

# CSE 536 Course Intro

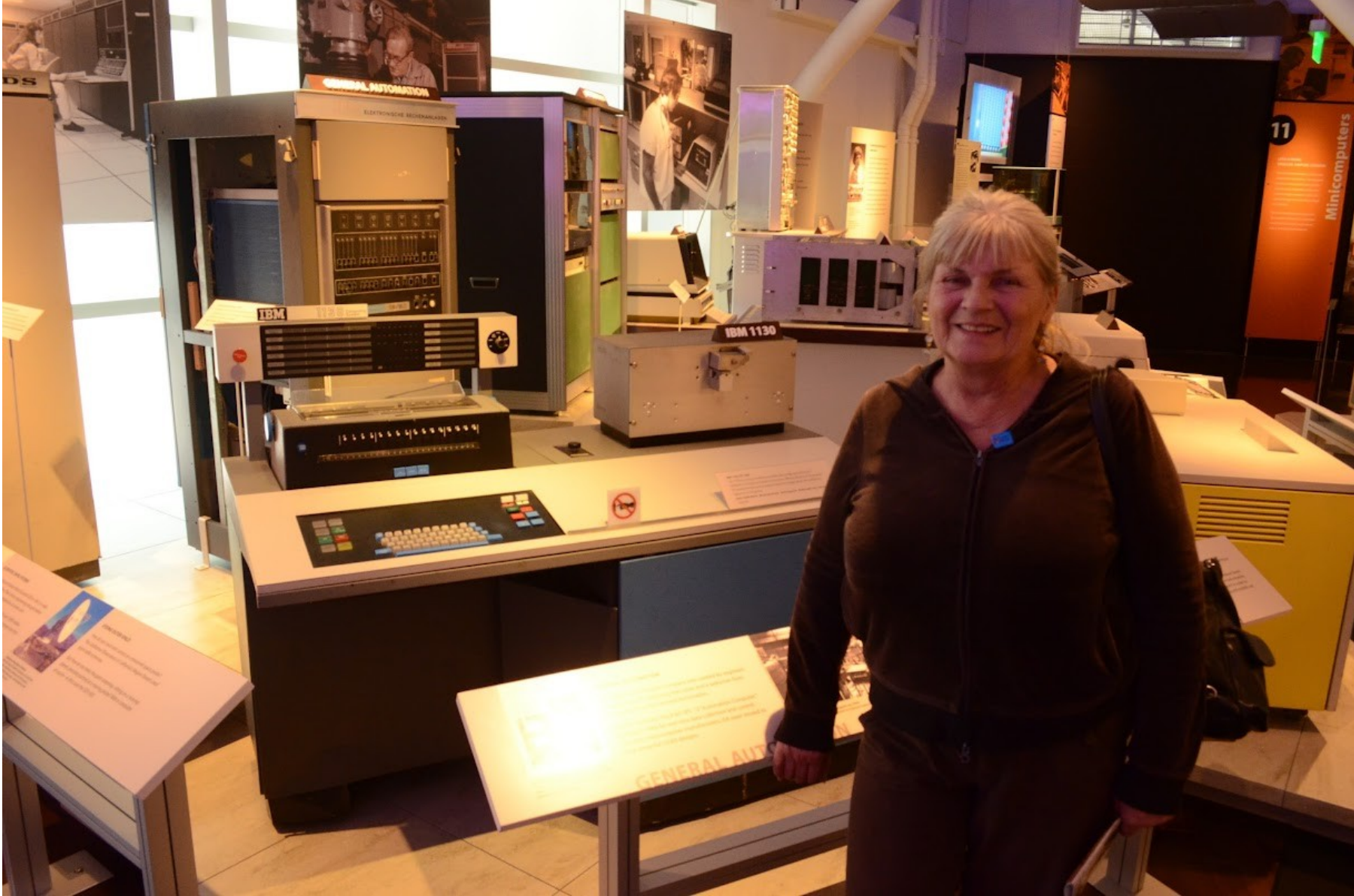
Advanced Operating Systems

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# A bit about me...

- Associate Professor, SCAI *and* Biodesign Center for Biocomputation, Security, and Society
- Research is about Internet Freedom, including:
  - Internet censorship and censorship evasion
  - Machine-in-the-middle attacks, adversarial networking
  - Privacy, forensics, and a few other things





IBM 1130

IBM



**IBM 1130, 1965**  
The 1130 was unusual in offering removable disk storage and a full line of peripherals including card readers and printers. IBM also offered over 50 specialized radio sets for high-way alignment, bridge design, and auto repair for civil engineers.  
Serial 124,880,440,100. Memory size 64 words. Business Unit Code. Memory width 16 bits.

