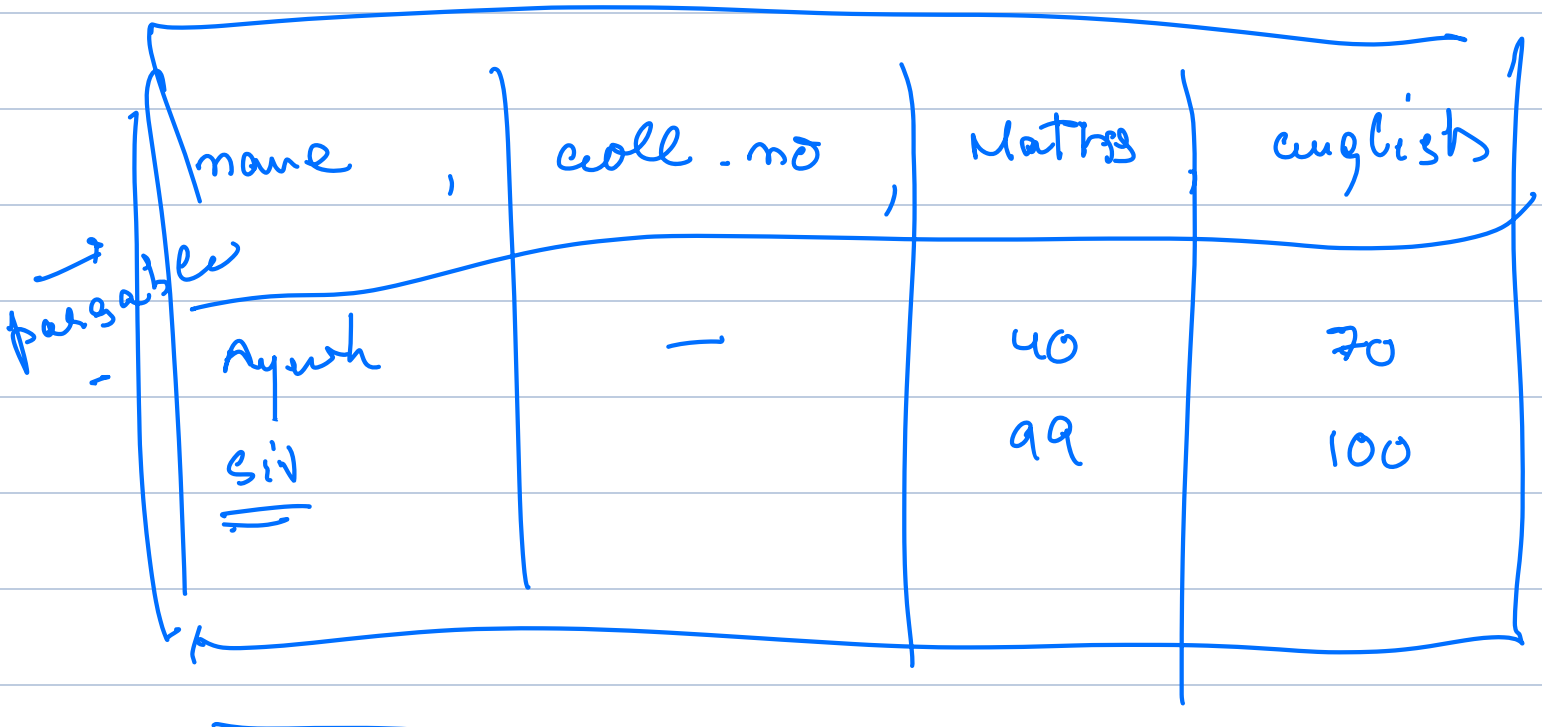
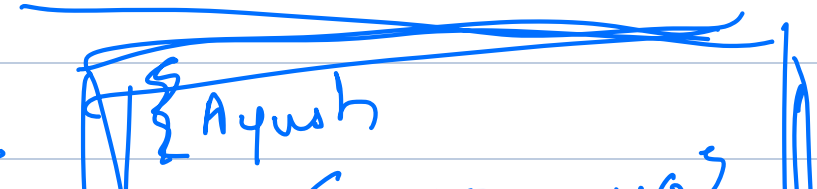
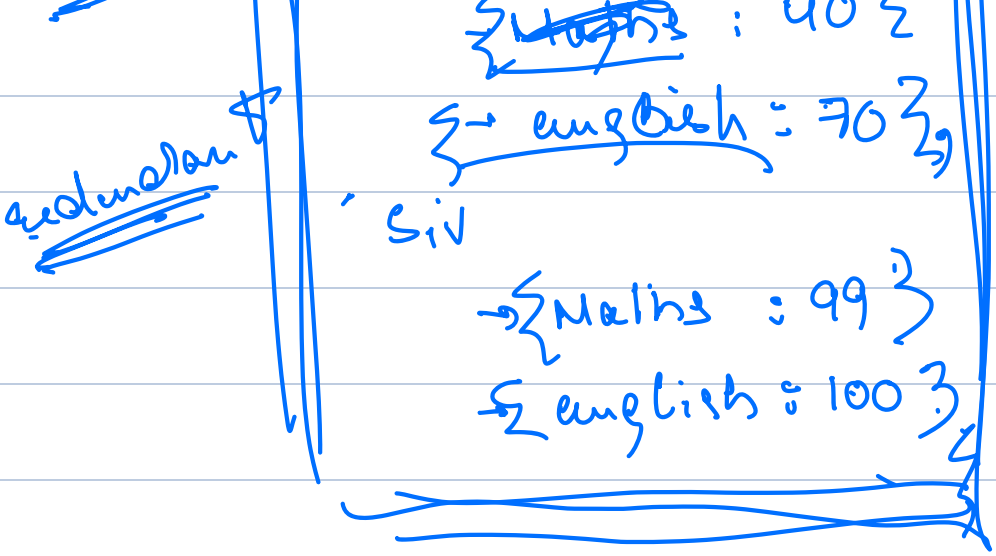
Agenda

