

Managing Transactions



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Overview

The transaction concept

Controlling transactions with Hibernate

Managing concurrent updates

- Optimistic Locking
- Pessimistic Locking



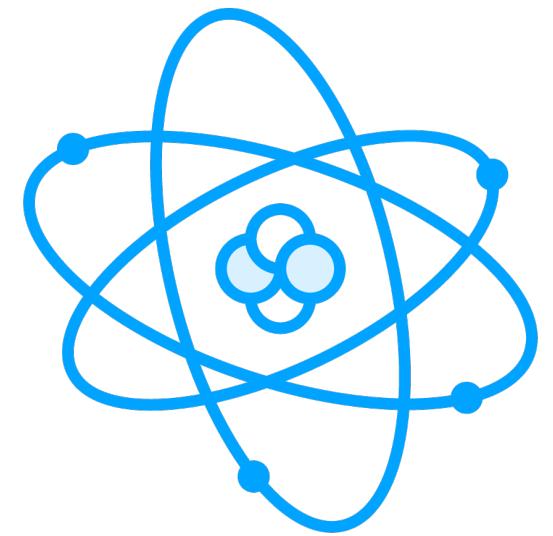
Transactions

Sequence of operations

A single logical unit of work



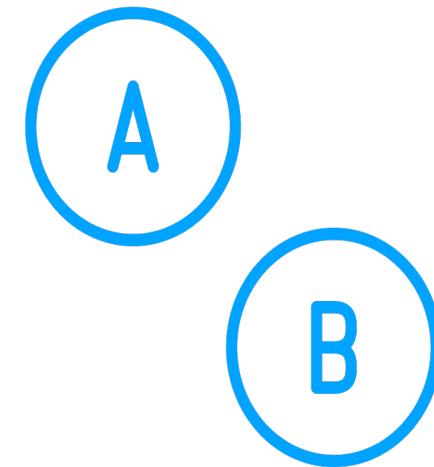
ACID Properties



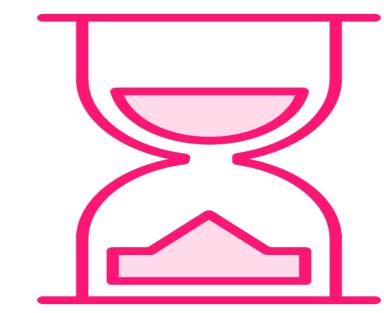
Atomicity



Consistency



Isolation



