CS 470 - Operating Systems  
Spring 2015 - Guidelines for Operating Systems Case Study  
Out: April 1, 2015  
Draft Due: April 15, 2015 (Wednesday)  
Final Paper Due: April 21, 2015 (Tuesday)

The main goal of this assignment is to report on the design of various operating systems with an emphasis on what design choices were made and why these choices were made.

Logistics  
This assignment will be done in trios assigned by the instructor. All case studies will discuss mobile or embedded operating systems for small devices. Operating systems will be distributed by random draw. Other operating systems in the same category may be proposed, which may or may not be accepted by the instructor. Proposed operating systems must have had at least one stable release.

Operating systems (listed in alphabetical order) in available in the random draw are:

1. Android OS  
2. FreeRTOS  
3. iOS  
4. QNX (also used in Blackberry phones)  
5. Windows Phone / Windows 10 Mobile

Each student trio is responsible for:

- An approximately 10-page written report in PDF format, due by 4:30pm on April 21, 2015. Copies of the report will be distributed to the rest of the class.
- A 15-20 minute class presentation. An electronic copy of the presentation in PDF format must be submitted to the instructor after the presentation. Order of presentations will be assigned by the instructor. Two will be on Wednesday, April 22, and two will be on Friday, April 24.

In addition, the following due date is in effect

- A draft of the written report is due by 4:30pm on April 15, 2014.

Each student trio should meet with the instructor at the time of submission of the draft to discuss the presentation.

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 also will 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

The report should follow standard formatting for technical reports. Report sections should be titled and numbered. The report pages should be numbered not including the cover page. 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.
   You should point out the rationale behind the choices, any unexpected interactions between design choices, and places where you might choose differently and why.
3. The report also should include a discussion of any unique characteristics of the operating system.
4. A brief discussion on the programming API used to write applications for the operating system may be included.
5. Finally, your report should conclude with a discussion of why you would or would not use this operating system from a user and/or programmer point of view. That is, give a "personal reaction" to the features and capabilities of the operating system.
6. A list of references used in the preparation of the report should be included. A reference should include the author (or organization, if something like a reference manual), title, name of publication, and date. Include a URL if reference is available on-line. The 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. Please note that Wikipedia is not acceptable as a reference. However, it is a good starting place for finding original source information. In addition, references should be to reputable resources. Most blogs and user forum answers are not acceptable unless written by a recognized expert.

Presentation

Each student trio will make one 15-20 minute presentation on their operating system, including time for questions. Each student in the trio must speak for at least 5 minutes during 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.

Presentations will be April 22 and 24. All students must be present in order for the presentation to be given. Unexcused absences will be penalized 10% for the absent student(s).