ECE464 – Final Project Proposal

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1 Overview

We want to build a simple RDBMS to explore the concepts and challenges of physical design. In particular, we would like to incorporate the major ideas from System R described in the paper "Access Path Selection in a Relational Database Management System", such as:

- Data and index pages (or files), clustered indices if possible

- B-tree implementation of index pages (as described in the paper)

- Very simple access path selection (e.g., checking if a predicate matches an index); we won't have time for most optimizations

2 Functional requirements

This DBMS should support a simple subset of SQL queries with common clauses such as `SELECT`, `FROM`, `WHERE`, simple conditional clauses, and (time-permitting) simple nested queries and joins.

A simple interface (either a CLI or a socket interface and language API) will be developed to interface with and test the DBMS' capabilities. The capabilities of this minimal query language should be well documented.

For the sake of time, transactions and multithreading will only be attempted if time permits. This means that the ACID principles will not apply (which apply to transactions and require concurrency).

3 Evaluation

A test suite will be used to check the correctness of various queries specified in the minimal query language. A series of benchmarks may also be applied to test the empirical scalability of the system, and the scalability may be compared to existing RDBMSes.