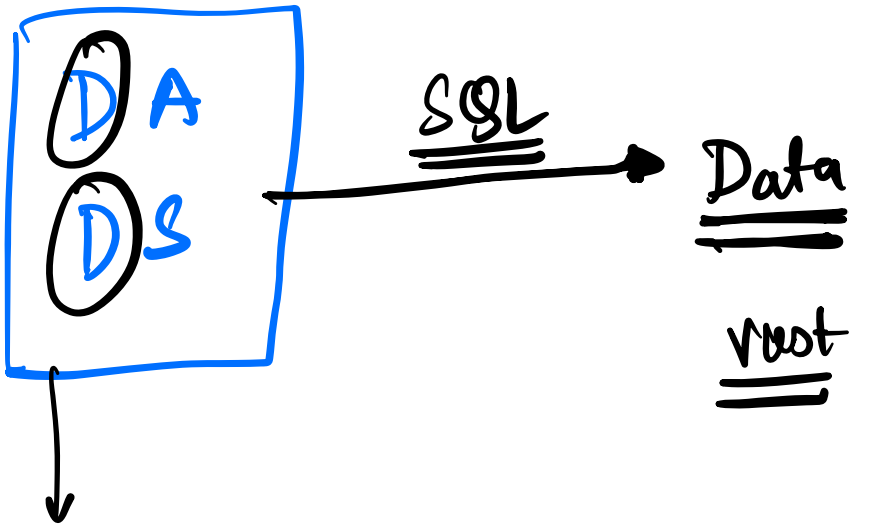
SQL

~ Aditya Jain
(AJ)

Agenda :-

1. Module Overview
2. Dashboard walkthrough
3. Problem Statement (overall)
4. What is a DB?
5. DBMS
6. why DBMS?
7. Schema?
8. keys
9. Data Warehouse → BigQuery Setup.



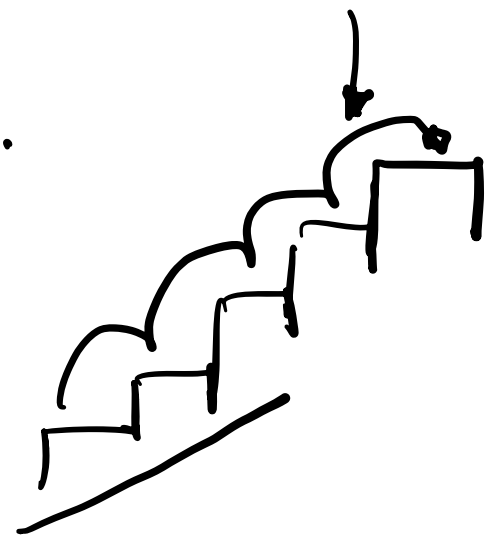
→ SQL Query Writing

* SQL Module Overview :-

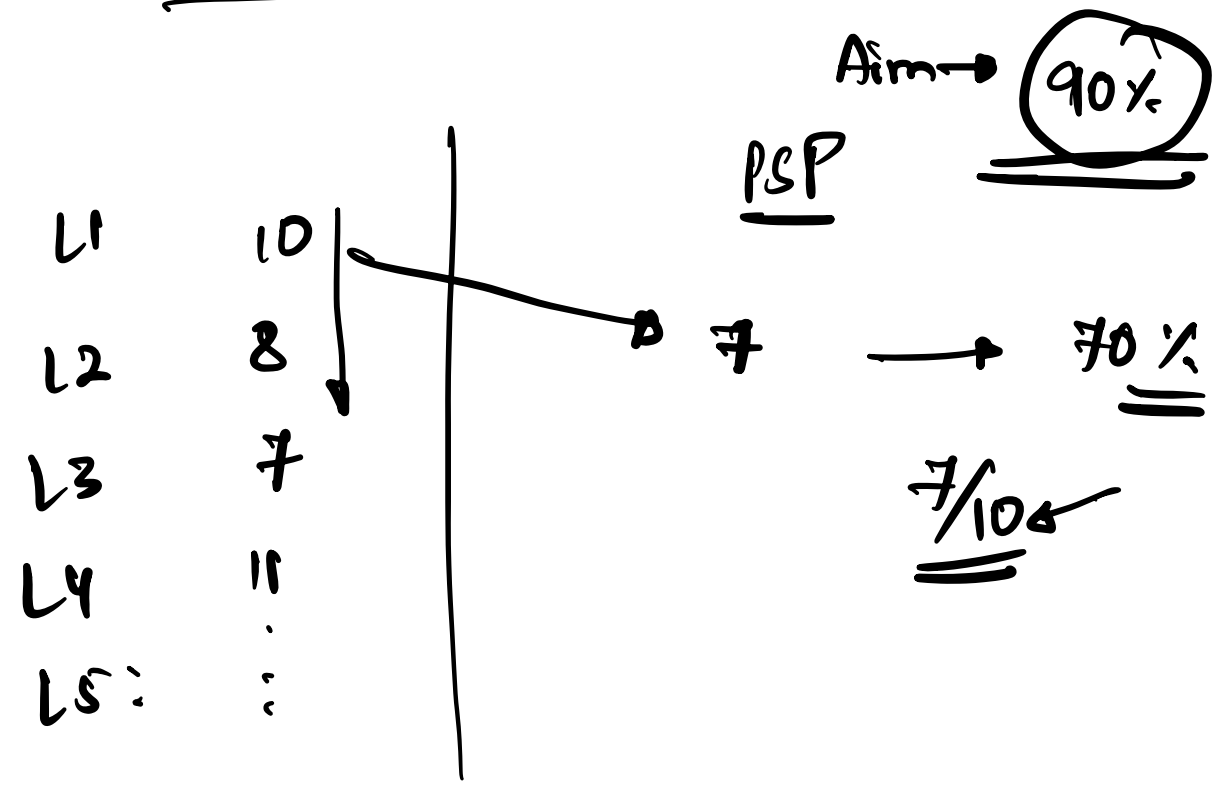
1. DB fundamentals
2. Extract and filter data
3. Grouping & Aggregation
4. Joins
5. Window functions
6. Data & Time
7. Advanced SQL
8. DDL/DML
9. Misc advanced topics.

