COURSE OUTLINE

Operating Systems 2019 Spring by Euiseong Seo
Warning

- You are now taking the **most challenging** course in the CSE curriculum
- Lectures will be easy, but projects will not
Overview

- What this course is about
- Who teaches this course
- Why you have to take this course
- What you will learn in this course
- What you will earn in this course
- How to succeed in this course
What this course is about

- Objectives and various forms of operating systems
- Design principles of internal components
  - Process management
  - Memory management
  - Storage management
  - Synchronization tools
Administrative Information

- Course Code
  - SWE3004

- Class Hour
  - Tuesday 16:30 – 17:45
  - Thursday 15:00 PM ~ 16:15

- Lecture Room
  - #26108 (located on 1st floor of Engineering Bldg. II)
Textbook

- Operating System Concepts
  - 9th Edition (10th Edition is also ok)
  - Written by A. Silberschatz, P. B. Galvin and G. Gagne
  - Published by Wiley
  - 2012
References

- Operating Systems: Internals and Design Principles
  - William Stallings
  - Prentice Hall

- Modern Operating Systems
  - Andrew S. Tanenbaum
  - Prentice Hall
Course Components

- Class participation
  - 10% of total credit
  - Up to four absences will be tolerated

- Exams
  - Mid and final
  - 45% of total credit (20% + 25%)

- Programming assignment
  - Pintos - operating system implementation
  - 4 assignments
  - 45% of total credit (10% + 10% + 10% + 15%)
  - TAs will guide you
Course Web Page

- http://csl.skku.edu/SWE3004S19
- Check the web site regularly
- Class material, project information and other useful things will be posted
Ethical Code

- No academic misconduct will be tolerated
  - Zero-tolerance policy
  - One who is found guilty will be kicked out of my class immediately
Lecturer

- Euiseong Seo
  - Associate professor, Software and Computer Eng. Dept.
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Teaching Assistants

- 김종석 (Jongseok Kim)
  - E-Mail: ks77sj at gmail.com

- 최동규 (Donggyu Choi)
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- They live in #85533
- E-mail is the preferred way to contact
- Make an appointment before you visit
Why You Have to Take This Course

- To graduate
- To understand computer systems better
- To obtain useful design methodologies and principles for implementation of complex software
- Just for Fun!
- To design a new hardware in OS-compatible ways
- To make a better OS or systems
  - Functionality
  - Performance / Cost
  - Reliability
  - Energy efficiency
Prerequisites

- Introduction to Programming
- Data Structures
- Computer Organization
- Introduction to Algorithms
Lecture Topics

- OS Structure
- Processes and threads
- CPU Scheduling
- Synchronization
- Deadlocks
- Memory management
- Virtual memory
- I/O systems
- Storage
- Filesystems
Keys to Success

- Read textbook exhaustively
- Think, think, think
- Begin your project assignments as early as possible
Pintos Projects

- What is Pintos?
  - An instructional operating system based on Nachos
  - Developed by Ben Pfaff @ Stanford University
  - A real, bootable OS for 80x86 architecture
    - Run on a regular IBM-compatible PC or an x86 simulator
  - Written in C with minimal assembly code
Pintos Projects

- Initially, the source tree of Pintos has a skeleton
  - Do nothing but testing the functionality
- You are supposed to fill in the empty code to provide following features
  - Thread scheduling
  - User programs
  - Virtual memory management
Pintos Schedule

- **Project 0 – Set up your development environment**
  - Lab class: 8PM 3/13
  - Due: 3/20

- **Project 1 – Threads**
  - Lab class: 8PM 4/3
  - Due: 4/10

- **Project 2 – User programs**
  - Lab class: 8PM 5/1
  - Due: 5/8

- **Project 3 – Virtual memory**
  - Lab class: 8PM 5/22
  - Due: 6/5