

Welcome to ECE2049!

E Term 2020

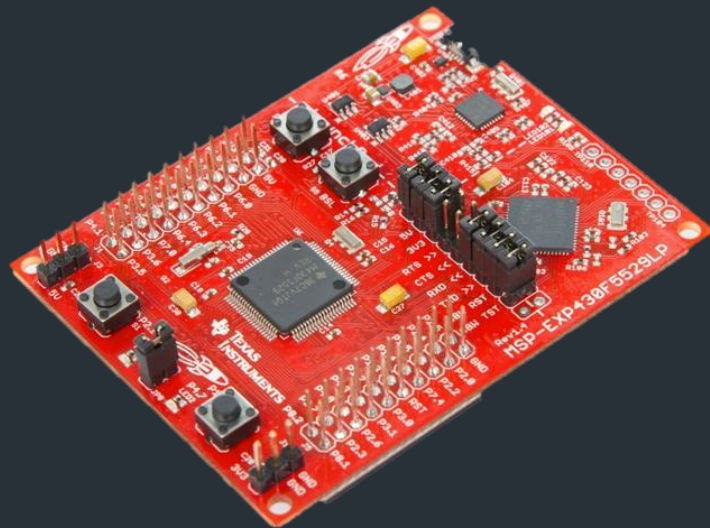
About Me

- I'm not a professor. Yet.
- ECE/CS double major; MS in ECE in 2015
- Currently pursuing PhD at Brown University
- Former TA for this course (and many others)

- Interests (not in order)
 - Embedded Systems
 - Computer Architecture
 - Systems & Security
 - Networks
 - Network Security

What is ECE2049?

“Students are introduced to the unique computing and design challenges posed by embedded systems”



MSP430 Launchpad



Arduino Uno

What are Embedded Systems?

