

CSCI 3310

OPERATING SYSTEMS

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Department of Computer Science

YouTube

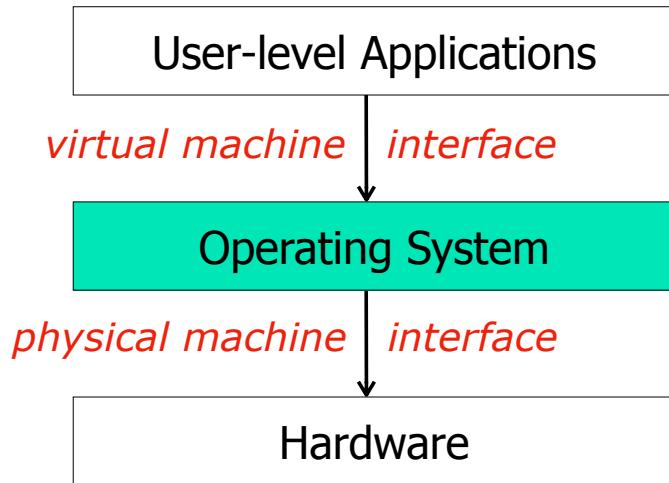
AN x64 PROCESSOR IS SCREAMING ALONG AT BILLIONS OF CYCLES PER SECOND TO RUN THE XNU KERNEL, WHICH IS FRANTICALLY WORKING THROUGH ALL THE POSIX-SPECIFIED ABSTRACTION TO CREATE THE DARWIN SYSTEM UNDERLYING OS X, WHICH IN TURN IS STRAINING ITSELF TO RUN FIREFOX AND ITS GECKO RENDERER, WHICH CREATES A FLASH OBJECT WHICH RENDERS DOZENS OF VIDEO FRAMES EVERY SECOND

BECAUSE I WANTED TO SEE A CAT JUMP INTO A BOX AND FALL OVER.

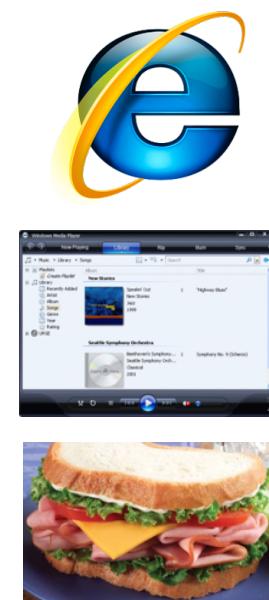


(source: xkcd.com)

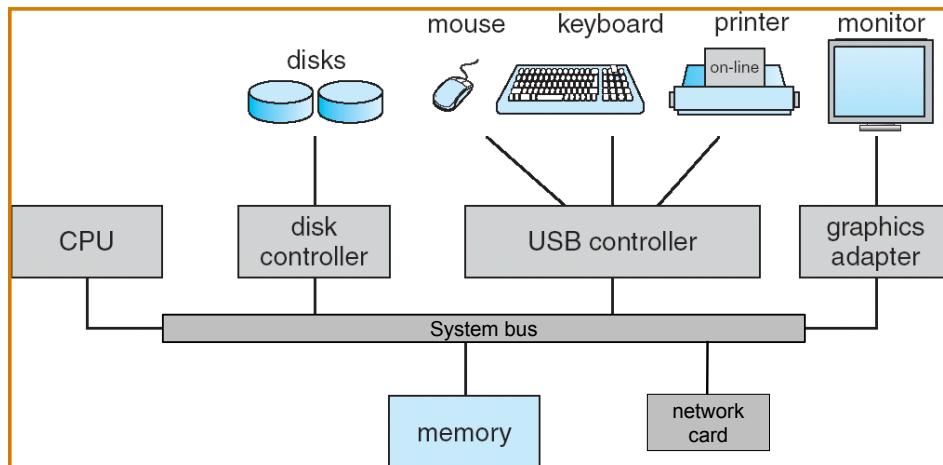
Top-Level View of an OS



What's in an OS?



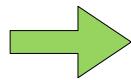
Generic Computer Architecture



OS Resource Management

Hardware

Processor



Example OS Services

Processes, scheduling,
synchronization

Memory

Allocation, protection,
virtual memory

I/O

Disk management,
filesystems, networking

Personnel and Resources

Instructor: Sean Barker

Email: sbarker@bowdoin.edu

Office: Searles 220

Office Hours TBA (or by appointment)

Email **Slack** for course announcements,
discussions, questions, etc.

