

\* What is a database?

Ans ⇒

Google Sheets | docs | notepad | excel | word | Confluence | Notion

- {
  - expenses
  - todo lists
  - Stocks and MF portfolio
  - birthdays
  - wishlist
  - grocery list

Similar to personal data, companies need to store a lot more information for their day to day work.

⇒ Salar ⇒ Student data

- + name
- email
- phone no.
- college
- passout year
- resume
- attendance
- P.S.P
- + skills

⇒ Student.txt / Student.csv

Name, email, phone, psp, attendance, yoe, passout, current

Naman, —, 1234, 99, 99, 5, 2019, Scaler

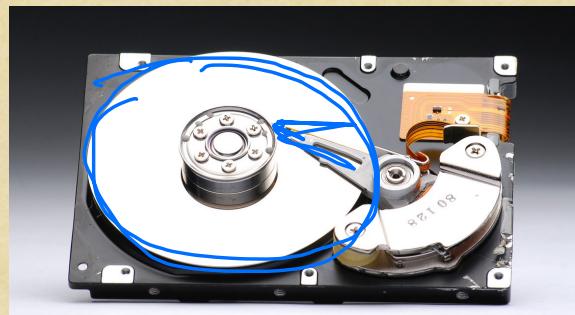
Sandeep, —, 5678, 0, 0, 5, 2019, #Kiran

Tket

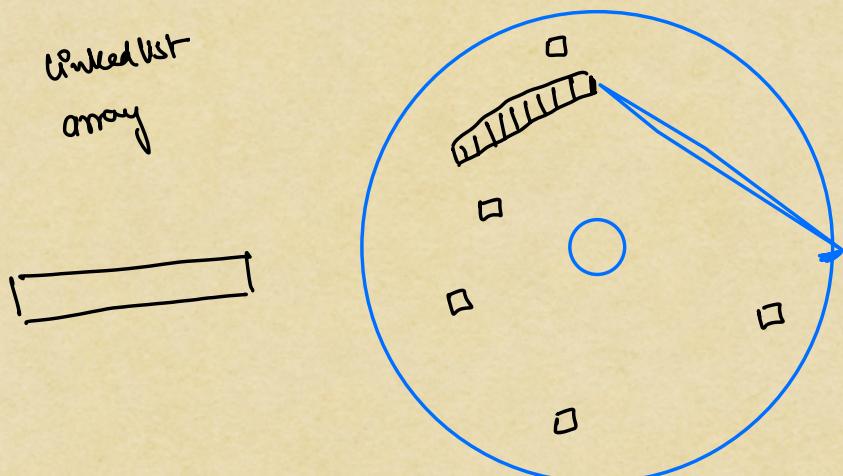
Taran

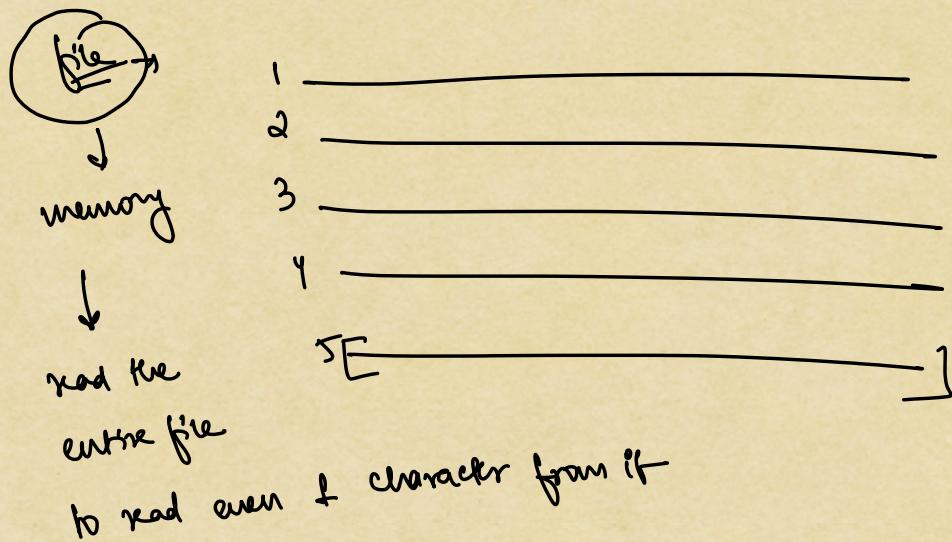
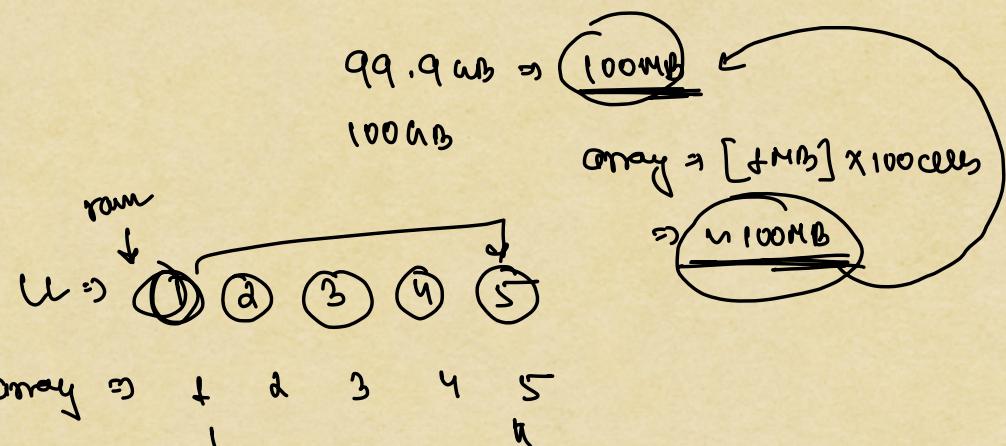
Han