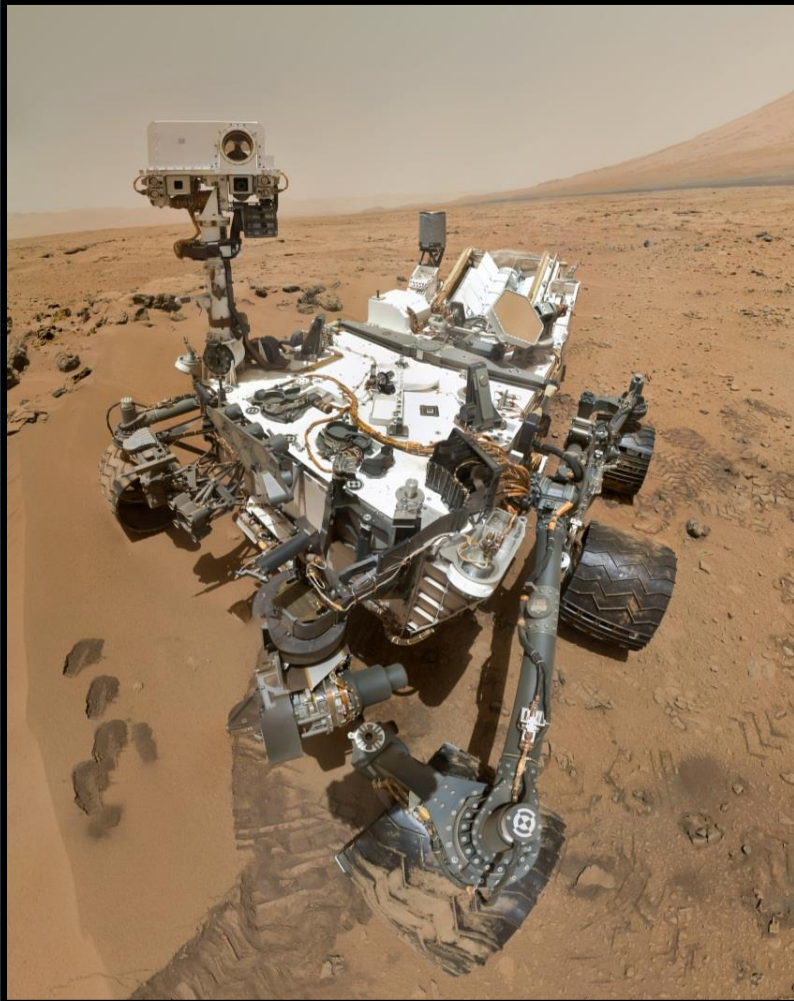
Some examples



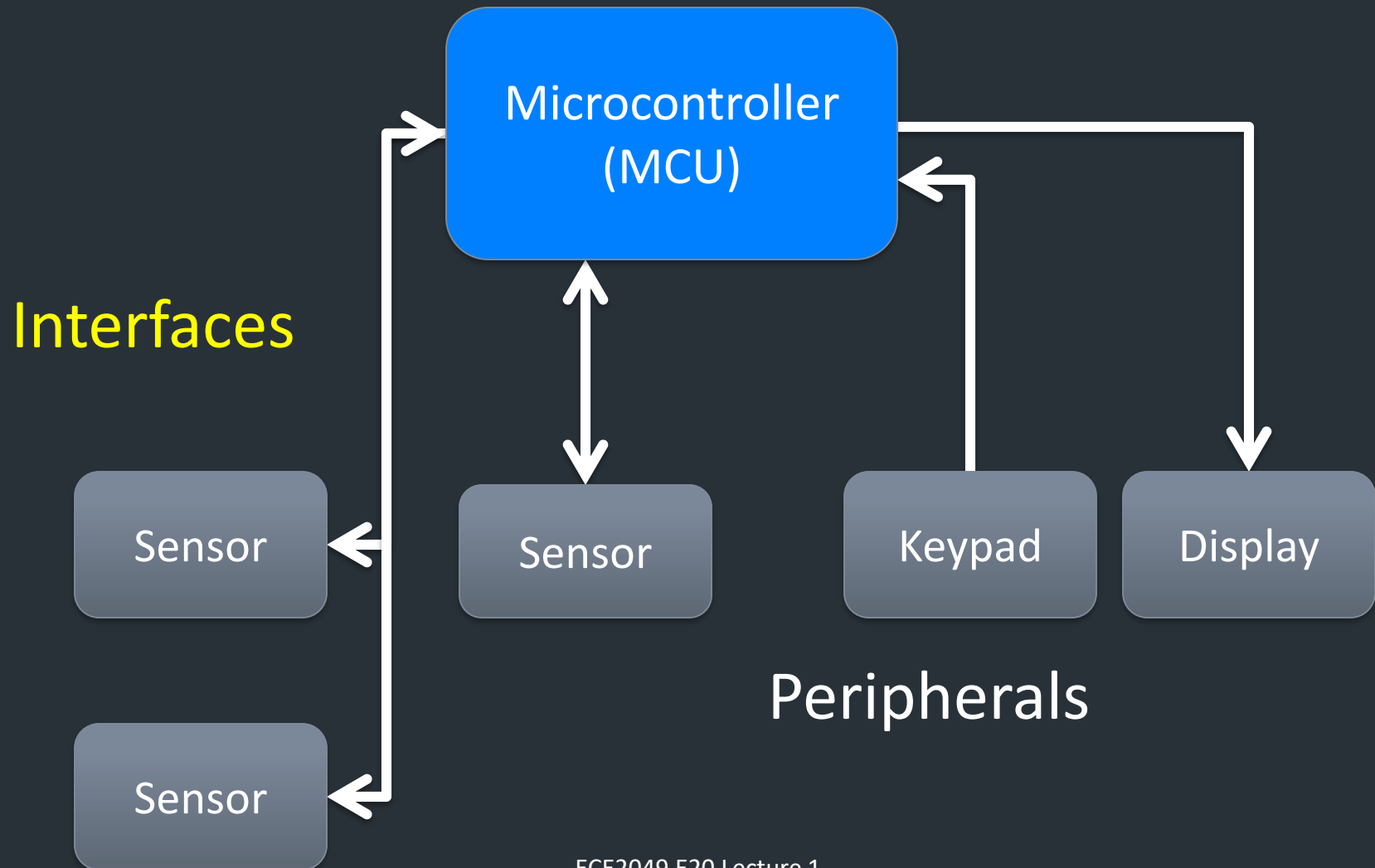
More examples



More examples!