- what is a database
- DBMS (DB Management system)
- types of DBs
  - relational
  - non-relational.
- Relational
- Keys.
  - Super keys
  - candidate keys.

what is a data base







- expenses
- TODO list
- notes (checklist) groceries

datastore / Databases.

organized collect^{n} of structured informat^{n} or data stored electronically (typically)

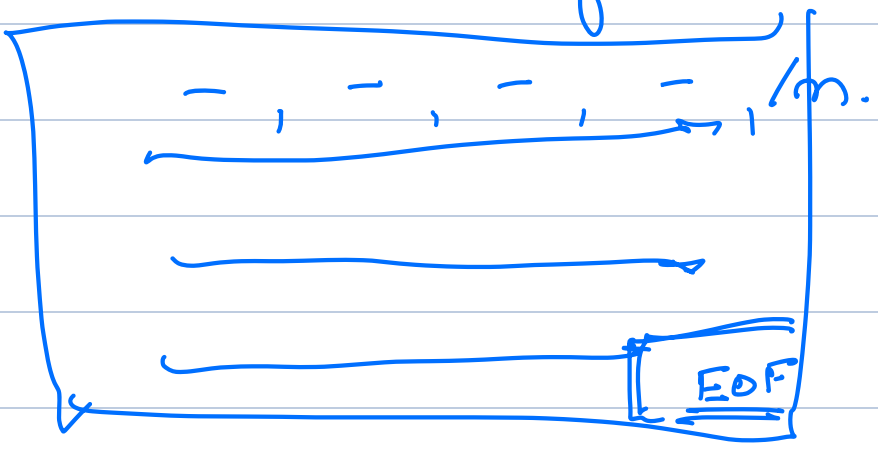
→ oracle.

product_id	name	quantity	expiry	buy
2	bread	40 - 20	25/02	4
1	butter	70	22/02	43.
3	brown bread	30 - 10 (20)	23/02	23.
2	br.	40	25/02 (version)	4

excel → csv (comma seperated values)

file.csv

files → collect^{n} of unicode characters



files, why not files!!.

