

# Welcome!

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CS 2130: Computer Systems and Organization 1  
Spring 2023

# Welcome

Welcome to CS 2130!

- Masks are always **welcome**
- Please no eating or drinking in the classroom
- Our lectures will be recorded, but please come engage with the course
- If you don't feel well, please stay home, we'll work with you

If you need to switch labs:

- Form will be coming soon
- Must be justified (i.e. class conflicts)
- **Very** limited space to make swaps

# What is CS 2130?



Where are we going?

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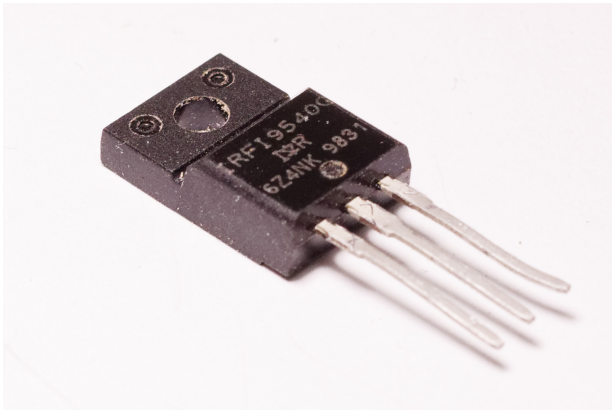
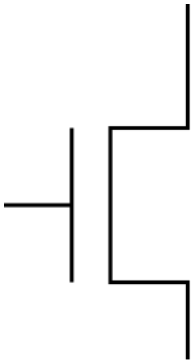
# Where are we going?



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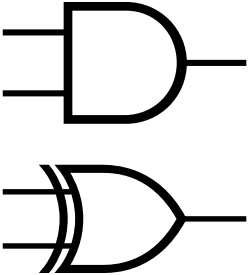


# Where are we going?



0 and 1

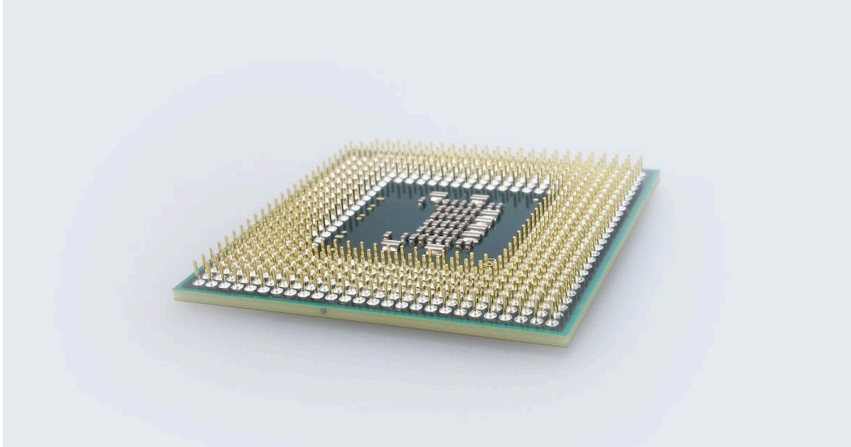
# Where are we going?







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# Where are we going?

```
0000000000000000 <main>:
 0: 55                push  %rbp
 1: 48 89 e5          mov   %rsp,%rbp
 4: 31 c0             xor   %eax,%eax
 6: c7 45 fc 00 00 00 00  movl  $0x0,-0x4(%rbp)
 d: c7 45 f8 03 00 00 00  movl  $0x3,-0x8(%rbp)
14: 48 c7 45 f0 04 00 00  movq  $0x4,-0x10(%rbp)
1b: 00
1c: 48 8d 4d f8       lea  -0x8(%rbp),%rcx
20: 48 89 4d e8       mov  %rcx,-0x18(%rbp)
24: 48 8d 4d f0       lea  -0x10(%rbp),%rcx
28: 48 89 4d e0       mov  %rcx,-0x20(%rbp)
2c: 48 8b 4d e8       mov  -0x18(%rbp),%rcx
30: 48 63 09          movslq (%rcx),%rcx
33: 48 89 4d d8       mov  %rcx,-0x28(%rbp)
37: 48 8b 4d e0       mov  -0x20(%rbp),%rcx
3b: 48 8b 09          mov  (%rcx),%rcx
3e: 89 4d d4          mov  %ecx,-0x2c(%rbp)
41: 5d               pop   %rbp
42: c3               retq
```