A General Architecture



Why do we care?

- Embedded systems are everywhere!
- Unique programming challenges
 - Limited resources
 - Interaction with hardware
 - Debugging challenges

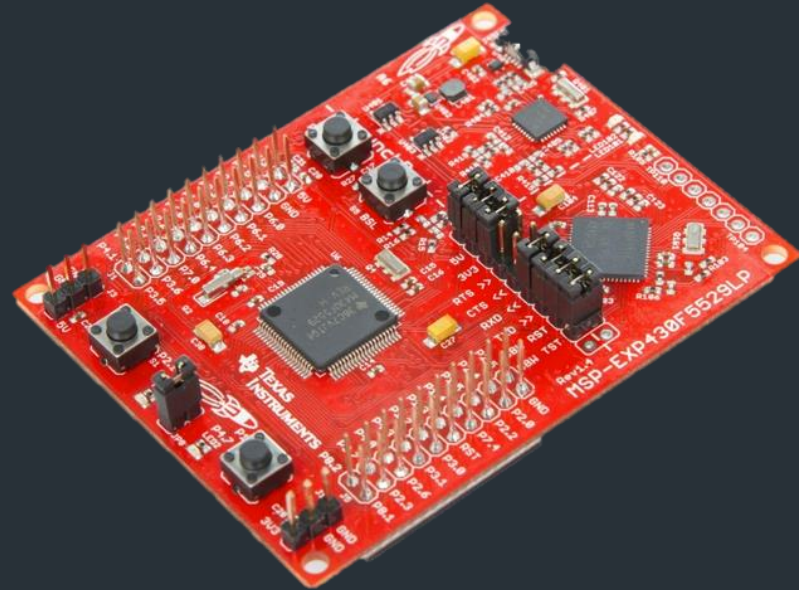


How will we do this?

- Example embedded platform: TI MSP430

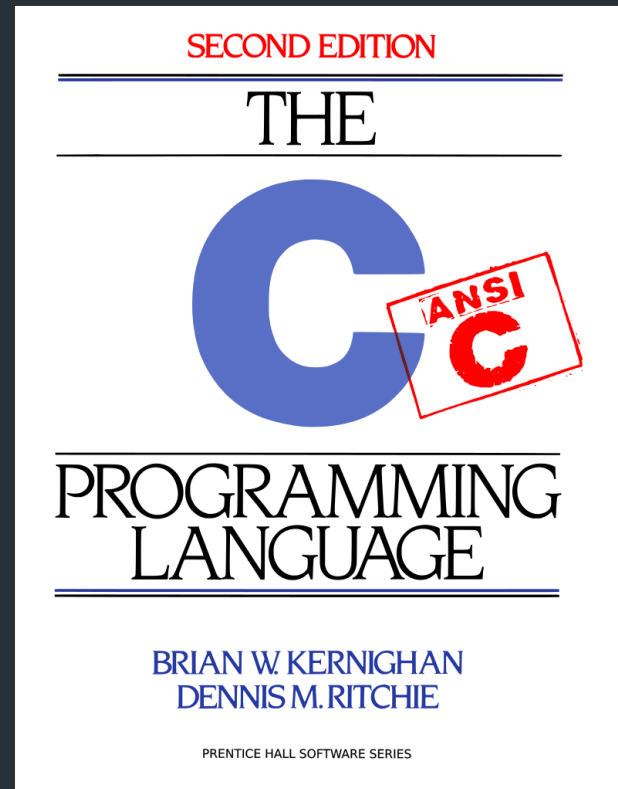
Our coursework:

- Labs
- Homeworks
- Exams



Recommend Background

- It is expected that you have seen C programming before
- This course will help build your skills!
- A good C programming reference is helpful!



The C Programming Language , 2nd Ed by Kernighan and Ritchie

Logistics

This is the second time ever ECE2049 has run as an online course, and my first.

As we navigate this term together,
your patience *and feedback* are much appreciated!

