

# **Keys**

### **Super Key**

It is a set of one or more attributes which can uniquely identify the row of a table.

In the table shown below-

| Stu_ | id name        | cou_id | Address                     | ohone     |
|------|----------------|--------|-----------------------------|-----------|
| 496  | Kuldeep Daga   | 101    | 781 Ashok Nagar,<br>Indore  | 943523345 |
| 267  | Ojasv Singh    | 671    | 50 M<br>Sector-4,Chandigarh | 999436436 |
| 367  | Sampriti Patel | 241    | 107, GS road,<br>Guwahati   | 967543322 |

- 1. Stu\_id,
- 2. Stu\_id, name
- 3. Stu\_id, name, cou\_id,
- 4. Stu\_id,name, cou\_id, Address
- 5. Stu\_id, name, cou\_id, Address, phone

These all could be super key because they can uniquely identify each record of the table.

# **Candidate Key**

It is a minimal subset of super keys. It contains no redundant attribute. As already mentioned it is a minimal set of super keys. Hence, it is selected from the set of super keys given that those selected keys DO NOT have any redundant attributes.

Candidate Key value should not be null.



From the above super key,

Stu\_id is candidate key because it can alone identify the other attributes uniquely.

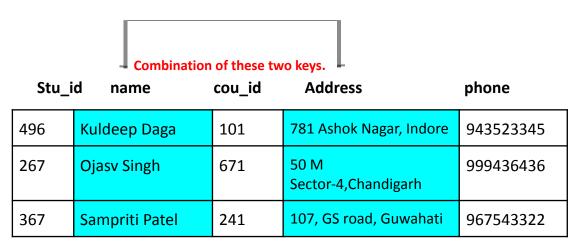
**Note:** Phone is not considered to be a candidate key, as it can hold NULL value. In case a student doesn't have a phone number.

# **Primary Key**

It is a unique identifier which helps us to identify each and every tuple uniquely. No two rows have the same value for primary key Attribute and the primary key cannot be null. The primary key in the table cannot be changed. It is selected out of all the candidate keys by database admin.

It could be further divided into **Composite Key** and **Compound Key**.

 Primary key which is formed using at least two attributes is known as composite key.



In this table name and address together can uniquely identify the row so it could be a primary key. As there are two attributes together making the primary key, so it is a composite primary key.

 Primary keys which are formed using two foreign keys which have been referenced in some other table.



| Stu_id | name           | Address                     | phone     |
|--------|----------------|-----------------------------|-----------|
| 496    | Kuldeep Daga   | 781 Ashok Nagar, Indore     | 943523345 |
| 267    | Ojasv Singh    | 50 M<br>Sector-4,Chandigarh | 999436436 |
| 367    | Sampriti Patel | 107, GS road, Guwahati      | 967543322 |

Table/Relation - Enrollment:-

| Stu_id | cou_id | Enr_num    |
|--------|--------|------------|
| 496    | 101    | 0978078068 |
| 267    | 671    | 9679543000 |
| 367    | 241    | 0808676542 |

Table/Relation - Courses:-

| cou_id | Stu_id | Cou_name         | Enr_num    |
|--------|--------|------------------|------------|
| 101    | 496    | physiology       | 0978078068 |
| 671    | 267    | music            | 9679543000 |
| 241    | 367    | Machine Learning | 0808676542 |

In the table/relation Enrollment ,**stud\_id** is a foreign key which is referring to the Student relation where stud\_id is a primary key.

Similarly, **cou\_id** is also a **foreign key** which is referring to the Courses relation where cou\_id is a primary key.

Stud\_id and cou\_id together is the primary key in the Enrollment relation which are individually foreign keys.

Hence (Stud\_id, cou\_id) is the compound primary key in the Enrollment Relation.



#### **Alternate Key**

All the candidate keys except the primary key are known as alternate keys.

## **Foreign Key**

It creates a relationship between two tables. It is also used to maintain data integrity consistency.

#### **Relation Student:-**

| Stu_id | name           | cou_id | Address                     | phone     |
|--------|----------------|--------|-----------------------------|-----------|
| 496    | Kuldeep Daga   | 101    | 781 Ashok Nagar, Indore     | 943523345 |
| 267    | Ojasv Singh    | 671    | 50 M<br>Sector-4,Chandigarh | 999436436 |
| 367    | Sampriti Patel | 241    | 107, GS road, Guwahati      | 967543322 |

#### **Relation Courses:-**

| cou_id | Stu_id | Cou_name         | Enr_num    |
|--------|--------|------------------|------------|
| 101    | 496    | physiology       | 0978078068 |
| 671    | 267    | music            | 9679543000 |
| 241    | 367    | Machine Learning | 0808676542 |

In this example **cou\_id** is **foreign key** in the Relation Student because it is referencing the primary key of the Courses table.

# **Surrogate Key**

To uniquely identify the data, generally we give a surrogate key as an integer. It is a virtual key with virtual or no actual reason.

#### **Example**

Let's say there is a rating system on your website. You're storing name and rating corresponding to that user but there is no unique key in your system.



There is no primary key in our current table because names can be duplicate and also rating too.

To identify each row uniquely we can create a surrogate key as rating\_id.

| Rating_Id | Customer_Name | Rating |
|-----------|---------------|--------|
| 1         | Akash         | 5      |
| 2         | Anand         | 4      |