COMP 323 – FUNDAMENTAL OF OPERATING SYSTEMS

Fall 2018

General Information

Description

This course introduces the major topics of computer operating systems such as processes, threads, synchronization and inter-process communication, processor scheduling, memory management, I/O, file systems, and issues in security. Students will also learn to solve operating system problems using multithreaded programming.

Prerequisites

- COMP 201 - Principles of Computer Organization
- COMP 111- Introduction to Computer Science & Object-Oriented Programming

Course Outcomes

- Upon successful completion of this course, students will be able to:
    1. Explain the structure and purpose of an operating system.
    2. Explain file systems interface and structure.
    3. Build programs using processes and threads.
    4. Explain multi-processing mechanism and interrupts.
    5. Apply synchronization and avoid deadlock.
    6. Describe virtual memory and identify its performance issues.
    7. Build programs using operating system calls.

Course Materials

Required Materials

- Silberschatz, A., Galvin, P. B., & Gagne, G. (2013). Operating system concepts (9th ed.). New York, NY: John Wiley and Sons. ISBN (print): 9781118063330; ISBN (e-text): 9781118559611.

Obtaining Course Materials

- A digital copy of the textbook (e-textbook) is integrated into the course along with access to the accompanying courseware. Clicking on any link to the book or courseware from within the course will direct you to an object from which the corresponding digital material can be opened in a new browser tab. For a detailed walkthrough on accessing the digital copy of the textbook, please refer to this tutorial.

Required Softwares

Students will develop programs with C that must compile and run on Linux in this course. If you already have a Linux-based computer, make sure that gcc, make, and gdb are installed. If you have a Windows or Mac computer, there are two options:

- Every student enrolled in the class will be provided with an Ubuntu Linux Virtual Machine (VM) hosted by Franklin University Cloud service. The VM contains software required to develop C programs in this course. Students must have broadband Internet access to utilize the service.
- Students can install an Ubuntu Linux Virtual Machine on their own computers. This option is recommended for those who are not satisfied with their Internet speed or prefer to work on their own computers.

Course Outline

Course Topics

Module 1: Introduction to Operating Systems	**Week 1**	Introduction to OS, Processes and Review of C Programming
Module 2 : Process Management	**Week 2**	Processes (Continued)
	Week 3	Threads
	Week 4	CPU Scheduling
	Week 5	Process Synchronization
	Week 6	Deadlock and Midterm
Module 3: Memory Management	**Week 7**	Main Memory and Virtual Memory
	Week 8	Mass Storage Structure and File Systems Interface
	Week 9	File Systems Implementation
	Week 10	I/0 Systems
	Week 11	Protection and Security
	Week 12	Final Exam