Types of Keys in Database

Surrogate Key

Candidate Key

Alternate Key

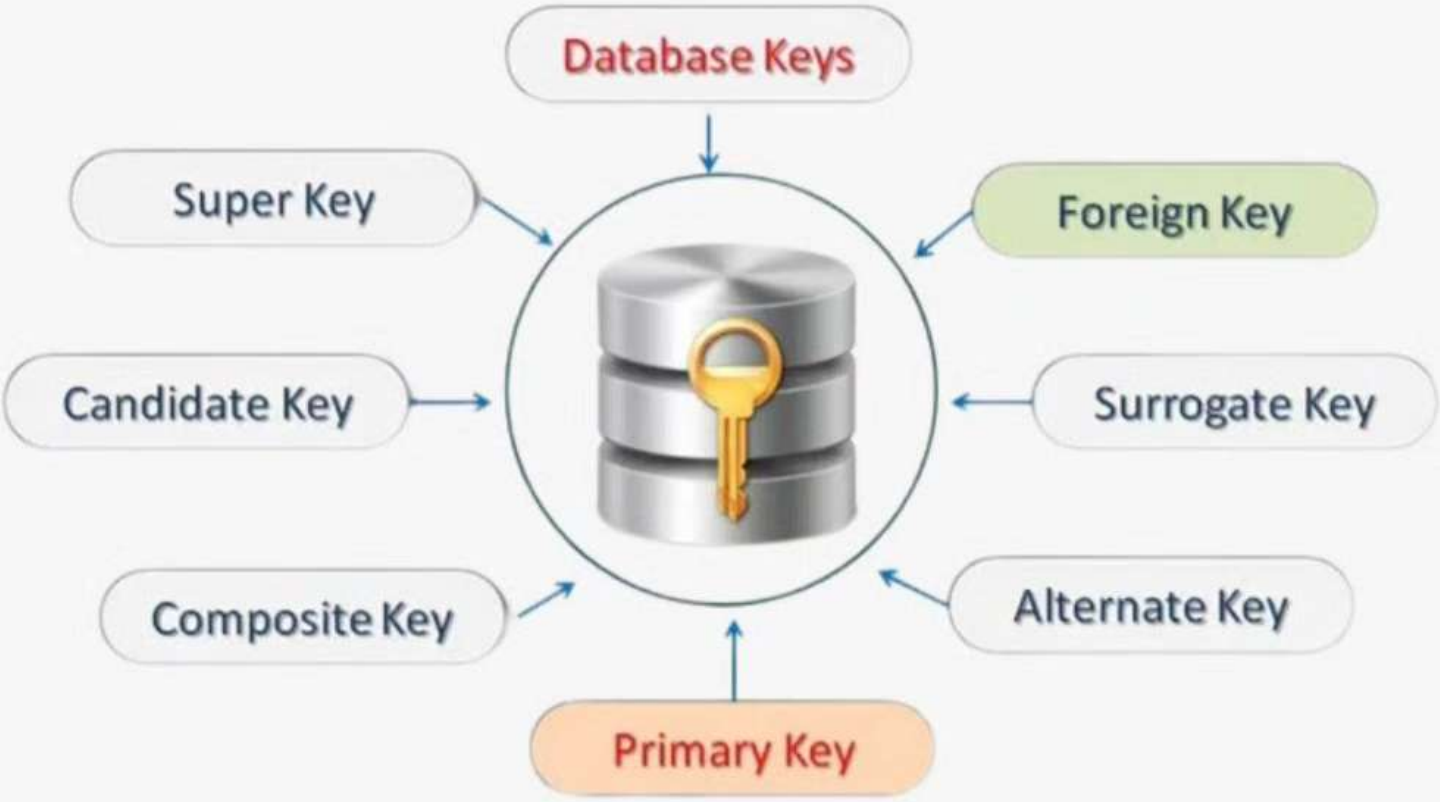
ID	Employee ID	SSC	First Name	Last Name	Job Title	Email
1	1	01A	John	Doe	Manager	johndoe@example.com
2	2	02B	Jane	Doe	Developer	janedoe@example.com
3	3	03C	Jim	Smith	Designer	jimsmith@example.com

Primary Key

Composite Key

In SQL, keys are special fields in a table that help:

- create relationships between tables,
- maintain uniqueness, and
- ensure data is consistent and valid.



