Term Project – *Choose Your Own Fun*

Proposals due: 11:59 PM, Monday, April 14, 2003
Progress reports due: 11:59 PM, Thursday, April 24, 2003
Presentations: Tuesday, May 13, and Thursday, May 15, 2003
Final submission: 4:00 PM, Friday, May 16, 2003

You may choose your own topic for the final project. Choose a topic related to parallel processing and study it in more detail than we have in class. Your project should include programming, but the amount may vary from topic to topic. A formal research paper and brief in-class presentation are required.

You may work individually or in groups of two or three for the term project. Groups must be formed by Thursday, April 10, 2003.

The proposal

Please start thinking about a topic right away and come to me with your ideas. By 11:59 PM, Monday, April 14, 2003, submit a proposal, no more than one page in length, that describes your topic, what you plan to investigate, and how you plan to go about it. If you will need access to any special hardware or software, include that in your proposal. Submit as a postscript file `proposal.ps` or PDF file `proposal.pdf`.

The progress report

By 11:59 PM, Thursday, April 24, 2003, submit a progress report. This should consist of an early draft of your paper including sources, and a description of the design and current implementation status of your software, as well as a timetable for completion of the project. Submit a postscript file `progress.ps` or a PDF file `progress.pdf`.

The paper

This is to be a formal research paper, and should be organized as such. You should begin with a title, author list, and abstract. The main body of the paper should be organized into sections including (*i*) an introduction in which you describe the general topic and the particular aspects you will be examining, (*ii*) one or more sections comprising your main text, where you describe what you have done, how you have done it, and what you have learned, (*iii*) a conclusion, which should include ideas for future investigation into your topic which were beyond the scope of your paper, and (*iv*) a complete list of citations. Citations of web pages are acceptable in some circumstances, but books, articles in conference proceedings or journals, or technical reports are preferred. Examples of papers that fit the expected format will be provided.

Proper English and a good technical writing style are important. Writing well is very difficult – it is an iterative process and cannot be done all at once. Be precise and be concise. Group members should proofread and make suggestions about each other's writing. Check your spelling and grammar carefully. If you would like, I can take a look at a draft when you have one available. A reasonable length might be 10 single-sided pages, using 1.5 spacing, one inch margins, and a 12-point Times Roman font (or as close as you can come). Please do not adjust margins and font sizes to force a certain length. Length is not important – content

and quality are. Papers shorter than 10 pages or longer than 20 pages are acceptable, if the length is appropriate for the content.

Submit a postscript file `paper.ps` or PDF file `paper.pdf` by 4:00 PM, Friday, May 16, 2003.

The project

You should submit your source code and instructions on how to build and run it. The software should be described in the paper. For programs that run on systems other than the CSLab Unix systems, you will need to make arrangements to demonstrate the program. Others may wish to schedule a demonstration as well. Source code should be submitted and demonstrations completed by 4:00 PM, Friday, May 16, 2003.

The presentation

Each group will present a summary of their work to the class. Include background information on your topic, a description of what you did, and a summary of what you learned. Software demonstrations may also be appropriate. Prepare slides or web pages. Rehearse your presentation, paying special attention to timing. Our schedule will be tight, so groups will not be allowed to run over the alloted time. Depending on the number of groups, there may be as little as 15 minutes available per group for your presentations. Presentations will take place in class on Tuesday, May 13, and Thursday, May 15, 2003. All group members must participate in the presentation. Attendance is required at both presentation sessions, not just when your group is speaking.

Grading

This final project accounts for 25% of the course grade The grade will be based on all aspects of the project, including the proposal, the progress report, the design, documentation, style, and correctness of the software developed, the content and writing style of the paper, and quality of the presentation. No credit is given for attendance, but penalties will be applied for missing class on the presentation dates.

Choosing a topic

Here are some ideas to consider when choosing your topic:

- Grid computing, internet computing
- Quantum computing
- Parallel discrete event simulation
- Bioinformatics
- Parallel data mining
- Partitioning and dynamic load balancing for heterogeneous and hierarchical systems
- Performance analysis for parallel programs
- Parallel and distributed visualization
- Parallel programming in Java
- Parallel programming languages
- Parallelizing compilers
- Actor model of parallel computation

- LogP model of parallel computation
- Hybrid programming models, such as combining MPI for inter-node communication with OpenMP for intra-node communication

These are just ideas, and you should not restrict yourself to this list. I hope everyone can find an appropriate topic that they find interesting.

Honor Code Guidelines

Collaboration within a group is unrestricted. Since each group is working on a different project, you are free to discuss your projects with each other. If you wish to use or refer to any software libraries or outside source code beyond the standard language (C, C++, Java) libraries, check with me first. All sources must be cited properly. If in doubt about anything related to Honor Code, ask now and avoid problems later!