CPS343 Parallel and High-Performance Computing
Writing a Project Report

This document[1] is intended to assist you in the preparation of your project report. In general, you need to make sure that your report is grammatically correct and contains no misspellings. Also, never make statements that you cannot back up.

Introduction

An introduction in a technical document should contain all important aspects of the paper. It should cover at least the following:

- what is the problem?
- why is the problem important?
- how did you solve the problem?
- what are your results?
- what are the implications of your results?

Furthermore, this must be done in about one page. It is often the case that a reviewer of a technical paper discards the paper if the introduction is not of enough interest.

Overview

The overview should contain enough information to acquaint a reader who is knowledgeable in general computer science principles to your problem. For example, you may assume that your reader understands that parallelization of scientific programs has value. You may further assume that the reader knows what a critical section is. However, you should not assume that they know where locks and/or barriers are needed in a specific application or why a specific application is even important.

Implementation

This section should contain details about your implementation. Provide sufficient information so the reader can understand how you implemented your program. For example, in matrix multiplication on a shared-memory machine, you might explain (1) that each processor (thread) is responsible for computing a contiguous set of the result matrix, (2) that you must compute the bounds *start* and *end* for each thread, (3) that each thread will access a contiguous set of rows of the *A* matrix and all of the *B* matrix. Further, you might mention how you used software packages, if any. Make sure you always state what your experimental environment is (exactly). Always label tables and graphs so that the reader can understand what you have done.

Discussion and Analysis of Results

In this section you should discuss your results, analyzing what happened and why. You must come up with at least a plausible theory if anomalies occurred in your tests. If you obtain strange numbers, try running tests on as few processors as possible on a restricted subproblem. This can be thought of as "performance debugging"; it's difficult but absolutely necessary. If it is beyond the scope of the current project to further analyze anomalies in your results, indicate what directions further research may take to address these issues.

Conclusion

The conclusion should restate the problem, its importance, how you solved it, and what you learned. It could also mention avenues for future work.

1 *The text of this document derived from a document prepared for CSc 522: Parallel and Distributed Programming by David Lowenthal (University of Arizona) dated March 17, 2009.*