Concurrency

MVCC: Multiversion Concurrency Control

The main concurrency architecture for postgres is called MVCC. MVCC use snapshots at specific times in order to handle its concurrency. This means that read and writes do not lock each other up, which allows for performance gains. Each time a transaction starts, it can refer to a snapshot of the current database.

MVCC DIAGRAM

With this concurrency control system, postgres allows you multiple different ways to finely tune what occur within the MVCC upon a read and write.

STATE DIAGRAM EXAMPLE

Isolation Levels

Controls how concurrent reads and writes are processed

Concurrent Read and Write Phenomenon

When there are multiple concurrent transactions that can read and write there are a few phenomenon that can occur:

Dirty read:

Nonrepeatable read:

Phantom Read:

Serialization Anomaly

3 distinct isolation levels:

Read Uncommitted, Read Committed

Repeatable Read

Serializable