Durability



Controlling Transactions

`EntityManager`

`EntityTransaction`

`EntityManager.
getTransaction()`



Methods of EntityTransaction

`begin()`

`commit()`

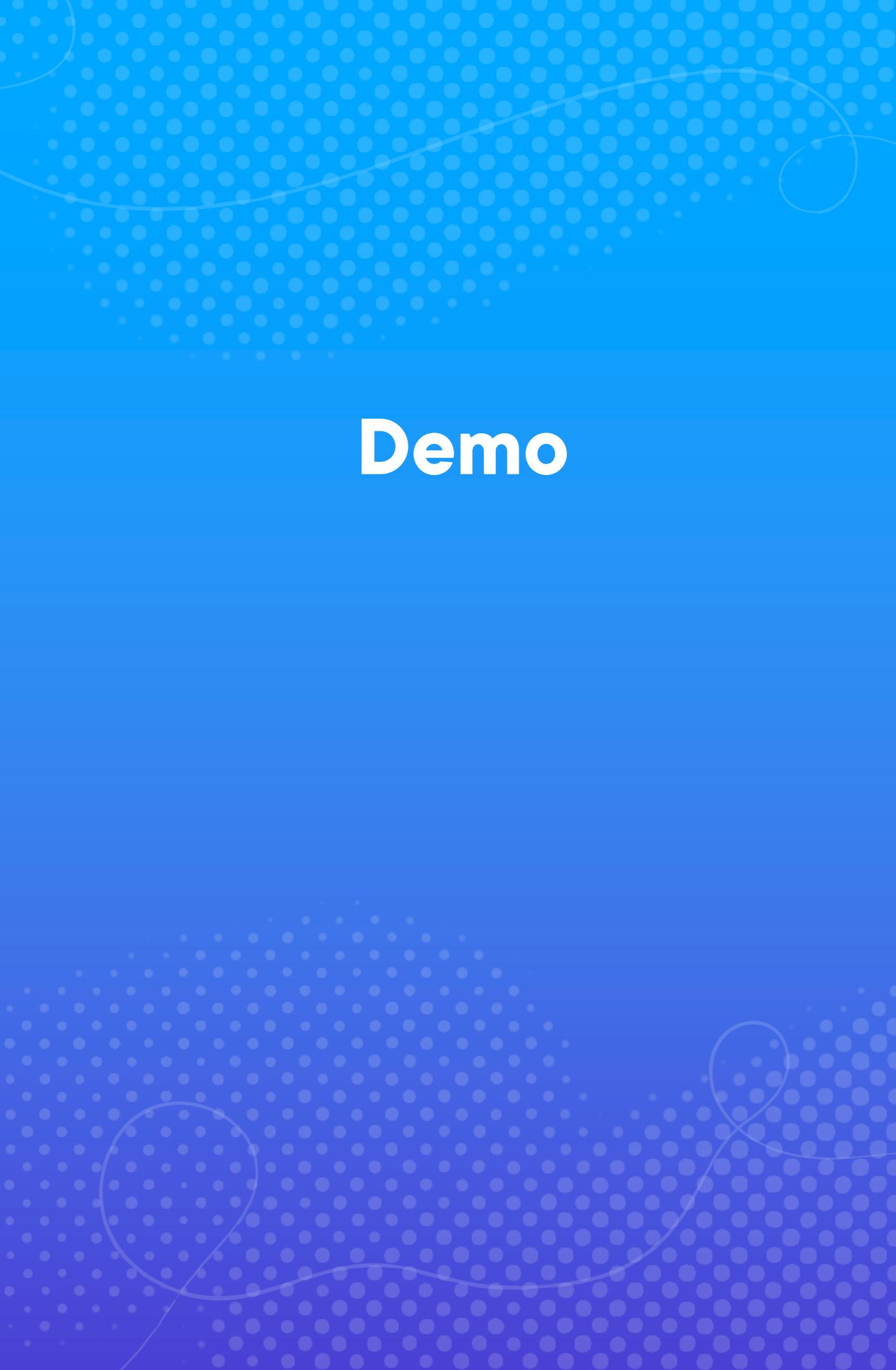
`rollback()`

`setRollbackOnly()`

`getRollbackOnly()`

`isActive()`





Demo

Working with Transactions



Optimistic Locking



Data Integrity and Consistency

Update Integrity

Read Consistency



Concurrency Locking



Optimistic Locking



Pessimistic Locking