**GENERAL AUTOMATION**  
Not every minicomputer company was created by engineers jumping ship. A marketing executive and a salesperson at Honeywell founded General Automation.

[https://commons.wikimedia.org/wiki/File:Apple\\_II\\_typical\\_configuration\\_1977.png](https://commons.wikimedia.org/wiki/File:Apple_II_typical_configuration_1977.png)



Welcome to Debian Linux 1.1!

This is the Debian Linux Boot Disk. On most systems, you can go ahead and press <ENTER> to begin installation. You will probably want to try doing that before you try anything else. If you run into trouble, or if you already have questions, press the function key <F1> for quick installation help.

WARNING: You should completely back up all of your hard disks before proceeding. The installation procedure can completely and irreversibly erase them! If you haven't made backups yet, remove the floppy from the disk drive and press <RESET> or <Control-Alt-Del> to get back to your old system.

Debian Linux comes with ABSOLUTELY NO WARRANTY, to the extent permitted by applicable law. For copyright information, press <F5>.

This boot floppy installs the Linux kernel version 2.0.0.

Press <F1> for help, or <ENTER> to boot!

boot: \_

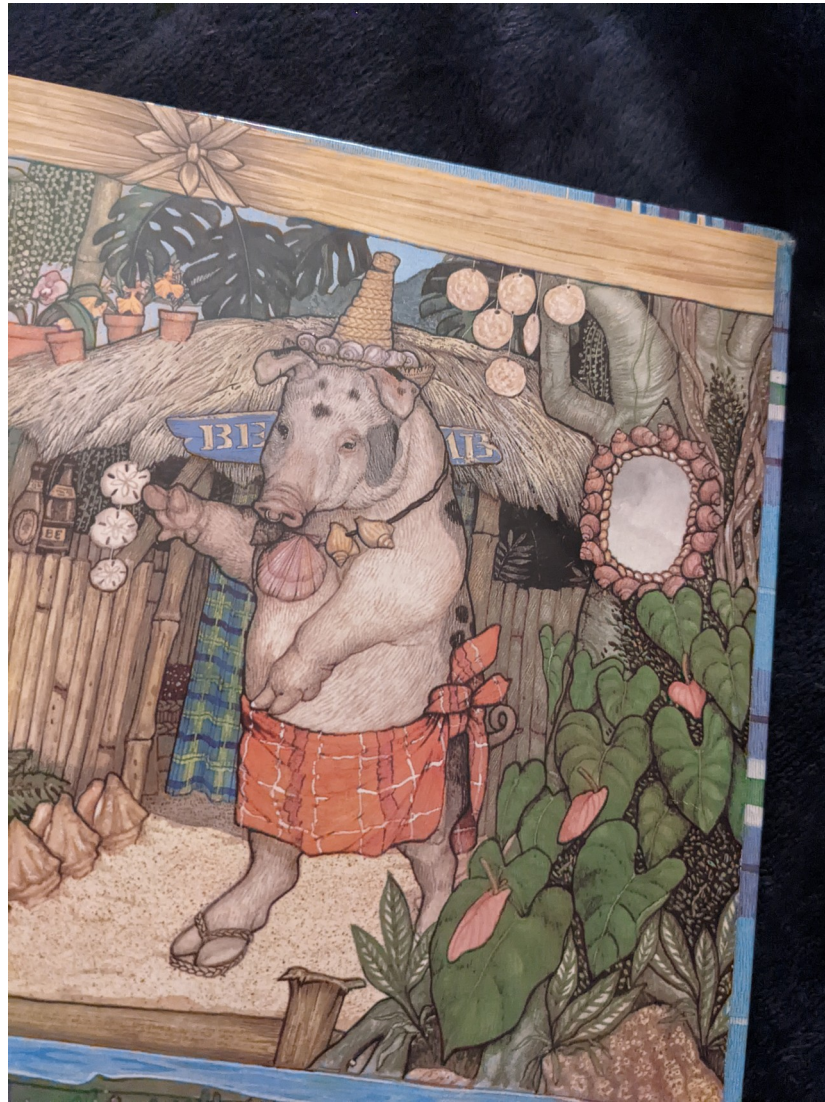
[https://archive.org/details/debian\\_1.1](https://archive.org/details/debian_1.1)