→ Busines Case study (SQL)

→ Module Test



PSP → Problem Solving Percentage



Problem Statement (overall)

→ Data Analyst at Amazon fresh.

↳ Resp: Extract insights.

Manager → (data) → DBMS ?

↳ DB Schema ?

DB → Database

↓

A collection of inter-related tables.

What is DBMS?

DBMS → Database

→ Management System:

A set of operations that help us in managing the DB.

- Create
- Read
- Update
- Delete

→ CRUD

- Insert
- Grant

...

T1: orders

Columns

Table

row

Order_id	P_id	C_id	timestamp
1	5	3	—
2	4	2	—
3	1	5	—
4	2	1	—
5	4	1	—

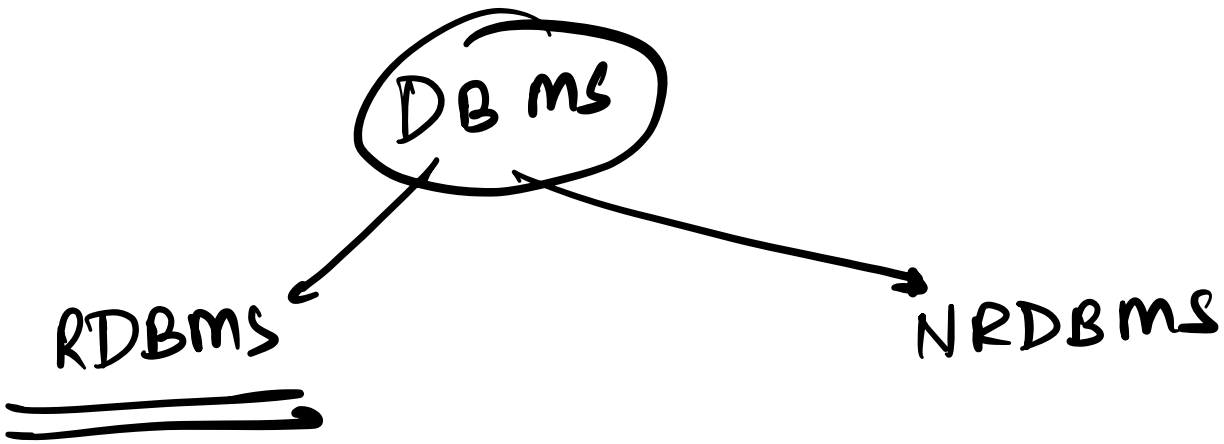
T2: Customers

C_id	Name	Age	Addr ..
1	A		
2	B		
3	C		
4	D		
5	E		

Tables → Relations

DBMS → Tabular Data * → Relational DBMS
→ RDBMS

DBMS → Non-Tabular format → NRDBMS
↓
NoSQL DBMS



→ Oracle
→ MySQL *
→ PostgreSQL
→ MS SQL Server

Why DBMS?