Course Components

Programming projects (4)

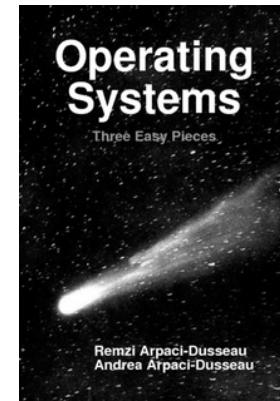
Problem sets (3-4)

Exams (2)

Attendance and engagement

Other Administrivia

Textbook



Collaboration policy and honor code

Guidelines for Generative AI

Course Website

Course website: bowdoin.edu/~sbarker/3310

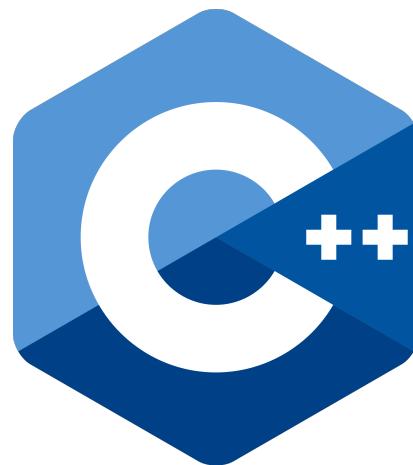
Syllabus & Policies

Class Schedule

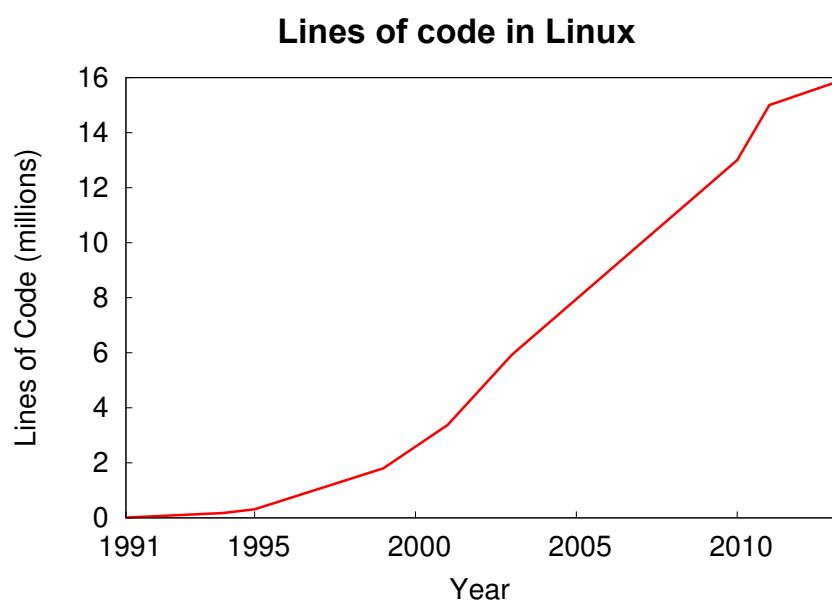
Assignments

Anonymous Feedback

Project 1: Inverted Index

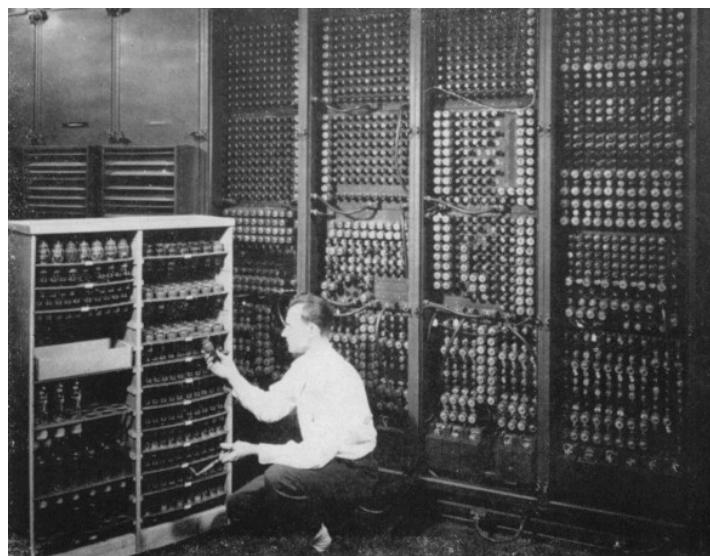


Now for some history...



1. Single-User Computers (1945-55)

Vacuum tubes!



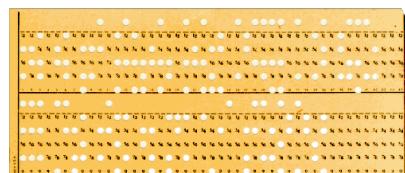
Replacing a bad tube meant checking among ENIAC's 19,000 possibilities.

2. Batch Processing (1955-65)

Mainframes!



Punch cards!



3. Multiprogramming (1965-80)



Transistors!



