

微算機系統課程綱要(93學年度第一學期)

課程介紹

本課程將由軟硬體介面的觀點出發，介紹微算機電腦系統架構設計的基本概念。

課本

David A. Patterson and John L. Hennessy, *Computer Organization & Design, The Hardware/Software Interface*, 3rd edition, Morgan Kaufmann Publishers, Inc: San Francisco, 2004.

教師資訊

陳伯寧
辦公室：工程四館831室
聯絡電話：(03) 5731670
E-mail: qponing@mail.nctu.edu.tw

上課時間

週二EF 與 週五B (上課教室 ED219)

成績計算標準

- 期中考：11/09 (考一 ~ 四章)，考兩小時，佔學期成績的40%。
- 期末考：01/11 (考五 ~ 八章)，考兩小時，佔學期成績的40%。
- 隨堂考：10/01、10/19、11/30、12/21共四次，以1~2題為原則，考試時間為10分鐘，每次佔學期成績的5%。

講義網站

上課投影片的PDF檔案可由<http://shannon.cm.nctu.edu.tw>下載自行列印，或可至工程四館八樓影印室購買。

助教

蔣名駿 實驗室：ED823 分機：54570 電子信箱：bluepig.cm88@nctu.edu.tw

卓雅婷 實驗室：ED823 分機：54570 電子信箱：yatingcho.cm88@nctu.edu.tw

助教Q&A時間與地點：Wednesday GH at ED823

預定教授內容

日期	預定進度
9/14	Course Requirement and Syllabus Chapter 1: Computer Abstractions and Technology
9/17與9/21	教師出國(10月2日9:30am~12:30pm補課)
9/24	Chapter 1: Computer Abstractions and Technology
10/01與10/05	Chapter 2: Instructions: Language of the Computer 2.2 Operations of the Computer Hardware 2.3 Operands of the Computer Hardware 2.4 Representing Instructions in the Computer 2.5 Logical Operations 2.6 Instructions for Making Decisions 2.7 Supporting Procedures in Computer Hardware
10/02	2.8 Communicating with People 2.9 MIPS Addressing for 32-Bit immediates and Addresses 2.10 Translating and Starting a Program 2.11 How Compilers Optimize 2.12 How Compilers Work: An Introduction 2.13 A C Sort Example to Put It All Together
10/08與10/12	2.14 Implementing an Object-Oriented Language 2.15 Arrays versus Pointers 2.16 Real Stuff: IA-32 Instructions
10/15與10/19	Chapter 3: Arithmetic for Computers 3.2 Signed and Unsigned Numbers 3.3 Addition and Subtraction 3.4 Multiplication 3.5 Division 3.6 Floating Point
10/22與10/26	3.7 Real Stuff: Floating Point in the IA-32
10/29與11/02 與11/05	Chapter 4: Accessing and Understanding Performance 2.2 CPU Performance and Its Factors 2.3 Evaluating Performance 2.4 Real Stuff: Two SPEC Benchmarks and the Performance of Recent Intel Processors
11/09	期中考 (考一 ~ 四章)
11/12	Chapter 5: The Processor: Datapath and Control 5.2 Logic Design and Conventions 5.3 Building a Datapath
11/16與11/19	5.4 A Simple Implementation Scheme

	5.5 A Multicycle Implementation
11/23與11/26	5.6 Exceptions 5.7 Microprogramming: Simplifying Control Design 5.8 An Introduction to Digital Design Using a Hardware Design Language 5.9 Real Stuff: The Organization of Recent Pentium Implementations Chapter 6: Enhancing Performance with Pipelining 6.1 An Overview of Pipelining 6.2 A Pipelined Datapath
11/30與12/03	6.3 Pipelined Control 6.4 Data Hazards and Forwarding 6.5 Data Hazards and Stalls 6.6 Branch Hazards 6.7 Using a Hardware Description Language to Describe and Model a Pipeline 6.8 Exceptions
12/07與12/10	6.9 Advanced Pipelining: Extracting More Performance 6.10 Real Stuff: The Pentium 4 Pipeline
12/14與12/17	Chapter 7: Large and Fast: Exploiting Memory Hierarchy 7.2 The Basics of Caches 7.3 Measuring and Improving Cache Performance 7.4 Virtual Memory
12/21與12/24	7.5 A Common Framework for Memory Hierarchies 7.6 Real Stuff: The Pentium P4 and the AMD Opteron Memory Hierarchies
12/28與12/31	Chapter 8: Storage, Networks, and Other Peripherals 8.2 Disk Storage and Dependability 8.3 Networks 8.4 Buses and Other Connections between Processors, Memory, and I/O Devices 8.5 Interfacing I/O Devices to the Processor, Memory, and Operating System
1/04與1/07	8.6 I/O Performance Measures: Examples from Disk and File Systems 8.7 Designing an I/O System 8.8 Real Stuff: A Digital Camera
1/11	期末考(考五 ~ 八章)