Pathfinder: A Relational Query Optimizer Explores XQuery Terrain
Torsten Grust  Jan Rittinger  Jens Teubner
http://www.pathfinder-xquery.org/

Abstract
Relational encodings of the static aspects of the XQuery data model, i.e., tabular representations for XML documents and ordered sequences of items, are widely used today. Since 2003, the Pathfinder and MoonDB/XQuery companion projects pursue the primary goal to also embrace the complete dynamic semantics of XQuery (expression evaluation and runtime aspects) with the help of relational database systems. This makes proven optimization techniques immediately applicable to the construction of XQuery processors and leads to unprecedented scalability in MoonDB/XQuery. This is a demonstration of the relational optimizer of Pathfinder, the query compiler behind MoonDB/XQuery. To account for the significant size and unusual shape of the relational query plans derived from input XQuery expressions, Pathfinder implements various optimization techniques in a graph-shape fashion and provides support for graph-shaped plans from the ground up.

Our demonstration system shows graphical representations of the relational query plans and allows the inspection of plan characteristics at various stages of Pathfinder's highly-configurable optimizer pipeline. Stages may be separately enabled to judge their impact on plan quality and XQuery evaluation performance. Our system is preloaded with various XML instances (up to 1 GB serialized size), against which users may run ad-hoc queries in an interactive fashion.

Table Column Pruning
Identify columns that may be separately enabled to judge their impact on plan quality and XQuery evaluation performance. Our system is preloaded with various XML instances (up to 1 GB serialized size), against which users may run ad-hoc queries in an interactive fashion.

The large graph printed on the left shows the loop-lifted query plan for Query Q8 from the XMark benchmark prior to optimization.