Class will start by 9:05 PM

Agenda:

1. Keys :
   - Candidate Keys
   - Primary Keys
   - Composite Keys
   - Foreign Keys.

2. CRUD operations.
   - C - Create
   - R - Read
   - U - Update
   - D - Delete

Super Key Recap

- email ✓
- phoneno ✓
- batch_id ✗
- name ✗
- p&p ✗

- email, phone ✓
- name, batch_id ✗
- phone, batch_id, p&p ✓

In many of the Super Keys, there were columns that didn't play any role in uniquely identifying a row.
Even w/o those attributes, we would have been able to identify the rows uniquely.

Candidate Keys : Super Keys with the least possible size.

size → no. of columns.

Super Keys, where if you remove any more columns, it will not be a Super Key any more

Super Key, where all the columns are required to identify the row.

eg (a, b, c)

(b, c) ✗

(a, c) ✗

just (phone no.) is a Candidate Key.
or (email)

Attendance

Student_id	Class_id	Attendance_percentage
401	191	87%
402	191	30%
403	191	40%
401	202	30%
402	210	40%
403	210	80%

Super keys

(Student_id) ✗
(class_id) ✗
(attendance_%) ✗

(Student_id, attendance) ✗
(class_id, attendance) ✗
(Student id, class_id) ✓ → Candidate Keys.
(Student_id, class_id, attendance) ✓
(Student_id, class_id, bla bla bla) ✓

Candidate Key: A Super Key in which all the attributes are mandatory to identify a row.

All candidate keys are Super Keys
But not the Opposite.
All Super Keys are not candidate keys.

Employee

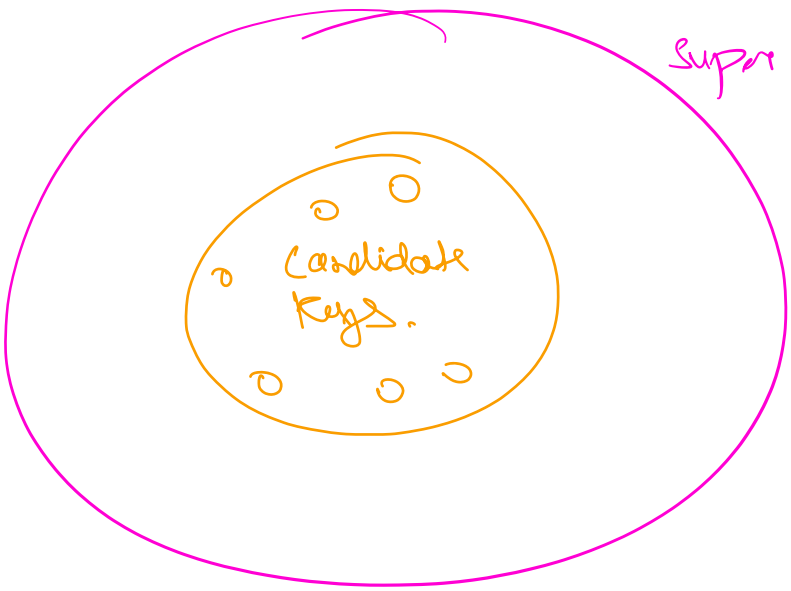
employee_id	email	department
1		
2		
3		
4		

(employee_id, department) ✓ Super Key.

(email_id) ✓ Super Key ✓ candidate Key

Note: → A table can have multiple Candidate Keys.

→ Just a Super Key, whose columns are mandatory to identify a row



Super Keys : All the party workers

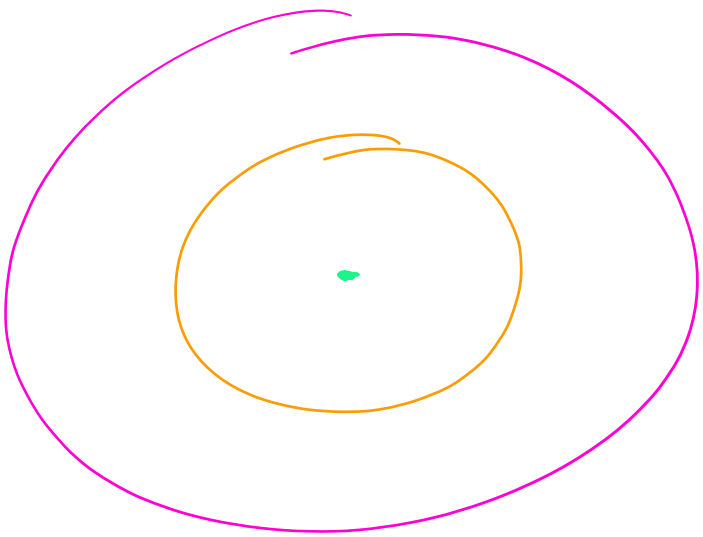
Candidate Key: Best Super Key. (can be Multiple)

Primary Key: 1 Chief Minister.

