Getting Started with SQL Server Transactions

Introduction to SQL Server Transactions



Dayo Bamikole

Data Architect

@dayo_bamikole | www.dayobam.com

Overview

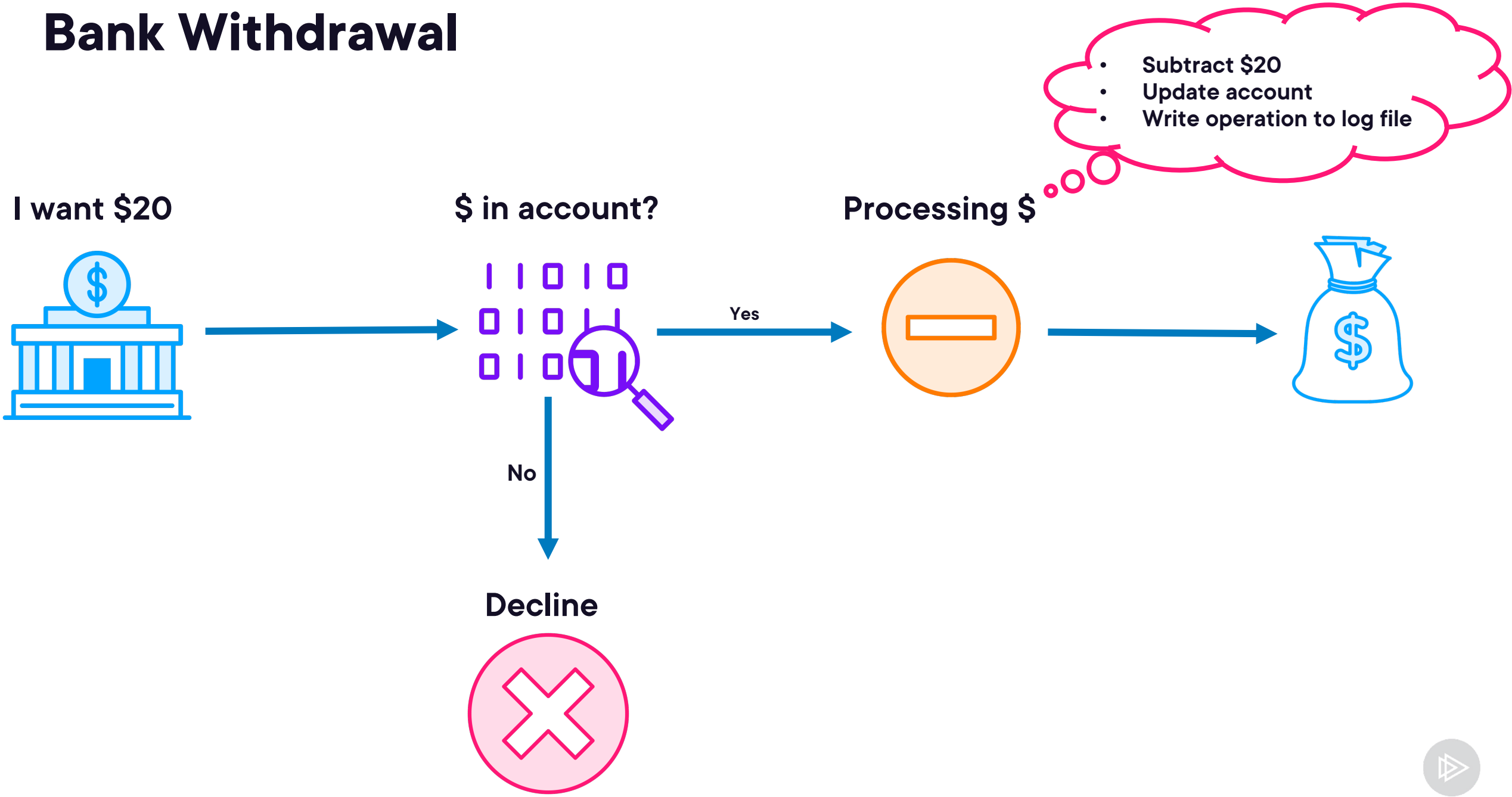


- Understanding of SQL server transactions
- How transactions apply to database operations
- Understanding ACID properties
- Transaction modes in SQL server

