CS 3853 Computer Architecture

Project Report

Thu, May 8th, 2025 11:59 p.m.

Team\_XX

Group Members

Printed Name #1

Printed Name #2

. . .

Printed Name #n

By signing this report I affirm that I know and agree with the contents.

Signatures:

Name #1: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Name #2: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Name #3: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Name #4: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Executive Summary:**

This should be the quick results section. NO MORE than ONE page (and probably less), that summarizes your recommendations. What they are and why they are it.

**Objectives:**

1. **Comprehend how a virtual memory works**
2. **Comprehend how a cache works**
3. **Comments on working in a small group**

**For each objective**, briefly describe at least 3 specific things you learned by doing the project. For A and B you can contrast what you learned in the class verses what you had to do for the simulation. C is self-explanatory. Anything that you didn’t anticipate? This is a group answer so you do not need to list everything for everyone in the group.

**Algorithm**

Briefly describe the algorithm you used to implement your simulation and what data structures you used. How did you handle the different cache configurations / physical memory configurations – Arrays? Heap allocations? Linked lists?

**Analysis**

This should be the results of running your simulator over a broad range of cache configuration parameters – different sizes, different associativity, and/or different replacement algorithms. I’m not going to specify it exactly – experiment and decide which results would be good to illustrate the pros/cons of various configurations. Graphs are generally a good idea to visually summarize your results.

Same applies to the physical memory simulation. Put in some smaller sizes or larger sizes with a lot taken up by the system in order to generate page faults for some cases. The number of page faults will be an indication of overall performance. Try different time slices to see how that affects the usage. Feel free to experiment with any ideas of your own.

If you don’t get the simulator completely working, you may use mine to do experiments and get results to report on. Just make sure you credit that.

**Technical Issues:**

Describe your most prominent technical issues and how you solved them. What was most difficult to figure out? You should have at least one and no more than three.

**Group Member Contributions:**

Describe the contribution by each group member. Contributions do not have to be equal but everyone should contribute something --- whether it is coding, testing and validation, or writing up the report.

**Group Issues and Resolutions:**

Describe any issues in the group. If none, state “None.”

**Conclusion:**

Any parting thoughts on the project. Liked it? Didn’t like it? Suggestions for improvement?