SDE5007: Special Topics in IC Design II

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Sungkyunkwan University
http://csl.skku.edu
Basic Information

- **Schedule**
  - 11:00 – 18:00 (Mon. & Wed.)
  - 4 weeks
  - CDI, Samsung Electronics Co.

- **Course homepage**
  - [http://csl.skku.edu/SDE5007M16/](http://csl.skku.edu/SDE5007M16/)

- **TA**
  - None
Instructor

- Jinkyu Jeong
  - Assistant professor @ SSE
  - Computer Systems laboratory
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  - URL: http://csl.skku.edu/People/Jinkyu
  - Tel: 031-290-7692
  - Email contact is preferred
Course Plan

- **Topic**
  - Advanced operating systems

- **Lectures**
  - Backgrounds and basic concepts of operating systems
  - Advanced topics on operating systems

- **Class discussions**
  - 2 papers a day

- **Reading assignments**
  - Read papers BEFORE the class
  - Submit paper evaluation forms (at the course homepage)
Class Materials

- Quality research papers will be used in class
  - ACM Transactions on Computer Systems (TOCS)
  - ACM Computing Survey
  - ACM Int’l Symp. on Operating System Principles (SOSP)
  - Usenix Symp. on Operating Systems Design and Implementation (OSDI)
  - Usenix Annual Technical Conference (USENIX)
  - ACM Architectural Int’l Conf. on Architectural Support for Programming Languages and Operating Systems (ASPLOS)
  - Usenix Workshop on Hot Topics in Operating Systems (HotOS)
  - Usenix Conf. on File and Storage Technologies (FAST)
  - More on http://csl.skku.edu/Links/Conferences
References (1)

- **Operating System Concepts**
  - 9th Edition
  - Written by A. Silberschatz, P. B. Galvin and G. Gagne
  - Published by Wiley & Sons Inc.
  - 2014

- **Operating Systems: Three Easy Pieces**
  - R. H. Arpaci-Dusseau, A. C. Arpaci-Dusseau
  - [http://pages.cs.wisc.edu/~remzi/OSTEP/#instructors](http://pages.cs.wisc.edu/~remzi/OSTEP/#instructors)
References (2)

- Operating Systems: Internals and Design Principles (8th ed.)
  - William Stallings
  - Prentice Hall, 2014

- Modern Operating Systems (4th ed)
  - Andrew S. Tanenbaum,
  - Prentice Hall, 2014
References (3)

- **For Linux:**
  - *Understanding the Linux Kernel (3rd ed.)*
    - D. Bovet and M. Cesati,
    - O’Reilly & Associates, 2015

- **For Windows:**
  - *Windows Internals (6th ed.)*
    - Mark E. Russinovich, David A. Solomon, and Alex Ionescu,
    - Microsoft Press, 2012

- **For Solaris:**
  - *Solaris Internals*
    - Richard McDougall and Jim Mauro
    - Sun Microsystems, 2001
# Topics

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<th>Day</th>
<th>Topics</th>
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<tr>
<td>Day 1 (7/5, Mon.)</td>
<td>Course Overview&lt;br&gt;Operating Systems Overview</td>
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<td>Day 2 (7/7, Wed.)</td>
<td>Operating Systems Overview</td>
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<td>Day 3 (7/11, Mon.)</td>
<td>Processes and Threads</td>
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<td>Day 4 (7/13, Wed.)</td>
<td>Synchronization and Multicore Scalability</td>
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<td>Day 5 (7/18, Mon.)</td>
<td>Memory Management</td>
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<td>Day 6 (7/20, Wed.)</td>
<td>Storage and File Systems</td>
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<td>Day 7 (7/25, Mon.)</td>
<td>Virtualization</td>
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<td>Day 8 (7/27, Wed.)</td>
<td>Final Exam</td>
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### Reading Assignments

#### Rules

- This is (mostly) a paper-reading course
  - Critical reading of technical papers is a must skill to have for your research
  - Your participation is very important!
- You should complete and submit paper evaluation forms (1 page for each paper) BEFORE each class.
- Submit evaluations for all papers discussed in the class.
- The list of papers to review and the evaluation form are available at the course homepage.
Paper Presentations (1)

- Paper presentation session
  - The heart of this course!
  - We will discuss two or three papers each week.
    - 30 minutes/paper for presentation
    - 15 minutes/paper for discussion
  - You need to present only one paper in this semester.
    - We have 9 enrolled students
    - Pick one among the 9 papers in the course homepage
  - The success of this course (and your grade 😊) largely depends on your presentation.
**Paper Presentations (2)**

**Tips**

- Highlight the followings:
  - Why are the authors doing this?
  - What is exactly the problem they try to solve?
  - What are the main ideas?
  - What do you think are the weaknesses of the paper?
  - What would you do to solve the same problem?
  - ...

- Do not just summarize the paper line by line!
- Understand the paper first and then present it in your own way.
- Survey the related work too (past and succeeding).
  - [http://scholar.google.com](http://scholar.google.com) may help.
## Time Schedule

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<tr>
<th>Time</th>
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<tr>
<td>11:00~12:30</td>
<td>Lecture 1</td>
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<td>12:30~13:30</td>
<td>Lunch</td>
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<tr>
<td>13:30~15:00</td>
<td>Lecture 2</td>
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<tr>
<td>15:00~16:00</td>
<td>Paper 1 presentation and discussion</td>
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<tr>
<td>16:00~17:00</td>
<td>Paper 2 presentation and discussion</td>
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Grading

- Policy (subject to change)
  - Class participation: 50%
    - Reading assignments
    - Paper presentations
    - Discussions
  - Exam: 50%
Questions?