The project is 50% of your grade. So it should involve substantial work. First you need to select your team and a project topic. The project can be anything as long as it involves: (1) low level (c++, c, FORTRAN or lower) programming languages. (No JAVA, MATLAB etc). (2) a problem with dependencies so embarrassingly parallel schemes are not applicable; (3) the code must compile and run on TACC facilities (lonestar or any other system).

Other than that, anything goes: GPUs are allowed. It is also possible to perform a comparative study for a specific problem if there are existing implementations. You can run it, scale it, and reproduce results. (Warning, dealing with other people's code is very instructive, if the code works well, and very frustrating.)

- **First deadline, project proposal:** Selection of your team members, 1/2 page problem description, proposed parallelization (MPI, OpenMP, CUDA) etc, expect problem size and resources needed, references. One page should be ok, two pages max.
- **Second deadline, progress report:** (sometime in mid april). Detailed explanation of the algorithm that you will use, theoretical analysis of complexity, some discussion on the state of the art, work-depth model (you can introduce assumptions if the actual problem is too hard to analyze), plan of experiments to test 1) correctness, 2) single core performance, 3) strong scaling, and 4) weak scaling. What variables will you be measuring and how. Typically 2-3 pages, five pages max plus a five-minute presentation during class.
- **Final presentation:** During the final exam date (there will be no other exam, your presentation is the exam. 15-25 minutes-long presentation, depending on the team size. Also you will submit the source code and a final write-up.