

Database Keys Explained: The Superheroes of Data



What Are Keys?

- **Keys are special fields in a database table.**
- **They help to uniquely identify each record.**
- **They create relationships between different tables.**
- **They are fundamental for organizing data.**
- **Think of them as a unique ID or a reference tag.**
- **Using keys ensures data integrity and avoids duplicates.**



The Primary Key

- A primary key is a table's unique identifier.
- Every table can have only one primary key.
- Each value in this column must be completely unique.
- A primary key value cannot be null (empty).
- It is the main way to find a specific record.
- Common examples: User ID, Product SKU, Order Number.



Primary Key Example

- **Table: Employees**
- **Columns: EmployeeID, Name, Department**
- **EmployeeID is the primary key.**
- **It holds a unique number for each person.**
- **Example values: 101 (Alice), 102 (Bob), 103 (Charlie).**
- **You can instantly find Bob's record by searching for 102.**



The Foreign Key

- A foreign key creates a link between two tables.
- It is a field in one table that points to a primary key in another.
- It establishes a relationship between the data.
- A table can have multiple foreign keys.
- Foreign key values can repeat and can be null.
- It acts as a cross-reference between tables.



Foreign Key Example

- **Table: Orders**
- **Columns: OrderID (Primary Key), CustomerID (Foreign Key)**
- **The CustomerID points to the Customers table.**
- **The Customers table has CustomerID as its primary key.**
- **This link shows which customer placed which order.**
- **Many orders can have the same CustomerID (a customer can have many orders).**



How They Work Together

- **Primary keys and foreign keys define relationships.**
- **A primary key is the parent; a foreign key is the child.**
- **The foreign key depends on the primary key for its value.**
- **This connection is called a relational database.**
- **It allows you to combine data from multiple tables in a query.**
- **For example, join Orders and Customers to get a customer's name for their order.**



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