In SQL, keys are used to identify & ensure the integrity of data in tables. They play a crucial role in managing relationships b/w tables & ensuring that data remains consistent.

1. Primary key :- A primary key is a unique identifier for each record in a table. It ensures that each row has a unique value & cannot be NULL.

- It is used to uniquely identify records in a table.
- Only one primary key can exist in a table
- Automatically enforces uniqueness & non-nullability.

2. Candidate key :- A candidate key is a set of one or more attributes that can uniquely identify a record in a table. Every candidate key is a potential primary key.

- A table can have mutiple candidate keys.
- A candidate key can be chosen as the primary keys.
- They must be unique & non-null.

Ex:- In a table, if EmployeeID & Email are both unique attributes that could serve as the primary keys, the both EmployeeID & Email are Candidate keys.

3. **Super key** :- A super key is a set of one or more attributes that can uniquely identify a record in a table. It may contain extra attributes that are not necessary for uniqueness
(i.e., it could be a ~~sust~~ superset of a candidate key).

- Every primary key is a super key, but not every super key is a primary key.
- A Super key can have additional attributes beyond the minimal unique identifiers.

Ex:- In the case of EmployeeID & Email, a Super key could be EmployeeID, Name.
(since EmployeeID alone is enough to uniquely identify, but adding Name makes it a super key.)

4. Foreign key :- A foreign key is an attributes (or set of attributes) in one table that is used to link to the primary key in another table. It establishes & enforces a relationship b/w two tables.

- Ensure referential integrity b/w 2 tables (i.e., ensures that data in one table corresponds to valid data in another)
- It can have duplicate values & NULLs, depending on the constraints.

Here, EmployeeID in the Orders table is a foreign key that links to the EmployeeID in the Employees tables.

ex:-
```
Create table Orders ( OrderID int Primary key, EmployeeID int,
foreign key (EmployeeID) Reference Employees (EmployeeID));
```

Types of Relationships in SQL:

1> One-to-One (1:1) Relationship:-

- One record in a table is related to one record in another table.

Example:- Each employee has one assigned parking spot.

2> One to Many (1:M) Relationship:-

- One record in a table is related to many records in another table. ~~This~~

Ex:- One customer can place many orders.

3> Many to Many (M:M) Relationship:-

- Many records in one table are related to many records in another table.

Ex:- A student can enroll in many courses, & each course can have many students.