Multiple programs concurrently

Simultaneous I/O and computation

4. Personal Computers (1980-present)



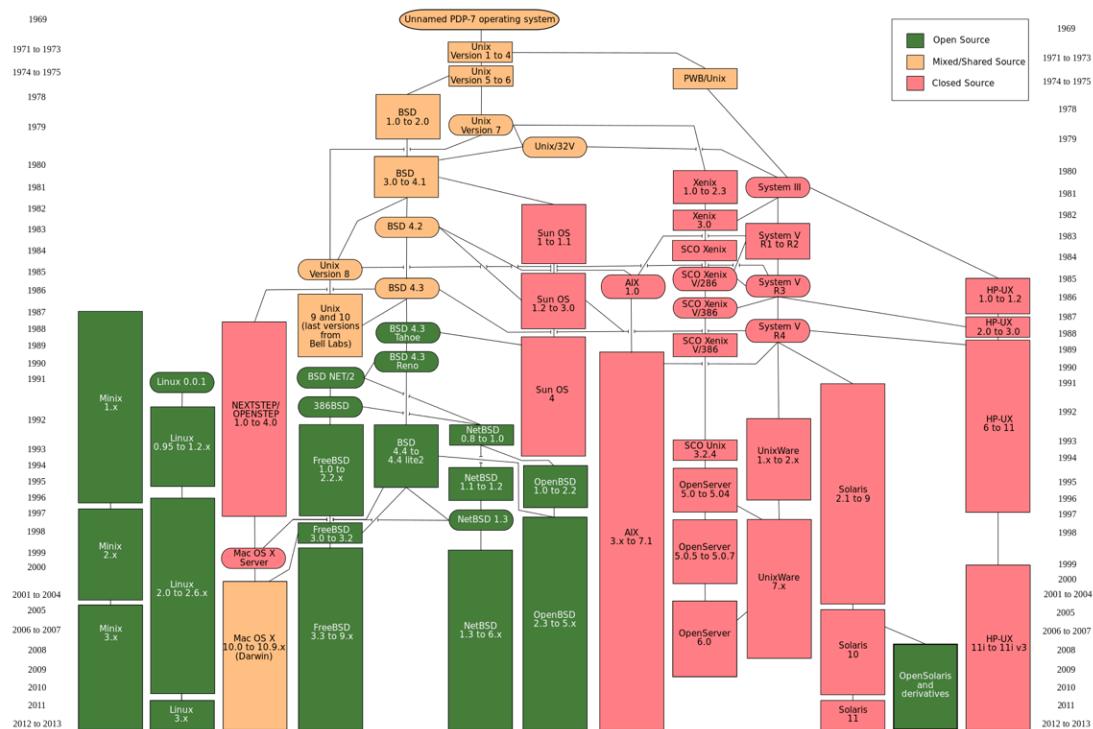
5. Mobile & Distributed (2000-present)



UNIX (1971)



Unix and Unix-like OSes



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MS-DOS (1981)

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Welcome to MS-DOS 2011

For a list of simple commands, please type HELP
>HELP

LOC - Displays the location of the currently operating program
OPEN <directory> - Opens and displays contents of the directory entered
EXECUTE <directory/filename> - Executes a file within that directory
REBOOT - Reboots current session (Confirmation will be required to prevent
accidental reboots)
SYS - Displays system properties
>RUN: person.EXE

What was that? I can't understand you.
>realityconfig

Attempting to configure your reality...
Enter password:
>^C to abort.

Incorrect password. Exiting function.
>SYS

Main Harddrive: Q:/
Space Used: 105246/6152374 KB
Processing Power: 10 GH
RAM: 3000000 KB
>OPEN GAMES

What are you, stupid? GAMES isn't a directory! Try Q:/!
>EXECUTE adventure.EXE

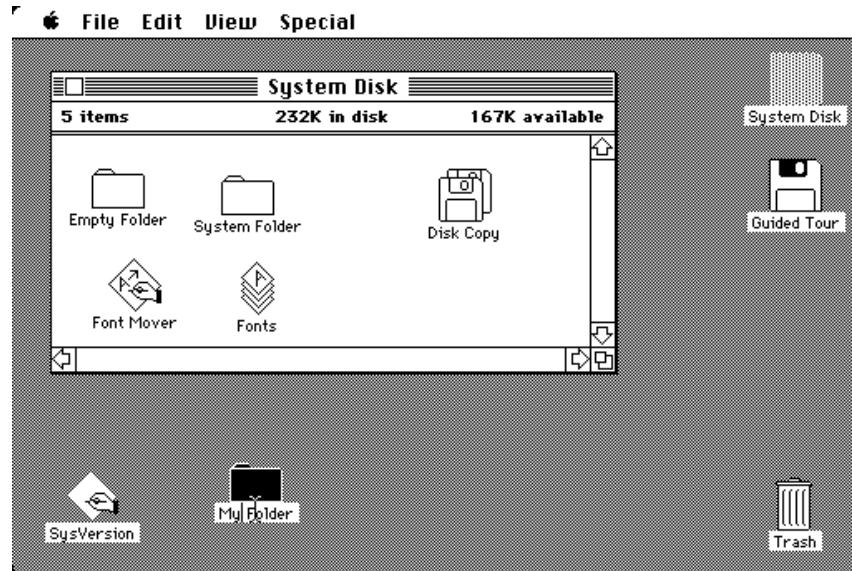
Try adding a directory to that, before you seem any less intelligent.
>_
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Mac OS (1984)



Mac OS X (2014)



Where are we going?