1. **Scalability:**
   - Excel has limitations on # Rows
2. **Performance:**
   - Excel can become v. slow
3. **Data Integrity**
   - Excel is more prone to Human errors.
4. **Concurrent Access:**

(8) what is DB Schema?

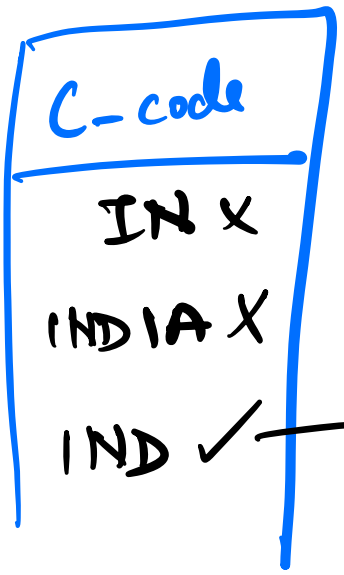
→ **Data types :-**

1. String
2. Numeric
3. * Date & Time

String :-

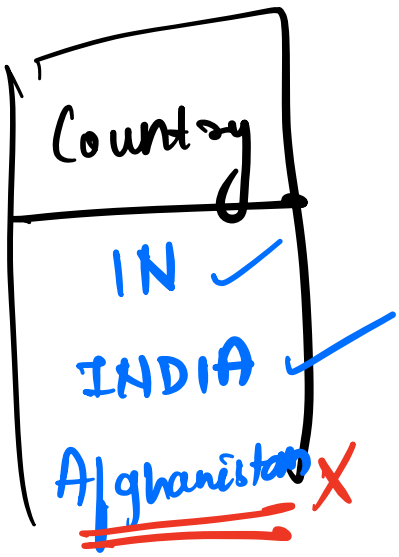
- a) char ⟹ fixed length String
- b) varchar ⟶ Variable " "

Country Code CHAR(3)



→ Country VARCHAR(8)

↳ upto 8 characters



Numeric

↳ a) INT → integer value
↳ Age

b) float
Decimal → amount
100.5

* c) Date & time

YYYY-MM-DD

eg:- 2024-03-18

timestamp :- YYYY-MM-DD hh:mm:ss

* keys

① Primary key : unique identifier

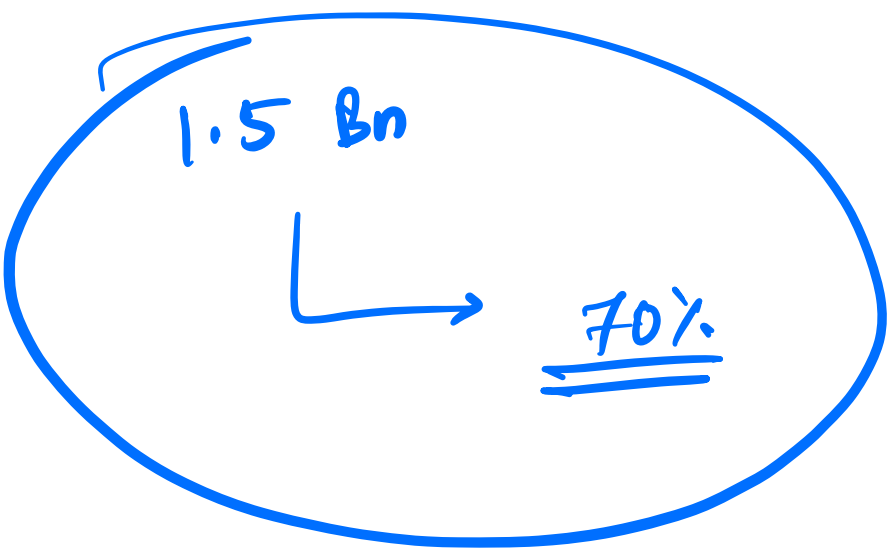
↳ Unique

↳ not null

Quiz: Aadhar Card → Primary key?

