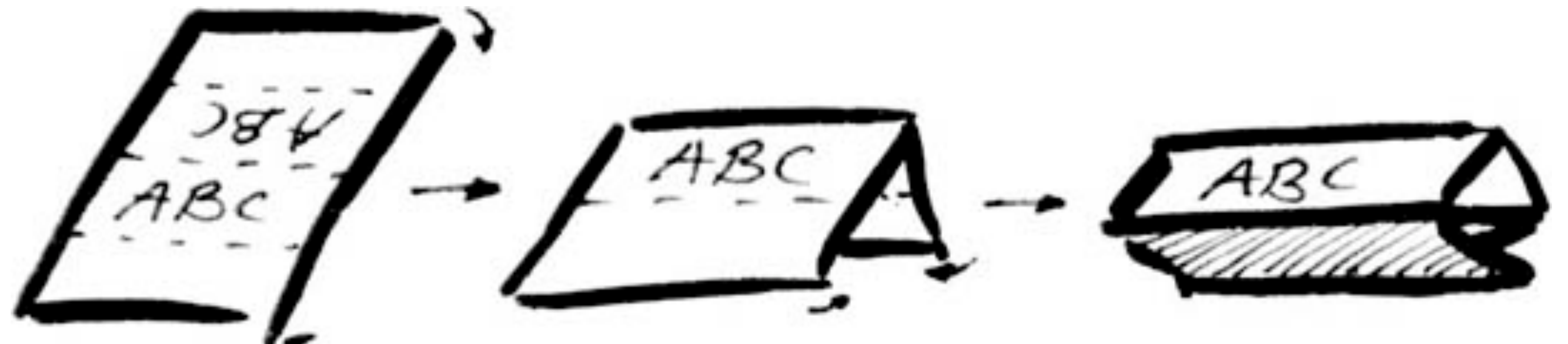


# Make a nameplate.

- Write **SUPER LARGE**
  - Put your name in the center
  - Put your preferred pronouns underneath (if you have them)
- Fold as below
- Hang onto it for the quarter!



# **CSE 134**

## **Embedded Operating Systems**

**Dr. Andrew Quinn**

# Discussion (10 min)

- Draw a “classic” layered system (think 13s, 130, etc.)
  - Include hardware, applications, and an **operating system**.
  - Where do the prereqs (120 and 130) fit into this picture?
  - What does this tell you about an OS’s role?
- Name some operating systems!



# Who are we?



Dr. Andrew Quinn



Leo Conrad-Shah



# Who are you?

- What do you want to be called?
- What are you excited to learn in this class?
- What are you nervous about for this class?
- What are you (outside of class) interests/hobbies?
  
- If you're comfortable—upload a selfie.



# Dog Tax





# What is this class about?

- How do operating systems work?
  - What tradeoffs do they face?
  - What principles do they follow?
- Build an Operating System!
  - No, not a fully fledged one.
  - Still, probably the largest project you have worked on.

# After this class, you will...

- be able to implement complex designs in real systems.
- be able to extend existing systems to add new functionality.
- be able to explain system designs, in English.
- be able to critique system designs.
- know how OSes support processes, virtual memory, and IO.



# What will we cover?

<b>Weeks</b>	<b>Subject</b>
<b>Week 1</b>	Introduction
<b>Week 2</b>	Concurrency Review
<b>Week 3</b>	Processes and Scheduling
<b>Week 4–6</b>	Virtualizing Memory
<b>Week 7–9</b>	File Systems
<b>Week 10</b>	Advanced Topics

# How will you learn?

- Mondays and Wednesdays—traditional lectures
  - Read the book beforehand (when applicable)
  - Come prepared to ask questions, participate in discussions, etc.
- Fridays—Hands-on experience (bring your laptop)
  - We'll go through code together
  - Often focused on assignments



# What are your learning resources?

- Course notes/slides posted on course website
- Course recordings posted on Yuja
- Office Hours for *specific questions*
- Piazza

## **Operating Systems: Three Easy Pieces**

**Remzi H. Arpaci-Dusseau and Andrea C. Arpaci-Dusseau (University of Wisconsin-Madison)**

# How do you succeed?

Historically, I have found an extremely high correlation between student success and attendance and lectures and office hours.



# How will you be evaluated?

<b>Metric</b>	<b>Percentage</b>
<b>Assignments</b>	60%
<b>Homework</b>	30%
<b>Final</b>	10%

# Assignments

## “Students Learn best by Implementing”

- Extend the educational OS Pintos in “C”
  - Don’t be fooled—it is still quite large!
  - Practice designing solutions within a **bigger** context
- 4 assignments:
  - Assignments 2—4 build on each other
  - There is some inherent double jeopardy :/



# Assignments (cont)

“Students Learn best by Implementing”

<b>Metric</b>	<b>Percentage</b>
<b>Tests Passed</b>	60%
<b>Design Document</b>	40%

# Assignments (cont)

## “Students Learn best by Implementing”

- Assignment 1 will be on your own
- Assignments 2—4 will be with a partner
  - Same partner for the **whole quarter**.
  - Choose a partner wisely. Set clear expectations.
  - You will have 3 grace days as a pair.



# Assignments (cont)

“Students Learn best by Implementing”

<b>Assign</b>	<b>Desc.</b>	<b>Expected Due Date</b>
<b>1</b>	“Alarm” clock	04/19
<b>2</b>	User Programs	05/03
<b>3</b>	Virtual Memory	05/22
<b>4</b>	File Systems	06/07

# Homework

- A few problems due EOD on Monday:
  - Some will be about lecture material
  - Some will be about Pintos
- Planning for 9...but we probably will have fewer



# Final Exam

- Cumulative test
- On 6/10 4PM-7PM (time from registrar)
- Best way to prepare: The Homework!

# DRC Accommodations

- If you have a DRC accommodation, let me know *ASAP*
  - I cannot apply them retroactively!

# Other Resources

- The syllabus outlines the many resources for you at UCSC:
  - Title IX
  - CARE
  - CAPS
  - Slug Support
- Let me know if/how I can help you.