# UNIX, C, and the Internet...

- UNIX was developed to run on anything
  - Bell Labs, 1969 (Thompson and Ritchie)
  - Contrast with TOPS10
- C provides direct access to hardware, virtually no runtime environment
  - Bell Labs, 1972-1973 (Ritchie)
  - Contrast with COBOL

UNIX example...





```
jedi@mariposa:~$ cat /usr/share/dict/american-english | tr [a-z] [A-Z] | grep "MB$" | head -n 20  
COULOMB  
HOLCOMB  
LAMB  
LIPSCOMB  
MB  
MB  
APLOMB  
BENUMB  
BOMB  
CATACOMB  
CLIMB  
COCKSCOMB  
COMB  
COXCOMB  
CRUMB  
CURRYCOMB  
DUMB  
ENTOMB  
FIREBOMB  
HONEYCOMB  
jedi@mariposa:~$
```

TOPS10 example...

# A TOPS-10 command primer

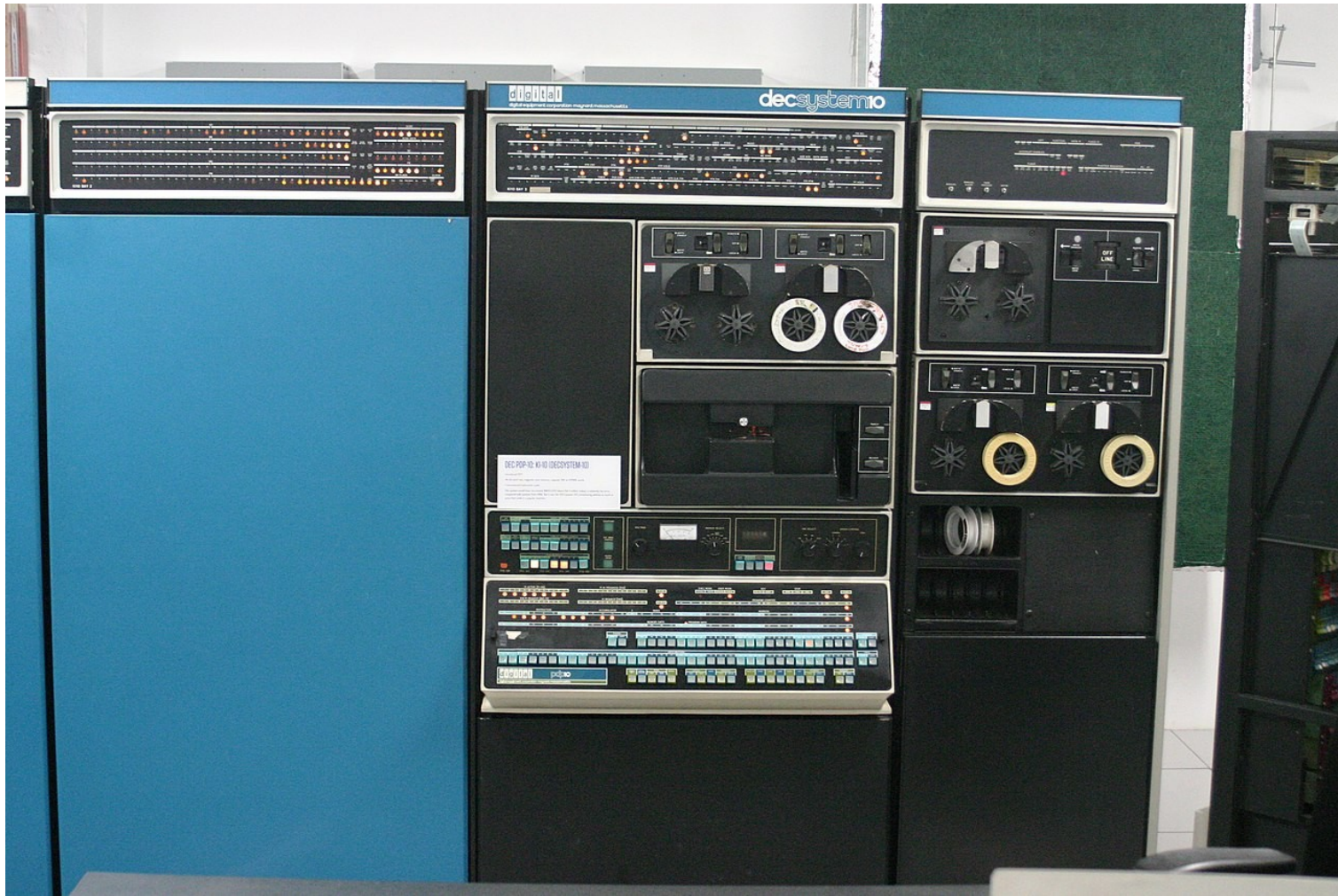
But

```
C:\> mkdir foo
C:\> cd foo
C:\FOO> dir
```

