CS 2810: Computer Organization and Architecture

Fall 2024	Topics
Aug 19–23	binary, 2s complement, binary logic (ch1), linux, cli, ssh
Aug 26–30	ch6: instructions, operands, memory, constants, logical/shift, mul/div, branch & jumps, conditionals & loops
Sep 2–6 (*Labor Day*)	gdb basics, floats intro, ch6: arrays, function calls, stack
Sep 9–13	gdb memory, endianness, float conversions both ways
Sep 16–20	functions, stack frames, memory map
Sep 23–27	more debugger: ch7: microarchitecture, single-cycle processor
Sep 30–Oct 4	ch7: multi-cycle processor, pipelining
Oct 7–11	ch7: advanced microarchitecture
Oct 14–18 (*Fall Break*)	
Oct 21–25 (*Fall Break*)	-
Oct 28–Nov 1	appx C: C overview, compilation
Nov 4–8	appx C: variables, operators
Nov 11–15	appx C: function calls, control flow
Nov 18–22	appx C: pointers, arrays, characters, strings, structs, typedef
Nov 25–29 (*Thanksgiving*)	appx C: dynamic memory allocation, linked lists, standard library
Dec 2–6 (*Thursday last day*)	cpu history

Note: Substantial changes to this schedule are likely and will be announced in class.

Resources

- Syllabus
- Adventure by Warren Robinett
- Examples from class

Getting started with Linux, CodeGrinder, GDB

- Installing Linux on Windows
- Installing RISC-V tools on MacOS
- Setting up CodeGrinder
- Command-line tutorial
- The missing semester of your CS education

Assembly, C, and architecture resources

- RISC-V cheat sheet
- Modern Microprocessors: A 90-minute Guide
- Beej's Guide to C Programming

Number conversions

- Binary and hexadecimal number systems (Khan Academy)
- Two's complement review (11:44)
- Float review (13:47)
- Converting numbers to floats (10:23)
- Python script to convert 9-bit floats into decimal fractions

Number conversion practice problems

- Binary/decimal/hex practice problems
- Two's complement practice problems

- Float practice problems