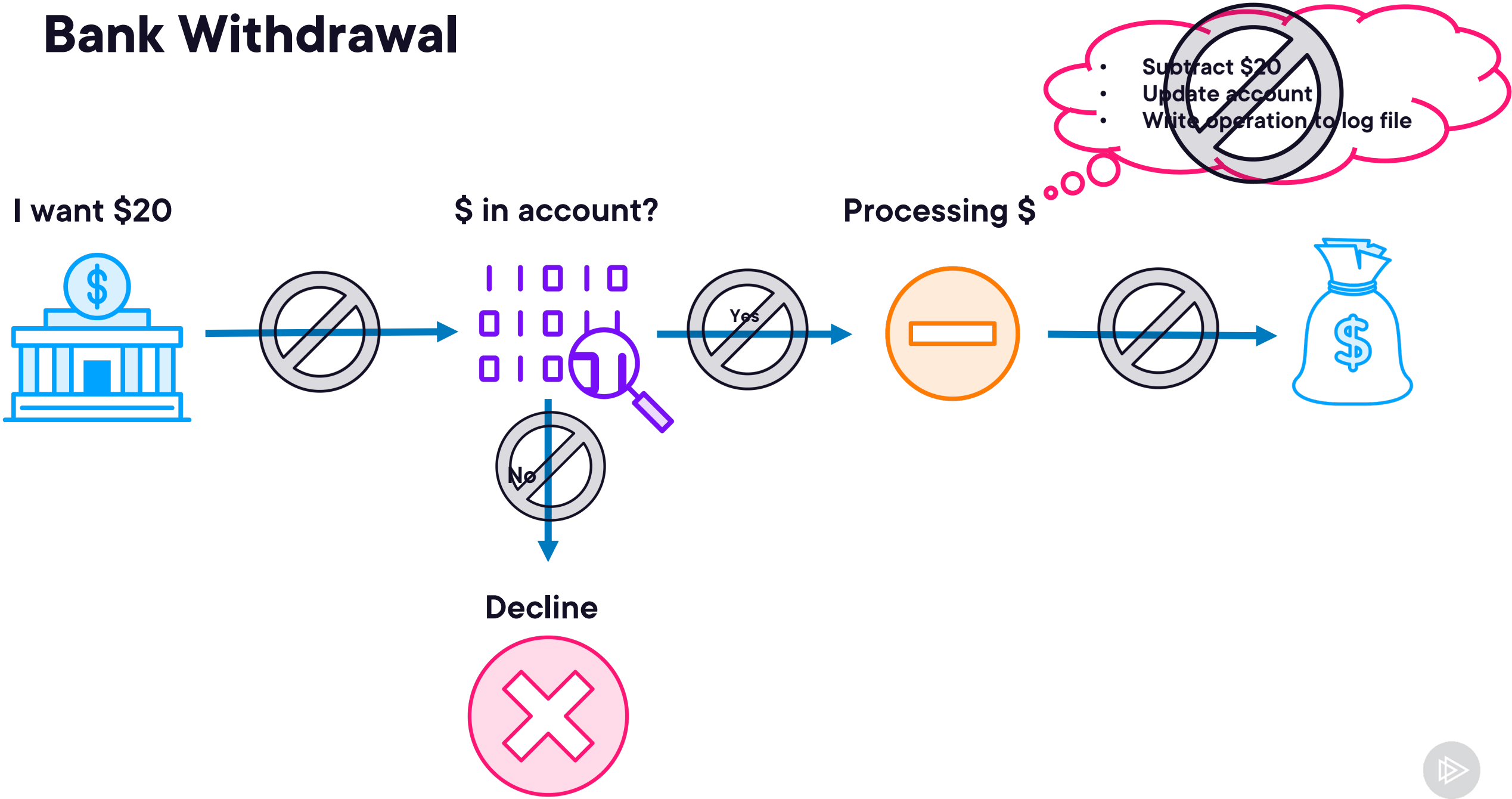
What Are Transactions?

