

## Keys

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### 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	phone
496	Kuldeep Daga	101	781 Ashok Nagar, Indore	943523345
267	Ojasv Singh	671	50 M Sector-4,Chandigarh	999436436
367	Sampriti Patel	241	107, GS road, 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.



Stu_id	name	cou_id	Address	phone
496	Kuldeep Daga	101	781 Ashok Nagar, Indore	943523345
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367	Sampriti Patel	241	107, GS road, Guwahati	967543322

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 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 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