EECS 211: Advanced System Software Lecture 8

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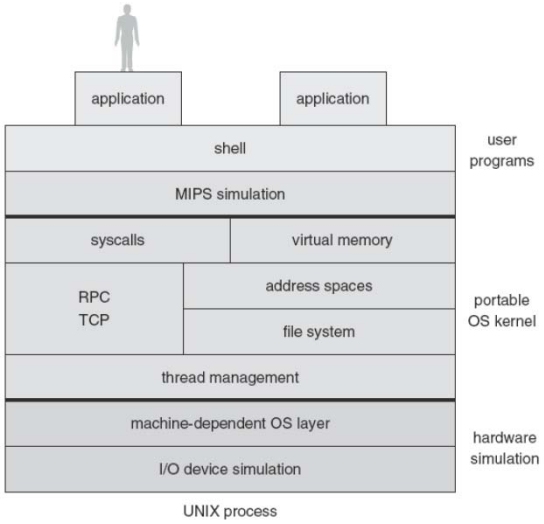
Lecture 8: Overview

- Assignment 1
  - Nachos setup, threads
  - ➢ Solution
- Assignment 2
  - Concurrency, Synchronization
  - ➢ Discussion
- Review of Chapter 6
  - "Condition Variables in Monitor"
- Memory Management
  - Paging, Segmentation

The Nachos System

- Overview
  - User code:
    - Cross-compiled C/C++ code
    - emulated by MIPS simulator
  - Kernel:
    - Compiled C/C++ code
    - normal (debug'able) Unix process
  - I/O System:
    - simulated by Unix process I/O



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Assignment 1

- Introduction to the Nachos System
  - Task 1: Read the overview chapter
    - Text book, Appendix D (contents online)
  - Task 2: Install the software
    - Setup environment, copy tar-ball, unpack, compile, test
  - Task 3: *Understand* the Nachos system!
    - Read documents and source code
- Deliverables
  - Log output for **`./nachos -rs 42`**
  - What is the purpose of **`SWITCH()`**?
  - Why is **`SWITCH()`** not implemented in C/C++?
  - Why does the execution order change with –rs option?
- Due by email to **`doemer@uci.edu`**
  - Wednesday, January 26, 2011, at 2pm (sharp!)

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Assignment 2

- Thread Synchronization in Nachos
  - Task 1: Implement the missing locks and condition variables
    - files **`synch.h`** and **`synch.cc`**
  - Task 2: Test the locks and condition variables
    - file **`threadtest.cc`**
      (based on **`threadtest.cc.W11templateA2`**)
    - implement *safe* scheduling of strictly alternating threads
      - *no change in execution order due to any* **`-rs value`***!*
- Deliverables
  - code for locks, condition variables, and safe test case
  - log file of test runs with five different random seeds
  - Email to **`doemer@uci.edu`**
- Due by email to **`doemer@uci.edu`**
  - Wednesday, February 2, 2011, at 2pm (sharp!)

Operating Systems Review

- Excerpts from chapter 6 of
  "Operating System Concepts", 8th Edition,
  by A. Silberschatz, P. B. Galvin, G. Gagne,
  John Wiley & Sons, 2009.

- Monitors
- Condition Variables

Memory Management

- Excerpts from chapter 8 of *"Operating System Concepts",* 8th Edition, by A. Silberschatz, P. B. Galvin, G. Gagne, John Wiley & Sons, 2009.
- Memory Management
  - Paging
  - Segmentation