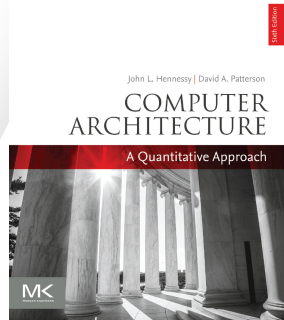# Computer System III

Chang Rui, Zhou Yajin

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TA: Hong Siyu, Sun Zhibo, Yuan Ziqi, Zhang Xingjian

2022.02.22

John L. Hennessy | David A. Patterson

COMPUTER
ARCHITECTURE

A Quantitative Approach

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Before the Class

Talk about our course

- What are you learn from computer system I and II?

Talk about our course

- What are you learn from computer system I and II?
- Which software courses did you complete?

Talk about our course

- What are you learn from computer system I and II?
- Which software courses did you complete?
- How the hardware influence the software or program?

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- What will be covered in our course and you should take away:

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    - Understand the working principles of Computer System.

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  - Know not only what but also why.

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  - Explore the tradeoffs of different designs and ideas.

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- What will be covered in our course and you should take away:
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  - Know not only what but also why.
  - Explore the tradeoffs of different designs and ideas.
  - Your own system. (How about it?)

Prepare for the Class

What's More

How we prepared before the class.

- Textbook

What's More

How we prepared before the class.

- Textbook
- Course Website (https://courses.zju.edu.cn/course/40422)

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- Teaching Components
  - Lectures
  - Labs/Projects
  - Research

What's More

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  - Labs/Projects
  - Research
- About me

Me

Rui Chang
- Associate Professor, College of CS, ZJU

Me

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- Associate Professor, College of CS, ZJU
- Ph.D. from PLA

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Rui Chang

- Associate Professor, College of CS, ZJU
- Ph.D. from PLA
- Teaching and doing research for PLA more than 12 years and be ZJUer for about 3 years

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- Research Interests:
    - System security (Architecture, OS, Embedded system, ARM-Linux, RISC-V)
    - Formal method (programe analysis, formal verification)

Me

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- Ph.D. from PLA
- Teaching and doing research for PLA more than 12 years and be ZJUer for about 3 years
- Research Interests:
  - System security (Architecture, OS, Embedded system, ARM-Linux, RISC-V)
  - Formal method (programe analysis, formal verification)
- My website (https://person.zju.edu.cn/changrui)

Teaching team

- Keep it simple and clear

Teaching team

- Keep it simple and clear
- Focus on the core concepts

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- Try to help you more easily understand

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- More concerns about security
  - CPU vulnerability
  - Memory attack
  - System security

Teaching team

- Keep it simple and clear
- Focus on the core concepts
- Try to help you more easily understand
- More concerns about security
  - CPU vulnerability
  - Memory attack
  - System security
- Warm-up for research

You

Some suggestions for you.

- Books
  - Computer Organization and Design The Hardware Software Interface [RISC-V Edition]
  - Operating System Concept
  - Computer Architecture: A Quantitative Approach 6th edition

You

Some suggestions for you.

- Books
  - Computer Organization and Design The Hardware Software Interface [RISC-V Edition]
  - Operating System Concept
  - Computer Architecture: A Quantitative Approach 6th edition
- Other ways
  - from class (lectures/labs/projects)
  - from github (https://github.com/riscv/riscv-isa-manual)
  - doing by yourself (of course, discussion with others)
  - optional extention

You should know:

Class Grading
- Final examination (30%)

You should know:

Class Grading

- Final examination (30%)
- Process assessment (70%)
  - Homework—————10%
  - Projects——————-60%
    - Lab 1 - System II (Lab 7)——————————6%
    - Lab 2 - Cache design———————————-10%
    - Lab 3 - Virtual Memory————————————-10%
    - Lab 4 - User mode————————————10%
    - Lab 5 - Page fault and fork system call————12%
    - Lab 6 - X part———————————————12%

You should know:

Important note

- Homework/Labs need to be submitted in time.

You should know:

Important note
- Homework/Labs need to be submitted in time.
- The more Late the more discount.

You should know:

Important note

- Homework/Labs need to be submitted in time.
- The more Late the more discount.
- Any new try is strongly encouraged.

How will you contribute?

Thanks in advance.

- Know the real computer system
  - according to reading, thinking, disscussion and doing
  - show your lab/project demo
  - teamwork
  - literature reading about recent research

How will you contribute?

Thanks in advance.

- Know the real computer system
  - according to reading, thinking, disscussion and doing
  - show your lab/project demo
  - teamwork
  - literature reading about recent research
- AT LEAST
  - submit assignments & lab reports
  - show up to final exam

Begin the Class

Contents

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