Any database, can have multiple Candidate Keys (email), (phone no.) ----

But when I actually create a Table in a SQL database, It will force me to specify a set of columns to uniquely identify the rows.

Primary Key: A candidate key selected to be the unique set of columns to help identify a row of the Database.



∫∫ Super Key
∫∫ Candidate Key
∫∫ Primary Key

why?

→ Database will sort the table by the Primary Key.

→ Primary Key is the index for a table
value by which table is sorted.

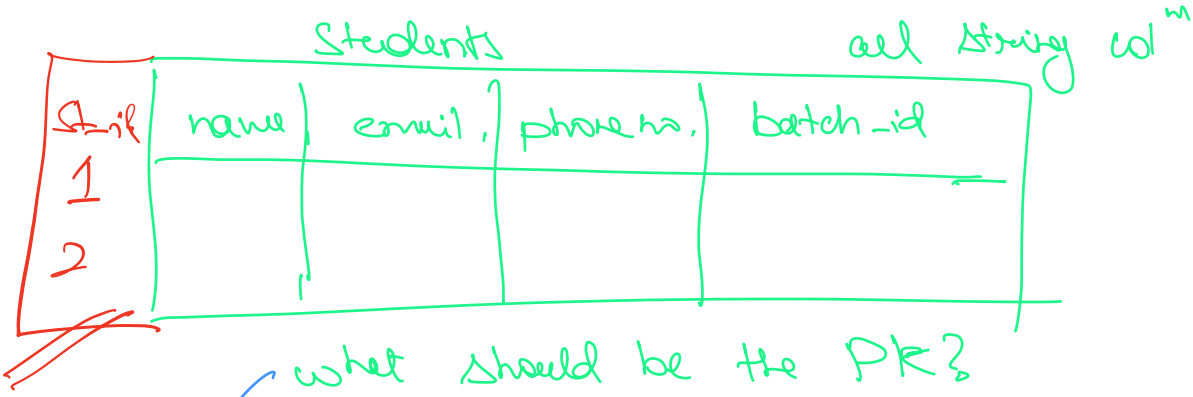
Select * from students.

default behaviour is to sort by the Primary Key. → (student_id)

How to choose a primary key

Good PK

		email
1	single column. → speed	✓
2	Integer column → speed.	✗
3	It should never change.	✗



what should be the PK?

→ Introduce 'id' as the PK.

Having an id is usually the best option!

	SK	CK	PK
name	✗	✗	✗
email	✓	✓	✗
phone	✓	✓	✗
batch_id	✗	✗	✗

Attendance

id	student_id	class_id	attendance_perc.
1			
2.			

(student_id, class_id) ✓ candidate key.

Much Better.

