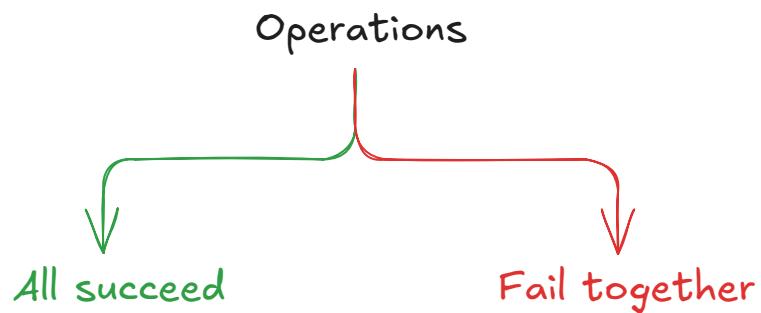


Advanced database

Transactions

Transactions

A database transaction is a logical unit of work that involves one or more operations (like read/write queries) on a database.



users

id	user_name	email	balance
1	Alice	alice@example.com	5000.00
2	Bob	bob@example.com	0.00
3	Charlie	charlie@example.com	1000.00

inventories

id	product_id	qty
1	102	5
2	103	2
3	104	0

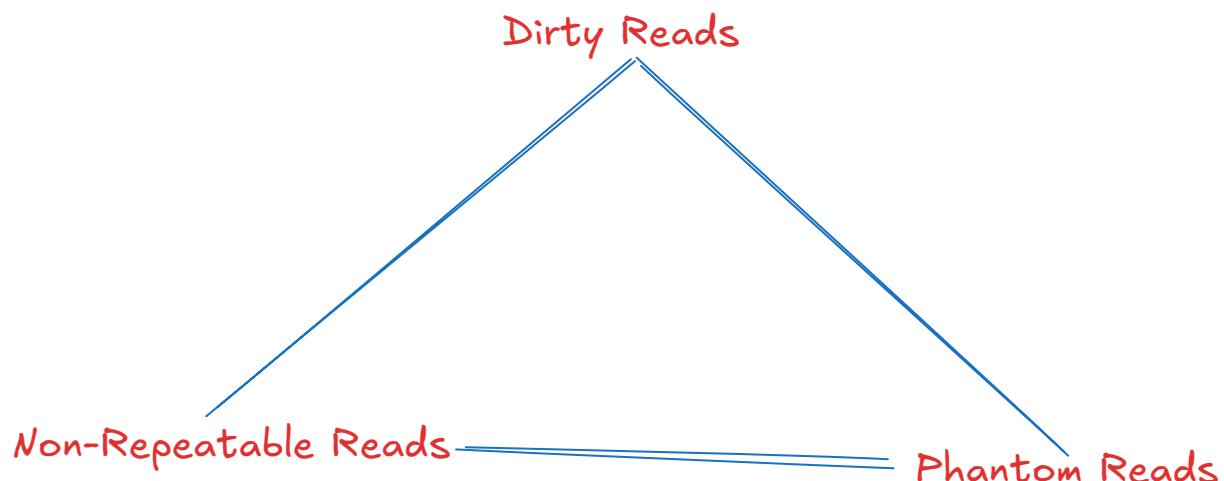
orders

id	product_id	user_id	qty
1	102	1	2
2	103	1	1
3	104	2	2

Let's use Transactions...

Anomalies in Transactions

Transaction anomalies (often called concurrency anomalies) are undesirable or incorrect behaviors that can occur when multiple database transactions execute concurrently, without proper isolation.



Isolation levels

Different isolation levels balance performance and concurrency requirements.

Isolation Level	Dirty Reads	Non-Repeatable Reads	Phantom Reads
Read Uncommitted	✓	✓	✓
Read Committed	✗	✓	✓
Repeatable Read	✗	✗	✓
Serializable	✗	✗	✗

