Quick notes

- Check Piazza
- Reminders:
  - Assign8 due 4th Dec
  - Assign9 due 11th Dec (NO LATE DAYS!!)
  - Weekly quiz
- Assignment 10
  - **Please also upload to gradescope**
    - (sorry for change in plans)

Feedback / Office Hours / Other

- Tameez Latib
  - tameezlatib@gmail.com, please add “CS35L” to the subject line
  - Office Hours: Monday **4pm-6pm** (or by appointment)
  - Feedback: https://forms.gle/6kcJ2aJtzAzFMhHQ7 (anonymous google form)
- If you guys are stressed out:
  - CAPS (https://www.counseling.ucla.edu/)
    - Free with UC ship

Disclaimer(s)

- I haven’t looked at what’s on the final yet,
- So everything here is a crash-course on what **I think** you should study
  - It may be a terrible guide!
  - It is very subjective
    - You’re different from me, this maybe won’t help you
- It’s possible that something appears in the final that we have not talked about
  - Check other section slides [final is open everything]
  - I don’t think I missed anything important, but it’s possible
- For each week, the goal is
  - 1. You know what to study for final
  - 2. You know what’s useful for your future career
  - Please ask questions as we go on!
- More * = more important / spend more time on

Week 1 - Review topics

- Linux
- CLI vs GUI
- File vs process
- File layout / file paths
- Terminal commands, (man)
- Inodes**
- Symbolic vs hard links*
- Environment variables*
- I/O, wildcards, etc

Week 1

- For final:
  - https://www.gnu.org/software/emacs/refcards/pdf/refcard.pdf
  - The shortcut cheat sheet ^ (can also google it)
  - “Emacs how to __”
    - __ = copy / paste / change windows / etc
  - Review topics
- For future career:
  - How to use terminal
  - Everything is a file (or a process)
  - How linux inodes, symbolic, hard links work
  - How to use emacs (or vim or anything else) to edit a file from CLI if necessary
    - Know that some advanced capabilities exist (e.g. search function definition)

Week 2 - Review topics

- Encryption
- Symmetric vs asymmetric
- Public vs private key
- Hash
- Signatures**
- CA**
- SSH*
- GPG*

Week 2

- For final:
  - Know all the alice / bob examples
  - Why each feature (asymmetric, signatures, etc) is necessary
  - How to use ssh and gpg
- For future career:
  - How to ssh
  - SSH behind the scenes
  - General security knowledge

Week 3 - Review topics

- I/O redirection
- Regex**
- Shell commands
- Bash scripts*
- IFS
- Interpreted vs compiled

Week 3

- For final:
  - Know regex. Use a simulator if you need help
  - Some bash syntax
    - (you have access to terminal, if there’s a bash question just try run the code)
- For future career:
  - Regex is really useful- you don’t have to be an expert
  - (simple) bash scripts may come up

Week 4 - Review topics

- Compilation steps
- Preprocessor vs compiler vs assembler vs linker**
- Makefile
- Diff
- Patch
- Python basics

Week 4

- For final:
  - If you need to, create a python file and run code yourself
  - Know basic syntax (python and makefile)
  - How / why patch + diff (unified format)
    - Looking at a diff file, what does it mean?
- For future career:
  - Compilation process is general knowledge
  - Makefiles, python, patching are all useful

Week 5 - Review topics

- C, and C vs C++
- Debugging (Valgrind, GDB)*
- Pointers*
- Malloc, calloc, realloc, free**
- C I/O operations
- Files
- Qsort*

Week 5

- For final:
  - Know how to use qsort, how to read/write,
  - Memory management, pointers, etc
  - Debugging
  - Again, it’s open notes- you have access to your code + can run things on seasnet
- For future career:
  - Debugging!!
  - Memory management

Week 6 - Review topics

- Kernel
- System calls**
- Buffered vs unbuffered I/O**

Week 6

- For final:
  - Be prepared to explain buffered vs unbuffered
  - Convert code from library calls to system calls
  - You have access to your previous code!!
- For future career:
  - System calls are slow
    - Want to minimize (read a lot at once)

Week 7 - Review topics

- Linking
- Static linking
- Dynamic linking
- Dynamic loading
- Symbol resolution + relocation
- Dlopen, dlsym, etc*

Week 7

- For final:
  - Be prepared to explain differences in dynamic link vs load vs static
  - How to use dynamic link vs load vs static
  - Compilation / linking step (roughly how it works)
- For future career:
  - How to use

Week 8 - Review topics

- Git
- Version control
- Blob / tree / commit / etc
- Branches
- Merging vs rebase*
- Git reset*
- Advanced git (ranges)

Week 8

- For final:
  - Git merge vs rebase
  - How to do certain important actions in git (see assignment 8)
- For future career:
  - Basic git workflow
  - How to work on a big project via github or other

Week 9

- For final:
  - Know what topological sort is
- For future career:
  - It’s a nice algorithm to know,
  - Maybe comes up as interview question?

General tips / help [for me]

- Do not rely on open note / book policy!
  - It may be quite time consuming, and you only have 3 hours
- Do the easy questions first, the hard questions are time consuming!
- You have access to your previous assignments
  - Hopefully your lab/hw log files are descriptive enough to help you
- There will most likely be theory questions
  - If you’re stuck, try check the slides- if you can’t find it immediately, move on to next q
    - As you go through the final, you’ll look in more places and can come back
- And practical questions
  - If you’re stuck, you can try run the actual code
    - But don’t spend too much time trying to get the right answer
- Above all, don’t panic!
  - It’s probably going to be really hard. If so, it’s gonna be hard for everyone
    - Even if you don’t do well- that’s okay! 3 units won’t affect your GPA [that much]

Questions??

- Let me know what to cover in 10th week
  - Email me or send in chat
  - What topics
  - Which week
  - Which assignment