



relational databases

A DATABASE is a collection of schemas.
A SCHEMA is a collection of objects, which may include tables.

A database table consists of columns and rows.

A column has a name and holds only a specific data type.

A RECORD, or row, is a group of related fields regarding a specific entity.

REFERENTIAL INTEGRITY is achieved through primary and foreign keys.

A PRIMARY KEY is an attribute used to uniquely identify a record.

A FOREIGN KEY is an attribute whose values match another table's primary key.
Eliminates repetitive data

The primary key is the ID column.

Customer Table

ID	Name
12345	Joe
12346	Bill
12347	Alice

Purchase Table

ID	customerID
0001	12345
0002	12346
0003	12347

The foreign key is the customerID column, which maps to the ID column in the Customer table.

Data Control Language (DCL)
Controls access to objects

GRANT
REVOKE

Transaction Control Language (TCL)

BEGIN COMMIT
ROLLBACK SAVEPOINT

Data Definition Language (DDL)
Manipulates object types

CREATE
ALTER
DROP

Data Manipulation Language (DML)
Manipulates table data

SELECT UPDATE
INSERT
DELETE MERGE

ACID Properties

ATOMICITY

All operations in a transaction complete, or none.

CONSISTENCY

The database is consistent before and after a transaction.

ISOLATION

A transaction is invisible to others until it has been committed.

DURABILITY

Data changes are permanent once committed.