Computer Organization

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Course Information

- Lecture:
  - Chih-Wei Liu 劉志尉 cwliu@twins.ee.nctu.edu.tw
  - 5731685, ED618
  - Office hour: 3CD
    - Please make an arrangement via E-mail
- Teaching Assistant:
  - 林欣垣
  - 簡嘉呈
  - 54225, ED412
- Course website:
  - http://twins.ee.nctu.edu.tw

Course Information

- Text
  - D.A. Patterson and J. L. Hennessy, *Computer Organization and Design: The Hardware/Software Interface*, 5th Edition, Morgan Kaufmann Publishers, 2014
- One semester course, which might include Chapters 1~5
  - To learn the hardware and software concepts of current computers
  - To learn what, why, and how the processor and computer are designed and developed
- Prerequisites:
  - Logic Design
  - C, Assembly, RTL Language Programming

Course Outline

- Computer abstractions and technology
- Language of the computer
- Arithmetic for computers
- The processor : Simple implementation
- Midterm
- The processor : Pipelined implementation
- Memory hierarchy
- Parallel processors from client to cloud
- Final

What You Will Learn?

- You can answer the following questions:
  - How high-level C/Java programs are translated into the machine language
    - And how the hardware executes them
  - The hardware/software interface
  - What determines the performance of program
    - And how it can be improved
  - How hardware designers improve performance
  - What is parallel processing

Course Grade (tentative)

- Lectures, Quiz, and Homework 20%
  - Adapted from Prof. Patterson's class notes
  - Please avoid arriving late or leaving early.
  - At least one problem sets with respect to each lecture
  - Homework should be handed in on time
- Quiz 10%
- Final Project 10%
- Midterm and Final Exams. 60%