① inefficient: →

② integerity: →

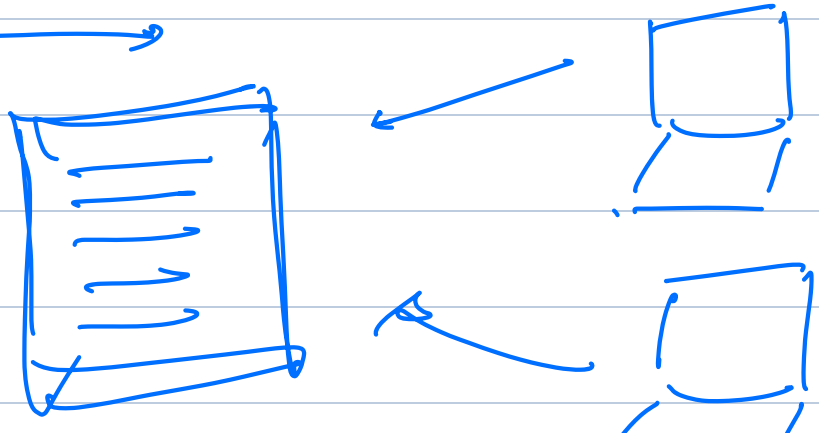
③ concurrency. →

④ security. →

users email password.

→ Ayush.

→ Naresh.



Database management system..

→ software CRUD

create | retrieve | update | delete

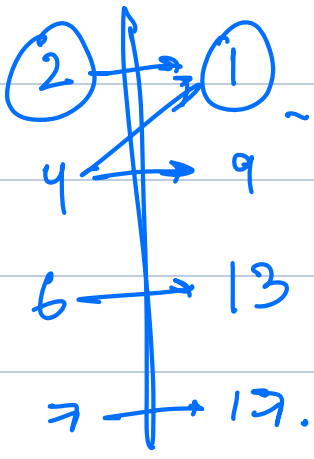
→ integrity
→ security →
→ concurrency →

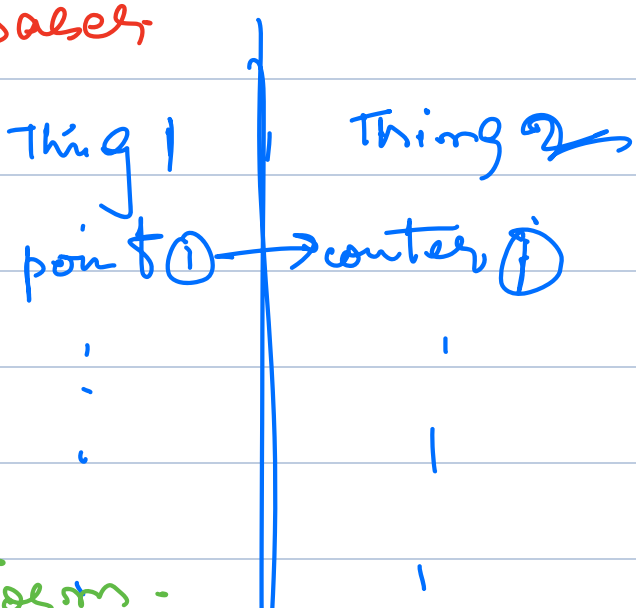
HLD (sharding, Replicat^{n}, master-slave)
(no-sql).

Types of data bases.

