

# CS3841 Design of Operating Systems

## Term research Paper

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### 1 Overview

The term paper is a research report on some aspect (your choice) of the design of operating systems, and is an individual effort. The format should be compatible with guidelines taught in MSOE composition courses (EN-131 and EN-132), and include appropriate bibliographic references. No specific length is set, though it seems unlikely that a reasonable job could be done in less than 8-10 pages of “double spaced” body text.

You are expected to research your topic in some depth. Your sources must include technical journals<sup>1</sup>, books, and similar “reputable” sources. While you are encouraged to use internet/web resources as well, be careful to assess the quality of the information you find<sup>2</sup>. The library has several online search tools which may be extremely beneficial. Be especially critical in evaluating information provided by someone with a vested interest (e.g., the vendor of a particular operating system or software package). Your treatment of your chosen topic should extend beyond any related material in the textbook.

An abstract and preliminary bibliography is to be submitted before the final paper is due, as well as an outline of your paper.

The final paper must be submitted PDF format through the course website on or before the due date.

### 2 Example topics

The following is a list of potential topic ideas. Other may be acceptable as well. If you have something that you are not certain if it is appropriate or not, feel free to discuss it with your instructor prior to the due date for the abstract and preliminary bibliography.

1. Distributed Operating Systems
2. Mobile Operating Systems
3. Real Time Embedded Operating Systems
4. Processor allocation and CPU scheduling, multi-processor support
5. Processes, threads, kernel threads, and associated implementation issues
6. Comparisons of different operating systems
7. Windows XP graphics architecture
8. Windows 7 architecture
9. .Net Virtual Machine
10. Improvements in the Java Virtual Machine

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<sup>1</sup>ACM and IEEE preferred

<sup>2</sup>Hint, in general, most “Blogs” should be regarded with suspicion unless supported by appropriate references to reputable sources, in which case you would use the reputable source.

11. File systems, or a particular file system
12. Flash drive storage management
13. Network queuing theory and its application to computer system models
14. Scheduling systems
15. Security and protection
16. Virtual machine operating systems
17. Caching and memory management.
18. Victim caching
19. prefetching
20. Operating systems which have failed
21. Architectures for high performance computing and their impact on operating systems
22. Supercomputing operating systems

Many past students have found the term paper to be a valuable and enjoyable project. It may be difficult to choose a topic early in the course, when many operating system subjects have not yet been discussed. You are encouraged to read ahead in the textbook, to visit the library, to surf the Web, and to consult the instructor.

### 3 Types of References

Each term paper should have at least a few journal article (or perhaps conference paper) references, which contain the most recent information available that has been peer reviewed. Newer papers provide depth and, especially, currency that is hard to find in books. Older papers may be appropriate, especially when they are seminal<sup>3</sup>. Each or your references should be cited at least once in the main narrative of your paper and a full citation should appear in a references section at the end of the paper. It is recommended that you use the IEEE Citation Format [1].

While there are many sources for these papers, two very good starting points are the technical societies for Software and Computer Engineering, namely the ACM and the IEEE, specifically the IEEE Computer Society.

For the most part your entire paper should be in your own words. On occasion you may find that your source material has used a particularly good turn of phrase in which case you should enclose the borrowed material in double quotes (“quotation”). The general rule of thumb is that if you borrow a phrase of seven or more words then you should use quotation marks. In the quotation you may also want to take advantage of ellipsis ( ) and alterations ([inserted word(s)]). Failure to follow these guidelines is an ethical breach and is considered plagiarism. You MUST give credit to those whose thoughts and ideas you are borrowing for your paper.

### 4 Deliverable Due Dates

1. Abstract and Preliminary Bibliography. Due Thursday, October 10, 2012 at 23:00 CDT Submitted in pdf format through the course website.
2. Paper outline, advanced bibliography, and completely written introduction section. Due Thursday, October 24, 2011 at 23:00 CDT Submitted in pdf format through the course website.
3. Final completed Term Paper. Due Friday, November 2, 2012 at 23:59 CDT. Submitted in pdf format through the course website.

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<sup>3</sup>from the time of the origin of the idea and strongly influencing further development.

## 5 References

[1] Documentation: IEEE Style, Engineering Communication Centre @ The University of Toronto, [Cited 19-December-2005], Available HTTP: <http://www.ecf.utoronto.ca/writing/handbook-docum1b.html>.