# Where are we going?

```
void swap(int *a, int *b) {  
    int tmp = *a;  
    *a = *b;  
    *b = tmp;  
}
```

# Where are we going?

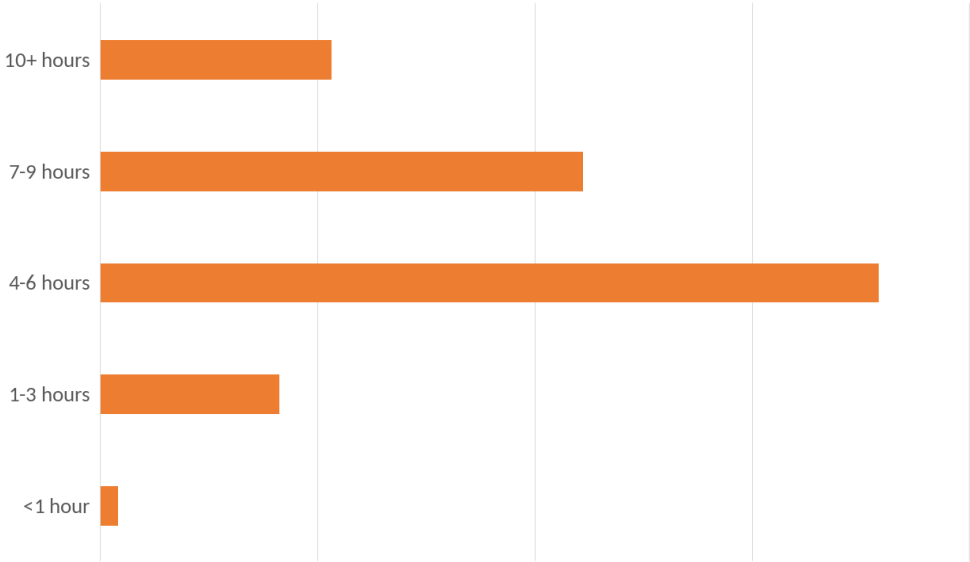
Along the way:

- Interact with the terminal and SSH
- Learn basic command-line tools and editors
- Access command-line documentation
- Practice C and using the C standard library
- Discuss related security and social topics

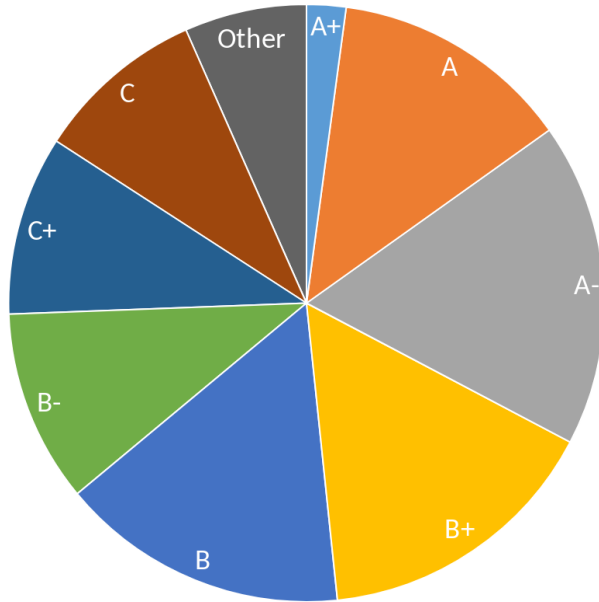
# Things to know about CS01

- This is a difficult course
- Why?
  - It's unfamiliar, not like CS 111x or CS 2100
  - It's more low-level
- But it's cool! How do computers work?
- We can then know how best to program them!

