

CS 2810: Computer Organization and Architecture

Spring 2018	Topics	Assignments
Jan 8-12	binary, hex numbers	
Jan 15-19 (<i>MLK Day</i>)	arithmetic, 2s complement	
Jan 22-26	boolean logic	Binary quiz
Jan 29-Feb 2	ALUs, 6502 assembly	
Feb 5-9		
Feb 12-16		
Feb 19-23 (<i>Presidents' Day</i>)	pipelining, superscalar	
Feb 26-Mar 2	ARM assembly	Mandelbrot steps 1, 2
Mar 5-9		
Mar 12-16 (<i>Spring break</i>)		
Mar 19-23		steps 3, 4, 5
Mar 26-30		steps 6, 7
Apr 2-6	caching	step 8
Apr 9-13	virtual memory	steps 9, 10
Apr 16-20	malloc, free, gc	step 11, 12
Apr 23-27 (<i>Wednesday last day</i>)	Atari 2600	step 13

Changes to the schedule will be announced in class.

Resources

- [Syllabus](#)
- [Examples from class](#)
- [Deep Mandelbrot zoom video](#)
- [Introduction to Computer Organization: ARM Assembly Language Using the Raspberry Pi](#)

git and ssh

- [How to set up ssh \(public key, firewall\)](#)
- [How to set up ssh forwarding using PuTTY \(for Windows\)](#)
- [git book](#)
- [git cheat sheet](#)
- [git for computer scientists](#)
- [longer cheat sheet](#)
- [How to set up git for a centralized repository](#)
- [25 tips for intermediate git users](#)

Raspberry Pi

- [Recommended Raspberry Pi 3 kit \(red/white case\)](#)
- [Recommended Raspberry Pi 3 kit \(black case\)](#)
- [Recommended 32GB micro SD card](#)
- [MicroSD card benchmarks](#) (use this to help pick a fast 32GB card)

Assembly language resources

- [ARM assembly notes \[html\] \[pdf\]](#)
- [Makefile](#)
- [Assembler directives cheat sheet](#)
- [ARM quick reference](#)
- [Official instruction set quick reference](#)
- [ARM instruction set slides](#)

Screencasts

These screencasts are to help you get started with CodeGrinder and with writing ARM assembly language.

- [Installing the grind command and logging in](#). Note: the installation process is simpler now (no path setup is necessary), but the rest of this screencast still applies. If you are working on leghorn you do NOT need to install the grind command, but you still need to log in.
- [Getting started with grind and git](#)
- [Complete code for reverse itoa function \(step 1\)](#)
- [Getting started with itoa \(step 2: reversing the string\)](#)
- [Debugging tips for step 13](#)

These screencasts are to help you review floats and 2's complement:

- [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](#)

Daily assignments

It is important that you come to class prepared. I will post reading and watching assignments here.

- Jan 11: Read [Chapter 2.1 through 2.8](#) and watch the [Binary and hexadecimal number systems videos](#) on Khan Academy.
- Jan 16: Read [Chapter 2.9 through 2.16](#) and [Chapter 3.1 through 3.3](#).
- Jan 18: Read [Chapter 3.4 through 3.7](#). and watch this [14m video about two's complement numbers](#).
- Jan 23: Read [Chapter 4](#)
- Jan 25: Read [Chapter 5](#)