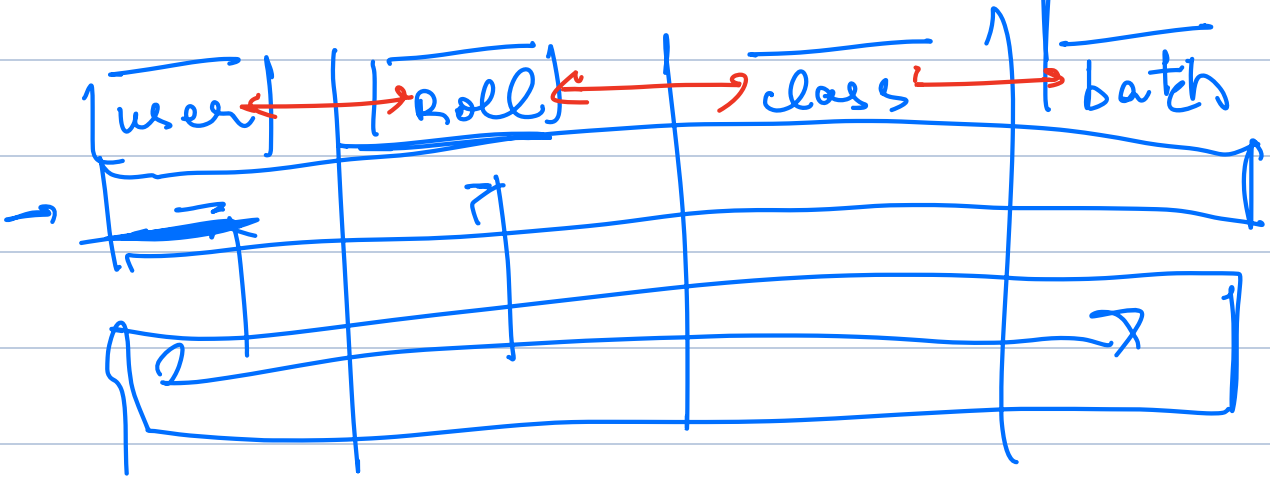
Roll	name	data	data 2		

① Relational Database





→ stored in Tabular form.



② non-relational database.

→ stored in ANYTHINGS other Than Tabular

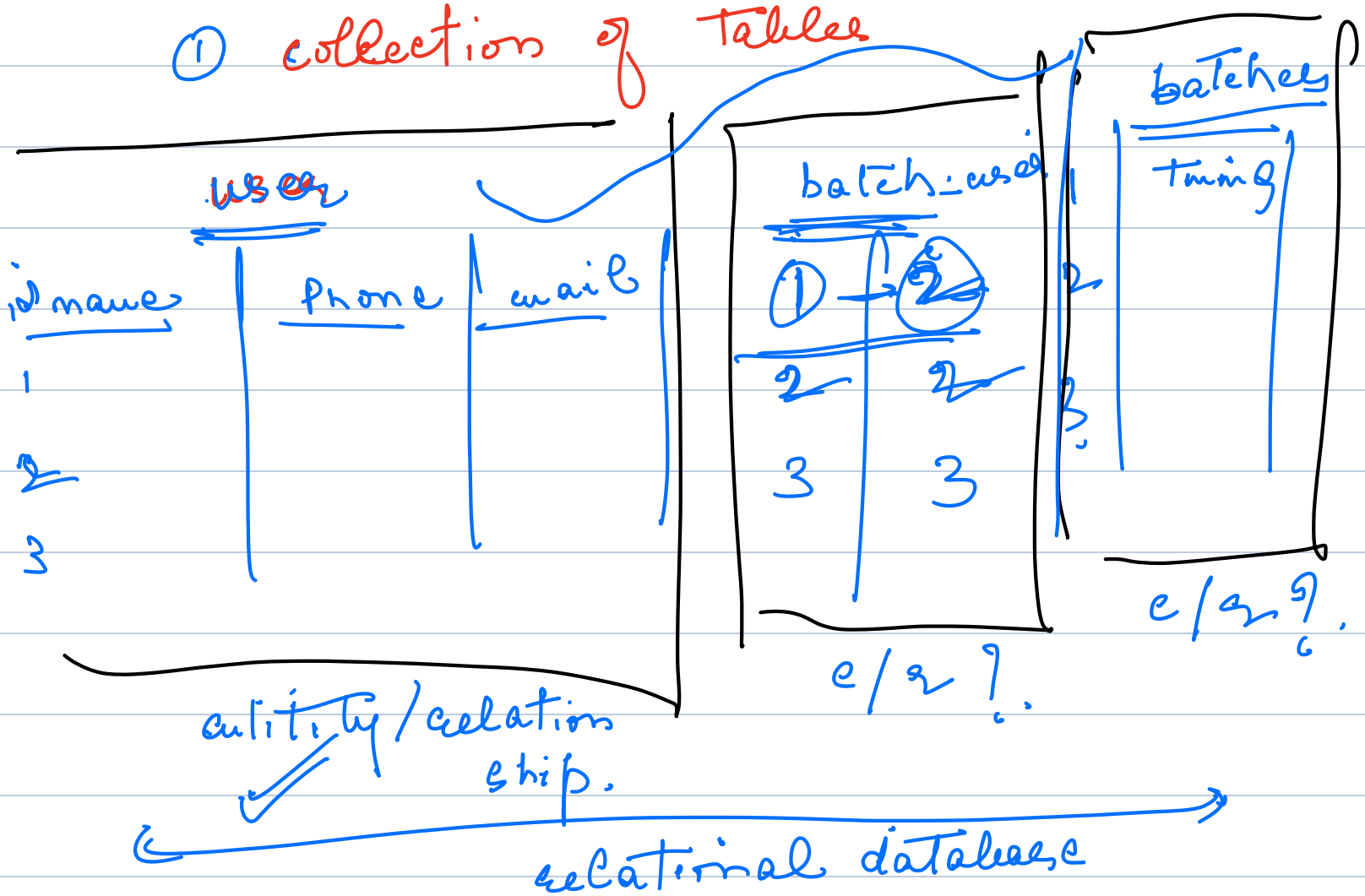
→ key : value.

