

**CS 470 - Operating Systems**  
**Spring 2008 - Guidelines for Operating Systems Case Study**  
**Out: February 22, 2008**  
**Topic Choice Due: Monday, March 10, 2008**  
**Outline with References Due: 2 weeks before presentation**  
**Draft Due: 1 week before presentation**  
**Paper Due: 1 day before presentation**

The main goal of this assignment is to report on the design of various operating systems with an emphasis on what choices were made and why they were made. The operating systems may be of a historical, current, or research interest.

### **Logistics**

**This case study must be complete in pairs (group of 2) with no exceptions.** Each pair is responsible for:

- an approximately 10-page written report, due one day before the presentation for distribution to the rest of the class
- a 20 minute class presentation

In addition, the following due dates are in effect

- **Each pair should decide on an operating system to report on by Monday, March 17, 2008.** Choose one from the list at the end of this handout or any other operating system **with instructor approval**. Topics will be assigned on a first-come basis, so inform the instructor as soon as possible of your preference.
- An outline of the written report **with references** is due no later than two weeks before the presentation. Order of presentation will be assigned by the instructor after operating systems have been chosen. Presentations will be the week of April 21.
- A draft of the written report is due no later than one week before the presentation.

Each pair will meet with the instructor at the time of submission of the draft to discuss the presentation. Students are encouraged to meet with the instructor more often.

Grading will be as follows: 50% of the case study grade will be on the written report. Factors include completeness of information, clarity of prose, relevance of examples. Submitting the outline and draft in a timely manner will also be considered. 50% of the case study grade will be on the presentation. Factors include clarity of presentation, fielding questions, and facilitating discussion.

### **Report Content**

Your report should follow standard formatting for technical reports. Report sections should be titled and numbered with subsections being subnumbered. The report pages **should be numbered** starting with the cover page (but the cover page should not have a number printed on it). The report should include the following:

1. An overview of the operating system including a short history and a statement of the main objectives of the operating system. A diagram of the system structure also would be helpful.

2. Most of the report should consist of descriptions of the various design decisions made for the operating system including, but not limited to:
  - Processor scheduling
  - Memory management
  - File management
  - I/O scheduling
  - Etc.
3. The report should also include a discussion of any unique characteristics of the operating system. You should point out the rationale behind the choices, any unexpected interactions between design choices, and places where you might choose differently and why.
4. Finally, your report should conclude with a discussion of why you would or would not use this operating system. That is, give a "personal reaction" to the features and capabilities of the operating system.
5. **A list of references used in the preparation of the report should be included. This list should be numbered and in alphabetical order by first author/organization.** Citations in the report should be indicated using "[#]", where # is the number of the work cited in the reference list.

### **Presentation**

Each pair will make one 20-minute presentation on their operating system, including time for questions. Each student must provide at least 5 minutes of the presentation. The presentation should be an **overview** of the case study pointing out the highlights. Please do not read your entire case study to the class. Throughout the presentation, the presenters should be prepared to answer questions.

Presentation software may be used, but is not required. Overhead slides may be used. Instructor can have slides made from handouts.

### **Operating Systems**

Here is a list of possible operating systems for study. This is certainly not an exhaustive list. You may suggest others, but get instructor approval **FIRST!**. Linux, Windows XP, Windows Vista, Mac OS X, and RTEMS (from EE 458) will not be allowed as choices. The course website has a couple of links to lists of operating systems.

1. BeOS - Attempt at a multi-platform OS
2. CP/M - Early 8-bit microcontroller OS
3. Ethernut OS - embedded OS for microcontrollers
4. Mac OS (System 9 and earlier)
5. Mach - Early microkernel Unix, research originally at CMU, basis for Max OS X
6. MS-DOS / Windows 3.1
7. Multics - Early time-sharing system at MIT
8. NextStep - Commercial OS based on Mach
9. Novell Netware - More than just a distributed file system and printer server
10. OS/2 - IBM alternative to Windows for PCs
11. OS/360 / MVS - IBM mainframe OS
12. PalmOS - Palm Pilot OS
13. QNX - Real-time OS
14. VxWorks - Real-time OS
15. Windows CE / Pocket PC / Windows Mobile - Windows for PDAs and other small systems
16. Windows 95/98 - Windows for a new generation