Optimistic Locking



Reader -> reads version



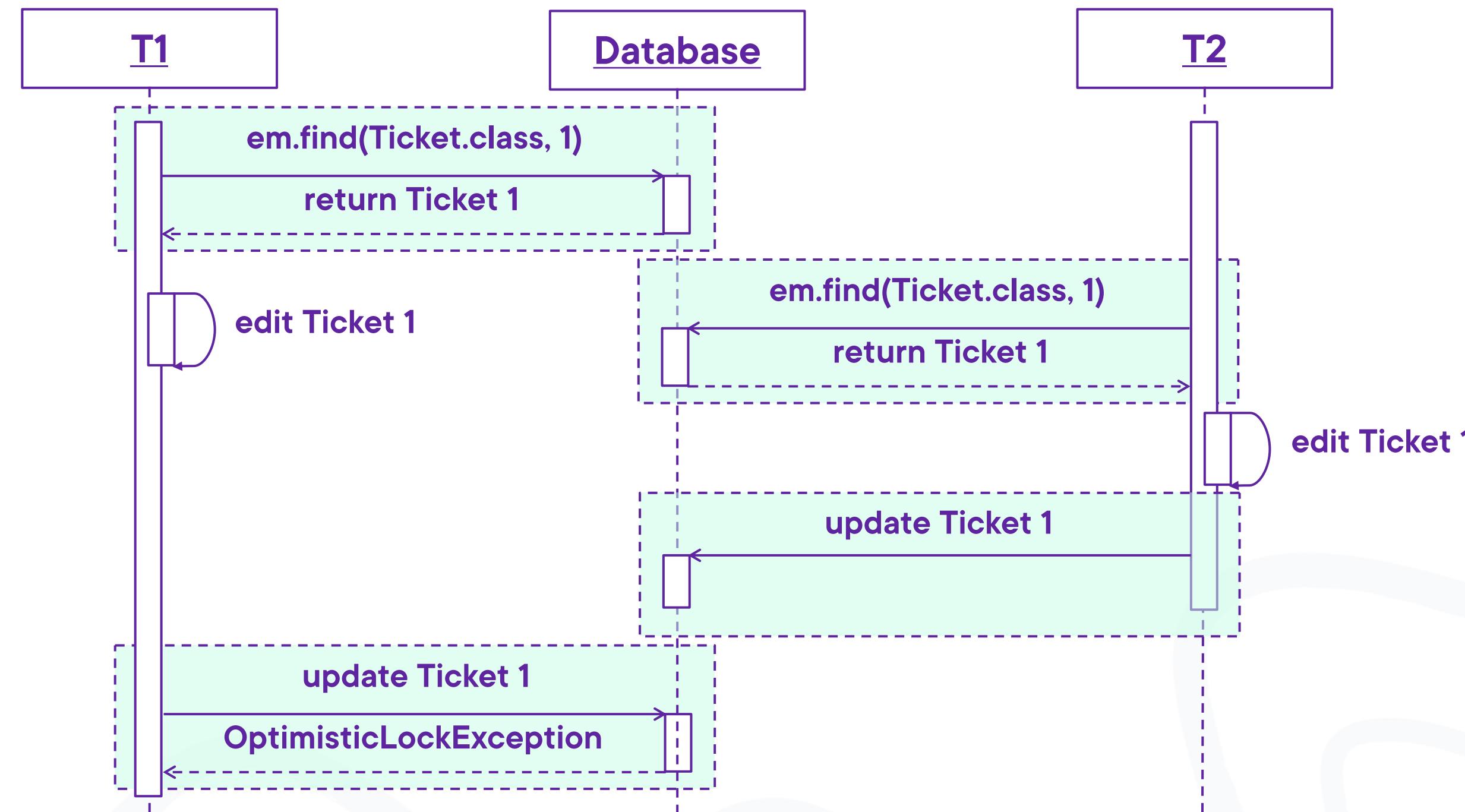
Writer -> check the version



Version mismatch -> rollback transaction



Optimistic Locking



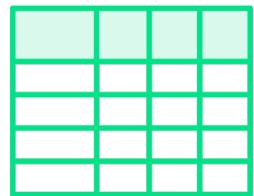
Optimistic Locking



@Version



int/long/etc. or java.sql.Timestamp



Mapped into the primary table



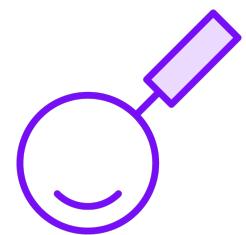
Not change by users



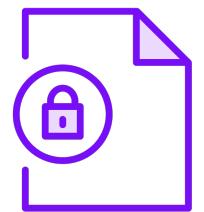
Optimistic Locking – Persistence Provider



