

# DBMS - Introduction

Tanmay Kacker

- ① Intro
- ✓ What? — Motivation
  - Types
  - Relational Model
  - SQL
- 

② — Schema Design

③ Datatypes + Normalisation

④ CRUD operation

↓

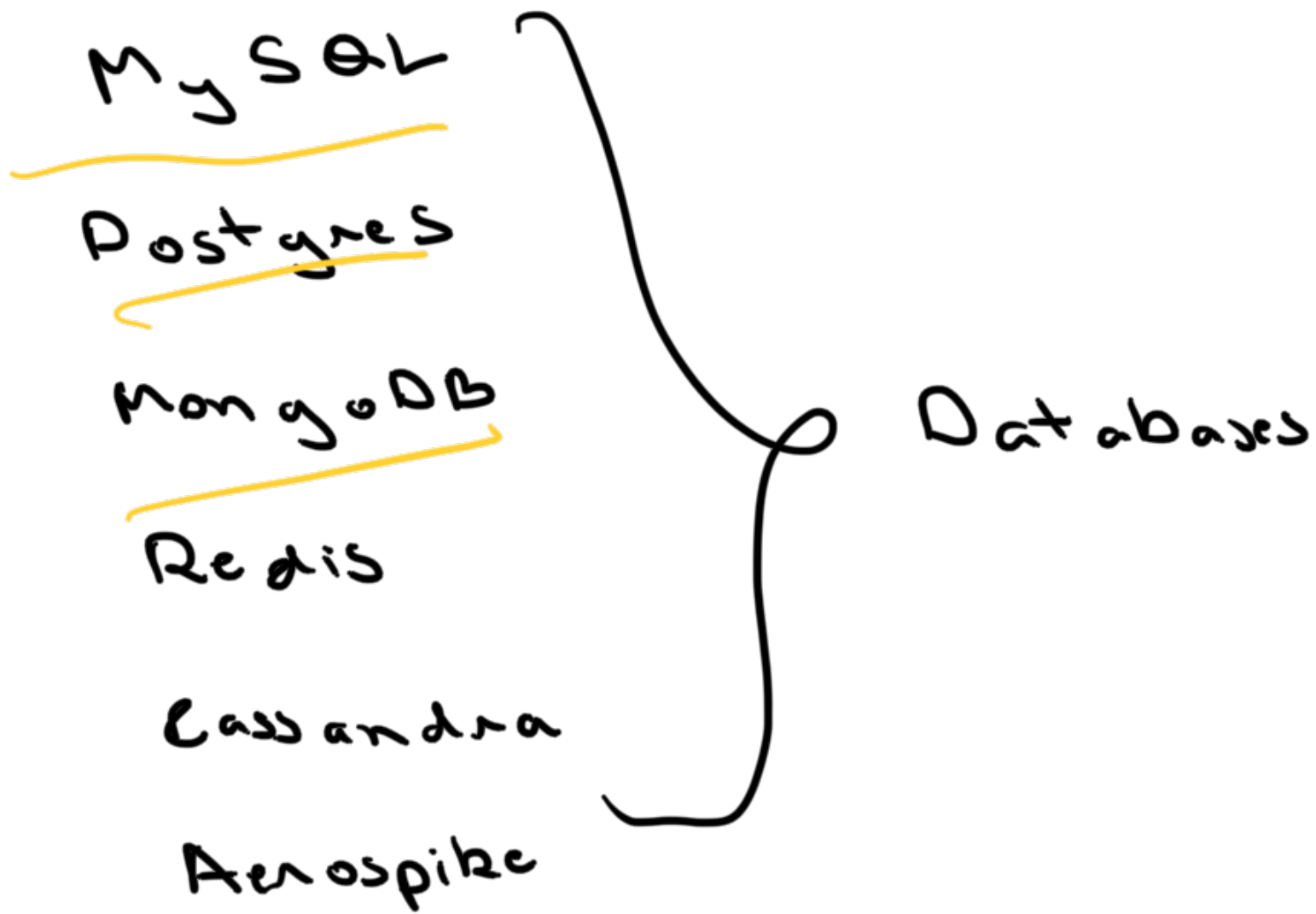
Create

Read

Update

Update  
Delete

- ⑤ Joins
  - ⑥ Aggregates + Builtin
  - ⑦ Transactions
  - ⑧ Indexing
  - ⑨ Subqueries, views etc.
    - Optimisation
-



