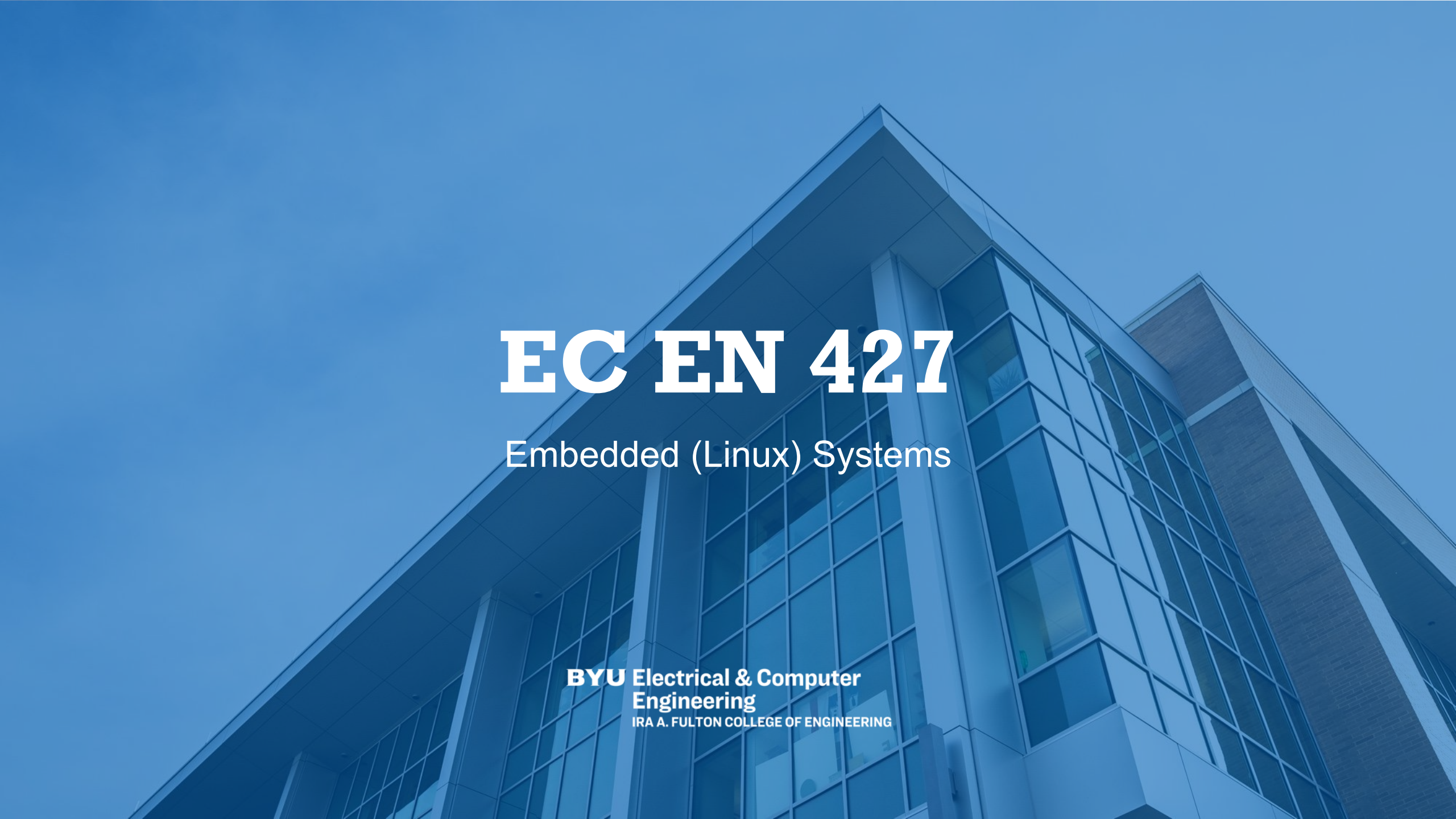

# EC EN 427

## Embedded (Linux) Systems

BYU Electrical & Computer Engineering
IRA A. FULTON COLLEGE OF ENGINEERING

# What this course is about

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# EC EN 427: Embedded Systems