Update version automatically



Examine version attribute



OptimisticLockException



LockModeType

NONE

OPTIMISTIC

OPTIMISTIC_FORCE_INCREMENT

READ



LockModeType

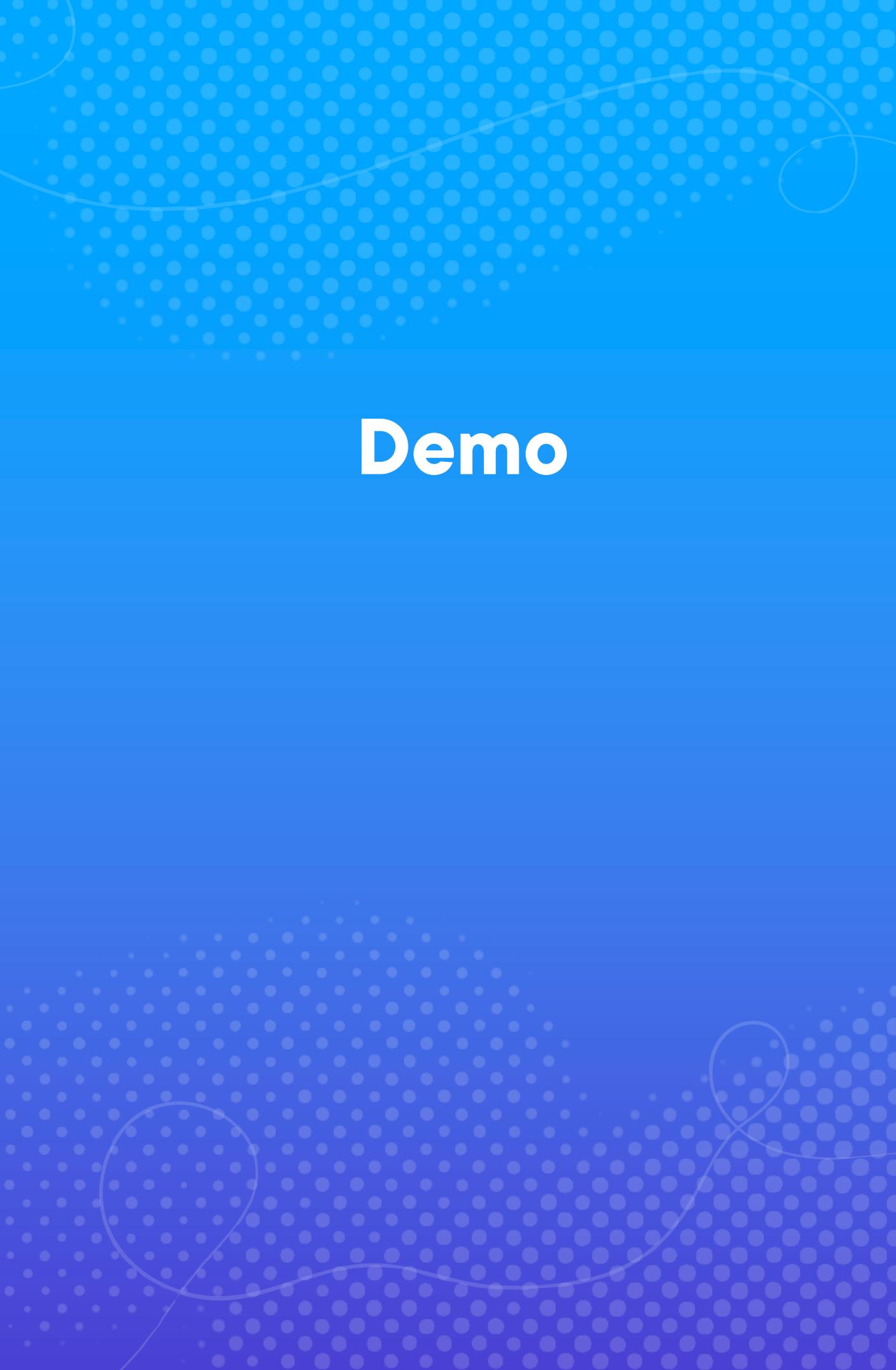
WRITE

PESSIMISTIC_READ

PESSIMISTIC_WRITE

PESSIMISTIC_FORCE_INCREMENT





Demo

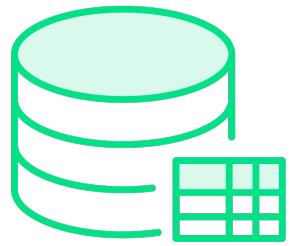
Optimistic Locking



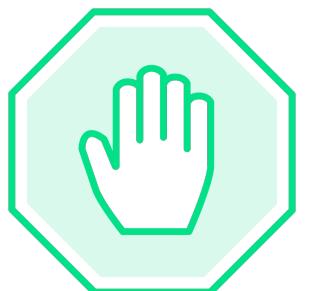
Pessimistic Locking



Pessimistic Locking