Int — never change

Int — never change

pair is good for PK

Break till 10:34 PM

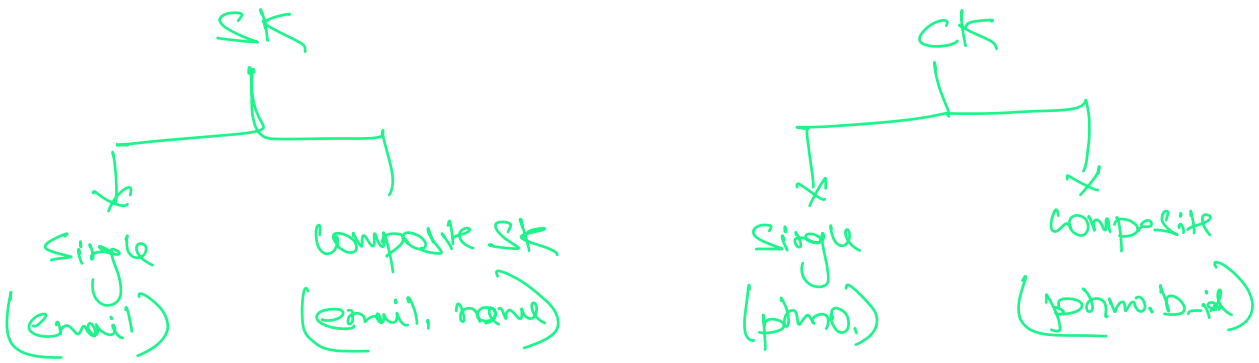
Composite Key → 5 - 10 Min

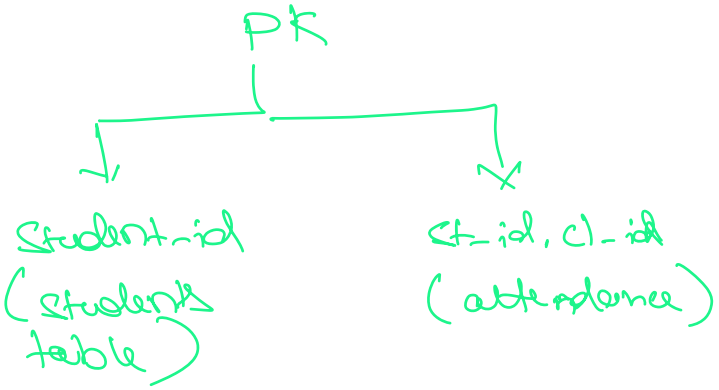
Foreign Key → 20 Min

By default, in MySQL, having an 'id' as the PK, it will always auto-increment.

Composite Keys:

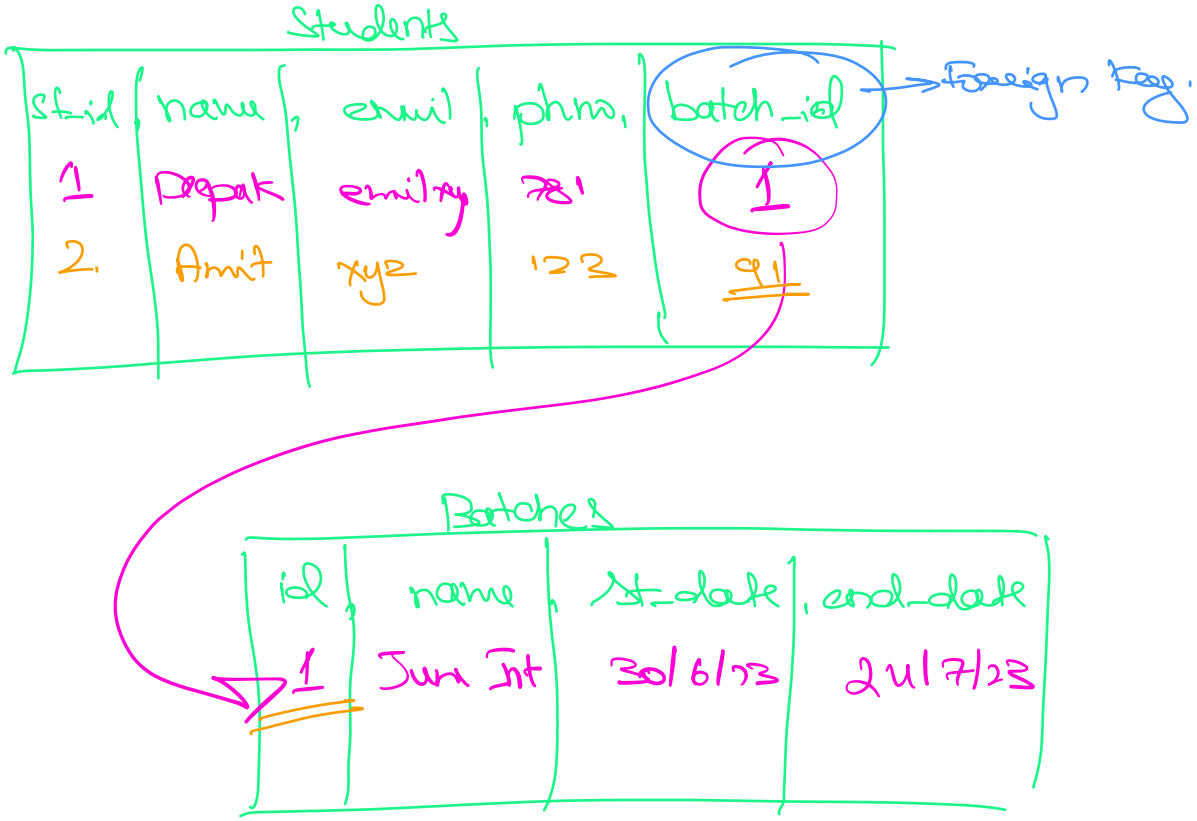
→ A Key with more than 1 col[m]





Foreign Keys

Nothing to do with PK, CK, SK.