Transactions in SQL Server are a way to group one or more SQL statements into a single unit of work

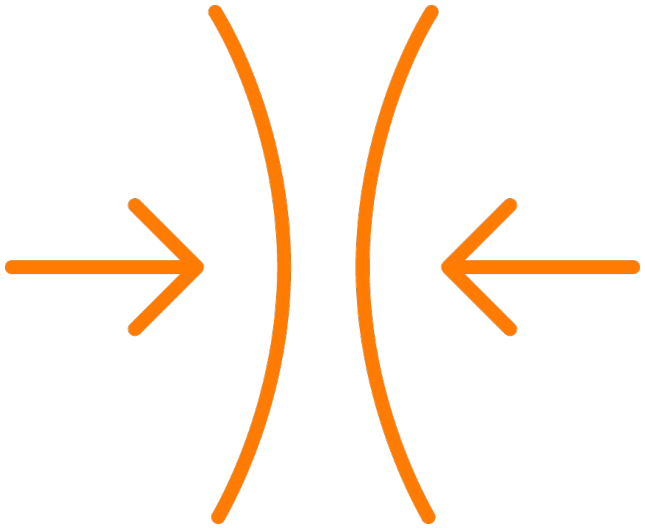
Bank Withdrawal



Bank Withdrawal



How Does This Relate to SQL Server Transactions?

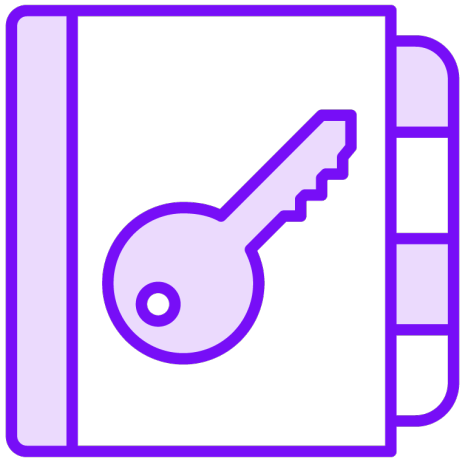


Data integrity

Roll back

ACID

Understanding ACID Properties

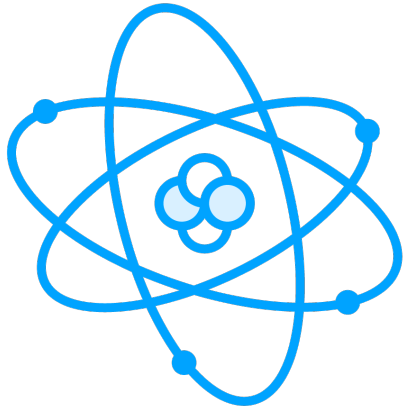


Four Key Properties in a Transaction

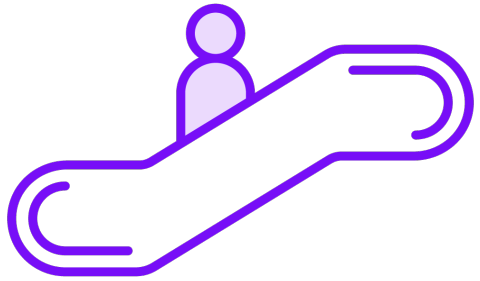
ACID

Acronym that refers to the set of four key properties that define a transaction

What Is ACID?



