

## OPERATING SYSTEMS SEMESTER PROJECT

CS 355, Spring 2013

This project requires you to gain in-depth experience with a topic related to operating systems.

### Assignment

Choose an operating-systems topic that interests you. You may work individually or with a partner. If you work as a team, your project should involve more depth than an individual's project.

Your project will result in a paper and a presentation.

Your paper will be similar to, but more extensive than, the lab reports that you will complete throughout the semester. Your paper should contain at least the following sections:

1. Statement of Problem
2. Discussion of Results
3. Limitations
4. Conclusions
5. Suggestions for Future Work
6. Works Cited (in a standard format such as MLA)
7. Appendix (including any relevant computer code that you wrote)

### Milestones

1. **First milestone due Friday, February 8:** Initial topic proposal  
Hand in one or two (typed) paragraphs describing your proposed topic area and whether you will work individually or with a partner.
2. **Second milestone due Friday, February 22:** Specific topic proposal  
Narrow down your topic and supply references. You should list at least five resources that you expect to use, not including the course textbook. At least two of your sources must be resources other than web sites, and at least one source must be a journal article. Present your topic and sources professionally, with sources cited in a standard format.
3. **Third milestone due the week of March 11:** Consultation  
Meet with the professor to discuss your project.
4. **Fourth milestone due Friday, April 26:** Rough draft of paper due
5. **Fifth milestone due Monday, May 6:** Final draft of paper due
6. **Sixth milestone due the week of May 6:** In-class presentations

## Suggested Topics

Following are some examples of interesting topics related to this course, but which are not part of the standard reading and assignments. When you consider topics, remember that depth is more important than breadth.

- Run and discuss a specific modern operating system, or some aspect of it, such as Jolicloud, ReactOS, PC-BSD, Oberon, QNX, or other. Ask about using a computer in the CS research lab so that you don't have to mess up your own computer.
- Use CORBA for inter-process communication or another method different from the one you use in the "candy factory" lab assignment.
- Create a Beowulf cluster by using Condor.
- Simulate a job queue with arrival times (if you know some statistics).
- Compare disk scheduling algorithms (or memory management algorithms) by simulation.
- Simulate the hardware Data Encryption Standard (DES) in software.
- Write an Ebay, Amazon, or Google Earth client.
- Write a program to illustrate load sharing, perhaps modifying something that you find on the web.
- Tune an operating system parameter in Linux and demonstrate the difference in behavior between the default value and the value you set.
- Discuss cache coherency in multiprocessor environments.
- Discuss and illustrate processor scheduling in Linux.
- Identify and propose solutions for several security issues with Windows.
- Research reliability: perhaps techniques to minimize failure, correctness of operating system software, or concurrent program correctness.
- Research some aspect of network operating systems; for example, you might compare OpenAFS with NFS.

## Grading

This project will be graded out of 100 points based on the following criteria:

- Creativity (10 points)
- Comprehensiveness: depth and breadth (20 points)
- Clarity: focus, organization, mature writing, use of diagrams (20 points)
- Correctness: technical accuracy, use of resources (20 points)
- Punctuality in meeting milestones, as detailed below (10 points)
- Presentation summarizing the main points of your work (20 points)

This project is worth 15% of your course grade for CS 355.