
SmartCliff
CAREER MOBILITY SOLUTIONS
We are on a mission to address the digital skills gap for 10 Million+ young professionals, train and empower them to forge a career path into future tech

Keys

Keys in SQL

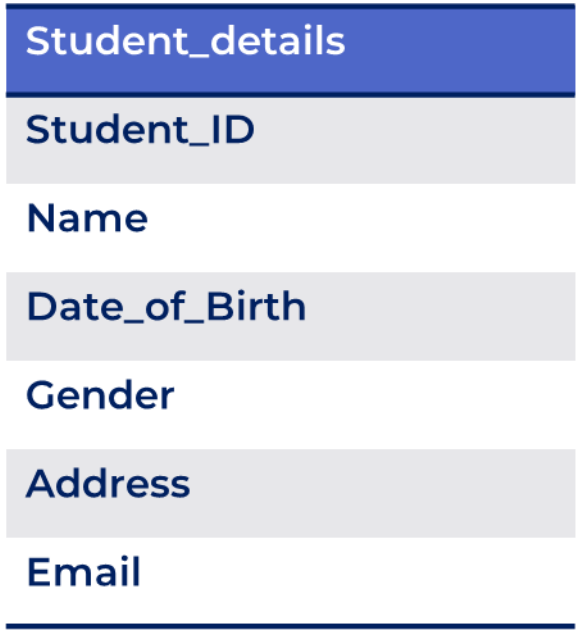
- Key is a Value used to **identify the records in a table uniquely**.
- It can be a single column or combination of multiple columns.
- It also helps to **establish relationship between tables .**
- Helps in implementing **identity and integrity** in the relationship.

Keys in SQL

- **Types of Keys in DBMS**
  - Super Key
  - Candidate Key
  - Primary Key
  - Alternate Key
  - Foreign Key
  - Compound Key

Example

- Consider the table **Student_details.** The attributes that uniquely identifies each record in the table are
  - Student_ID
  - Email
  - Name and Address
  - Student_ID and Name



Super Key

- All possible set of one or more attributes that can uniquely identify a tuple in a relation.
- The super keys of the relation **Student_details** are:
- **Single attribute**
  - Student_ID
  - Email
- **Two attributes**
  - (Name, Address)
  - (Name, Address, Email)
  - (Student_ID, Name)

Candidate Key

- A **minimal set of attribute** that uniquely recognize a tuple and it cannot be NULL.
- In **Student_details** tuple, minimal set of super keys act as a candidate key can be **Student_ID, Email, {Name, Address}.**
  - A smallest super key for which no subset is a super Key.
  - In Student_details tuple, the super key {Student_ID, Name} cannot be a candidate key since the super key Student_ID is a subset of it.

Primary Key

- A candidate key that is chosen by the designer to uniquely identifies a record (**One out of many candidate keys)**
- **Rules in selecting primary key**
  - The attributes of the primary key are never or rarely changed
  - The primary key field cannot be null.

Example: In Student_details relation ,Address field cannot be a part of primary key, since it is likely to be changed

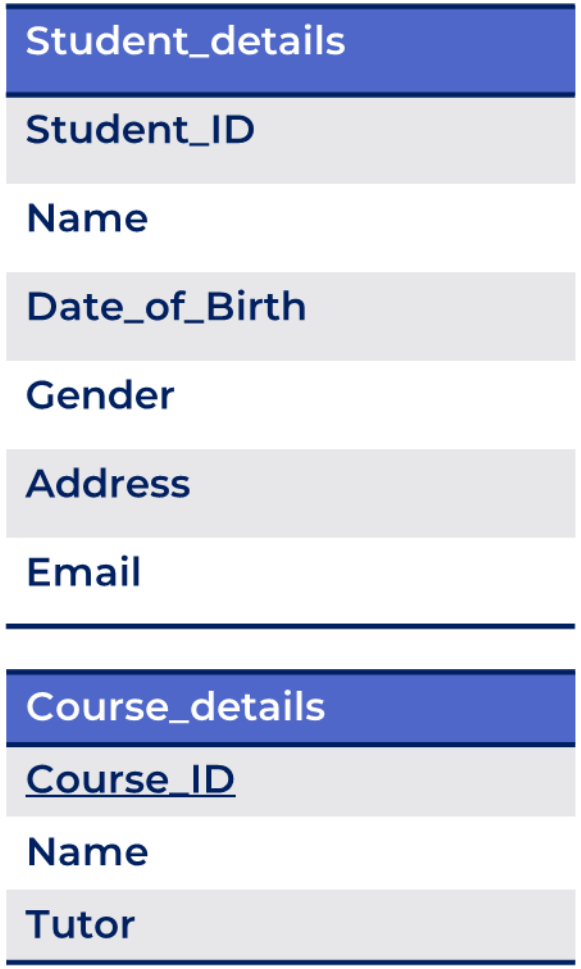
The attribute Student_ID can be chosen as a primary key represented with underline.

