ASSIGNMENT 4 (5%)

CS330 - 001 INTRODUCTION TO OPERATING SYSTEMS • WINTER SEMESTER 2020

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Research Report (80 marks)

You will provide a written report based on a scientific research paper that investigates technical problems of operating systems.

The research paper chosen should focus on an in-depth topic about theories, algorithms, approaches, mechanisms, or implementation of one of the following fields of operating systems:

- process management
  - process and thread
  - CPU scheduling
  - synchronization
  - deadlock handling
- storage management
  - main memory
  - virtual memory
  - file systems
  - mass-storage and I/O
- protection and security
- distributed, real-time, and multimedia systems

The topic could also come from a sub-problem of cutting-edge research problems discussed in the literature (i.e., investigating a technical problem).

If you have trouble deciding which research paper to work on, contact your instructor, who can advise you on the suitability of the paper and/or suggest modifications. Note that the research paper is part of your assignment requirements for this assignment, so you cannot rely on your instructor to assign a paper.

In your report (expectations outlined below), make sure you **highlight your own inputs, work and outcomes in your own words**. You must also properly cite any viewpoints, methods, algorithms, data, results, figures, tables, etc. that you borrow from other papers (**you may chose more than one pape**r) or contributors that you discuss or include in your paper/report. All references cited should be published, or at least be publicly available, stable, and accessible online (referenced in according with the LaTex template given). Using the work of others without proper credit in your paper/report may lead to a form of plagiarism, which is not tolerated in UofR courses. Please review the UofR Academic Integrity for more details.

The Research Paper(s)

Your investigation will be based on recent publications (i.e., published in the past five years) such as journal/conference papers and technical documents, and the applicable software packages (open source preferred). You can access many resources via University of Regina Library, including **Web of Science**, **Springer**, **ScienceDirect**, **IEEE**, and **ACM**.

Once you have chosen your main research paper(s), your contribution is to identify meaningful, feasible outcomes for possible new research on the topic. Overall, the outcomes should interest and benefit the professional community of operating system research and development. Some possible outcomes:

- analysis, findings, and discovery of problems,
- results of your tests, surveys, and comparative analysis,
- proposals for new or improved methods, algorithms, etc.,
- meaningful implementation plans,
- insight on future directions.

Present the review of the research paper(s) and outcomes of possible future research in a **3- to 5-pages** paper (**NOT INCLUDING REFERENCES**) written in the **CS330 Assignment template format**. Your report should include the following sections:

- **Title**: a new one. For instance, if the paper chosen is called "*OS paradigms on Quantum Computing*", your report may be called "*Investigating OS paradigms on Quantum Computing*" or "*On OS paradigms on Quantum Computing*")
- **Abstract**: no more than 300 words. Summarize the paper(s) work and your own findings. DO NOT COPY THE ABSTRACT FROM THE ORIGINAL PAPER.
- **Introduction/Background**: motivation for the research and introduction to the outcomes, including a literature review and reference citations.
- **Methods**: describe the problem and the methods used to explore or address the problem.
- **Results and findings**: research results or exploration findings, including theoretical analysis and any experimental and implementation results accomplished based on the methods.
- **Related work**: summarize related work by others; compare the methods and results with others' work. Cite your references. Often research papers have a section on related work. Simply list them. If the paper is on a new field with no related work, explain why. This section may be included in the **Introduction/Background section.**
- **Conclusion and future work**: conclude your exploration and research, and suggest possible future work on the topic.
- **References**: include all references cited in your paper.
- **Appendix (if applicable)**: Includes a list of your data, design/implementation, and source codes (as applicable), and software necessary for running your programs (if applicable). **The Appendix isn't part of the page count for your report**.