PK → and ① Unique ✓

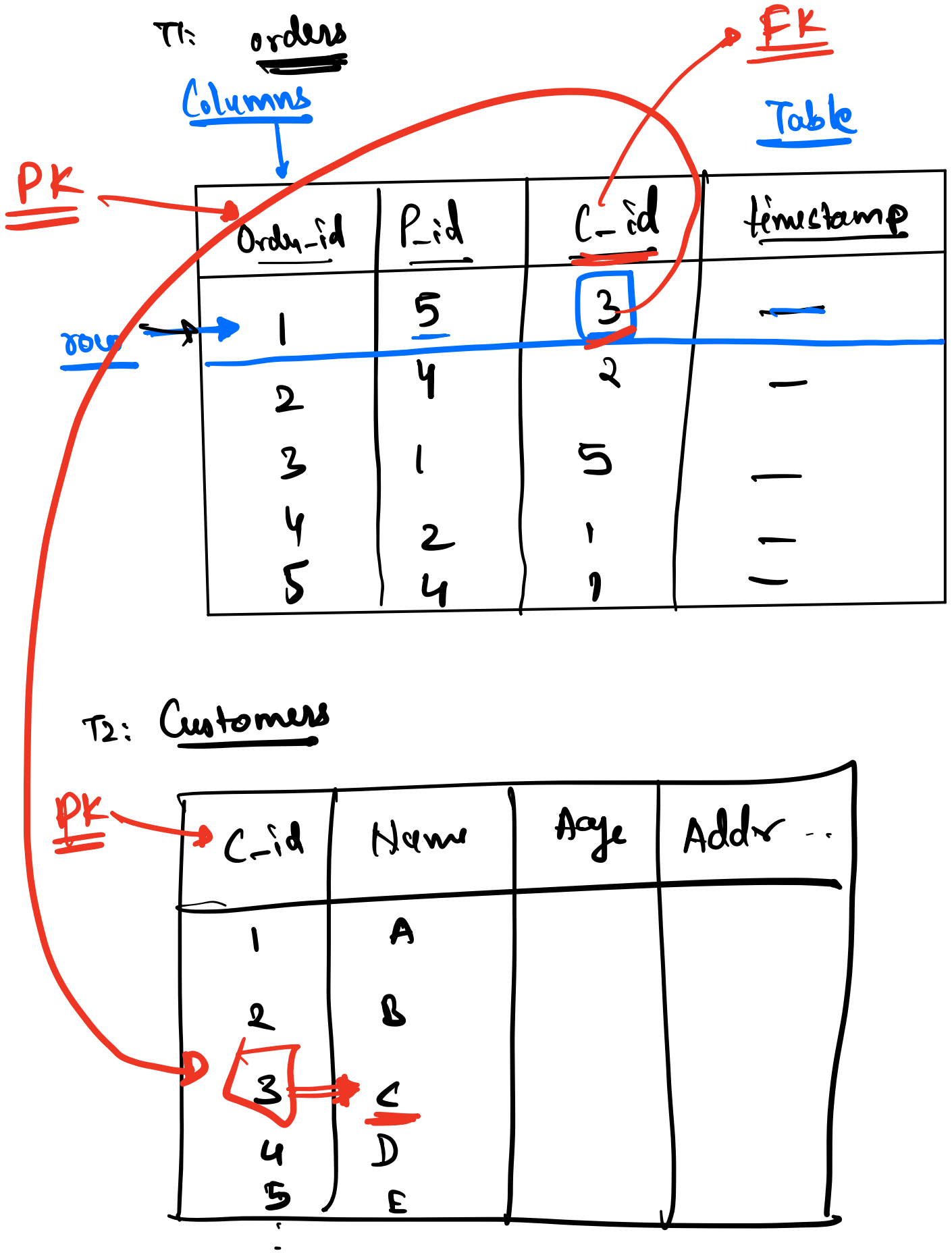
② not null ✗



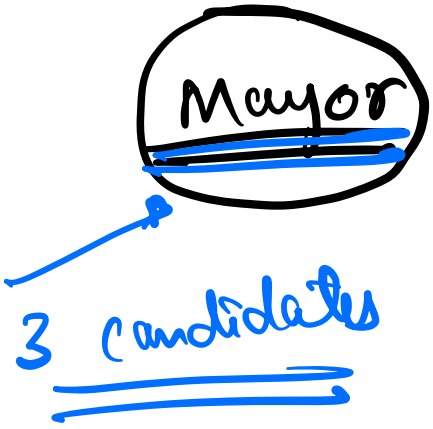
② Unique key :

