

Extending the 007 benchmark for deductive object-oriented databases

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ABSTRACT

Database performance benchmarks play an important role in evaluating the performance of different database systems. In particular, for relational database systems, a number of different benchmarks have been designed to assess the relative behaviour of different systems. Well known examples include TPC-B (a benchmark with simple queries with updates), TPC-C (a benchmark with more complex MIS queries) and AS3AP.

With the development of object-oriented database systems, new benchmarks have been designed which can be used for assessing their performance. The most widely used of these is the 077 benchmark, which is based on an engineering database.

The recent emergence of database systems, which combine both deductive and object-oriented capabilities, so-called Deductive Object-Oriented Database system (DOODs), creates new type of database system with more advanced functionality. However, their performance is poor and needs improvement. Furthermore, no single benchmark exists for evaluating the performance of this combination of paradigms. Currently one can use benchmarks such as 007, 001 or Hyper Model for evaluating the performance of object-oriented characteristics and some other benchmarks to assess the performance of the rule-based component.

This paper presents an extension to the well-known 007 benchmark, which can be used to evaluate the performance of deductive queries in a deductive object-oriented database. To the best of our knowledge, no such benchmark exists. The cost of setting up the benchmark is a minimal addition to that of setting up the 007

benchmark. Some results of applying the benchmark to the ROCK & ROLL (Rule Object Computation Kernel & Rule Object Logic Language) system are also presented.

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