Updated Project List

Semantic Web Projects

1. Standard Project: The Triple-Triple Store. (team project)

This project will familiarize students, conceptually, with the underpinnings of the Semantic Web. The programming work proper will provide hands on experience with benchmarking database systems and performance tuning as might be done by a database administrator. Several novel alternative physical database organizations will be suggested. Students will update a triple-store implementation and compare alternatives. Students who develop their own optimizations will be rewarded.

2. Compiling SPARQL queries to SQL queries.

Per the standard project write-up. I am eager for someone, as a project, to implement the SPARQL to SQL aspect of the project, with or without connection to the main-part of the project.

Solid-state disk drive (SSD):

3. a) Assemble, review and assess existing technical papers concerning using SSD in existing database products. This project might be most appropriate for someone who already has some database experience, or is otherwise eager to jump into to understanding RDBMS configurations.

b) Develop a project that consider the impact of SSD on the memory hierarchy issues in RDBMS. The project could focus on,

i) Buffer management algorithms with/without their interaction with physical query operators.

ii) Indexing algorithms. Early in the semester we will cover the external data structures used to support fast retrieval from disk. A critical property of such algorithms is that they minimize disk-head movement. What is the future of databases when disk seek and rotational latency are no longer critical features.

Advanced Indexing Methods.

4. Parallel Implementation of the R-tree algorithm, inspired by R+-trees (Sellis). (see me.)