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# Keys In DBMS

- Keys play a very important role in our database.

They → are used to identify one and only one instance of an entity uniquely.

- Types of key:
  - Primary key
  - Candidate key
  - Super key
  - Foreign key
  - Alternate key
  - Composite key
  - Artificial key

These four are very important.

Remarks

I discussed here detail in about primary, candidate, foreign and super key.

⇒ Primary key:

**Primary key = { Unique + Not NULL }**

Property: like in **every table** **every entity** has their **unique** **id** for identification.

Like in college I. card: We have a key like = Enrollment number / Registration number

Remarks

By using this no. they get all data about particular student.

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Unique — what comes inside ??

Phone no.
Aadhar Card
PAN
Reg No.
Enroll No.
:
etc.

} Unique

↓

If it is unique so that is candidate key but for primary key unique is not complete satisfaction.

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Not Null — what ??

Never empty (it is compulsory field)

Remarks

For primary key we achieved Unique + Not NULL

Date__/__/_____

Note

# Candidate key

Key → attribute

use of key → uniquely Identify

| Sname | City | Age | |
|---|---|---|---|
| Shivani | kanpur | 20 | Same |
| Samyama | Lucknow | 21 | |
| Prachi | Delhi | 28 | |
| Shivani | kanpur | 20 | |

Take eg. of student data table

- Adhar Card
- Roll no
- Registration
- License No
- Remarks
  - Mobile No
  - Email

All are diff^n for all every student

These are set of candidate key

Point: We choose primary key from set of candidate key.

## Foreign key

It is an attribute or set of attribute that references to primary key of same table or another table (relation).

Point: Maintains referential Integrity.

Remarks

## Example

Student table

PK (Primary key)

| Roll No | name | address |
|---|---|---|
| 1 | A | Delhi |
| 2 | B | Mumbai |
| 3 | A | Chandigarh |

Course Table

foreign key

| CourseId | Course Name | Roll no |
|---|---|---|
| C1 | DBMS | 1 |
| C2 | Networking | 2 |

Note

Remarks

Here in course table Roll no is used as a foreign key.

Here,

Student table is **Referenced table** where **primary key** exist.

In Course table, it it **Referencing table**, where **foreign key** exist.

Query: After table creation —

After table course ADD constraint fk foreign key (Roll No) references Student (Roll No).

Remarks

Point —

Table has more than one foreign key (possible).

Date__/__/_____ No

# Super keys

- It is a combination of all possible attributes which can uniquely Identify two tuples in a table.
- Super set of any Candidate key is Super key.

Student table

Ck = Rollno

Eg: we add Rollno Name age

Rollno, name
Rollno, age
Rollno, name, age

Remarks: then they will be super key.

Notes Date __/__/_____

Que: $R(A_1, A_2, A_3, A_4 \ldots A_n)$ then how many super keys are possible.

Sol $\longrightarrow$ $A_1$ is candidate key.

$\longrightarrow$ $A_1, A_2$ are candidate key

**Case-①**

// given **$A_1$ is candidate key** then **$A_1$ is necessary** to present in all subset.

$\Rightarrow 2^{n-1}$ is super key possible.

**Case-②**

// $A_1, A_2$ are candidate key

Remarks

So Here $(2^{n-1} + 2^{n-1} - 2^{n-2})$ is no. of super key.