facebook ? graph Database

key - value

json (documents)

Properties of a relational Database.



Relational DBs are a collection of Tables which can be an entity or a relationship

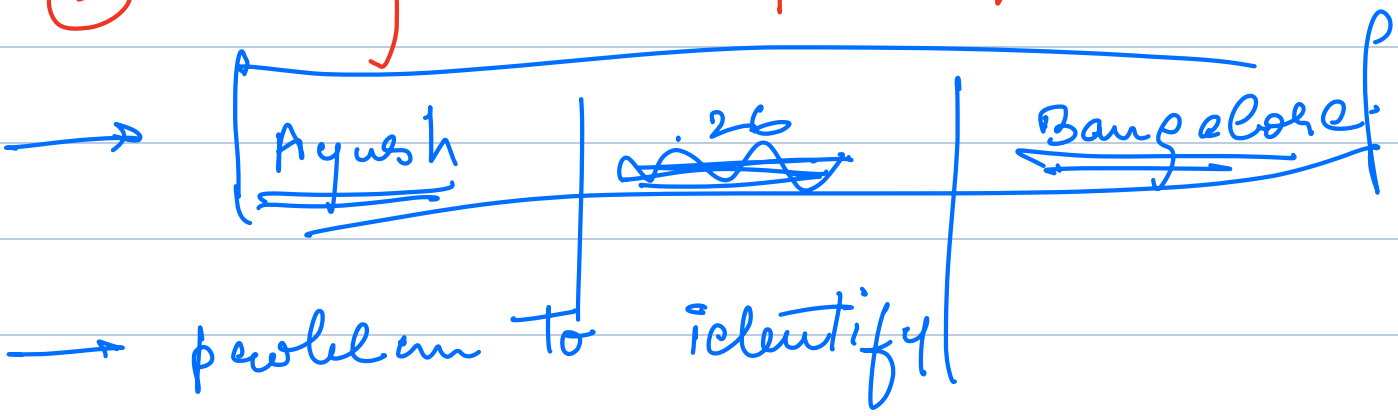
objects

school:

DPS → 12th

② seeding → 8th / 100

(2) every row is should unique



→ problem to identify

(3) every data point in a field/column should be of the same data type.

~~name~~	amt ??	date/string datatype	amt.
bread	40	24/02	4.
butter	~~50~~ baigan	22/02	34.

Database ??

(4) All values of a cell should atomic

Rutherford.

atoms were non divisible

string

{ — — — }.

[1, 2, 5, 9, ∛]

user.

name, batch email Phone

([ ])

" "

Json blob.

arrays.

