

CSCI 447 - Operating Systems, Spring 2024
Reading 2 : Process and Memory Management, Virtual Memory
Due Date: See canvas

Overview and Goal

The goal of the readings and summary/critique compositions is for you recognize and appreciate important operating system topics in the context of seminal scholarly original-source articles.

1 Articles

Select and read one of the following articles. They can be found online (scholar.google.com), else retrieved from the files folder on canvas. Refer to the lecture slides for hints on how to read a scholarly article. You must NOT read every single word in order to be able to write a summary and critique.

- C.L. Liu and James W. Layland, **Scheduling Algorithms for Multiprogramming in a Hard-Real-Time Environment**, *Communications of the ACM*, 20, 46-61 (1973).
- J. Dennis, **Segmentation and the Design of Multiprogrammed Computer Systems**, *Communications of the ACM*, 8 (4), 589-602 (1965).
- B. Jacob, **Uniprocessor Virtual Memory without TLBs**, *IEEE Transactions on Computers*, 50 (5), 482-499 (2001).
- K. Li and P. Hudak, **Memory Coherence in Shared Virtual Memory Systems**, *ACM Transactions on Computer Systems*, 7 (4), 321-359 (1989).

2 Composition

For this assignment you'll submit three individual documents.

2.1 Document 1: Your summary and critique

Compose two paragraphs. The first paragraph should be a summary paragraph. Make sure that your paragraph contains the WHAT, WHY, and HOW. See the lecture slides for a sample summary paragraph. In your summary paragraph, please:

- **bold** your sentence that describes WHAT the article is about
- *italicize* your sentence in which you describe WHY the article was written (the motivation for the work, and/or the problem that the science is trying to address)
- underline your sentence that describes HOW the research was conducted (the technical details and/or solution)

In the second paragraph, offer a critique of the article. Be sure that your critique is **constructive**. Do not only mention shortcomings, but also mention how any deficiencies might be mitigated. See the lecture slides for hints on how to critique a scholarly article even if you are not an expert in the field.

Please:

- Do not make use of ChatGPT or any AI assistive technology
- Do not include your name on your submission; it will be passed through a system to check for AI help
- Do not write in first person – the word “I” should not appear in your submissions
- Write in present tense
- Refrain from announcing; do not write “I think ...” or “The main point of the article is ...”
- Irrespective of which article you choose, assume you are a reviewer at the time when the article was being considered for publication. In other words, the submission should not be a book report, and shouldn’t allude to the research in a historical context when the state of the technical world was very different than it is now.

2.2 Document 2: AI generated summary and critique

Make use of an AI tool – your choice – and prompt it to write a 1 paragraph summary and 1 paragraph critique of the article. If the AI is unable to do a good job, that’s fine. Submit the two paragraphs – the AI generated summary and critique. Do not include your name on your submission.

2.3 Document 3: assessment of AI generated summary and critique

Write a single paragraph, in which you a) mention which AI tool you used, b) provide the query that you submitted, and c) discuss briefly how good (or bad) the AI-generated summary and critique are.

3 Submission and Rubric

Submit your two writeups via Canvas. Only .pdf files are accepted.

Summary paragraph written, 3 sentences minimum, 5 sentences maximum	2
The WHAT summary sentence is bolded	2
The WHY summary sentence is italicized	2
The HOW summary sentence is underlined – be sure to include technical details	2
Critique paragraph contains constructive comments/feedback	2
Correct grammar and proper usage of standard modern written English.	2
Summary and Critique not written in first person, written in present tense, not written as a book report, nor should you (as the writer) announce	2
AI-generated summary and critique, and brief discussion paragraph	6
Total	20 points