

Keys

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Today

Next



Notes

3rd Hard day challenge:

- Assignment questⁿ → MCQs
- Additional questⁿ
- Backlog



2. Candidate Key

Students

name	email	phone. no	psp	b_id
Rahul	Rahul@...	829376769	89	1
Naman	Naman@.	956453789	91	2
Rahul	Rahul@...	806122348	98	1

Unique
Columns



How many of them are super key ?

Column Name

Super Key

name



email



phone number



psp, batch



name, batch, psp



name, phone number



email, phone number, name



email, phone number





Definition : Minimum (non - redundant) columns which are required to uniquely identify a row is called Candidate Key.

→ Minimal Super Key

- A candidate is a super key from which no column can be removed and still have property
- if anymore column can be removed from a candidate key, it will no longer be able to identify a unique row

Now let's remove columns that weren't necessary from above example.

Column Name	SK	Candidate Key
name	X	<input type="checkbox"/>
email	✓	<input checked="" type="checkbox"/>
phone number	✓	<input checked="" type="checkbox"/>
psp, batch	X	<input type="checkbox"/>
name, batch, psp	X	<input type="checkbox"/>
name, phone number	✓	<input type="checkbox"/>
email, phone number, name	✓	<input type="checkbox"/>
email, phone number	✓	<input type="checkbox"/>



students_attendance

s_id	class_id	attendance
1	2	80
2	2	75
1	3	80

Question-1 : Is s_id unique here? ✗

Why?

Question-2 : Is class_id unique here? ✗

Same students can attend multiple classes like Joins-1, Joins-2 etc.

Column Name

SK

CK

s_id



class_id



attendance



s_id, class_id

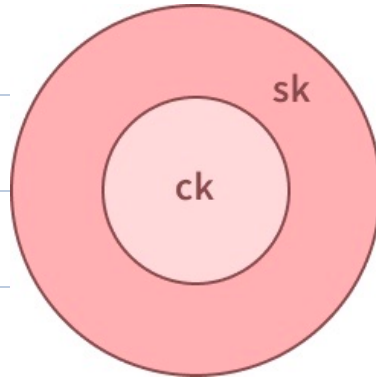


s_id, class_id, attendance





Quiz-1 : Is a ck always a super key? *Yes*



Quiz-2 : Is a super key always a candidate key? *No*

Quiz-3 :

	SK	CK
i. <i>Employee_Id , department</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ii. <i>Email</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
iii. <i>f_name , l_name</i>	<input type="checkbox"/>	<input type="checkbox"/>
iv. <i>l_name , department</i>	<input type="checkbox"/>	<input type="checkbox"/>



3. Primary Key

Among all candidate keys we will choose a primary key. There is only 1 PK in a table.

Students

name	email	phone. no	psp	b_id
Rahul	Rahul@...	829376769	89	1
Naman	Naman@.	956453789	91	2
Rahul	Rahul@...	806122348	98	1

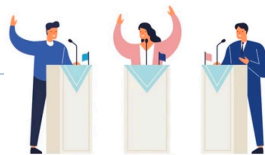
↳ CK ↲

Party Workers



(Super Key)

Candidates



(Candidate Key)

Prime Minister



(Primary Key)

• Internally

1. Database sorts the data by primary key
2. Database outputs the results of every query sorted by a primary key.
3. Database creates an index as well on primary key.

• A good primary should :

1. Be fast to sort on.
2. Have smaller size (to reduce the space required for behind the scenes indexing.
3. Not get changed.



In above table which column should become **PK** ?

name	email	phone number	psp	b_id
✗	✓	✓	✗	✗

Question-1 : What if student updates the email? *Yes*

Question-2 : What if student went abroad and updated phone number? *Yes*

Note : Have you noticed Scaler provides this feature?

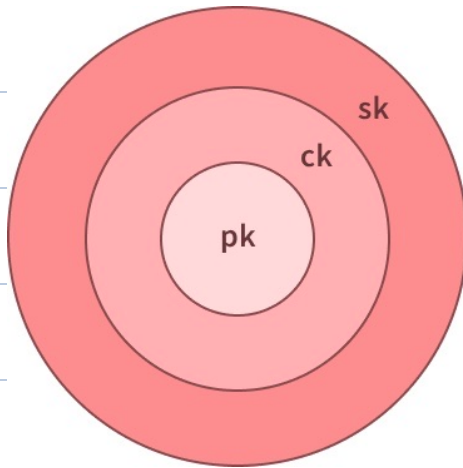
Therefore we sometimes add one more column having unique integer value.