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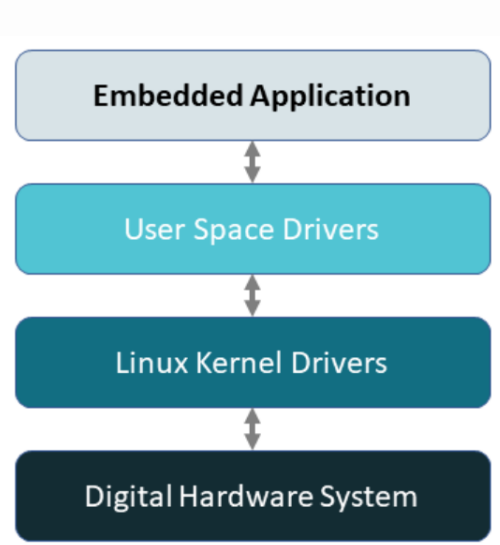
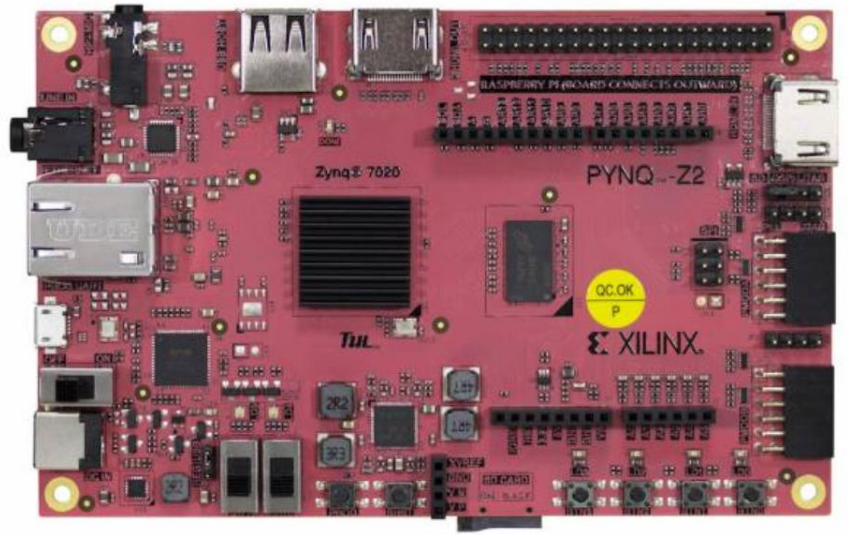
- The “full stack” of embedded systems, from software applications down to digital hardware
- How exactly do software and hardware interact?
- Interacting with an operating system
- Interacting with hardware, with an operating system
- Writing Linux “kernel” code

