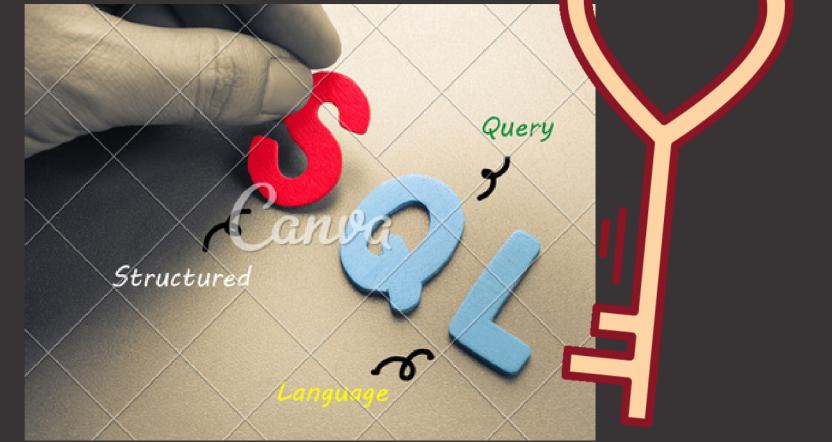


SQL Keys

SQL



@sandhya Chauhan 

Why we have Keys in DB?

- A Key is an attribute or a set of attributes in a relation that identifies a tuple (record) in a relation.
- The keys are defined in a table to access or sequence the stored data quickly and smoothly.
- They are also used to create relationship between different tables.

Types of Keys in Database

- 1 Primary Key
- 2 Candidate Key
- 3 Alternate Key
- 4 Super Key
- 5 Composite Key
- 6 Foreign Key
- 7 Unique Key

Primary Key

- Which is **Unique & Can't be have NULL Value**
- Is the column you choose to maintain uniqueness in a table at row level.
- Here in **Employee** table we can choose either **EmployeeID** or **SSN** column for a PK.
- EmployeeID is preferable choice because SSN is a secure (PII) value.
- Primary key is the minimal super keys. In the ER diagram primary key is represented by underlining the primary key attribute.
- Ideally a primary key is composed of only a single attribute.
- But it is possible to have a primary key composed of more than one attribute.



To define a field as primary key, following conditions had to be met :

- No two rows can have the same primary key value.
- Every row must have a primary key value.
- The primary key field cannot be null.
- Value in a primary key column can never be modified or updated, if any foreign key refers to that primary key

Candidate Key

- Are individual columns in a table that qualifies for uniqueness of each row/tuple.
- Here in **Employee** table **EmployeeID**& **SSN** are eligible for a **Primary Key** and thus are ***Candidate keys***.
- Candidate Keys are super keys for which no proper subset is a super key. **In other words candidate keys are minimal super keys.**

Employee
<u>EmployeeID</u>
EmployeeName
<u>SSN</u>
DeptID
DOB

Alternate Key

- Candidate column other the Primary column, like if **EmployeeID** is set for a PK then **SSN** would be the Alternate key.

Employee
EmployeeID
EmployeeName
<u>SSN</u>
DeptID
DOB

Super Key

- If you add any other Column /Attribute to a Primary Key then it becomes a Super Key, like **EmployeeID**
+**EmployeeName** is a Super Key.
- Super key stands for superset of a key.
- **A Super Key is a set of one or more attributes that are taken collectively and can identify all other attributes uniquely.**

Employee
<u>EmployeeID</u>
<u>EmployeeName</u>
SSN
DeptID
DOB

Composite Key

- If a table do have a single column that qualifies for a Candidate key, then you have to select 2 or more columns to make a row unique.
- Like if there is no EmployeeID or SSN columns, then you can make **EmployeeName + DateOfBirth(DOB)** as **Composite Primary Key**. *But still there can be a narrow chance of duplicate rows.*

Employee
EmployeeID
<u>EmployeeName</u>
SSN
DeptID
<u>DOB</u>

Foreign Key

- Here in below tables **DeptID** of **Department** table is Primary Key where as **DeptID** of **Employee** is an **Foreign key**.
- It means it has referred to another table. This concept is also known as **Referential Integrity**.

Employee
EmployeeID
EmployeeName
SSN
<u>DeptID</u>
DOB

Department
<u>DeptID</u>
DeptName

Unique Key

- **Unique key** is same as primary with the difference being the existence of null.
- Unique key field allows one value as NULL value.

Employee
EmployeeID
EmployeeName
SSN
<u>EmailID</u>
DOB