

System Programming

Eunji Lee
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공지사항

■ 초과신청

- 반드시 들어야 하는 상황 (복수전공인데 본 교과목이 필수인 경우인데 이제 곧 졸업인 경우) - **허용**
- 본 학과인데 편입/전과 등의 사유로 신청 기회가 애초에 없었던 학생 허용 - **허용**
- 타학과 학생인데 순수한 배움에 대한 열망으로 신청하고자 하는 학생 - **불허**
- 기타 - **상담요망**

■ 초과신청서 작성

- 아래의 링크에 접속하여 작성 후 제출
<https://forms.gle/LzXnSbU7b575tfTT6>
- 9/2(목) 학과 사무실에 일괄 전달 (각자 확인 요망)

Hello!

■ Instructor

- **Prof. Eunji Lee** (연구관 209호, ejlee@ssu.ac.kr)
 - Senior researcher in Samsung Electronics
 - Researcher at Univ. of Wisconsin-Madison
- **DATOS Lab**
 - Data Analytics and Computing Systems Laboratory

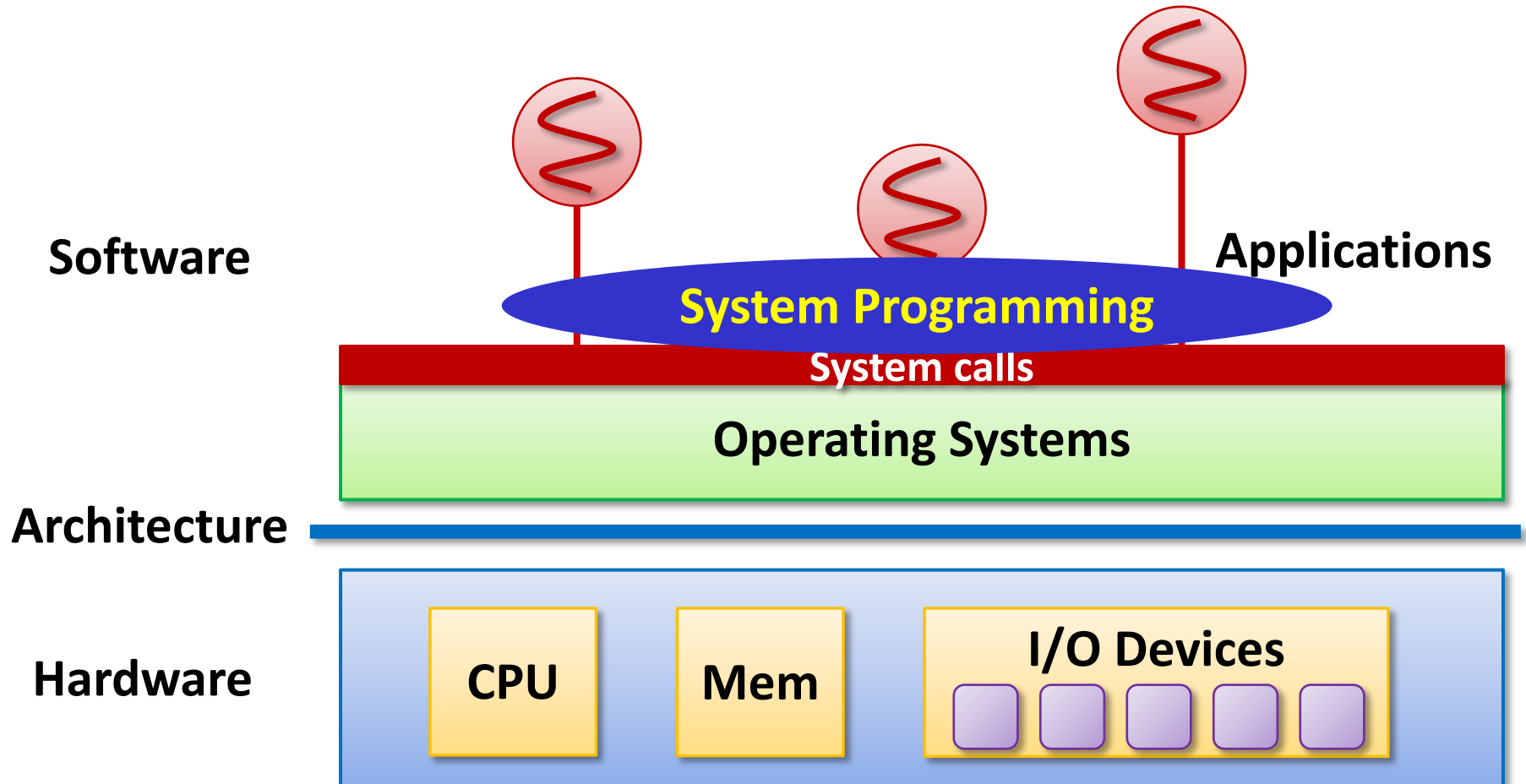


■ Major research area – Computer Systems

- Operating systems
- Distributed storage systems
- Emerging memory technologies (e.g., Flash and 3D-Xpoint)
- Cloud / Edge computing
- ...