Database Management Systems  
(DBMS)

Data - information

- Temperature in Bangalore
- How many matches has India lost to Australia?
- Your food orders from Sui ggy

Data -

- ① Requirement
- ② Analysis

27°C

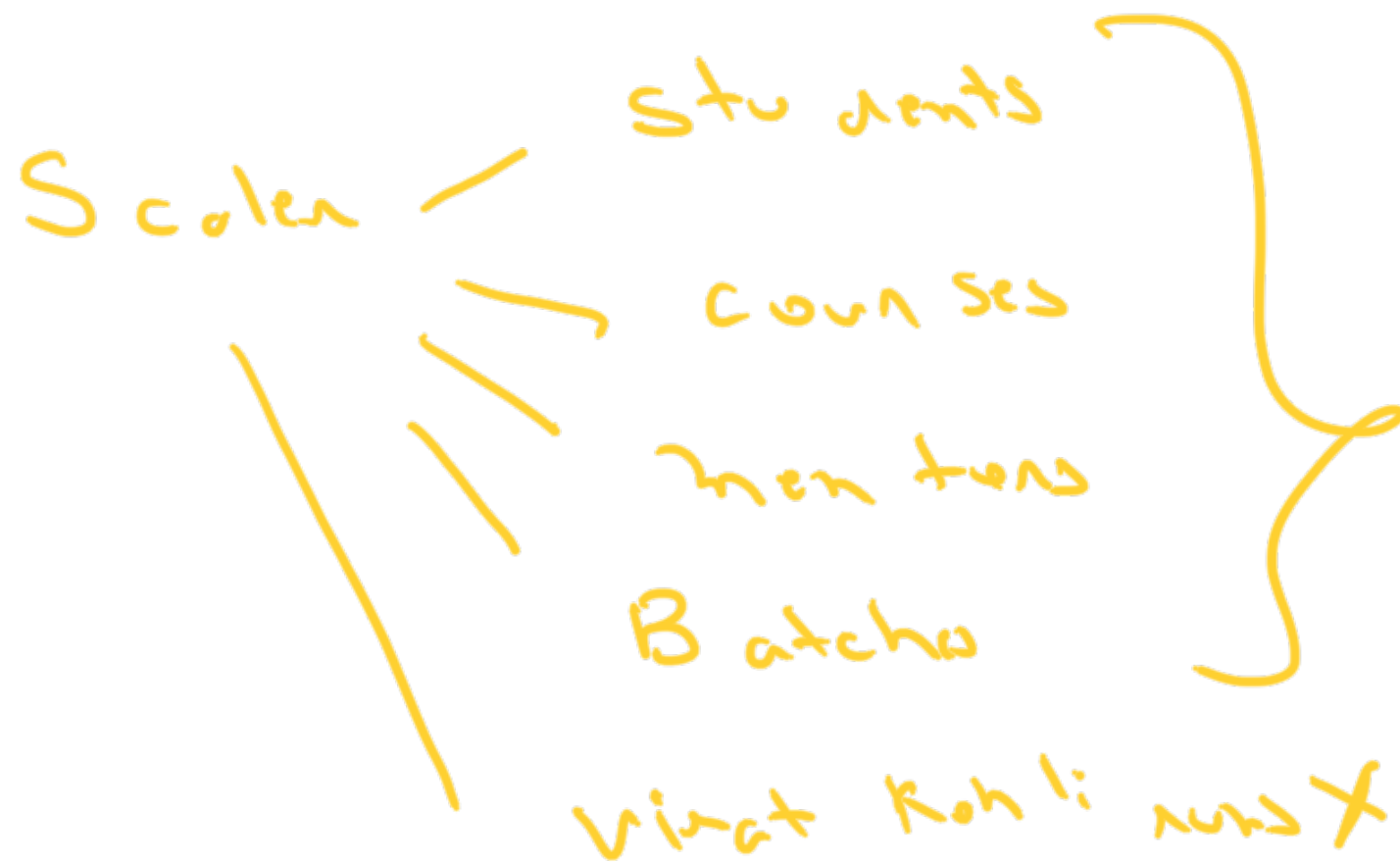
Data base

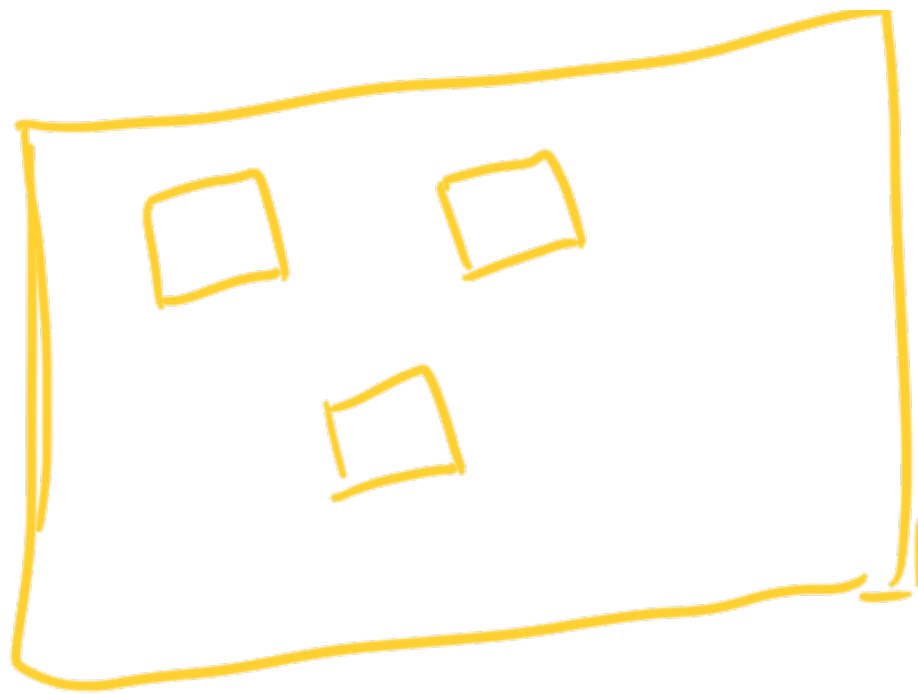