Foreign Key: A col^{m} or a set of col^{ms} that will help uniquely identify a row of another table

Constraint

If we try to do an entry with wrong FK's
Possibilities → error / NULL

Specifying a FK, will help maintain Data integrity

→ while inserting, possibilities are
error
NULL

→ Deleting an entry from the other table:

Error

NULL → set batch_id in Students as NULL

Delete → remove the Students with that batch_id.

→ Update. Change batch_id in batches table

→ Throw error

→ Null

→ Update: Set batch_id to 5

In the case of Delete and Update.

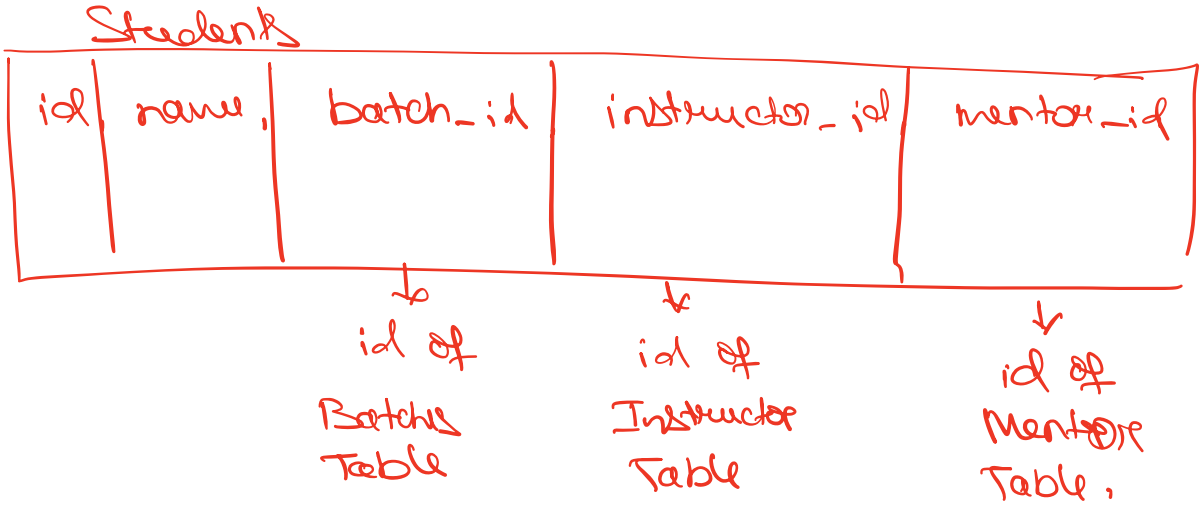
1. NOT ALLOW (throw error)
2. NULL
3. Do what you did (Repeat the same for dependent table)
   → CASCADE

Default in MySQL is Not Allow.

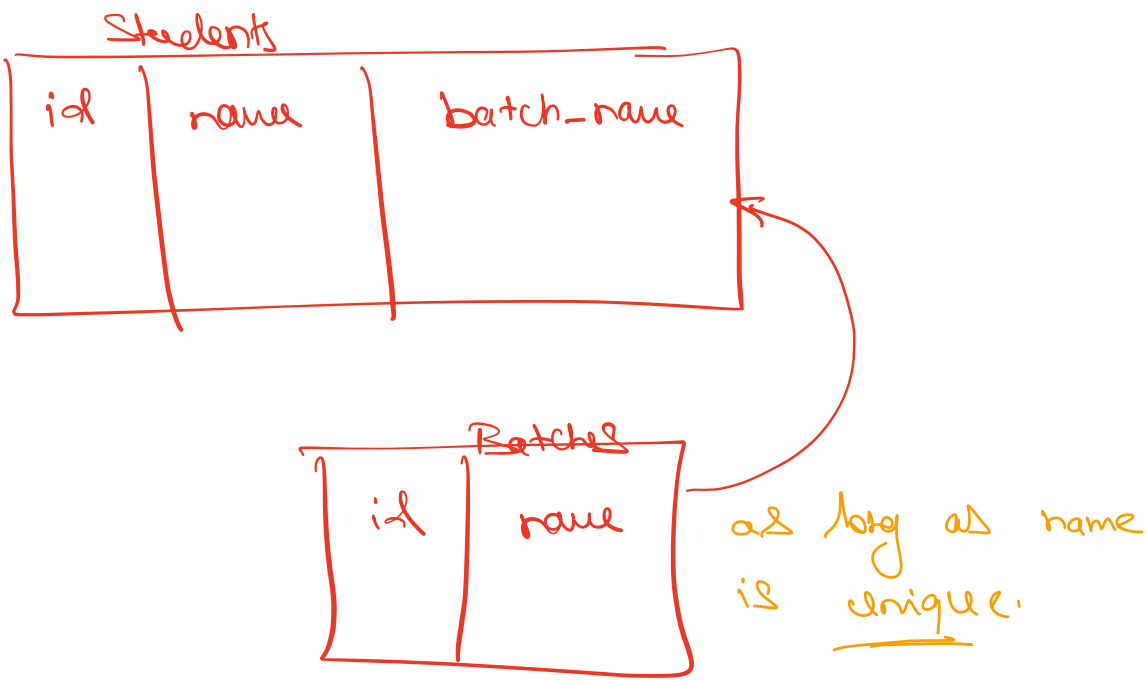
Insert, Delete, Update constraints are defined at the time of creating the table.