What is System Programming

- Computer systems internals



Course Schedule

Week	Contents	Lab
1. 9/1	Ch1. Overview / CH2-3. Bits, Bytes, and Integers	Virtual Machine Installation
2. 9/8	Ch2. Bits, Bytes, and Integers	Build tools
3. 9/15	Ch2. Float Point	Bit manipulation
4. 9/22	Ch3. Machine-level Programming – Basics	Quiz
5. 9/29	Ch3. Machine-level Programming – Control	Quiz
6. 10/6	Ch3. Machine-level Programming – Procedures / Data	Reverse engineering
7. 10/13	Ch3. Machine-level Programming – Advanced Topics	Attack lab
8. 10/20	Midterm exam	
9. 10/27	Ch5. Optimizing Program Performance	Program profiling
10. 11/3	Ch6. Memory Hierarchy*	(Matrix multiplication)
11. 11/10	Ch7. Linking	Quiz
12. 11/17	Ch7. Linking	Static / Dynamic library
13. 11/24	Ch8. Exceptional Control Flow	Shell
14. 12/1	Ch10. System-Level I/O	File I/O
15. 12/8	Final exam	

Prerequisites

■ Courses

- C/C++ Programming
- Data Structure
- System Software

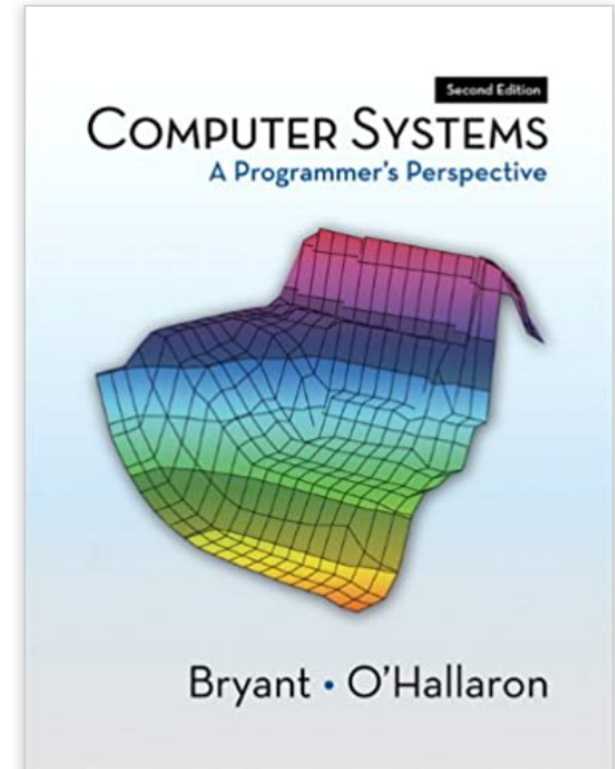
■ Required skills

- Fluent C programming
- Intel x86 architecture & assembly programming
- Basic knowledge of Unix/Linux systems
- Reading a large, complex program

Textbook

- **Computer Systems: A Programmer's Perspective (2nd edition)**
 - Randal Bryan and David O'Hallaron
 - Pearson

- **Lecture notes will be uploaded at class.ssu.ac.kr**
 - *Some of slides for this lecture are based on materials provided by the textbook publisher*



Reference

■ The Unix Programming Environment

The Unix Programming Environment (Prentice-Hall Software Series) 1st Edition

by [Brian W. Kernighan](#) (Author), [Rob Pike](#) (Author)

★★★★★ 127 ratings



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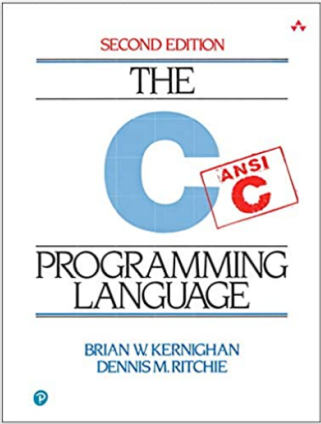
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Reference

■ The C Programming Language

C Programming Language, 2nd Edition 2nd Edition
 by Brian W. Kernighan (Author), Dennis M. Ritchie (Author)
 ★★★★★ 2,533 ratings
 #1 Best Seller in C Programming Language

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Grading

- Mid-term exam 35 → 30%
- Final exam 35 → 30%
- Projects/Homework/Quiz 20 → 30%
- Attendance 10%

Cheating

■ What is cheating?

- Sharing code with friends: by copying, retyping, looking at, or supplying a file
- Coaching: helping your friend to write a lab, line by line

■ What is NOT cheating?

- Explaining how to use systems or tools
- Helping others with high-level design issues
- *Searching web pages on WWW*

■ Penalty for cheating

- Removal from course with failing grade

Getting Help

■ Mail to us:

- Eunji Lee (instructor): ejlee@ssu.ac.kr
- Leeju Kim (TA): kimleju1408@gmail.com

공지사항

■ 강의 진행방식

- 초반 5주: 실시간 강의 – 퀴즈 or 실습/과제
- 이후 10주: **대면 강의**. 퀴즈 or 실습/과제

■ 매주 실시간 화상 / 대면 강의 진행

- (가)분반: 15:00 – 16:15
- (나)분반: 16:00 – 17:15

■ 화상강의 주의사항

- 수업 시작 후 10분 이상 지각 시 결석 처리
- **참석자는 화상/음성 활성화 필수. 이름(학번)** 형태로 참석자 표시
- 상기 사항 미준수 시 결석처리

VM Installation

■ Virtual box

- <https://www.virtualbox.org/>

■ Ubuntu

- <https://ubuntu.com/download/desktop>
- Ubuntu 20.04.3 LTS