Collection of related Data

→ Temp. in Bangalore

- 22nd m

- 23





- Over 100
- Expert
- backup
- Shanding

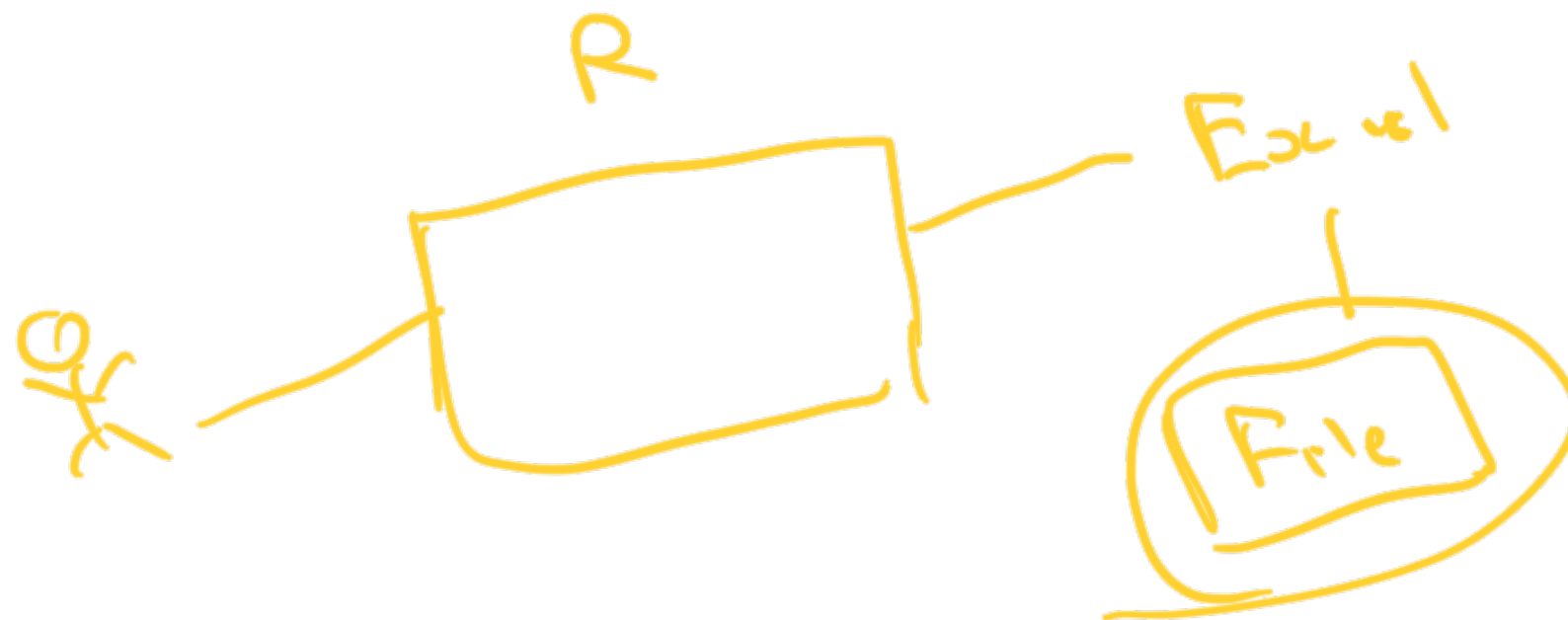
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DRY

Don't Repeat Yourself

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## Motivation



## Scalen







id	Name	Email	Phone	Age	Address
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CSV - Comma Separated Values

! | Tentia Tope | tentia@rev.in

TSV

1	Tentia
---	--------

cc

" = Escaping

Why DBMS is better than Files?