Prevents concurrent reads



Lock released when transaction commits



Reduces maximum achievable concurrency

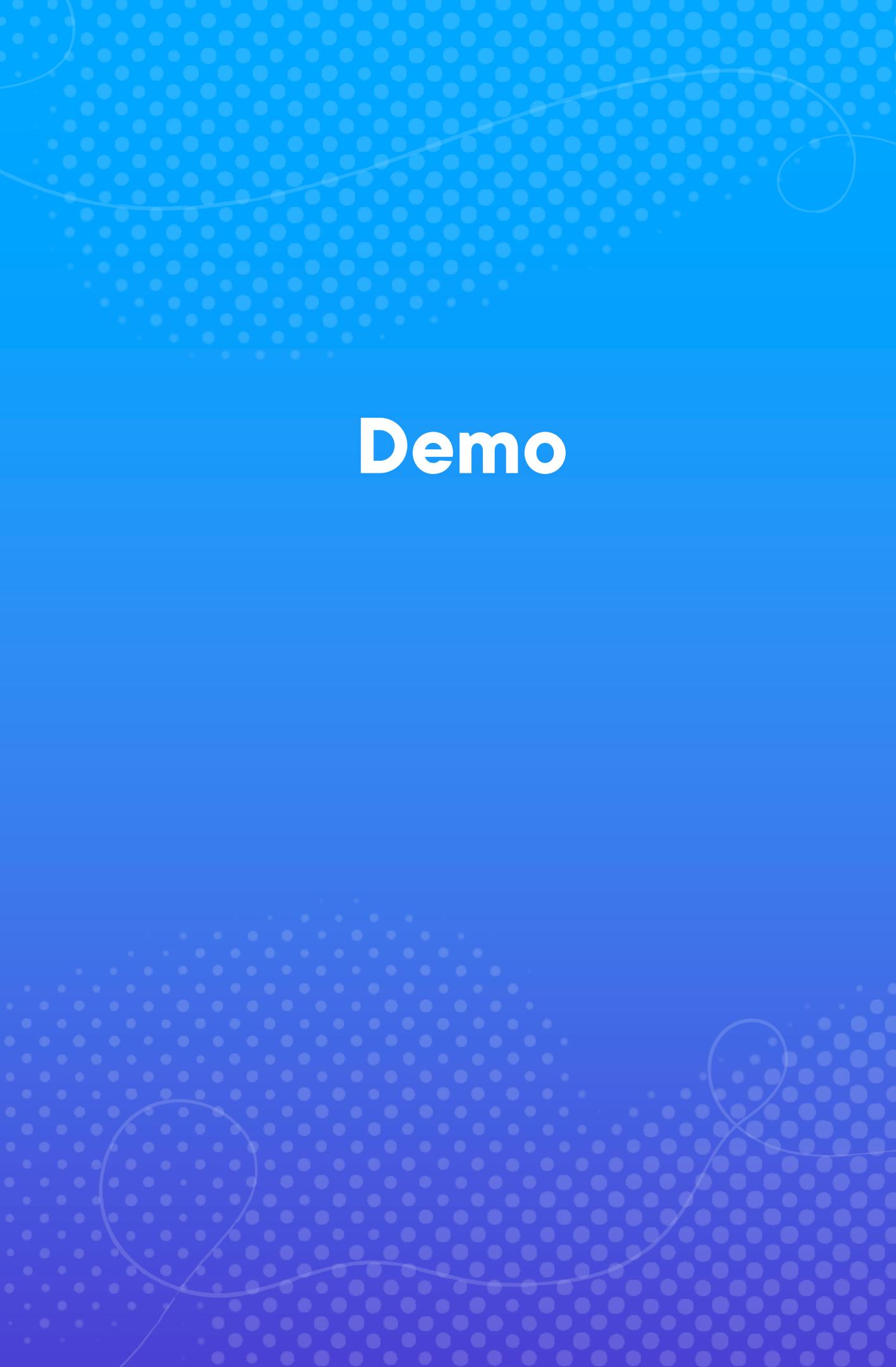


Pessimistic Locking

The row that corresponds to the persistent state of that instance

Rows in additional tables if joined inheritance or secondary table usage





Demo

Pessimistic Locking



Summary

Transactions

- Concept
- ACID

Controlling transactions with Hibernate

Optimistic Locking

Pessimistic Locking