Atomicity



Consistency

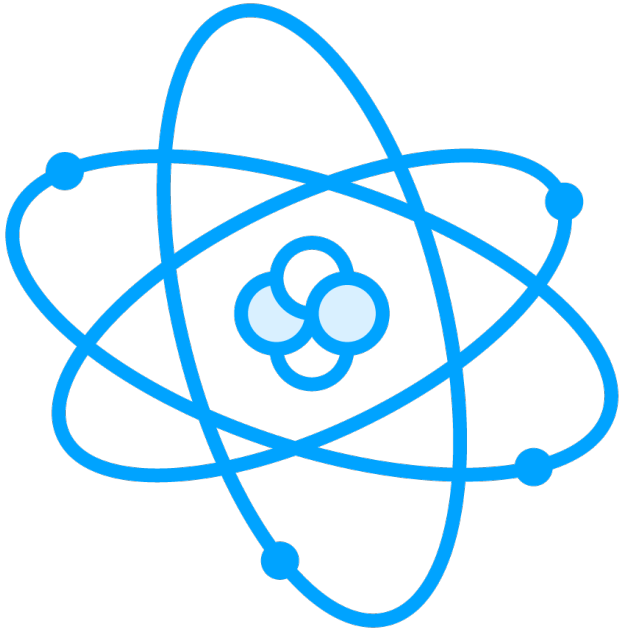


Isolation



Durability

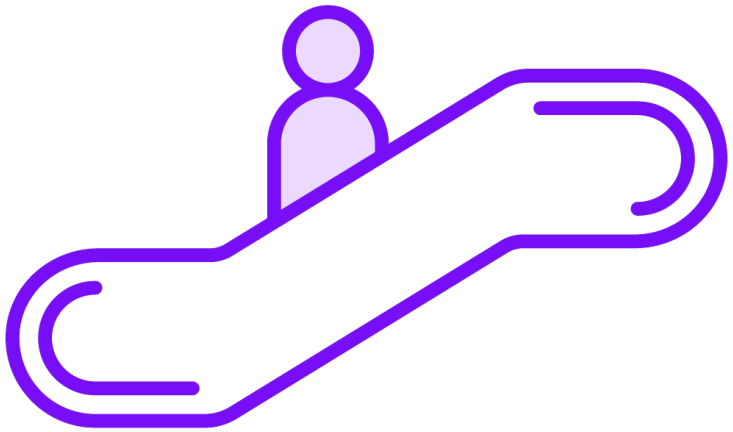
Atomicity



Each statement in a transaction must execute successfully

Either the entire statement is executed, or none are executed

Consistency



Transactions can make changes to the data ONLY when a transaction is successful

Avoids corruption

Isolation



Transactions are independent from each other

There is no interference

Transactions are isolated from other transactions

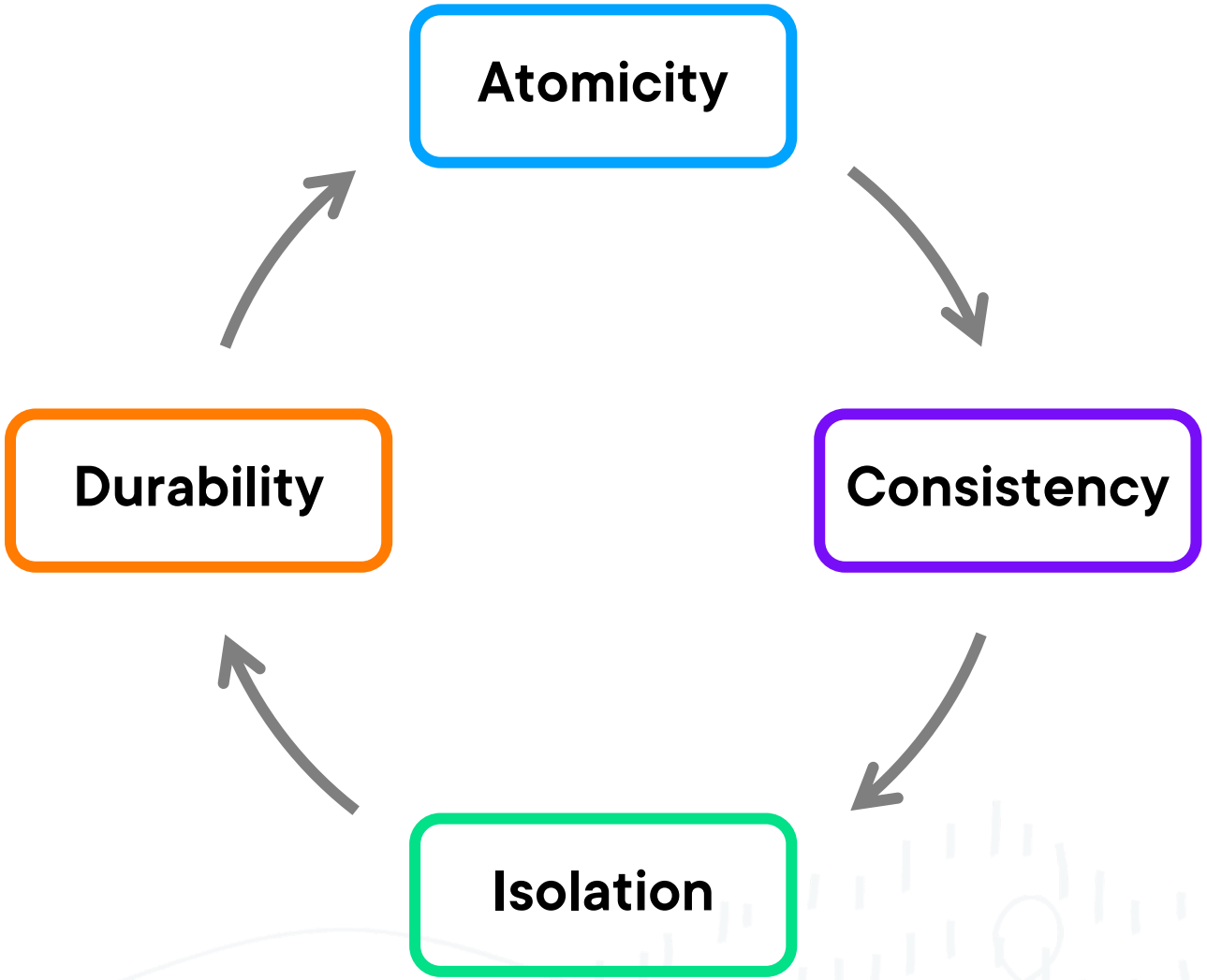
Durability



If a transaction is committed, changes to the data will be saved

Regardless of system crash

ACID Properties



Why Is ACID Important to SQL Server Transactions?

Data reliability

Ensures integrity

Avoids inconsistency



Transaction Modes in SQL Server

Transaction Modes in SQL Server

Auto-commit

Implicit

Explicit

Transaction Modes in SQL Server

Auto-commit

Default mode in SQL Server

Each statement is a transaction

Transaction Modes in SQL Server

Implicit

Needs to end a transaction with the command

- COMMIT TRANSACTION
- ROLLBACK

Transaction Modes in SQL Server

Explicit

Needs to use the following:

- BEGIN TRANSACTION
  - At the beginning of a transaction
- COMMIT TRANSACTION
  - At the end of a transaction

Demo



How to enable transaction mode in SQL server

Summary



What are transactions in SQL Server?

ACID properties: Atomicity, Consistency Isolation, Durability

Types of transaction mode: Auto-commit, Implicit, Explicit

Transaction Controls: BEGIN TRANSACTION, COMMIT, ROLLBACK

How to switch between transaction modes

Up Next:

Managing and Optimizing SQL Server Transactions