SQL ???.

(5) column sequence is not guaranteed.

2 → Jaipur → pain BA.

baigan → 2 → plain BA

Ayush, 26, Bangalore / m.
Nitish, 24, Delhi / m.

select name, age, city
from user.

name	age	city
age	city	name.

(6) row sequence is not guaranteed
column will always
have the relation
rows will not.

order By : { sort : -1 / +1. }

(7) Name of every column is
unique.

name.	age	age.	email
Ayush			

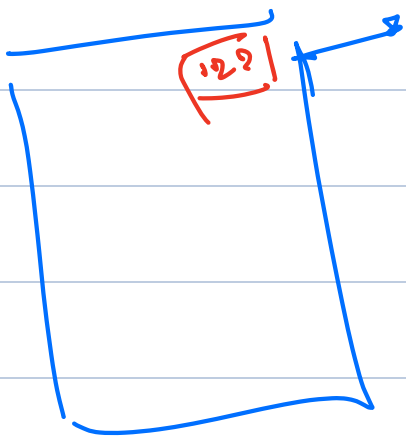
Keys

name	vendor	Payment Amount	date
Prakash	Swiggy	80	20/08
Prakash	"	"	"

we introduce key - transaction id.

Ayush
Shubham
Harsha

(id_scalar)



identifier
unique.

Keys: columns or set of column in a Table which helps you uniquely identify a row.

① Super keys.

users-

name	Phone number	email	age	address
Amit	m	m	n	m
Piyush				
Mohit				
om.				

(name) ✗ super ✗

(phone number) ✓ super

(email) ✓ super

(age) ✗ super ✗.

(address) ✗

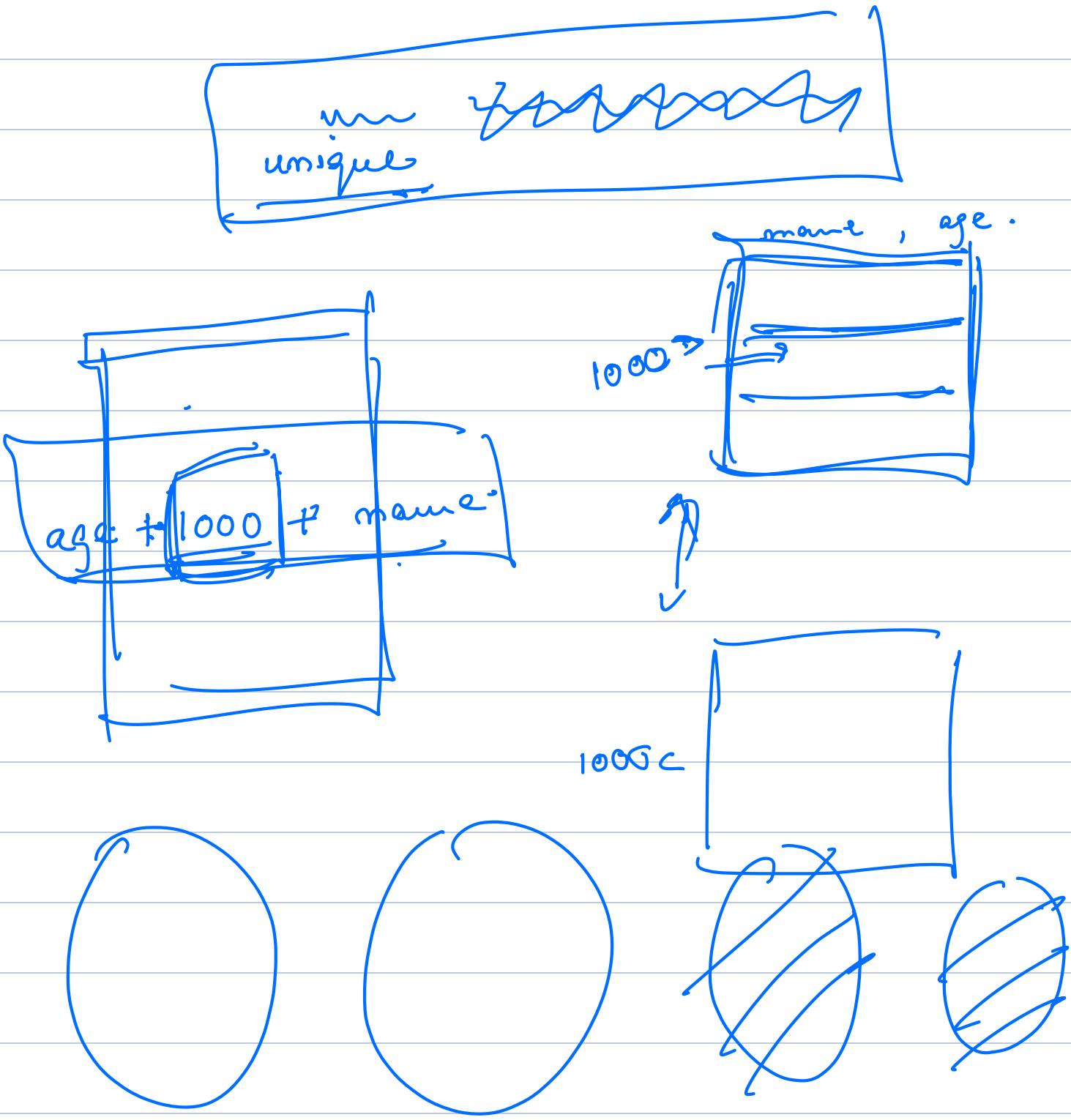
(name, age) ✗ super ✗.