Alternate Key

- The candidate key other than the primary key
- Also known as **secondary key**
- In the relation Student_details, among the set of candidate keys **Student_ID, Email, (Name, Address), the Student_ID** is selected as a primary key
- Remaining candidate keys Email, (Name, Address) are alternate keys.

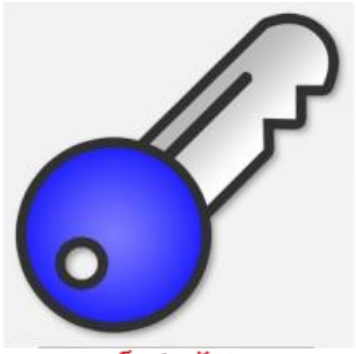
Foreign Key

- Creates a relationship between two tables.
- Attribute of one table pointing to the primary key of another.
- Consider the course details in the relation Course_details, in which Course_ID is the primary key.
- College may have several courses and it is difficult to find the course of the students.
- Can be achieved by adding the foreign key Course_ID (primary key of the relation Course_details) in to the Student_details relation.



Foreign Key

- Referenced Relation: The relation being referenced {Course_Details}
- Referenced Attribute: Corresponding attribute being referenced {Course_ID} and it must be a primary key
- Referencing relation: Relation that refers to the referenced relation {Student_Details}.
- Unlike primary key, foreign key can have
- NULL value.
- May contain duplicate values
- More than one student can opt a specific course



Composite Key

- A candidate key that is composed of two or more attributes to uniquely identify the tuples.
- It is a primary key having two or more attributes
- In the given relation Student_details without the {Student_ID} attribute, then the {Name, Address} act as a primary key.
- {Name, Address} is a composite key.

Compound Key

- Similar to composite key where two or more attributes uniquely identifies the tuples.
- But, compound keys are made with two or more primary key from different tables that act as a foreign key
- In the given relation **Student_details**
  - {Student_ID, Course_ID} is a compound key.
  - {Student_ID} is the primary key of Student_details.
  - {Course_ID} is the primary key of Course_details yet is a foreign key in Student_details.

Prime and Non-Prime Attributes

- **Prime Attributes:** Attribute that is a part of one of the candidate keys
  - Name is the prime attribute in relation **Student_details.**
- **Non-prime Attributes:** Attribute that is not a part of any candidate keys
  - Gender is a non-prime attributes in relation **Student_details.**

Quiz

1. The primary keys are such that its attribute values are _____

a) Dependent

b) Changed

c) Maximum

d) Never Changed

d) Never Changed

Quiz

2. Minimal super keys are called as _____

a) Primary key

b) Candidate Key

c) Alternate Key

d) Compound Key

b) Candidate Key

Quiz

3. Which one of the following cannot be taken as a primary key?

a) Id

b) Register Number

c) Dept_id

d) Street

d) Street

Quiz

1. An attribute in a relation is a foreign key if the _____ key rom one relation is used as an attribute in that relation.

a) Candidate

b) Primary

c) Super

d) Sub

a) Candidate

Quiz

5. Which key is used to make relations between two tables?

a) Foreign

b) Primary

c) Candidate

d) Composite

a) Foreign

Exercises

Exercise

List all super keys, candidate keys, primary keys, alternate keys, Composite keys, Compound Key, prime and non-prime attributes for the given relations Student, Course, and Enrolled.

Student
S_ID
S_Name
Log_ID

Course
C_ID
C_Name
Credits

Enrolled
S_ID
C_ID
Grade


THANK YOU
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