# CS 250 Introduction

Class 1

# Administrative

- class web site `https://borax.truman.edu/250`
- syllabus
- Blackboard for grades

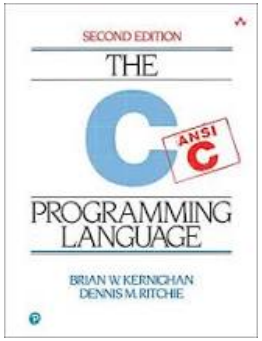
# Academic Honesty

- you may
  - discuss the mechanics of editing, compiling, and running a program
  - discuss the mechanics of using a built-in C function, e.g., atoi
  - discuss the mechanics of using a shell command, printing, etc.
  - use the instructor's code, original or modified, without attribution
- you may not
  - look at any portion of another student's code or writeup
  - show any portion of your code or writeup to another person other than the instructor
  - discuss the content of any assignment, in person or electronically, with anyone other than the instructor
  - copy code or solutions from the internet or a published source
  - collaborate in any way on tests
- if you're unsure, ask!

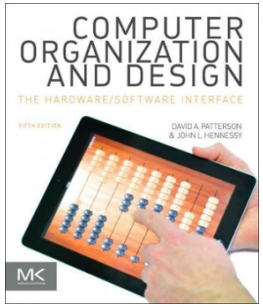
# Textbooks

there are two required textbooks

- Kernighan & Ritchie
  The C Programming Language
  2nd edition
  ISBN 9780131103627




- Patterson & Hennessy
  Computer Organization and Design
  MIPS version (unlabeled)
  5th edition
  ISBN 9780124077263
  used for both CS250 and CS330
  so probably cheaper to buy than rent



# Software Environment

- you must use an environment that provides *all* of the following
  1. the bash shell on a Linux or mac os system
     the Linux subsystem for Windows is not acceptable
  2. clang and llvm version 7.0 or later
     gcc is not acceptable
     MSVC++ is not acceptable
  3. a code editor such as Emacs, vim, or VScode
  4. the QtSPIM MIPS emulation system (more on this later in the semester)
- the department's Linux server sand provides all of the above

# Platform

- I strongly recommend you equip your own computer with all of the software discussed on the previous slide
- you will have the most success and the easiest time if you have Linux installed on your own computer
- mac os is fine but:
  - the bash shell shipped with it is so old: version 3.x vs 5.x current
  - if you use mac os, I strongly recommend you install a modern version of bash using Homebrew (or MacPorts if you already have it)
  - installing Homebrew will make lots of other desirable packages available as a bonus
- I strongly recommend you make sure you can get to sand and can use it as a backup, in case your own computer has problems
- very important: make backups of your files — sooner or later, all hardware fails

# Sand

- however, if you don't have a mac
- and you can't install Linux
- you'll need to use sand

- huge, powerful machine
- up-to-date with all necessary software
- closely maintained by Dr. Bindner

- to get to it:
  - directly in browser: https://sand.truman.edu/vnc/
  - x2go client for Windows: `x2go.org`
    (Mac client works just fine also, as a backup)
  - TightVNC client: `tightvnc.com`
    (no Mac client available)

# The Shell

- this class uses bash, the Bourne-Again Shell
- mac os has switched to zsh by default, but bash is still installed
- if you have a mac, you need to switch from the Z shell, zsh, to bash; google "mac os change terminal to bash"
- bash was written by programmers for programmers
- an incredibly powerful productivity tool, a selling point trying to get an internship or job

# Written Assignments

- homework assignments will be
  - bash scripts
  - C source code
  - MIPS assembly source code
  - written answers to questions in a text document

# Code Editor

- Linux
  - Emacs (this is what I use)
  - vim
  - geany
  - VS code
- Mac
  - TextMate
  - VS code
  - Emacs
  - vim

# Keys to Success

1. attend class
   - `https://zoom.us/j/96659777218` password: cs250-01
   - I will open the zoom meeting at about 10:20 am
   - by 10:30, you need to be in with your video on, your audio off, and having typed "Hello" in the zoom chat tool
   - edit your zoom profile so that your name is given as "PreferredFirstName LastName"

   - after each class session I will post the slides
   - I will usually not record the class video; if you know you're going to be absent, let me know and I will record that session for you
2. participate
   - I can't easily monitor the chat box or raised-hand icons while sharing my screen, so when you have a question, just turn on your audio and interrupt me
   - don't sit there confused — interrupt me and ask your question

# Keys to Success

3. program!
   - computer science is so much more than programming
   - but you cannot be a computer scientist without programming
   - this course requires strong programming skills
   - you must have completed CS181 with a grade of C or better

   - program every day
   - type in, run, and experiment with
     - my code examples
     - code examples from the textbooks
     - code you find online

# Create and Run a Simple Script

- use an editor to create the shell script source code hello_world.sh
- use the command line to make the script executable
- use the command line to run the program

# BASH Reading

- there are a gazillion bash tutorials on the web
- this one is up to date and pretty good
- everything in it works on mac os as well as Linux
- `https://ryanstutorials.net/bash-scripting-tutorial/`
- your first reading assignment is this tutorial
- all 8 sections (although we won't do anything in section 8)

# Homework Assignment 0826

- on course calendar
  `https://borax.truman.edu/250/CalendarCS250.html`
- due Thursday at noon
- full instructions are on the calendar link on Thursday

# Homework Assignment 0826

- a simple program that illustrates some bash features from the tutorial
  - tests and branching
  - interacting with the system
  - arithmetic