Keys. Relations. Relationships. SQL Data Types Cheat Sheet

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Relational DB - Main Terms

Relational Database (RDB):

A type of database that organizes data into tables with predefined relationships between them. Tables consist of rows (records) and columns (attributes) that store data in a structured manner.

Table:

A collection of related data organized into rows (records) and columns (attributes). Each table has a unique name and consists of a predefined set of columns with specific data types.

Row (Record):

A single entry or instance of data in a table. Represents a unique entity or record within the table. Each row consists of values corresponding to the columns defined in the table's schema.

Column (Attribute):

A named data element within a table that holds a specific type of data. Defines the type of information that can be stored in the column, such as numbers, text, or dates.

Schema:

The structure or blueprint of a database. Defines the tables, columns, data types, relationships, and constraints within the database.

Query:

A request for data retrieval or manipulation from a database. Written in SQL (Structured Query Language) to specify the desired data and the operations to be performed.

Normalization

1NF (First Normal Form): Ensures that each column in a table contains only atomic values (no repeating groups).

2NF (Second Normal Form): Requires meeting 1NF and ensuring that non-key attributes depend on the entire primary key.

Normalization (cont)

3NF (Third Normal Form): Requires meeting 2NF and removing transitive dependencies, ensuring that non-key attributes depend only on the primary key.

Keys

Primary Key: A unique identifier for each record in a table. Ensures data integrity and enables efficient data retrieval.

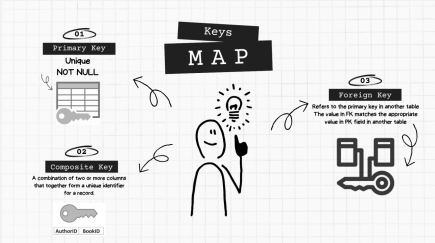
Foreign Key: A field in one table that refers to the primary key in another table. Establishes relationships between tables.

Composite Key: A combination of two or more columns that together form a unique identifier for a record.

Candidate Key: A column or set of columns that can uniquely identify a record in a table.

Surrogate Key: A system-generated unique identifier used as a primary key, often an auto-incremented number.

Keys



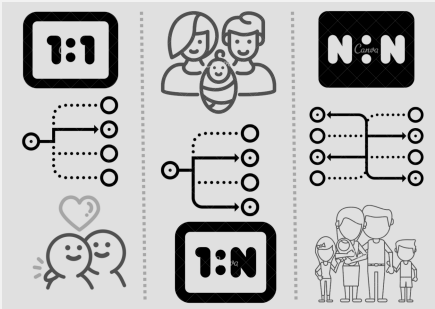
Relationships:

One-to-One: A relationship where each record in one table is related to exactly one record in another table.

One-to-Many: A relationship where each record in one table is related to multiple records in another table.

Many-to-Many: A relationship where multiple records in one table are related to multiple records in another table. Requires a junction table.

Relationships



SQL Data Types:

Numeric Data Types:

INT: whole numbers (e.g., 1, -5, 1000).

DECIMAL(p, s): fixed-point numbers with a specified precision (p) and scale (s).

FLOAT(p): floating-point numbers with a specified precision (p).

Character Data Types:

CHAR(n): fixed-length character strings with a maximum length of n characters.

VARCHAR(n): variable-length character strings with a maximum length of n characters.

TEXT: large variable-length character strings.

Date and Time Data Types:

DATE: a date value in the format YYYY-MM-DD.

TIME: a time value in the format HH:MM:SS.

DATETIME: a combination of date and time values (YYYY-MM-DD HH:MM:SS).

TIMESTAMP: a unique value that changes whenever the row is updated.

Binary Data Types:

BLOB: large binary objects (e.g., images, videos, files).

BINARY(n): fixed-length binary strings with a maximum length of n bytes.

VARBINARY(n): variable-length binary strings with a maximum length of n bytes.

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