Primary Key

A special type of key that uniquely identifies each record in a table. Each table can have only one primary key.
Example: Employee_Id in the Employee table.

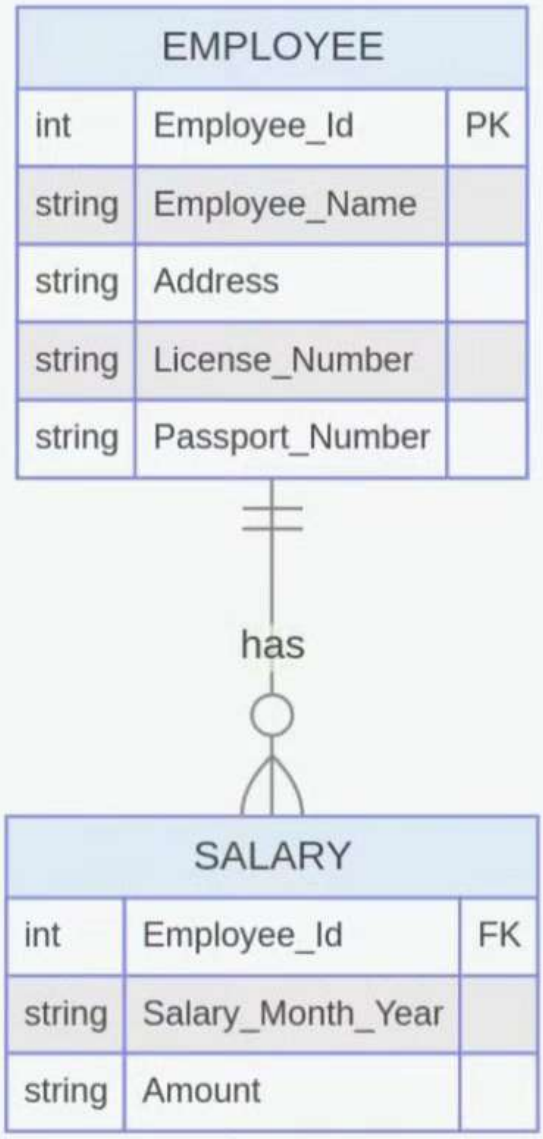
Unique Key

A key that ensures all values in a column are unique across the table.
Example: License_Number and Passport_Number in the Employee table

Foreign Key

A field in one table that uniquely identifies a row of another table, creating a relationship between the two tables.

Example: Employee_Id in the Salary table is a foreign key (FK) that references the Employee_Id in the Employee table (PK).



Surrogate key

A surrogate key is a unique identifier for each record in a table, typically created by the database itself (e.g., an auto-incrementing integer).

Surrogate vs Primary key

Primary key can have a real meaning, like driving license number, while surrogate key is usually auto-incremented integer with no real meaning

Composite key

Composite key (also known as compound key or concatenated key) is a group of two or more columns that identifies each row of a table uniquely.

Example: In salary table, Employee_Id and Salary_Month_Year are combined together to identify each row uniquely in Salary table.

Independently Employee_Id or Salary_Month_Year column cannot identify each row uniquely

Candidate Key

Candidate key is a key of a table which can be selected as a primary key. A table can have multiple candidate keys, out of which one can be selected as a primary key.

