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**
  - Monday and Wednesday
  - 13:30 PM ~ 14:15 PM

- **Lecture Room**
  - #330110 (located on 1F in Engineering Bldg. II)
Textbook

- **Operating System Concepts**
  - 9th Edition
  - 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
  - No lateness is allowed
  - Up to four absences will be tolerated

- **Exams**
  - Mid and final
  - 35% of total credit

- **Programming assignment**
  - Pintos - operating system implementation
  - 4 assignments
  - 55% of total credit
  - TAs will guide you
Course Web Page

- [ ] http://csl.skku.edu/SWE3004S15
- [ ] 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

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

- 이재민
  - E-Mail: jminlee92 at gmail.com
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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
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 3/9
  - Due: 3/18

- **Project 1 – Threads**
  - Lab class: 8PM 3/23
  - Due: 4/8

- **Project 2 – User programs**
  - Lab class: 8PM 4/27
  - Due: 5/18

- **Project 3 – Virtual memory**
  - Lab class: 8PM 5/20
  - Due: 6/10