CMPE 200
Computer Architecture & Design

Lecture 0.
Introductions

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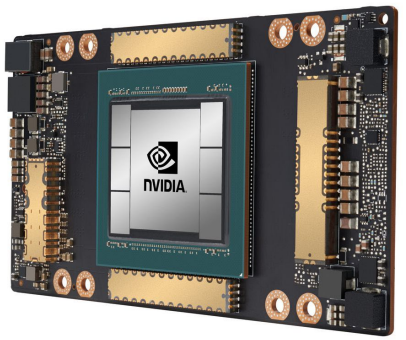
Computer Architecture -- Where?

Computers

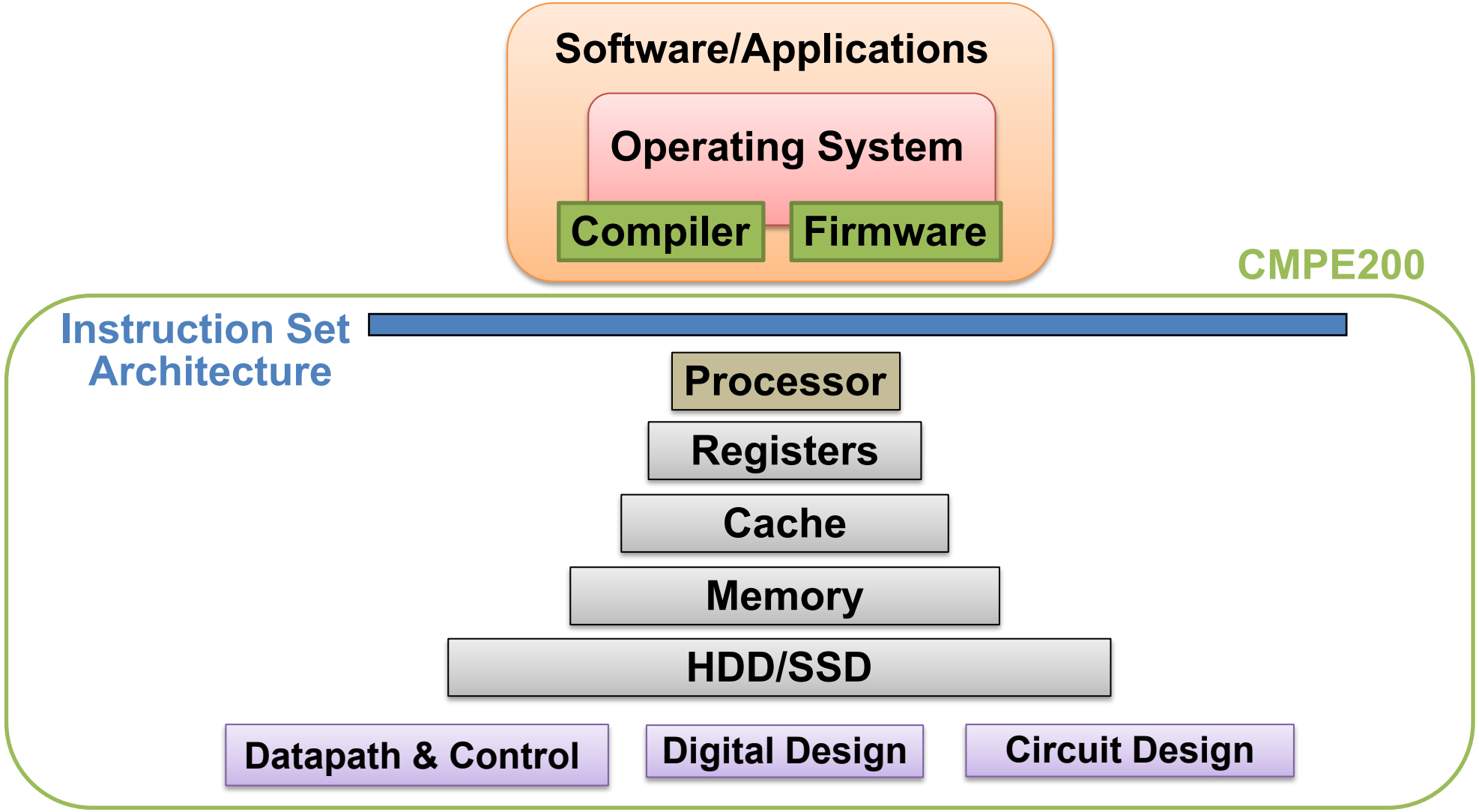
Mobile Devices

Data Centers



Accelerators

Computer Architecture -- What?



