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Course Information

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CSCD540 Advanced Operating Systems

Instructor: Imamura

Office (& Office Hour): CEB 308 (MW 16:00-1700)

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Course Description

The course covers synchronization in concurrent/distributed computing (which modern operating systems must support) and the implementation of virtual machine operating systems. Implementation includes file systems, memory management, paging, task switching, process management, and basic operating system services. The virtual machine must be able to support various CPU time allocations schemes to simulate multiprocessor system of different processing speed.

Text: Not required. Reading assignments will be given.

Required work: You are expected to complete assignments and the term project. Each student is expected to turn in weekly progress report approximately one page (double space, font size 12 point). The progress report should contain

1. Task completed past week and task to be completed this week.

2. Difficulties and the solutions you provided. Or, parts you had to work hard.

3. Hours you spent on the tasks (this is to help you estimating how many hours you need to do things.)

Term Project: Implement the Virtual Machine (VM.zip)

1. P4 language implementation

1.1 implement subroutine for the P4 programming language

1.2 separate processor and memory from a4 load and go assembler.

2. Operating systems

2.1 File system

2.2 scheduling

2.3 memory management

2.4 paging

2.5 program loader

2.6 bootstrap loader

Assignments:

1. Implement the byzantine agreement on the network (Simulate faulty processes.)

2. Shared memory computing.

3. Implement the too much milk too little milk on the network.

4. Implement the reader/writer or producer/consumer problem on the network.

Deliverables: Demonstration of your work and source code.

Grading: You are expected to work as professionals. Contribution to your team is 80% of your grade. The rest 20% is based on attendance and midterm and final exam. Grading is primarily based on paging works or not, tasks switched or not, and file system works or not.