# Reported Hours per Week



# Historic Grade Breakdowns



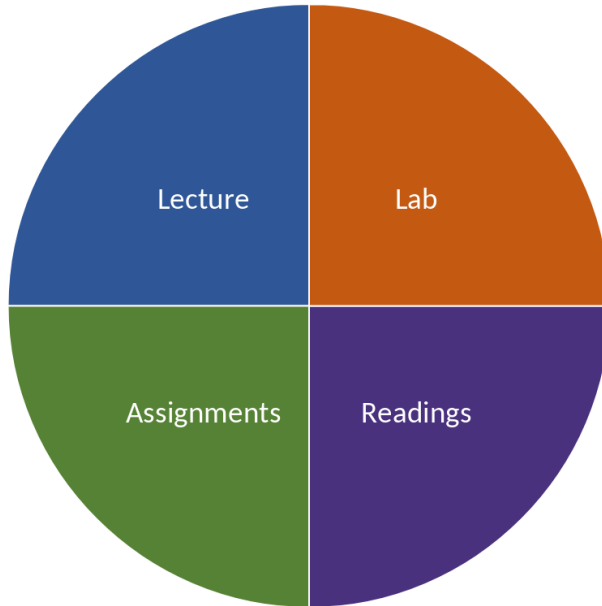
# Who should take this course?

## Prerequisites

- You have credit (or passed the placement test) for at least one of CS 1110, CS 1111, CS 1112, CS 1113, or CS 1120
- You do not have credit for CS 2110 or CS 2150
- You will know some C- or Java-like language by the middle of the class
  - See website for examples we expect you to know



# Course Content and Learning Sources



# Course Content

Where do I go to find course material?

- Collab: central hub for 2130 this semester
  - Course website for all content
  - Lecture recordings on Panopto
  - Q&A discussion on Piazza
  - Submit assignments through Gradescope
- Community and online TA office hours on Discord

# Textbooks and Readings

Readings provided on course website

- Other links as provided

There is no required textbook. Our goal is to provide additional freely available material throughout the semester.

Optional: *Introduction to Computer Systems: From Bits and Gates to C/C++ & Beyond* by Patt and Patel

# Expectations and Evaluations

## Course Engagement

- Complete readings **before** coming to class
- Come to lecture and be present
- Participate in lab
- Practice lecture material through class activities, homework, lab
- Track progress on Quizzes and Exams

# Measuring Learning

Four avenues to practice and measure learning

- Weekly Quizzes: Build on understanding from lecture and readings
- Lab: Practice course topics, learn supplemental topics to lecture
- Homework Assignments: Independent practice of course content
- Exams: Two midterms and final exam, in class

All are **individual** assignments except lab (unless otherwise noted)

# Measuring Learning: Details

## Weekly Quizzes

- Open Friday after class, due Sunday night by 11:59pm
- Independent, but open notes
- Lowest quiz score will be dropped

## Labs

- We expect everyone to participate fully in lab activities
- Learning exercises in groups
- Most credit for participation, milestones for full credit
- One lab will be excused, but must be checked off for credit
- See syllabus for full details!

