Course Project

Important Milestones and Dates:

- **Select project topic**: Nov. 7
- **Project Proposal and Project Design Presentation** (5 min each): Nov. 11. Proposal and Presentation slides due on Nov. 11 before class.
- **Final Presentation** (10 min each): Dec. 7 and 9. Presentation slides due on Dec. 7 before class.
- **Project Package Submission** (including code and documentation): Dec. 17, 11:59 PM

This is the capstone project of this course. Normally a project team will have two members. If you want to do the project independently, you should talk to the instructor and get an approval.

You should put everything you have learned into this work. There are 3 milestones. The first is to select a project topic from the following list, or, after consulting with and receiving approval from the instructor, select a topic of own interest. The second is a project proposal document and a presentation (10%) that includes the overview of the project and a reasonable plan of how to proceed with your project. The last milestone is the final presentation and the submission of your project package (10% and 25% respectively). In particular, you should brief your progress and plan for the major parts of the project by the date of the final presentation. Please note 5% of your grade will be peer evaluation, that is, your teammate gives an evaluation of your contribution to the project. If you are approved to do an individual project, you will receive the full 5% by default.

What is a proposal? (also applies to presentations).

(1) Problem: something that is not ideal. (Backdrop)
   a. I'm hungry.
(2) Why the problem is hard to solve. (Crisis)
   a. My favorite restaurant is far away.
(3) How do you want to solve this problem. (Action)
   a. I walk out of the hall.
   b. Walk north on the Academy street.
   c. Turn right on the main street.
   d. Go to Taverna.
(4) What is the expected outcome. (Climax)
   a. I have a good lunch.

Possible Topic list:

(1) FFT on GPU or SSE.

(2) Sparse Matrix-vector multiplication on GPU.

(3) Parallel Stencil computation.

(4) Radix Sort on CUDA.

(6) Micro-benchmarking for CUDA or X86 CPUs. Reference: Automatic measurement of memory hierarchy parameters (http://portal.acm.org/citation.cfm?id=1071690.1064233).

(7) Fast Ray Sorting and Breadth-First Packet Traversal for GPU Ray Tracing. Reference: http://research.microsoft.com/en-us/um/people/cloop/garanzhaloop2010.pdf

What to submit:

The package you submit for project should include your source code, performance results and analysis, and brief description that you think might help the instructor understand your code, e.g., about any design choices you make in your program. The instructor will compile, run and measure the performance of your code. Therefore, you should also describe how to compile and run your code in your submitted documentation.

How to Submit:

Copy your lab report, which is a .pdf, a .doc, or a .html file, and all your source code into an empty directory. Assuming the directory is "submission", make a tar ball of the directory using the following command:

tar czvf [your_first_name]_[your_last_name]_project.tar.gz submission.

Replace [your_first_name] and [your_last_name] with your first name and your last name.

Submit the tar ball to Sakai.