(age, address, name) ✗ super ✗

(email, phone number) ✓ ✓

(email, name) ✓ super

↑ colum or set of colums that uniquely identify a row.



student table

age	first	last	studentid	courseid
Ayush	Sahasrant	1	52	2
Sumit	Mondal	2	592	2

(first, last) Super ✗

(courseid, last name) Super ✗

sharma's

(studentid ⟶ 2) Super ✓

first course of

(email) (email, ⟶ (studentid) Super ✓

(2) sql and Datagrip

(age, first, last) Super ✗.

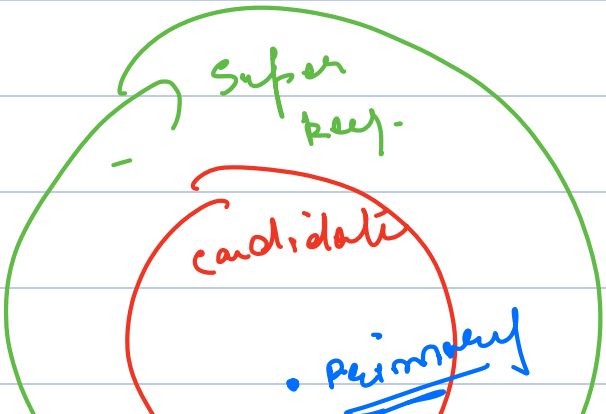
(age) ✗

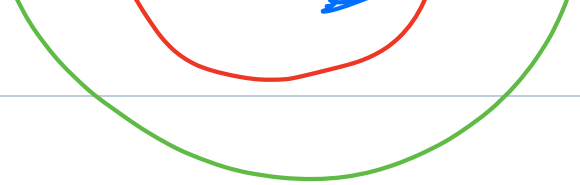
Ayush	26
Ayush	26

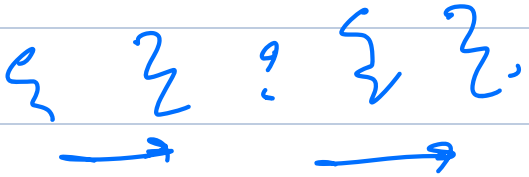
B. Bangalore Delh.

Ayush Saraswat 26

studentid

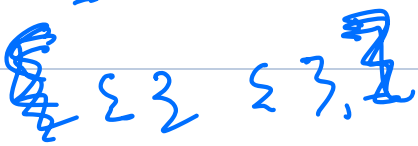






a

colum



int

[int, int]