*eXtreme*SQL™

Standards-based programming interface for the *eXtreme*DB® embedded database system.

"eXtremeSQL adds a familiar interface to technology that provides radically improved performance."
-- SySoft Company

*eXtreme*DB, the real-time embedded database for devices that are eXtremely innovative

Overview

McObject's *eXtreme*SQL is a high-performance implementation of the SQL database programming language for the *eXtreme*DB embedded database system. *eXtreme*SQL targets real-time enterprise software development and strengthens *eXtreme*DB's appeal in fields such as banking and securities trading, where real-time responsiveness is a must and SQL is the dominant database language.

Built on the unsurpassed performance of *eXtreme*DB, and a RAM-based SQL optimizer, *eXtreme*SQL delivers blazingly fast processing of dynamic SQL queries.

Benefits of using *eXtreme*SQL include…

Co-exists with native *eXtreme*DB API. Use *eXtreme*SQL alongside the *eXtreme*DB native API in the same application—the native interface for speed, and *eXtreme*SQL when a higher level of access helps, as in retrieving data from multiple tables or performing aggregation.

ODBC & JDBC support; broad coverage of the SQL-89 standard. *eXtreme*SQL offers Open Database Connectivity (ODBC) and Java Database Connectivity (JDBC) support, and implements much of the ANSI SQL-89 specification.

Extensions to exploit *eXtreme*DB features and data types. *eXtreme*SQL implements *eXtreme*DB-specific extensions including support for structures, arrays and vectors, and query optimizations based on *eXtreme*DB capabilities.

Compatible with other *eXtreme*DB editions. *eXtreme*SQL is fully compatible with the *eXtreme*DB In-Memory Database System, High Availability, Transaction Logging, and 64-bit editions for simple migration within the *eXtreme*DB product family.

No client/server inter-process communications. Like *eXtreme*DB, *eXtreme*SQL is embedded in application code, not deployed as a separate process, eliminating client/server inter-process communication overhead.

Interactive SQL utility. *eXtreme*SQL comes with an interactive SQL program, *xSQL*, that can be used to test SQL statements independently from application programs. Full source code for the utility is provided, making it a useful example of a full *eXtreme*SQL implementation.

In addition to executing SQL statements, *xSQL* also supports *eXtreme*DB-specific commands, such as "report" and "save <file>".

xSQL also serves as a batch processing utility that redirects input from a text file containing *eXtreme*SQL statements.

*eXtreme*SQL Query Optimization

Creating the optimal plan for execution of SQL statements is complex and challenging. Cost-based SQL optimizers analyze SQL queries and select the best search strategies to access the database. This process depends heavily on data distribution, with optimizers collecting their own samples, and using statistics provided by the database system, to calculate the performance "cost" of candidate execution plans. That makes their operation CPU-intensive and unpredictable: optimization time varies, and execution plans change from one invocation to another, as the data distribution changes.

For real-time systems that demand predictability, a rule-based optimizer, such as the one used by *eXtreme*SQL, is more appropriate. In addition, the *eXtreme*SQL optimizer makes it possible for applications to specify their own execution plans. For example, the optimizer never re-orders tables in the query; joins are performed in the sequence specified. Some other important rules used for query optimization include:

- If possible, an index is used
- Each table is assigned an index representing its position in the FROM list
- The search predicate is divided into the set of conjuncts and the conjuncts are sorted. Therefore the expressions accessing the tables with smaller indexes are checked first
- The execution of subqueries is optimized by checking the dependencies of the subquery expression. The results of the subquery are saved and recalculated only if the subquery expression refers to fields from the enclosing scope

Precision ***Data Management***

McObject LLC
33309 1st Way South
Suite A-208
Federal Way, WA 98003

Phone:+1 425 888 8505
info@mcobject.com
www.mcobject.com