Computer Architecture -- Why?

Job opportunities

Research opportunities

Conferences: HPCA, MICRO, ASPLOS, ISCA

Help in many other aspects

- Coding
- Other courses
- Purchasing hardware
- …

Learning Goals

- 1. Have an overall understanding of computing systems from architectural and organizational point of view.
- 2. Have an in-depth understanding of RISC processor instruction-set architecture and micro-architecture, as well as memory organization.
- 3. Understand advanced topics such as instruction-level and thread-level parallelism, and multicore/multiprocessor/clustered systems.

Computer Architecture -- How?

Lectures: Mon/Wed 15:00 – 16:15 @ Clark Building 222

- Grouped in Canvas modules with assignments, discussions, readings, practices, quizzes, etc.
- Slides, announcements, etc. will also be uploaded to Canvas

Textbook

– Computer Organization and Design – the Hardware/Software Interface, *5th Edition*

Other Readings

– Digital Design and Computer Architecture, 2nd Edition
– Hennessy and Patterson: Computer Architecture – A Quantitative Approach, 5th Edition
– Parallel Computer Organization and Design, 1st Editio
– The IEEE Standard 1364-2001 (Verilog Language Reference Manual)
– MIPS data card
– Google it!

All can be found on Canvas

Grading Information

- **Assignments 35%:** 7 - 8 assignments solo or in 2-student teams
  - Grade based on completeness, successfulness, and quality of demo & lab reports
  - Proportion of each assignment (to the final grade) is based on workload
  - Contribution of each member must be shown (Deserting your teammates is not acceptable)
  - Almost weekly, check deadlines carefully (No late submissions will be accepted)

- **Exams 65%:** one midterm exam 25% + one final exam 35% + up to four quizzes 5%
  - Using lockdown browser on Canvas

- **Extra credit up to 25%:**
  - 10% (attendance:6%; asking and answering questions: 4%)
  - Miscellaneous: 15% (e.g., solving additional questions in assignments and exams)

Tools & Equipments

- **EDA Tool (software)**
  - Xilinx Vivado HLx 2019.1 WebPACK edition (https://www.xilinx.com/support/download.html)

- **Hardware equipment**
  - Windows and Linux (or virtual machines like WSL) laptops/desktops

- **Assemblers and simulators**
  - MIPS: MARS (will be provided in Canvas), MIPSASM
  - Miscellaneous simulators for process, memory, etc..

- **Drawing tool (**https://www.draw.io/)
  - Or other professional drawing tools

About Me

- Research: Computer Architecture, GPU Architecture

- Teaching/learning method: Feynman Technique

- My vision of diversity/inclusiveness: the future
  - “Our conquest is the sea of stars.”

    --- Legend of Galactic Heroes

- Contact info
  - Email: Haonan.wang@sjsu.edu *(add “[CMPE200]” to the subject line)*
  - Office hours: M/W 16:15-17:15 @ ENG 265
  - Join the Slack Channel

Module 0: Assignment 0

1. Introduce yourself in one page (in PDF)

- Picture (you should be recognizable by this)
- Name / Student ID
- A brief self-introduction (background, hobby, special note, something to share, etc.)
- What do you know about computer architecture

2. Prerequisite supporting document

- Provide a copy of your transcripts, with the grade of CMPE 180D (or equivalent) highlighted
- Be careful: You will be dropped if proof is not provided by the due date

3. Honesty pledge

- Review carefully and upload signed copy to the Canvas

Module 0: Assignment 0

4. Install Vivado WebPACK Edition.

5. Review the Prerequisite Review: System-level Design Module.

6. Form up 2-student teams for team assignments

- Use the People tool on Canvas
- You will be randomly assigned a team if you have not joined any team by Sep. 24.

7. Go through the Start Here Module on Canvas.

- Orientation Quiz
- Respondus Lockdown Browser Practice Quiz
- Introductory Discussion-Getting to know you
- All contents will be unlocked after finishing the module

Due by Sep. 3 (Sat) 11:59PM

Reference & Special Thanks

CMPE 140, Hyeran Jeon, UC Merced

CMPE 140, Donald Hung, SJSU

CSCI 424, Adwait Jog, W&M

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