

## Types of Keys

1. What is key :

### WHAT ARE DBMS KEYS?

- A DBMS Key is an attribute or a set of attributes which help you uniquely identify a record or a row of data in a relation(table).

2. Need :

### WHY WE NEED DBMS KEYS?

- For identifying any row of data in a table uniquely
- We can force identity of data and ensure integrity of data is maintained.
- To establish relationship between tables and

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identifying relationship between tables.

## Student Records

**SId is mandatory**

SId	SName	SBranch	SEmail
1	John	C.S.	john@xyz.com
2	Adam	C.S.	adamcool@xyz.com
3	Adam	I.T.	adamnerd@xyz.com
4	Elly	Electronics	elly@xyz.com

Then we can say for sure that each row will be identifiable using **SId** (because it has unique value)

### 3. Types

## Types of DBMS Keys

- 1 Super Key
- 2 Candidate Key
- 3 Primary Key
- 4 Foreign Key
- 5 Composite & Compound Key
- 6 Alternate Key
- 7 Surrogate Key

Super key is a default key and composite and compound keys are like sisters.

1. Super Key : Every possible key inside a table is said to be as super key.

## Student Table

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SID	REG_ID	NAME	BRANCH	EMAIL
1	CS-2019-37	John	CS	john@xyz.com
2	CS-2018-02	Adam	CS	adamcool@xyz.com
3	IT-2019-01	Adam	IT	adamnerd@xyz.com
4	ECE-2019-07	Elly	ECE	elly@xyz.com

Can have more combinations as well

### Keys:

- SID
- REG\_ID
- EMAIL
- SID + REG\_ID
- REG\_ID + EMAIL
- EMAIL + SID
- SID + REG\_ID + EMAIL

Beginning:

- An attribute or a set of attributes that can be used to identify row of data in a table is a super key.

2. Candidate Key: It is a minimal subset of the super key which can be used to identify a set of rows uniquely.

## Student Table

SID	REG_ID	NAME	BRANCH	EMAIL
1	CS-2019-37	John	CS	john@xyz.com
2	CS-2018-02	Adam	CS	adamcool@xyz.com
3	IT-2019-01	Adam	IT	adamnerd@xyz.com
4	ECE-2019-07	Elly	ECE	elly@xyz.com

### Candidate Keys:

- SID
- REG\_ID
- EMAIL

We can choose any one as Candidate Key

## Student Table

Watch later

SID	REG_ID	NAME	BRANCH	EMAIL
1	CS-2019-37	John	CS	john@xyz.com
2	CS-2018-02	Adam	CS	adamcool@xyz.com
3	IT-2019-01	Adam	IT	adamnerd@xyz.com
4	ECE-2019-07	Elly	ECE	elly@xyz.com

### Candidate Keys:

- SID
- REG\_ID
- EMAIL
- SID + EMAIL
- REG\_ID + SID
- EMAIL + REG\_ID
- REG\_ID + EMAIL + SID

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**Can't be Candidate Keys**



- If any proper subset of a super key is a super key then that key cannot be a candidate key.

3. Primary key : It is the key which is any one of a subset of candidates key and anyone of them can be used as to find a unique row of data.

## Student Table

Watch

SID	REG_ID	NAME	BRANCH	EMAIL
1	CS-2019-37	John	CS	john@xyz.com
2	CS-2018-02	Adam	CS	adamcool@xyz.com
3	IT-2019-01	Adam	IT	adamnerd@xyz.com
4	ECE-2019-07	Elly	ECE	elly@xyz.com

### Candidate Keys:

- SID
- REG\_ID
- EMAIL

**Pick any one as Primary Key**

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## Student Table

SID	REG_ID	NAME	BRANCH	EMAIL
1	CS-2019-37	John	CS	john@xyz.com
2	CS-2018-02	Adam	CS	adamcool@xyz.com
3	IT-2019-01	Adam	IT	adamnerd@xyz.com
4	ECE-2019-07	Elly	ECE	elly@xyz.com

- **SID**
  - **REG\_ID**
  - **EMAIL**
- If we choose REG\_ID as Primary Key then SID and EMAIL will become Alternate Key**

4. Alternate Key: From the set of Candidates key after picking one of them as primary key the remaining keys are said to be Alternate keys.

5. Foreign Key: This key comes into the picture when we have 2 tables where one table is making a relationship with another table.

Firstly, the key that we consider a foreign key must be the primary key of that table and the same ID should be stored in another table to show the relationship between the two.

## Branch Table


BRANCH_CODE	BRANCH_NAME	HOD	...
CS	Computer Science	John M...er	...
ME	Mechanical Engineering	Adam Lee	...
IT	Information Technology	L. Subramanyam	...
ECE	Electronics and Communication	Lilibet Windsor	...

# Student Table

SID	REG_ID	NAME	BRANCH_CODE	EMAIL
1	CS-2019-37	John	CS	john@xyz.com
2	CS-2018-02	Adam	CS	adamcool@xyz.com
3	IT-2019-01	Adam	IT	adamnerd@xyz.com
4	ECE-2019-07	Elly	ECE	elly@xyz.com

### Student Table

SID	REG_ID	NAME	BRANCH_CODE	EMAIL
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3	IT-2019-01	Adam	IT	adamnerd@xyz.com
4	ECE-2019-07	Elly	ECE	elly@xyz.com




**DB Error**

### Branch Table

BRANCH_CODE	BRANCH_NAME	HOD	...
CS	Computer Science	John Mayer	...
ME	Mechanical Engineering	Adam Lee	...
IT	Information Technology	L. Subramanyam	...
ECE	Electronics and Communication	Lilibet Windsor	...

**Update an Entry which is referred in Student Table**



This is how data integrated is maintained.

6. Composite Key: Any key with more than one attribute is called a composite key.

## COMPOSITE KEY

- Any key with more than one attribute is called Composite Key.
- In the above example (SID, REG\_ID), (REG\_ID, EMAIL), (EMAIL, SID), (SID, REG\_ID, EMAIL) etc all are composite keys.

all super key more than one attribute are considered to be composite keys.

7. Compound Key: If a composite key has at least one attribute which is a foreign key. This is a compound key.

# COMPOUND KEY

- If a composite key has at-least one attribute which is a foreign key then it is called as Compound Key.
- In the above example if we have a composite key (REG\_ID, BRANCH\_CODE) then it will be known as a Compound Key because BRANCH attribute is a Foreign Key.

8. Surrogate key:

# SURROGATE KEY

- If a relation has no attribute which can be used to identify the data stored in it, then we create an attribute for this purpose.
- It adds no meaning to the data but serves the sole purpose of identifying rows uniquely in a table.