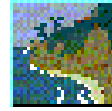


Infinity Database Engine™ B-Tree



Data Store Component for Embedded Systems

<http://www.boilerbay.com/infinitydb>

The Infinity Database Engine™ B-Tree is the most compact means available to store relational data using pure Java, both in terms of bytecode count and disk or flash memory usage. It is also safe, fast, concurrent, simple, flexible, and proven.

Most Compact Relational, all-Java Data Store

- Occupies only 165 KB bytecode, with the minimal core 125 KB.
- 100% Pure Java 1.1, J2ME CDC Foundation Profile Subset using a minimum set of platform features.
- Can be adapted to other embedded API's having a RandomAccessFile or equivalent. Single-Thread environments are supported. JDBC is not used.

On-disk Data Compression

- Uses UTF-8 over ZLib and packs B-Tree cells into variable-length units instead of fixed-length blocks, avoiding almost all wasted space, and actually increasing disk I/O speed threefold due to the compaction. Such compaction has only recently become practical because CPU speed has increased faster than disk I/O speed.
- Long, variable-length entries; common prefix compression; and common suffix compression, minimize the amount of data that must be stored.
- Denser cells means the OS file cache is better utilized.
- There is no pre-allocation or waste in 'extents', 'segments', 'clusters', or 'blocks.'
- All freed space is reclaimed immediately and completely in spite of catastrophes.
- Unlimited size and number of databases, relations and rows; no wasted space. Null attributes take no space. Relations and attributes can be added dynamically without schema change, taking space only when and as used.

Atomic Global Commit and Integrity Guarantee

- Guarantees database internal integrity and application-level consistency through power down, user interrupt, or any other non-media failure.
- Reliability comparable to far larger and more complex transaction-based systems that employ logging, without the possibility of deadlocks, forced rollbacks, log overflow, or dirty shutdown with slow restart recovery from the log.
- Code is simplified because forced rollback cannot occur; application may rollback if desired.

High Performance and Concurrency

- In-cache performance is a blazing 20K searches or 10K modifications per second on a 300MHz Pentium II using JDK1.1.6 with JIT.
- On-disk performance is 100% concurrent, since there are no cell locks at all. (see US Patent 5,283,894.) Threads whose working sets are in the cache are not delayed by those which need data from disk. On-disk searches and updates overlap.

- No SQL parsing or optimization delay on each query.

Predictable Memory Usage

- Avoids catastrophic out-of-memory errors by using a fixed-size cell cache and no large, temporary allocations. Conversely, Object-Relational mapping, for example, may bring all row data returned by an inquiry into memory at once, taking serious risks.
- Accessing BLOB's and CLOB's requires no temporary space -- some systems even bring long objects entirely into memory.

Low Cost of Ownership

- Accommodates a single-file model that eliminates 'flat', 'index', and log files.
- User Transparency - storage technology invisible to user; no user training or knowledge required.
- Requires no DBA – no installation, configuration, or config files. No need for monitoring of log, segment, or extent sizes.
- Trivial API – essential methods are: create(), open(), insert(), delete(), next(), and commit().
- No SQL – Engine is for use as a transparent component, not an RDBMS replacement.
 - No Syntax Portability Problems
 - Simple Schema Upgrade – no nonportable 'ALTER TABLE', no script proliferation.
 - No Unpredictable, Variable CPU or Disk Usage when joins are complex or ad-hoc.
- Applications can maintain and extend database at runtime.
- Self-Contained – no dependency on other libraries, platforms, or other technologies.
- No Wasted Licensing Fees for unused DBMS capability.

Proven Technology

- As the data storage layer of the BoilerBase Email ® Indexer and Categorizer the Infinity Database Engine has been in the field since 1999.

Simple Programming and Flexible Data Representation

- Refer to <http://www.boilerbay.com/infinitydb> for details about how relational, text, LOB's, or multiple/composite values can be easily stored and extended.

Boiler Bay licenses the Infinity Database Engine™ to developers, and provides customization and consulting services, if desired.

Boiler Bay is currently seeking partnerships with embedded and small-system tool vendors. Please visit our site <http://www.boilerbay.com/infinity.db> and write to us at rideran@boilerbay.com.