Course: ENPM 675 – Operating System Design
Semester: Summer 2015
Day(s): MW
Time: 6:00-8:40 PM
Location: JMP 2216 (DETS)
Instructor: Manoj Franklin
Phone: 301-405-6712
Email: manoj@eng.umd.edu

Course Description

ENPM 675 covers fundamental concepts related to the design and implementation of operating systems. Operating systems are an essential part of any computer system. They provide an established, convenient, and efficient interface between user programs and the bare hardware of the computer on which they run. Operating systems vary significantly, but their fundamental principles remain the same. The course will start with a brief historical perspective of the evolution of operating systems over the last fifty years and then cover the major components of most operating systems. This discussion will cover the tradeoffs that can be made between performance and functionality during the design and implementation of an operating system. Particular emphasis will be given to three major OS subsystems: process management (processes, threads, CPU scheduling, synchronization, and deadlock), memory management (segmentation, paging, swapping), and storage management. Topics include virtual memory, threads, context switches, kernels, interrupts, system calls, interprocess communication, coordination, and the interaction between software and hardware.

Prerequisites

Undergraduate course in Computer Organization and Assembly Language Programming

Grading

The final grade breakdown is as follows:

<table>
<thead>
<tr>
<th>Item</th>
<th>Weightage</th>
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<tbody>
<tr>
<td>Assignments</td>
<td>20%</td>
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<tr>
<td>Midterm Exam</td>
<td>40%</td>
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<tr>
<td>Endterm Exam</td>
<td>40%</td>
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</tbody>
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Required Textbook

Title: Operating System Concepts, 8th Edition
Author: Silberschatz, Galvin, Gagne
Publisher: John Wiley & Sons, Inc.
Year: 2009
Course Outline

1. Overview
   - Introduction
   - Organization
2. Process Management
   - Processes and Threads
   - Process Scheduling
   - Process Synchronization and Communication
3. Memory Management
   - Main Memory
   - Virtual Memory
4. Storage Management
   - File System
   - I/O System
5. Protection and Security

Code of Academic Integrity

The University of Maryland, College Park has a nationally recognized Code of Academic Integrity, administered by the Student Honor Council. This Code sets standards for academic integrity at Maryland for all undergraduate and graduate students. As a student you are responsible for upholding these standards for this course. It is very important for you to be aware of the consequences of cheating, fabrication, facilitation, and plagiarism. For more information on the Code of Academic Integrity of the Student Honor Council, please visit http://shc.umd.edu/SHC/HonorPledgeInformation.aspx.