**INNODB**

InnoDB is a storage engine for the database management system MYSQL and MariaDB. It provides the standard ACID – compliant transaction features, along with foreign key support. It is included as standard in most binaries distributed by MySQLAB, the exception being some OEM versions.

InnoDB became a product of Oracle Corporation after its acquisition of the Finland-based company Innobase in October 2005. The software is dual licensed; it is distributed under the GNU General Public License, but also be licensed to parties wishing to combine InnoDB in proprietary software.

InnoDB is the default storage engine for MySQL as of version 5.5.5 and MariaDB of version of 10.0.

**Key Features:**

* **Transaction support:** InnoDB supports transactions, which allow a set of SQL statements to be executed as a single unit of work. This ensures the consistency of the database in case of failures or errors.
* **ACID Compliance:**
* **Atomicity:** Transactions are treated as a single, indivisible unit of work.
* **Consistency:** The database remains in a consistent state before and after a transaction.
* **Isolation:** Transactions are isolated from each other to prevent to interference.
* **Durability:** Once a transaction is committed, its changes are permanent and survive system failures.
* **Row-Level Locking:** InnoDB uses row-level locking as opposed to table-level locking. This allows multiple transactions to access different rows in the same table simultaneously, improving concurrency.
* **Foreign Key Constraints:** InnoDB supports foreign key constraints, ensuring referential integrity between tables. This means that relationships between tables are enforced at the database level.
* **MVCC (Multi-Version Concurrency Control):** InnoDB uses MVCC to manage concurrent access to the database. Each transaction sees a snapshot of the data as it existed at the start of the transaction, allowing for consistent querying even in the presence of concurrent modifications.
* **Crash Recovery:** InnoDB is designed to recover gracefully from crashes or unexpected shutdowns. It uses a transaction log to ensure that committed transactions are durable even in the face of hardware or software failures.
* **Full-Text Search:** InnoDB supports full-text search capabilities, allowing you to perform complex text searches within your database.
* **Automatic Deadlock Detection and Resolution:** InnoDB automatically detects and resolves deadlocks, situations where two or more transactions are waiting for each other to release locks.
* **Buffer Pool:** InnoDB maintains a buffer pool in memory to cache frequently accessed data, which helps improve performance by reducing the need to read data from disk.