CS 5523 Operating Systems

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The University of Texas at San Antonio

Fall 2015
Big Data and Parallelization

Contributions

- False Sharing Problems
- Deterministic Multithreading
- Detecting Memory Errors
General Information

- Self introduction
  - Research interests: security, reliability and performance of Big Data systems and parallel systems (Software Research Group)
  - Looking for new Ph.D. students

- Class Web
  - Syllabus, class schedule and slides/handouts

- Prerequisites:
  - CS 3733: Operating Systems or equivalent
  - CS 4753: Architecture or equivalent
  - Working knowledge of C/C++/Java
General Information (cont.)

- **Required textbook:**
  - *Operating System Concepts*, by Silberschatz, Galvin and Gagne (SGG), 9th edition (older versions work)

- **Recommend Reading:**
Contact Information

- **Office**: NPB 3.328
- **Office hours**:
  - Tuesday: 4:00pm – 5:15pm
  - Thursday: 4:00pm – 5:15pm
  - Or by appointment

- **Email**: Tongping.Liu @ utsa.edu
  - Best way to reach me!
  - Common questions should be posted at Blackboard forum.
Grade Distribution

Homework and Programming projects (35%)
- A few writing homework (3) may be expected
- Two/three projects may be expected
- Discussions are allowed but no code-copying/cheating
- Project demonstration may be required

Two Mid-Term Exams (15% each)
- Closed books, closed notes

One Final Exam (30%)
- Dec 10 (6pm – 8:30pm): fixed date and time
- Comprehensive, closed books, closed notes

Attendance & class participation (5%)
- Answering questions on the forum.
- Participation at classes. Quiz.
Grading Policy

- Final letter grade:
- No late assignment submission without prior consent
- No early/makeup exam without university sanctioned excuse or prior consent
- **Zero** tolerance on cheating!!
  - A direct fail on the plagiarism on homework or project.
Course Objectives

- Better understanding of **basic OS concepts**;
- Learn the **principles** behind the **design** of operating systems, both **centralized** and **distributed**;
- Discuss on “solved” and “**open**” **problems** in OS design and recent OS trends;
- Gain **hands-on programming experiences**
  - Multithreaded/network programming
  - Distributed system design and implementation
Topics to be covered (and schedule)

- Operating system overview: history, components, design principles and different types of OS
- Process and memory management
- Threads, concurrency and synchronization
- Inter-Process Communication (IPC) and networks
- Distributed/Remote Objects and RMI
- Name and Directory Services
- Security/Protection and Fault Tolerance
- Distributed File Systems
- Advanced OS topics: depending on time
1<sup>st</sup> Homework

- Change email on Blackboard to your favorite email:
  - For future important notices etc;
  - Get used to Blackboard system