\* file is stored in  
contiguous memory

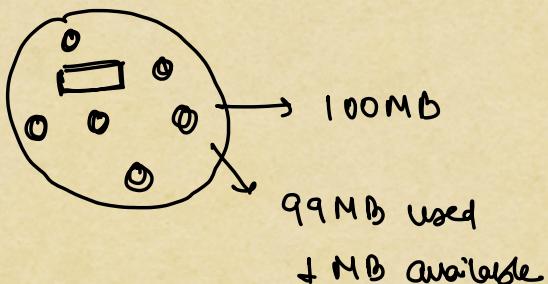


linked list  
array



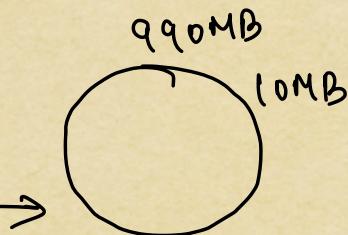
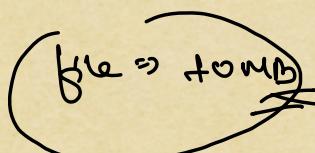


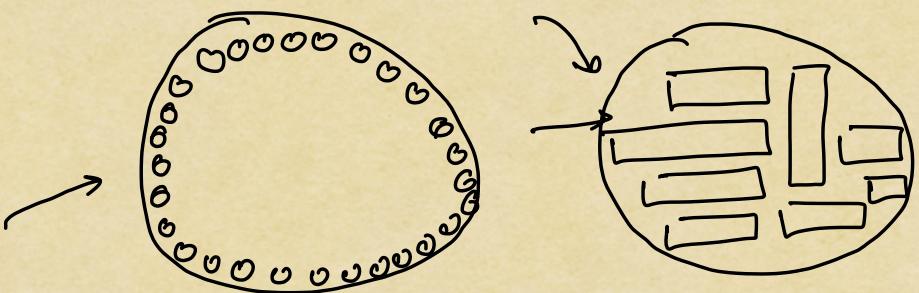
\*



$\text{array} \Rightarrow t \text{ MB} \rightarrow \text{contiguous}$

$\text{LL} \Rightarrow t \text{ MB} \rightarrow \text{fragmented}$





\* Complex data

Students → batches

Students.csv

name, phone, batchId, psp  
 Ravi 1234 T, 80  
 Sasi 5678 D, 90

batches.csv

id, batchName, Instructor  
 T, SQL, Sandeep  
 D, C++, Naman

avg psp- for each batch  
<sup>a specific</sup>

\* file storage

Inefficiency ⇒ work and read

