Computer Architecture
SKKU SWE3005_42
Spring 2017

Instructor: Hee Yong Youn, Rm 23424, 031-290-7147, youn7147@skku.edu

TA: Yi Li Wang, Rm 23403A, 031-290-7952, wylstrive@gmail.com

Office Hour: Instructor: M 1:30 - 3:00 p.m. (or by appointment)

TA: T: 3:00 - 6:00 p.m.

Lecture type: English

Course Description: A study of organization and architecture of microprocessor and computer system. Topics include instruction set design, performance measurement, arithmetic operation, datapath and control design, pipelining, memory hierarchy, input and output.

Objectives: Computer architecture is a foundation with which a computer system is built. It includes both hardware and software, which are used together to let the system operate. This course is for covering the core issues related to computer architecture such as design of CPU, instruction set design, memory structure, I/O and peripherals, etc. This course will thus give you an in-depth understanding on how the modern digital computer system is organized and operates. Group project will also be conducted for consolidating the materials covered in the lectures and providing team work experience.

Prerequisites: Digital logic design, or consent of instructor.

Textbook: David A. Patterson and J.L. Hennessy, ``Computer Organization & Design," Morgan Kaufmann, 5th ed., 2013.

References:
- W. Stalling, "Computer Organization and Architecture," 9th ed., Pearson, 2013.
- Andrew S. Tanenbaum and Todd Austin, "Structured Computer Organization," 6th ed., Prentice Hall, 2013.

Grading policy:

Midterm Exam	25%
Final Exam	30%
Homework (6 or 7times)	25%
Project	15%
Attendance	5%
Total	100%

Schedule:

Week	Subject	Remark
1	Introduction, Computer-system organization Instruction set	HW 1 assignment
2	Operation of hardware Addressing modes	Project assignment
3	MIPS programming Measuring performance	HW 2 assignment
4	Evaluate performance Number systems	HW 3 assignment
5	Arithmetic operations Complex arithmetic operations	
6	ALU Design Floating point operation	HW 4 assignment
7	Datapath Multicycle implementation & review	
8	**Midterm exam (April 24, Mon)** Microprogramming	Open book and note
9	Exceptions Pipelining	HW 5 assignment
10	Hazards Storage system	
11	Memory hierarchy Caches	HW 6 assignment
12	Virtual memory	
13	Paging and segmentation	HW 7 assignment
14	I/O Performance Peripheral device interface	
15	Project presentation Review	
16	**Final exam (June 19, Mon)**	Open book and note

Remark:

- 10% penalty per day for late submission of the assignments.
- Honor code violation such as copying the assignments results in **F** grade for all the students involved.
- The exams are open book and notes.
- If you miss the classes more than three times without approval, an F grade will be given regardless of the classwork.
- All the course materials are available at **http://mobile.skku.ac.kr**.