# Measuring Learning: Details

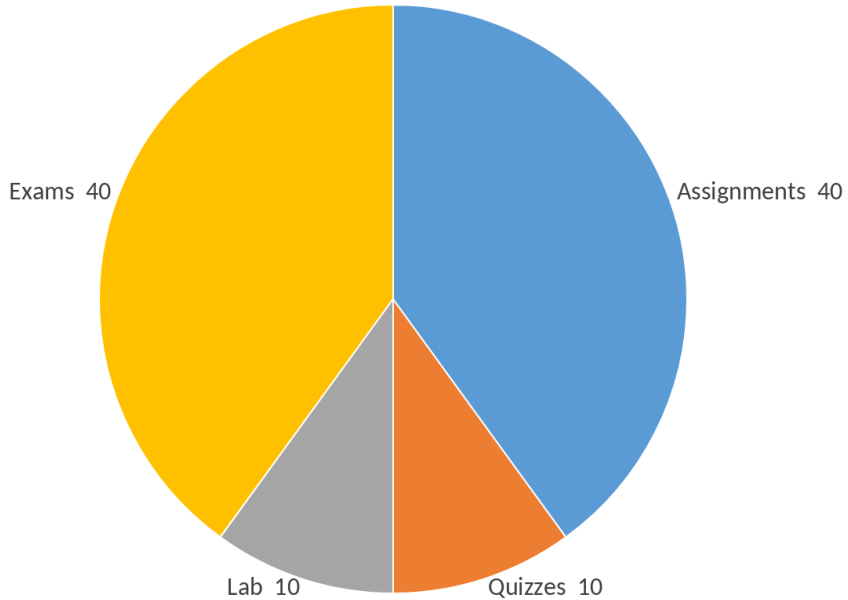
## Homework

- Programming assignments, puzzles, worksheets, or other activities
- **Individual** assignments unless otherwise stated
- May be submitted up to 48 hours late (no penalty)
  - I will *only* mention the due dates
  - No office hour assistance after the due date
  - Use your time wisely!

## Exams

- In-class, closed notes, likely pen/paper
- Two midterms: Feb 24, April 7
- Final Exam: May 4 at 7pm (combined)

# Measuring Learning: Grading





# Professionalism, Academic Integrity

## Honesty

- No plagiarism: cite any and every source you consult
- **Write your own code:** Compose it yourself
  - Programming to help learn the content and demonstrate knowledge
  - Unlike industry, in which programming to create product
  - We are looking to cultivate our minds
- Working with others is not okay (by default)
- Do **not** share your code (even if you are just trying to help)

*Consequences of dishonesty are outlined in our Syllabus*

# Expectations and Evaluations

## Covid-19, Flu, Cold, etc, Policies

- Masks are always welcome in class (I will be wearing one)
- No eating or drinking in the classroom
- Attendance is **not** required in lecture, but engagement is
  - Watch lecture videos
  - Discuss on Piazza
  - Practice in Lab
- If you don't feel well, stay home, it will be okay
  - Will work with you—if you stay home—to ensure no effect to grade

## Editors and Writing Code

- Familiarity with the command line is a goal of this course
- Setup and practice in Lab 1 and future labs
- You may **not** use online compilers or editors
  - Using an online compiler will result in a 0 on that assignment
- We will ask you to run your code on the CS portal

# This is a Large Class

How can you get your questions answered?

- Piazza (!!)
  - If you know an answer to someone else's question, answer it!
  - We're in it together for the next semester
  - But remember: do NOT share code or solutions
- Discord
- TAs (office hours and labs)
- My office hours

# Professor Hott

Who am I? Why teach 2130?



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The collage features several key elements:

- University of Virginia Crest:** A green shield with a white crown and a white monogram.
- White-washed Town:** A photograph of a hillside town with white buildings and red roofs.
- University of Virginia Logo:** A blue shield with an orange building icon and the text "UNIVERSITY of VIRGINIA".
- Network Diagrams:** Three diagrams illustrating social networks: a circular one with colored segments, a large radial one with many nodes, and a smaller one with colored lines.
- SNAC Website Screenshot:** A screenshot of the Social Networks and Archival Context (SNAC) website. The page title is "Social Networks and Archival Context". It includes a search bar and a grid of historical figures with their names and dates:
  - Goddard, Arabella, 1836-1922
  - Thomas, Cyrus, 1825-1910
  - Wilson, William Bauchop, 1862-1934
  - Lindquist, Roy E. (Roy Ernest), 1907-1986

# Questions?

Ask me *almost* anything