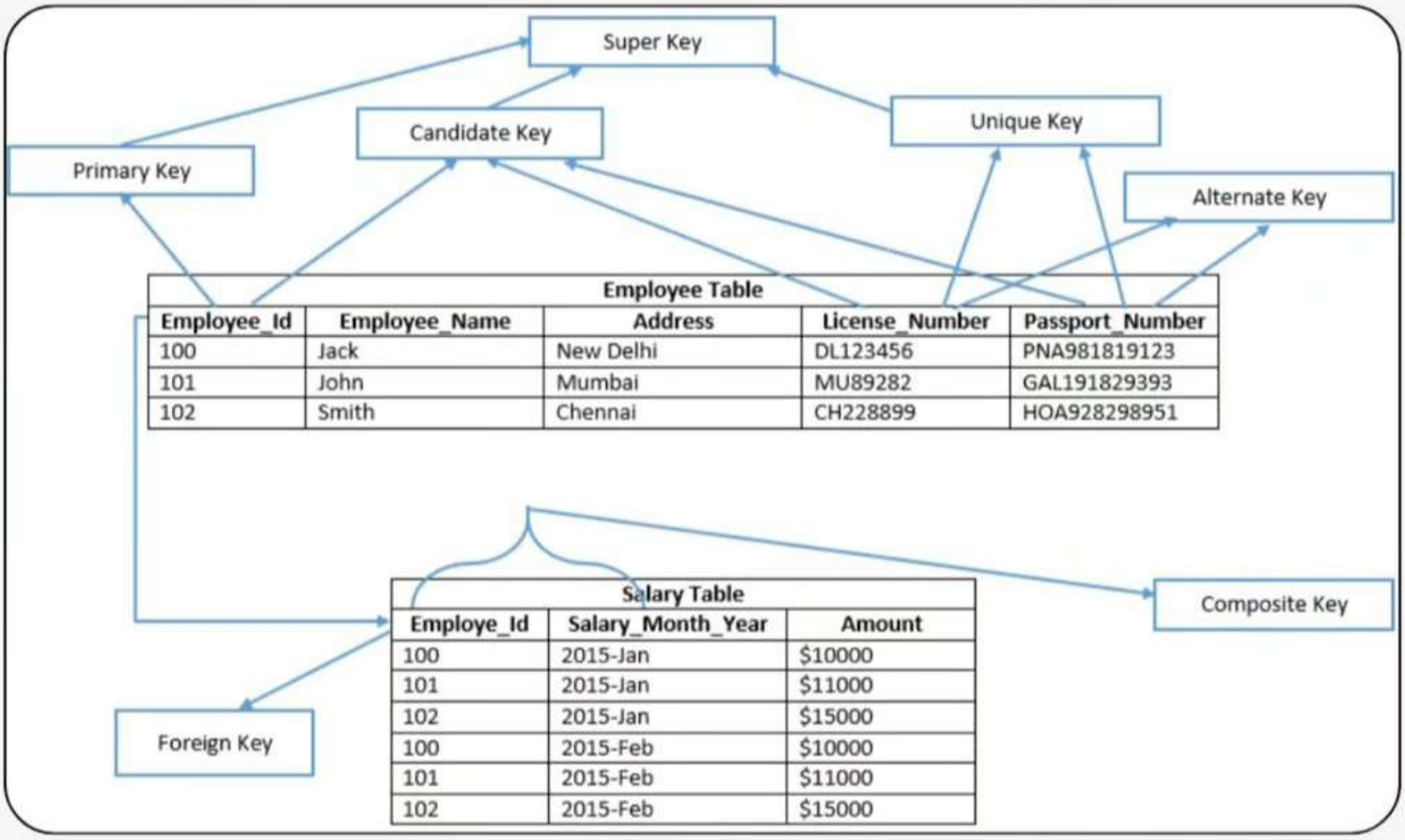
Example: Employee_Id, License_Number and Passport_Number

Alternate Key

Alternate key is a candidate key, currently not selected as primary key of the table.

Example: License_Number and Passport_Number

Final graphical explanation of all database keys



Employee Table

Employee_Id	Employee_Name	Address	License_Number	Passport_Number
100	Jack	New Delhi	DL123456	PNA981819123
101	John	Mumbai	MU89282	GAL191829393
102	Smith	Chennai	CH228899	HOA928298951

Salary Table

Employe_Id	Salary_Month_Year	Amount
100	2015-Jan	$10000
101	2015-Jan	$11000
102	2015-Jan	$15000
100	2015-Feb	$10000
101	2015-Feb	$11000
102	2015-Feb	$15000