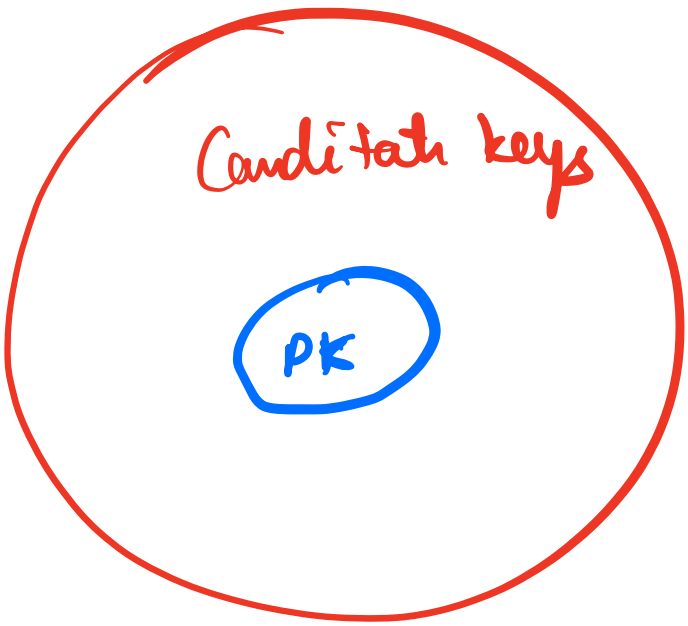
↳ unique
↳ can be null

③ foreign key → helps you establish relation with another table.


T1: orders
Columns
Table
FK
PK
row
Order_id
P_id
C_id
timestamp
1
5
3
—
2
4
2
—
3
1
5
—
4
2
1
—
5
4
1
—
T2: Customers
PK
C_id
Name
Age
Addr ..
1
A
2
B
3
C
4
D
5
E

Candidate key





Industry :-

DBMS → OLTP → online Transaction Processing

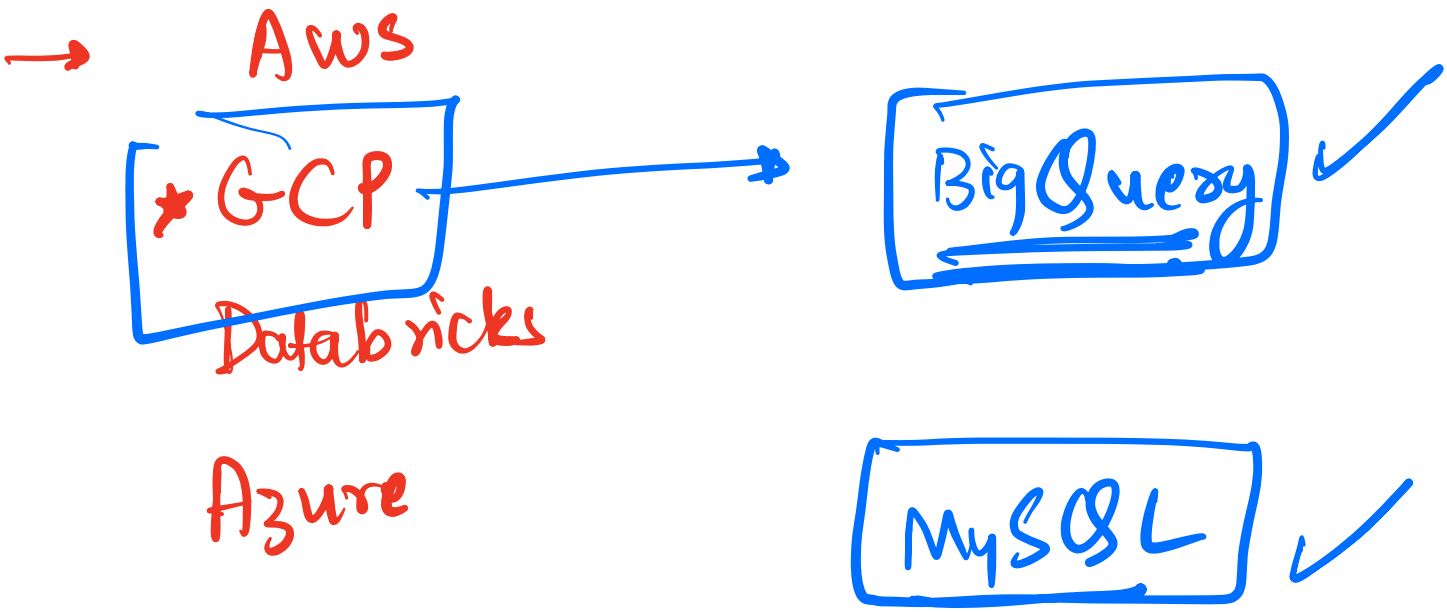
DBMS → write

DBMS → read

DBMS → OLAP → Online Analytical processing

Data Warehouse (DW)

DW is a giant DB optimised for Analytics usecases.



BigQuery Setup

1. Dashboard walkthrough
2. Bigquery Setup Doc
3. Hand written notes
4. Detailed sqpence notes.

Dataset