Ex : s_id and roll_no

Students

s_id	name	email	phone. no	psp	b_id
1	Rahul	Rahul@...	829376769	89	1
2	Naman	Naman@.	956453789	91	2
3	Rahul	Rahul@...	806122348	98	1

→ Primary Key





4. Composite Keys

- A key using more than one column to uniquely identify a row.
- A sk, ck and a pk can be a composite key as well.



Introduction to SQL

- SQL stands for **S**tructured **Q**uery **L**anguage
- It is a language used to interact with relational databases.
- It allows you to create tables, fetch data from them, update data, manage user permissions.
- It helps us to do the following :

Create

Read

Update

Dele~~t~~e

Database



Coal Mine

MySQL



Mine
Management

SQL



Workers

Note : SQL is case insensitive.

(RAHUL == RAHUL)

Let's write some code now !



Create

- Used to create new DB.
- Used to create new table

Students

name	psp	attendance	b_id
Himanshu	80	85	2
Rahul	92	85	2
Krish	95	95	1
Rohit	80	88	1

Rahul	92	85	2
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 →

< / > Syntax

[Create database database_name;]

→ Create DB

[Create table table_name (column_name datatype constraint)]

→ Create table

Note : We have added content on datatype in your typed notes. Please go through them before next session.

Create database school;

Create table students (

student_id int auto_increment Primary Key,
first_name varchar(50) not null,
last_name varchar(50) not null);



5. Foreign Keys



Students

s_id	name	psp
1	Himanshu	85
2	Rahul	85
3	Rohit	88

Batch

b_id	name
1	A
2	B
3	C

Question : Is there any link in these tables ?

Students

s_id	name	psp	b_id
1	Himanshu	85	1
2	Rahul	85	2
3	Rohit	88	1

Relationship



Batch

b_id	name
1	A
2	B
3	C



Definition : A foreign key is a column in a table that references a column in another table.

- It has nothing to do with primary, super and candidate keys.
- It can be any column in one table that refers to any column in another table.
- In our case, batch_id is a foreign key in students table that references the id column in the batches table
- This ensures that the batch id we're storing in the students table is a valid id.
- If we try to insert any value in the batch id column of students table that isn't present in id column of batches table, it will fail.
- In general we keep them as PK.
- If not a PK it should be column with unique constraints.
- If not a PK it should be column with unique constraints else there will be a ambiguity.



- In case of **Deletion** or **Updation** data we might need to take care of them.

How?

1. Cascade

If the referenced data is deleted or updated all rows containing that foreign key are also deleted or updated.

Students

s_id	name	psp	b_id
1	Himanshu	85	1
2	Rahul	85	2
3	Rohit	88	1

Batch

b_id	name
1	A
2	B
3	C

Delete / Update



2. Set Null

If the referenced data is deleted or updated, all rows containing that foreign key is set to null. This assumes that the foreign key column is not set to NOT NULL.

Students

s_id	name	psp	b_id
1	Himanshu	85	1
2	Rahul	85	NULL
3	Rohit	88	1

Batch

b_id	name
1	A
2	B
3	C

 Delete / Update

3. No Action


If the referenced data is deleted or updated, MySQL will not execute the update or delete operation on present table. This is the default action.

Students

s_id	name	psp	b_id
1	Himanshu	85	1
2	Rahul	85	2
3	Rohit	88	1

Batch

b_id	name
1	A
2	B
3	C

 Delete / Update

4. Set Default

If the referenced data is deleted or updated, the foreign key in all the referencing rows is set to its default values. This is only functional with tables that use the InnoDB engine and where the foreign key column(s) have not been defined to have a NOT NULL attribute



Students

s_id	name	psp	b_id
1	Himanshu	85	1
2	Rahul	85	2
3	Rohit	88	1

Batch

b_id	name
1	A
2	B
3	C

←  Delete / Update →

<https://drive.google.com/file/d/16ChEp-YmvKpPhQtRqFvxH-YGIYzondvV/view>



Announcement

- What **NEXT?**

1. Assignment / Homework

MCQ's again !



2. Read Notes

3. Download MySQL workbench if not done so far.