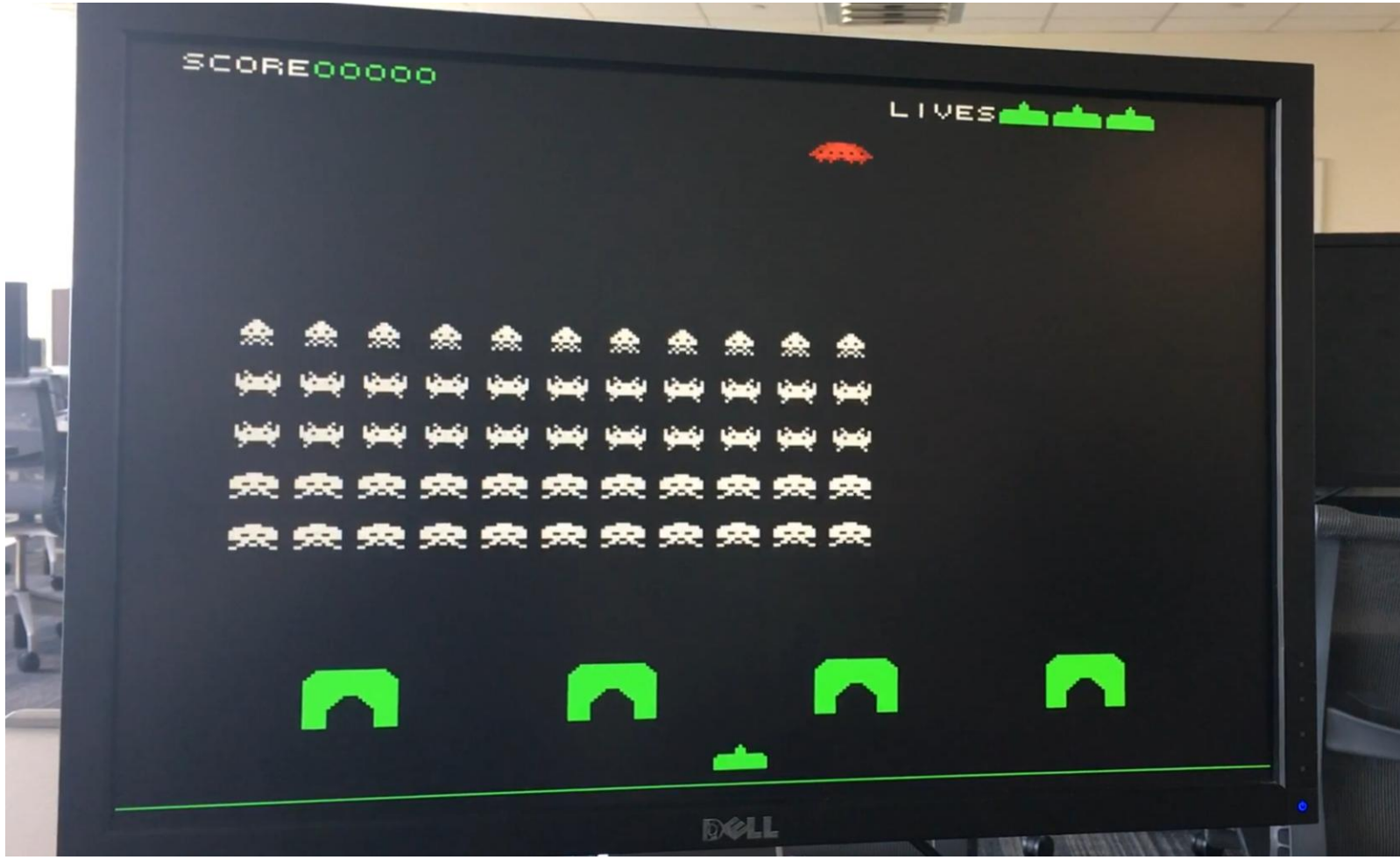


# Class Project

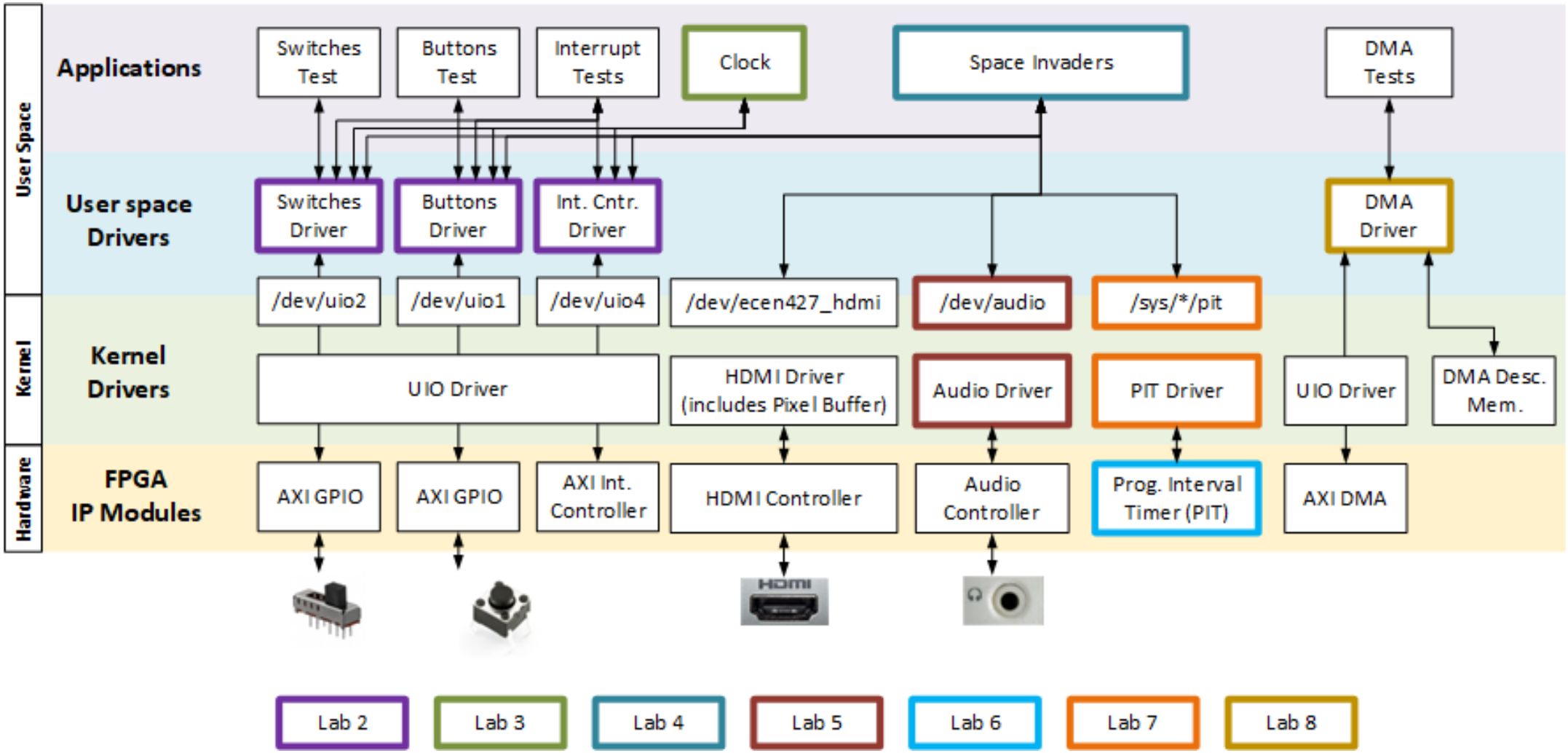


- The labs will be working toward a complete space invaders game



# How the labs fit together





# Course Philosophy



This is a hands-on course, and requires you to figure things out on your own

- The lab pages won't have all the details
- The are concepts you will need to research on your own to better understand

The most important skills you will learn in this class:

1. Learning things on your own
2. Debugging

How does modern AI impact this?

- It can help you very quickly learn about concepts you are less familiar with
- It can help you with debugging ideas when you're stuck

- AI agents (not permitted) could complete the lab, without you learning much
- AI agents (not permitted) can find your bugs, without you learning much

https://byu-cpe.github.io/ecen427/ai/

# Logistics

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# Couse Website vs Learning Suite



- Couse Website: https://byu-cpe.github.io/ecen427/
  - Lab assignments and submission instructions
  - Lecture slides, readings
  - Lab room schedule
  - AI policy
  - Documentation and tutorials for the PYNQ board and tools
  - Links to Teams

- Learning Suite
  - Grades
  - Lecture schedule
  - Quizzes
  - Syllabus (with late policy)

Lab due dates are in both places

# Schedule / Grade Breakdown



- Mon / Wed / Fri lecture: 10am-10:50am
- Quizzes (10% of grade)
- 3 Midterm Exams (30% of grade) – location/schedule TBD
- Labs (60% of grade)
  - No fixed lab time.  See https://byu-cpe.github.io/lab_schedule/#eb-438

