Introduction to Relational Model

The Relational Model is a way to organize data in tables with rows and columns. It uses a set of rules to ensure data consistency and integrity.

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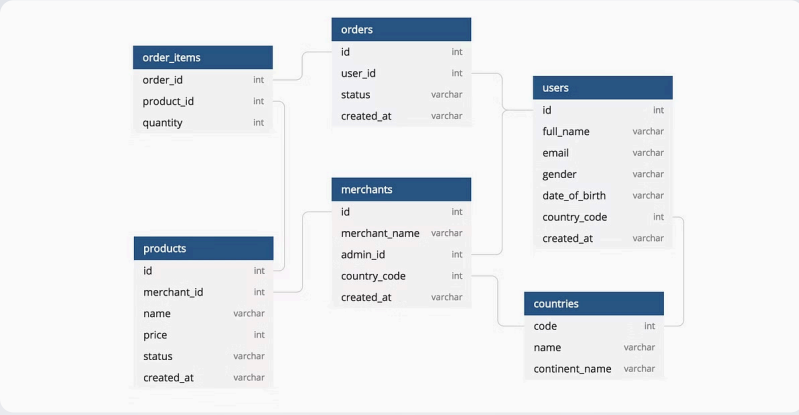


Primary Key

A Primary Key uniquely identifies each row in a table. It's like a serial number for each record.

Uniqueness

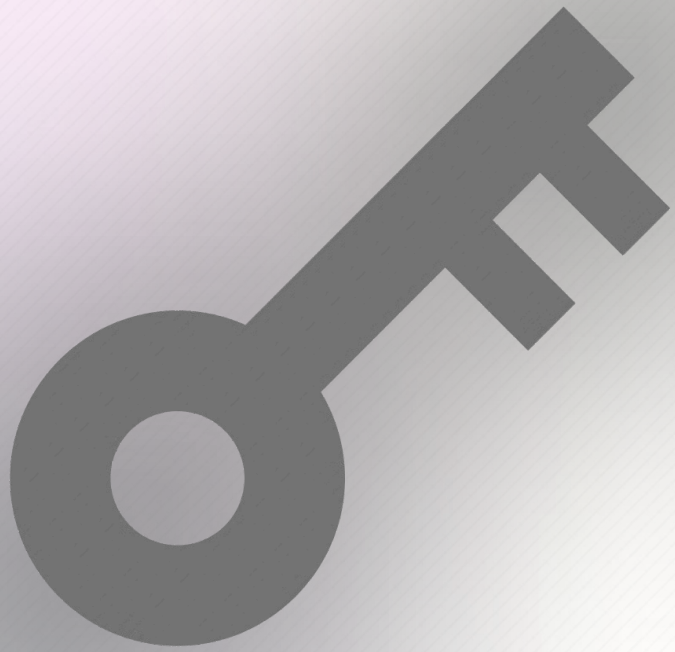
No two rows can have the same Primary Key value.

Not NULL

Every row must have a Primary Key value, it cannot be empty.

Immutable

The Primary Key value should not change over time.



Candidate Key

A Candidate Key is a column or set of columns that can be used as a Primary Key. It has all the properties of a Primary Key, but it may not be chosen as the actual Primary Key.

1

Customer ID

A unique identifier assigned to each customer.

2

Email Address

Unique identifier for each customer, assuming email addresses are unique.

3

Phone Number

Another possible unique identifier, although less reliable.

Alternate Key

An Alternate Key is any Candidate Key that is not chosen as the Primary Key. It can be used to uniquely identify a row, but it's not the main identifier.

Primary Key

Customer ID

Alternate Key

Email Address

Composite Key

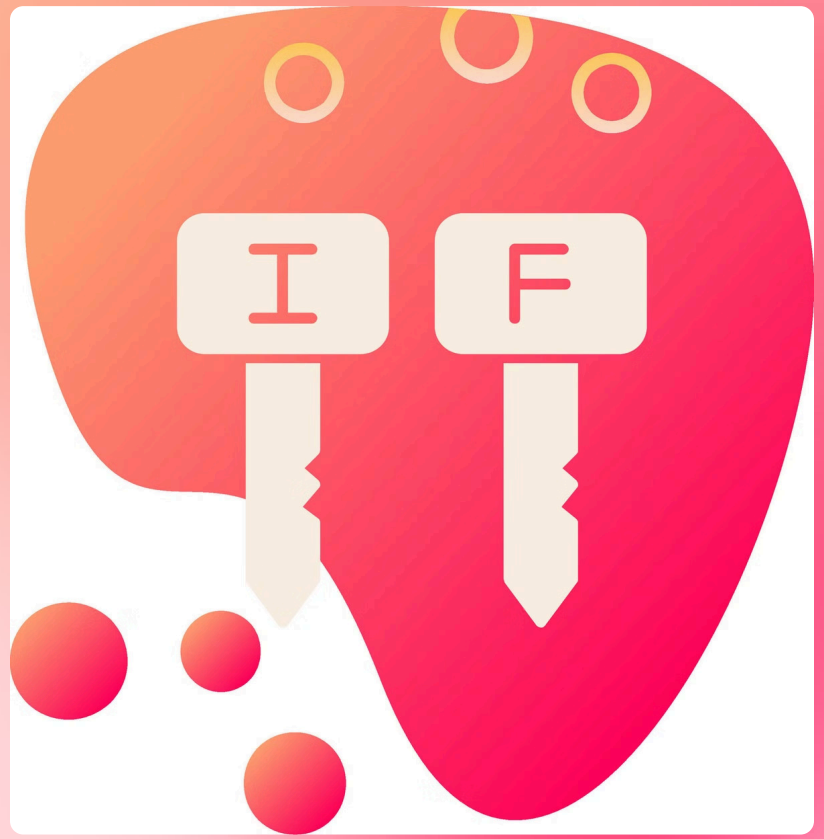
A Composite Key is a Primary Key that consists of multiple columns working together to uniquely identify a row. It's like using multiple puzzle pieces to make a complete picture.

Order ID	Customer ID
101	1
102	2
103	1

Surrogate Key

A Surrogate Key is a unique identifier generated by the database system. It's a simple integer that doesn't have any meaning in the real world, but it's used to efficiently identify rows. This is often used when there's no natural Primary Key.

1	2
Customer Data	**Surrogate Key**
Name, Address, Phone	12345



Foreign Key

A Foreign Key is a column in one table that references the Primary Key of another table. It creates a relationship between the two tables, allowing you to link data from one table to another.

1

Customers Table

Customer ID (Primary Key)

2

Orders Table

Customer ID (Foreign Key)

Conclusion

Understanding these different key types is crucial for designing and using relational databases effectively. Each key plays a specific role in ensuring data integrity and relationships.