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CS 457

Design Document

Overview

This project implements SQL inner joins and left outer joins while building on top of PA2.

Building and Executing

This project uses a standard cmake build system. It may be built by first creating a directory called “build” in the source directory. After entering the directory, running “cmake ..” and “make” will build a project. The executable’s name is “BasicSqlCli”. The cli does not support loading commands from a file. Commands must be fed from the standard input.

Functionality and Implementation

This project implements joins on top of PA2. This is achieved by first extending the select statement struct in the code to be able to parse implicit inner joins, inner joins, and left outer joins, though little validation is performed. The parser also coerces implicit inner joins and explicit inner joins into explicit inner joins for simplicity. How you can join 2 tables is also limited as implementing more advanced join logic would require expanding the SQL parser to parse binomial expressions, which would require a fair amount of time. As such this has been omitted for simplicity.

After parsing the joins into the select statement struct, I use nested loops to combine the table rows when the join expression passes. I iterate over the original table in the outer loop, and over the joining table in the inner loop. For outer left joins, I extend the inner loop logic by keeping track of whether the current left table row has been output at least once at the end of iteration. If not, I create a new row that fills in the missing right table data with nulls and append it to the result.