# Equipment



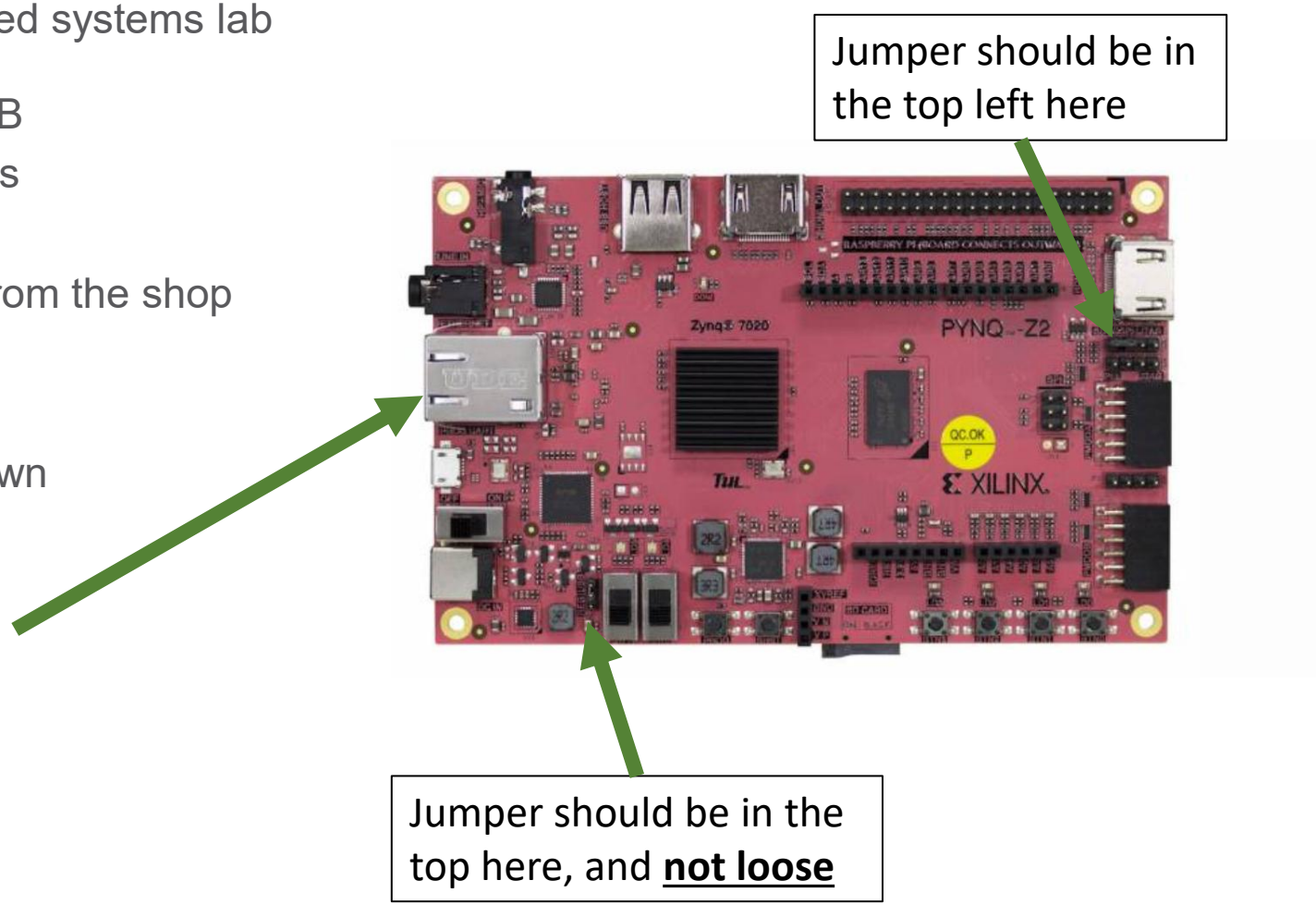
- PYNQ boards at every station in embedded systems lab (EB 438)
- You need to buy a micro SD card >= 16GB
- The shop has “ECEN 427” micro SD cards

- You can pay a deposit and sign one out from the shop

- This is a full computer system
- Don’t flip the power off before shutting down
  - sudo poweroff

- Is it booting?
  - Look for Ethernet jack lights blinking
  - Make sure:
    - SD card inserted
    - Jumpers set correctly

- In the back right drawer in the lab:
  - Backup jumpers
  - SD card readers



# Labs



- Labs are due each week on Friday (or Saturday?)

- Submission instructions: https://byu-cpe.github.io/ecen427/submission/

- I need your github username before I can create a class Github repo for you.
- Please fill out the survey right away.

# Late Policy



Labs are due as indicated on the schedule page.  Late penalty:

- 1 day: 20% penalty
- 2 days: 30% penalty
- 3 days: 40% penalty
- 4 days: 50% penalty
- 5+ days: 60% penalty

Saturday and Sunday do not increase the late penalty.  For example, if the lab is due on Friday, you can submit on the following Saturday, Sunday, or Monday for a one late day penalty. If the lab is due on Saturday, you can submit on the following Sunday or Monday for a one late day penalty.

No late quizzes or exams.

Per BYU policy, no work accepted after last day of class.