Asynchronous Lectures

- Live lectures on Zoom
 - Tuesdays 2-3:50pm EDT
 - Thursdays 12-1:50pm EDT
 - Link to join on Canvas
- Attendance not required, encouraged if you can attend
- Extra videos on special topics may be posted separately
- Recordings will be posted on Canvas within a few hours of the lecture

Lecture notes

- We will try using “handout-style” notes
- A “blanked” version of the notes will go online before the lecture
 - You can print them beforehand, or just take notes in a notebook
 - Big PDF of all notes online if you want to have them printed
- I will post my completed notes on the website after lecture

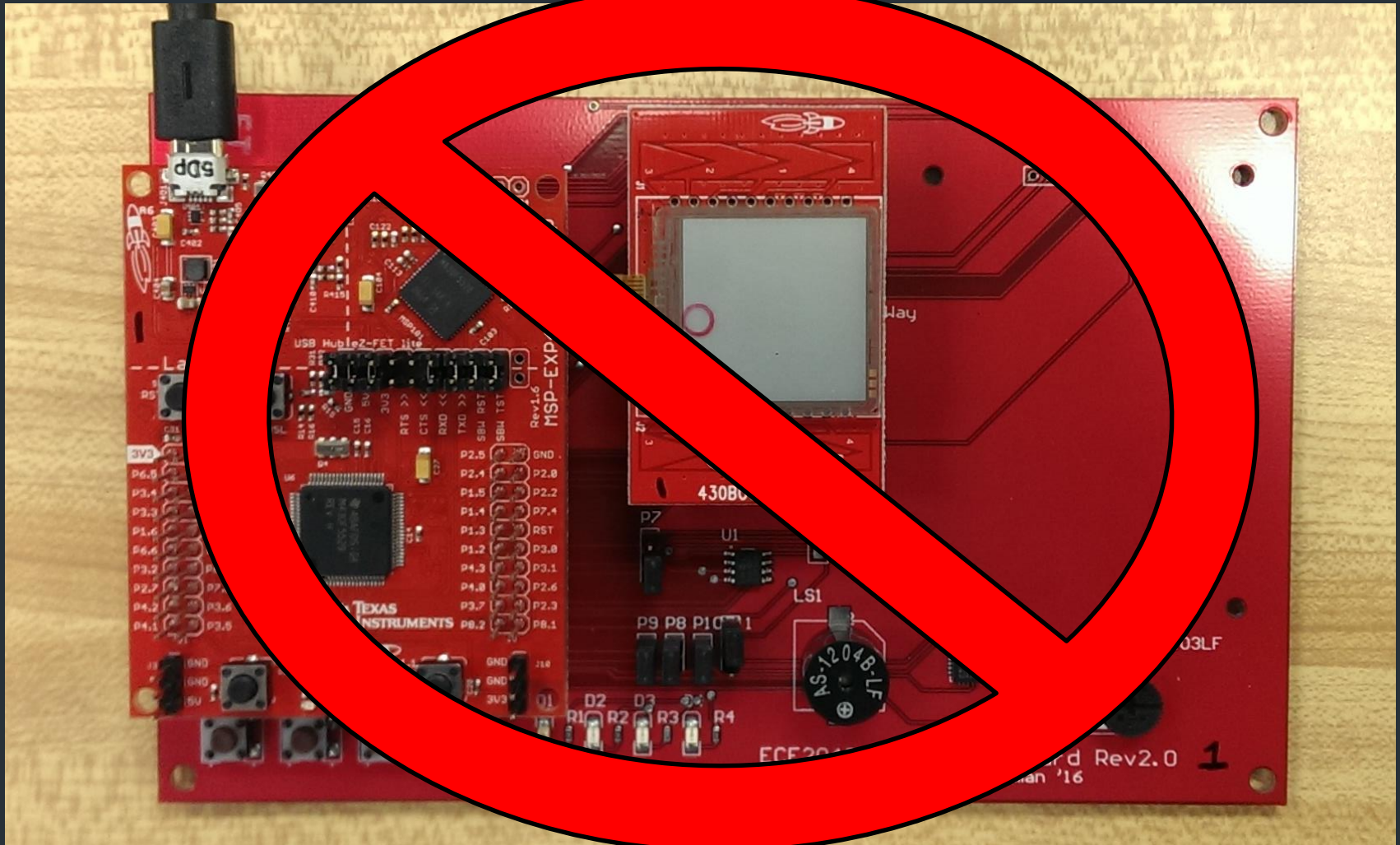
“Homework”

- Small problems assigned (usually) each lecture
- Problems discussed in next lecture
- Recommended: do them before you watch the next lecture
 - Will be due (roughly) every 2 lectures, on Tuesdays
- Goals
 - Focus on fundamental course concepts (Theory)
 - Often provides a starting point for your labs! (Practice)
 - Good practice for your exams!