① Performance  $\propto O(N)$

↳ Sequential Access

② Data integrity

① Duplicates / Uniqueness

② Data type / Domain

③ Reference / Referential



5:06 - 5:11

10:43 PM

③ Concurrency  
A



10:00:30

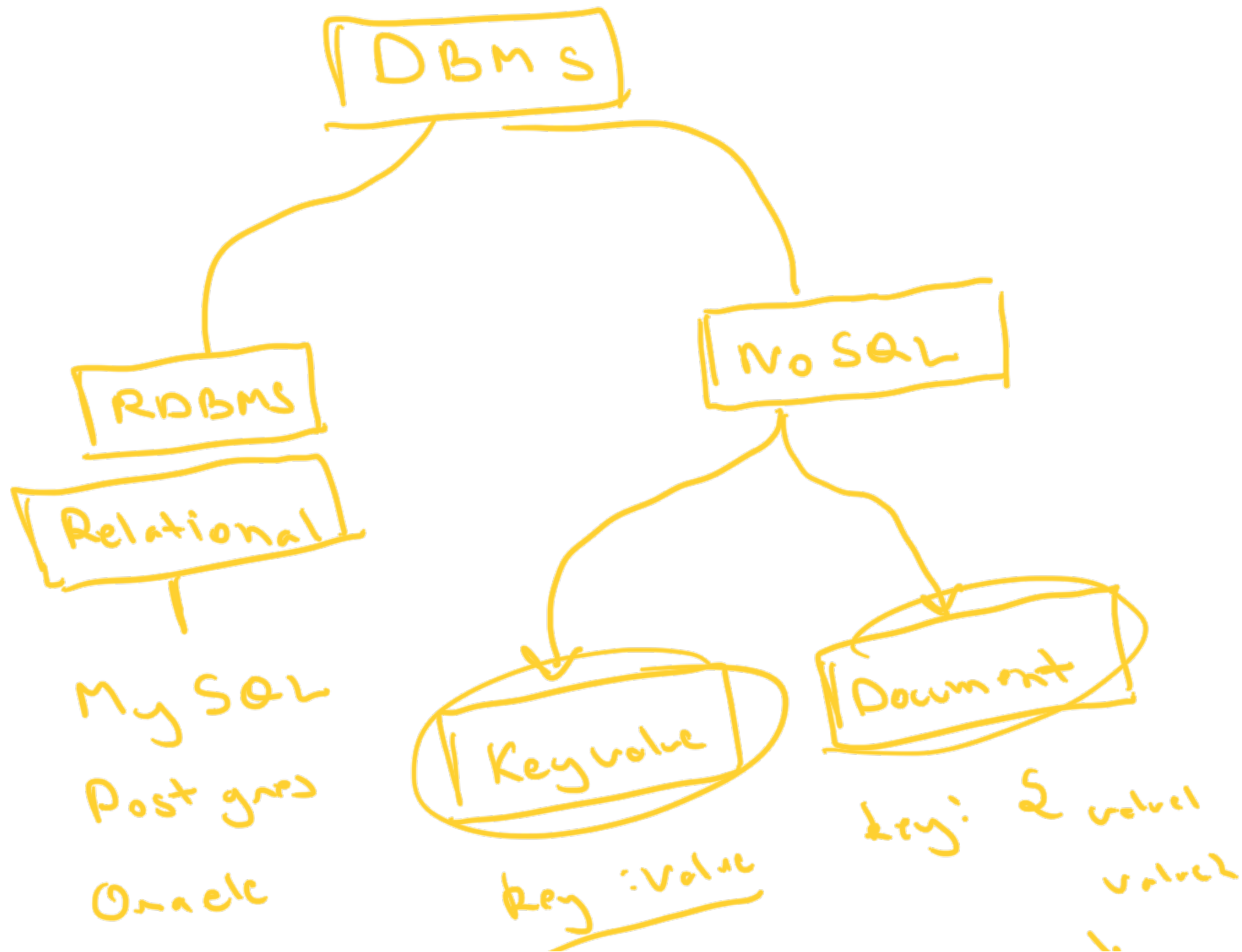


10:00:31

④ Security

# ⑤ Fault tolerance

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mysql

✓ beg: v. 1e

① Redis

② DynamoDB

① MongoDB

② CouchDB

§

Name : Tenzin

Student :



③

Columnar

Student / ID / NAME / A WE

1	A
2	B
3	C
n	

1	2	3	4
A	B	C	

Analytics

→ Influx DB, Maria, Cassandra

② (Graph - based)

- map

- air flights

- social media

Neo4J

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Data model

↳ Relational model

① All students > 25



All student  $> 25$  AND  $< 30$



Set

|

Scalen



§ 1 } | Student | Marks | Batch.

## ① Tables

② Columns - attributes

③ Rows - Student

④ Keys

Diagram illustrating a B-tree structure:

- Root Node:** Contains keys 1 and 2. It has three pointers leading to three leaf nodes.
- Leaf Node 1:** Contains the value 3.
- Leaf Node 2:** Empty.
- Leaf Node 3:** Empty.

① Properties of relational

② Keys

③ Work with SQL

④ Schema design

① MySQL

② Client

DB-Framework

- Wen 2 bench )