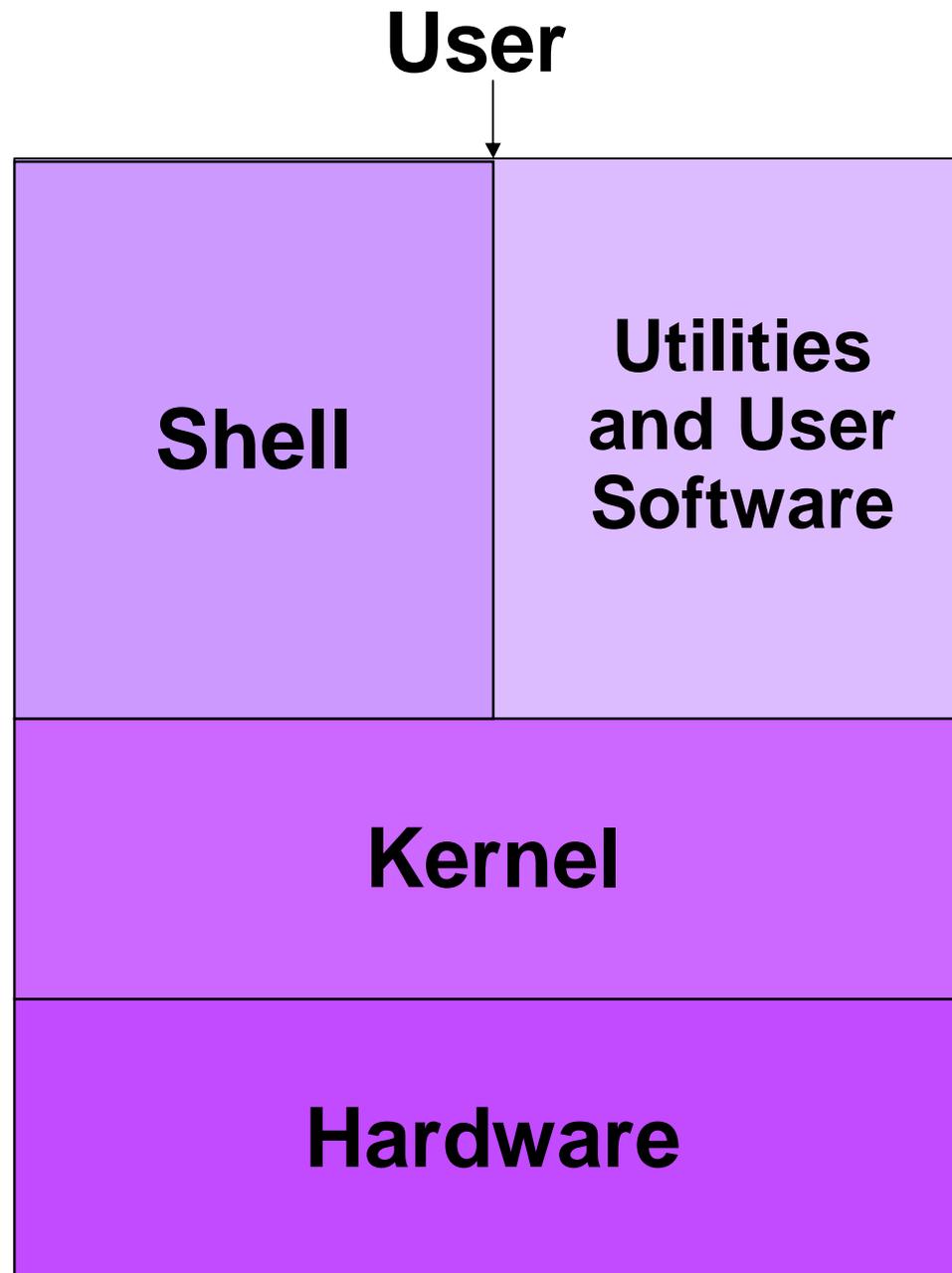
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## ◆ The Unix Tools

- Keep each tool simple
- Have each tool do one thing, and do that one thing really well
- Keep tools terse and not too talkative
- More complex tasks can be accomplished by combining tools together in scripts or pipelines
  
- Originally, input and output to workstations were slow and tedious, and this approach made things faster and more efficient.

# Structure of a Unix System

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# Parts of a Unix Operating System

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## ◆ Kernel

- Manages the processes and resources
- Controls and hides the hardware

## ◆ Shell

- An interface between users and the kernel
- A command line interpreter (CLI)

## ◆ Utilities are standard tools/applications

- They are used so often that they become a part of Unix
- “elm” and “pine” are Unix utilities, for example

# A Word on Linux

- ◆ In 1991, Linus Torvalds wrote the Linux kernel
  - When he was an undergraduate in University of Helsinki.
  - Wanted a version of UNIX that he could run on the old computer he owned...
- ◆ Numerous programmers have worked on it
  - It's a popular Unix-like operating system now
    - ❖ Started with hobbyists and at universities
    - ❖ Growing popularity in corporations and elsewhere
  - Occupies a large percentage of PC server market
- ◆ Achieved its goal of POSIX compliance

# A Word on Linux

- ◆ Now available for many architectures
  - x86, PowerPC, SPARC, SGI Indy, HP PA-RISC, DEC Alpha, IA64 ...
- ◆ Growing software base
  - Office suites, desktops, server software, games, ...
- ◆ Has become the predominant Unix in the microcomputer world
  - Much more popular than Free/Open/NetBSD, Solaris x86, ...
- ◆ Still a "free" operating system
  - Mostly under GNU General Public License (GPL or "Copyleft")
  - Many companies create and sell distributions (Redhat, SUSE, and many others)
  - Check it out at: <http://www.linux.org>
- ◆ Big servers start using linux now.
- ◆ We are thinking of teaching linux...