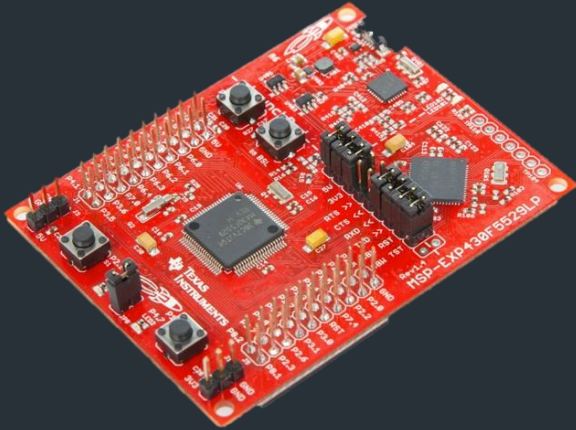
Communication

- Website: Materials and Lecture notes
- Canvas: Lecture videos, grades, and work submission
- Piazza
 - Announcements posted here
 - Discussion board: ask questions asynchronously!
 - Please ensure you are subscribed
- Discord
 - Lab sessions, office hours, and other meetings
 - Think of it like a virtual lab room
 - See Canvas for invite link

Labs: The Before Times



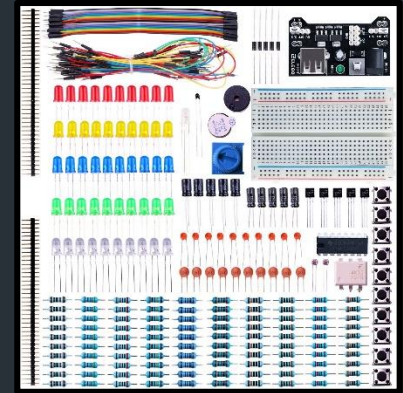
Labs: Our Version



1. MSP430 Launchpad



2. LCD Display Module



3. Some common parts

- List of parts on course website
- Extra parts (#3) needed for Lab 2
 - Sample kit listed, but you can find any suitable alternative
 - List of components we will need is on website
- Optional: a cheap digital multimeter (highly recommended for debugging!)

Once you have ordered your parts, please fill out the “Lab kit survey” on the website. This will help me with scheduling.

Logistics for Labs

- Lab assignment and intro video posted on course website
- Live lab sessions: Thursdays 2-4pm EDT via Discord
 - Similar to office hours; attendance not required
- Complete labs on your own time
- You will have questions, we will have answers!
 - Lab sessions
 - Office hours
 - Piazza
 - Join on Discord and collaborate!

Most Logistics for Labs

- Setup instructions for TI Code Composer Studio (CCS) on course website
- When you have completed the lab, you will submit a short report explaining your work
- Stay tuned for details on signoffs/demos
- Labs are fun! This is where you will build your programming skills.

Collaboration

- I encourage you to collaborate on labs and homeworks
 - Talk with each other on Discord!
 - Answer questions on Piazza!
- However, the solutions you write down **must be your own work.**

I would much rather spend time helping you than investigating an academic honesty case.

Collaboration Guidelines

- Sharing of solutions is not permitted
- You can post code snippets, but don't paste your whole lab or a homework solution
 - If you're concerned, restrict your Piazza post to instructors only—we can then ask if it can be public
- Be nice. Don't say/do anything in Discord you wouldn't do in a physical lab. You are not anonymous.

Feedback

- Don't like a lab or assignment?
- Suggestions to improve things?
- Ideas for better remote learning?

Submit feedback!

See anonymous survey on course website.

I won't know you don't like something unless you tell me!

Wrapup

After watching this lecture, you should:

- Make sure you can access Canvas, Piazza, and Discord
- Order your lab components, fill out parts survey
- Complete the course background survey