Notes:

① You can have multiple FK.



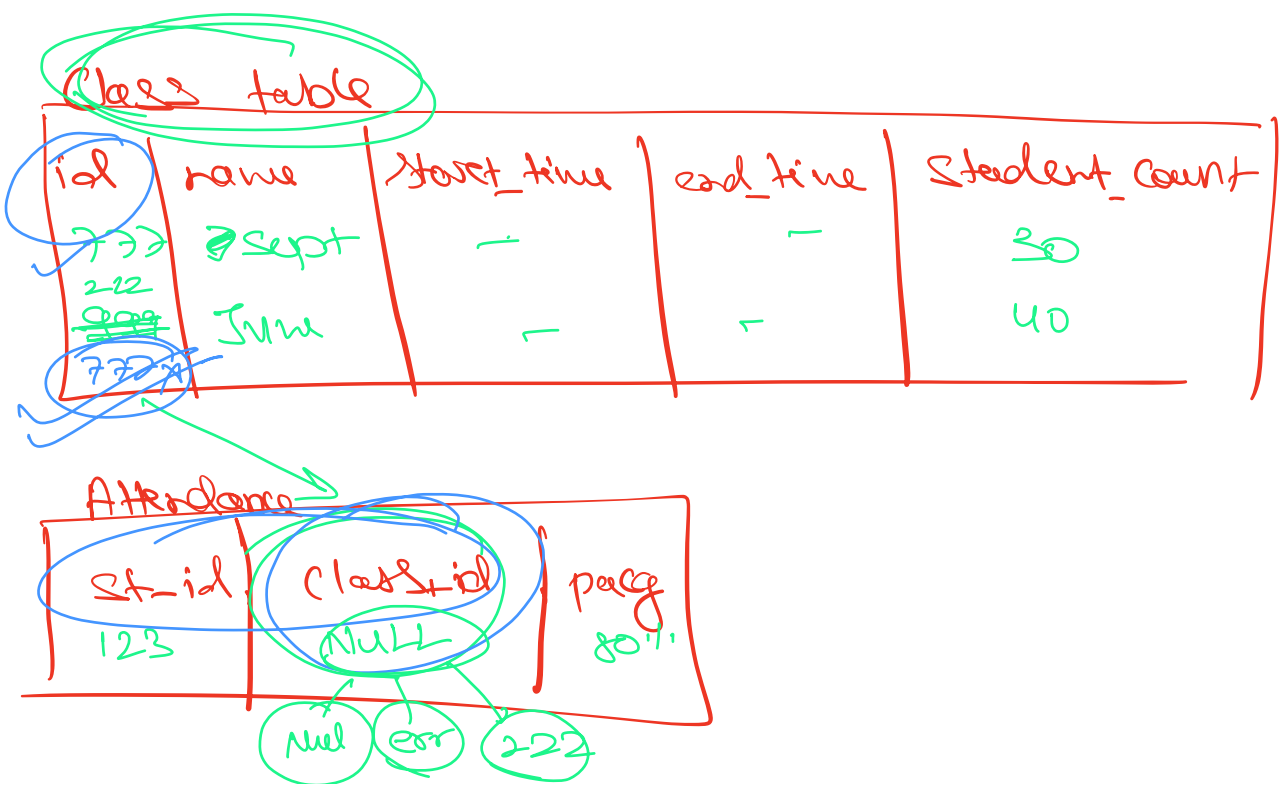
② FK should have uniqueness in the other table (Not necessarily it should be a PK).



MySQL (H/w)

Install

1. MySQL &
2. MySQL workbench
3. Sakila Dataset
   - → Official MySQL Dataset
   - → All the tables, with huge # of rows.
   - → Study all the CRUD operations using this dataset.



Create TABLE Attendance(

id, Int Primary key

name

⋮

Foreign Key (id

ON CASCADE