Integrity of data not present

Concurrency ⇒ not present

Security ⇒ not present

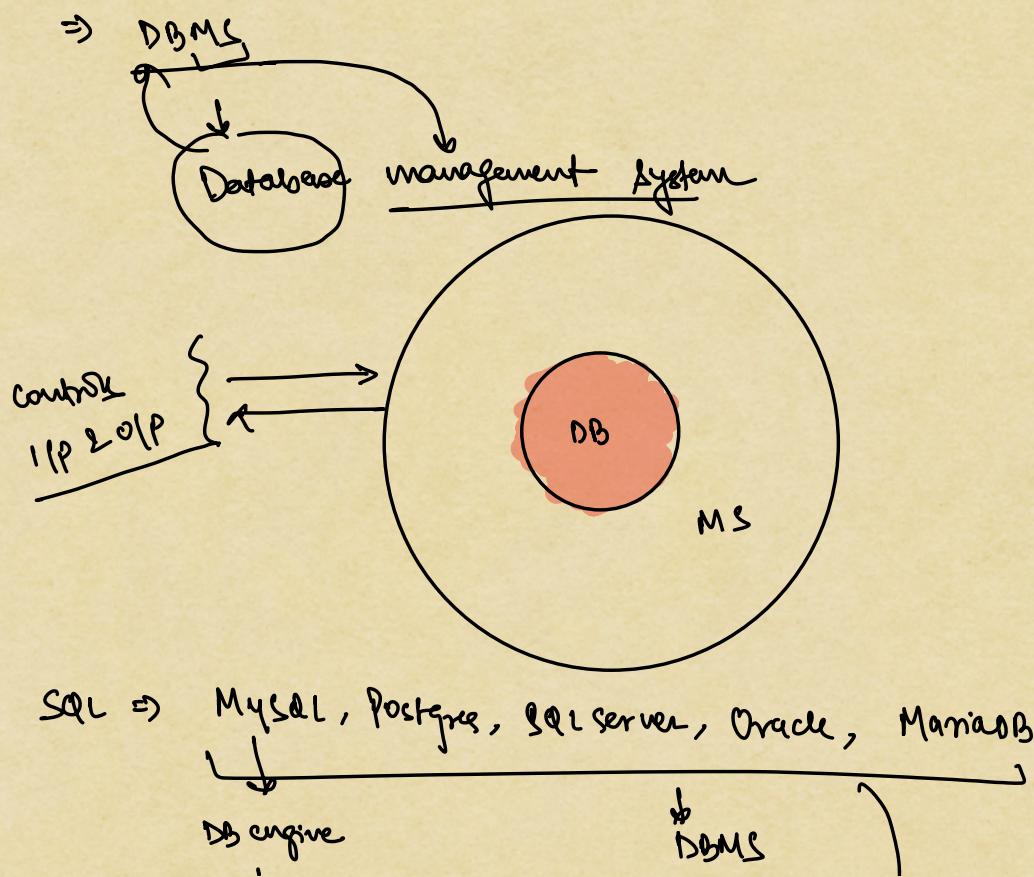
⇒ Database

airbase ⇒ planes are stored

army / military base ⇒ armies are stored

database ⇒ data is stored

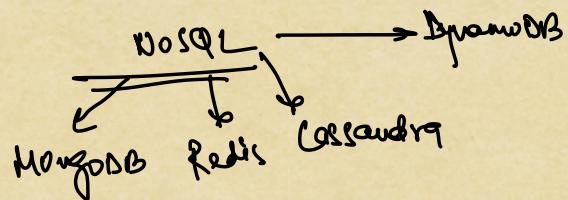
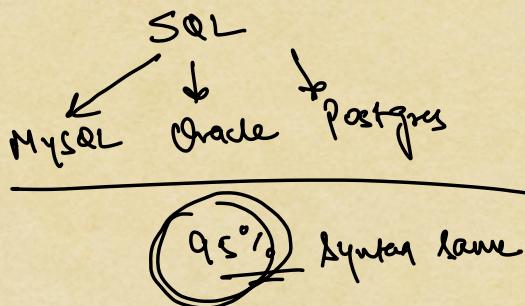
\* complex [data structure and algorithms] to  
efficiently store, update, read and delete data



InnoDB

↓  
Relational Database  
↓  
SQL

⇒ Why DB?



Introduction  
Keys  
CRUD 1  
CRUD 2  
Joins - 1  
Joins - 2  
Aggregate queries  
Subqueries & views  
Indexing  
transaction - 1  
..  
2

Schema design - 1  
Schema design - 2