becomes:

```
.r credir
Create directory: [, ,foo]
  Created DSKC0:[42,42,
FOO].SFD/PROTECTION:775
Create directory: ^Z

.r setsrc
*cp [, ,foo]
*^Z
EXIT
.dir
%WLDDEM Directory is empty
```



<https://commons.wikimedia.org/wiki/File:DECSys10-KI10.JPG>

# CP/M<sup>®</sup> GRAPHICS<sup>™</sup>

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[https://en.wikipedia.org/wiki/CAP\\_computer](https://en.wikipedia.org/wiki/CAP_computer)





# Who cares?

- Early computing
  - Failed to create a separation between users
  - Concurrency was handled *via* hardware support
- Today (Internet is prevalent)
  - Security and privacy are very personal
  - Users are in a “walled garden”, powerless
  - Concurrent processes span continents



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MALICIOUS APP —

# Android app from China executed 0-day exploit on millions of devices

Fast-growing e-commerce app Pinduoduo had an EvilParcel stow-away.

DAN GOODIN - 3/27/2023, 5:31 AM

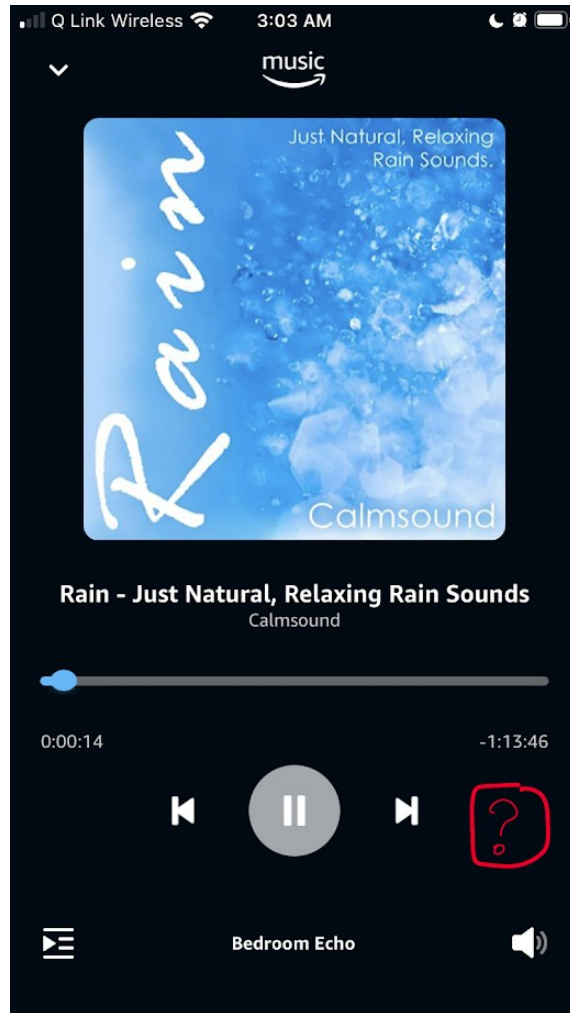
ARS VIDEO

How The Callisto Protocol's  
Gameplay Was Perfected Months  
Before Release

Ad: (0:13) ⓘ



<https://www.amazonforum.com/s/question/0D56Q00008AmLsySAF/repeat-mode-option-is-missing-from-music-playing-on-alex-app-ios-version>



# Key ?'s we'll focus on this semester

- Who controls your devices?
  - Who has root?
  - Who needs root?
- How do we implement concurrency correctly in our systems and programs?
  - What does correctness even mean?

# Syllabus...

- Attendance
  - Bring a Canvas-capable device and your ID starting next week
- Canvas vs. email
- Exams
  - Based on the homework assignments, which are based on the lectures and readings
  - Don't think about the exams too much, and don't be afraid to think, engage, *etc.*



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<https://discord.io/DevilSec>