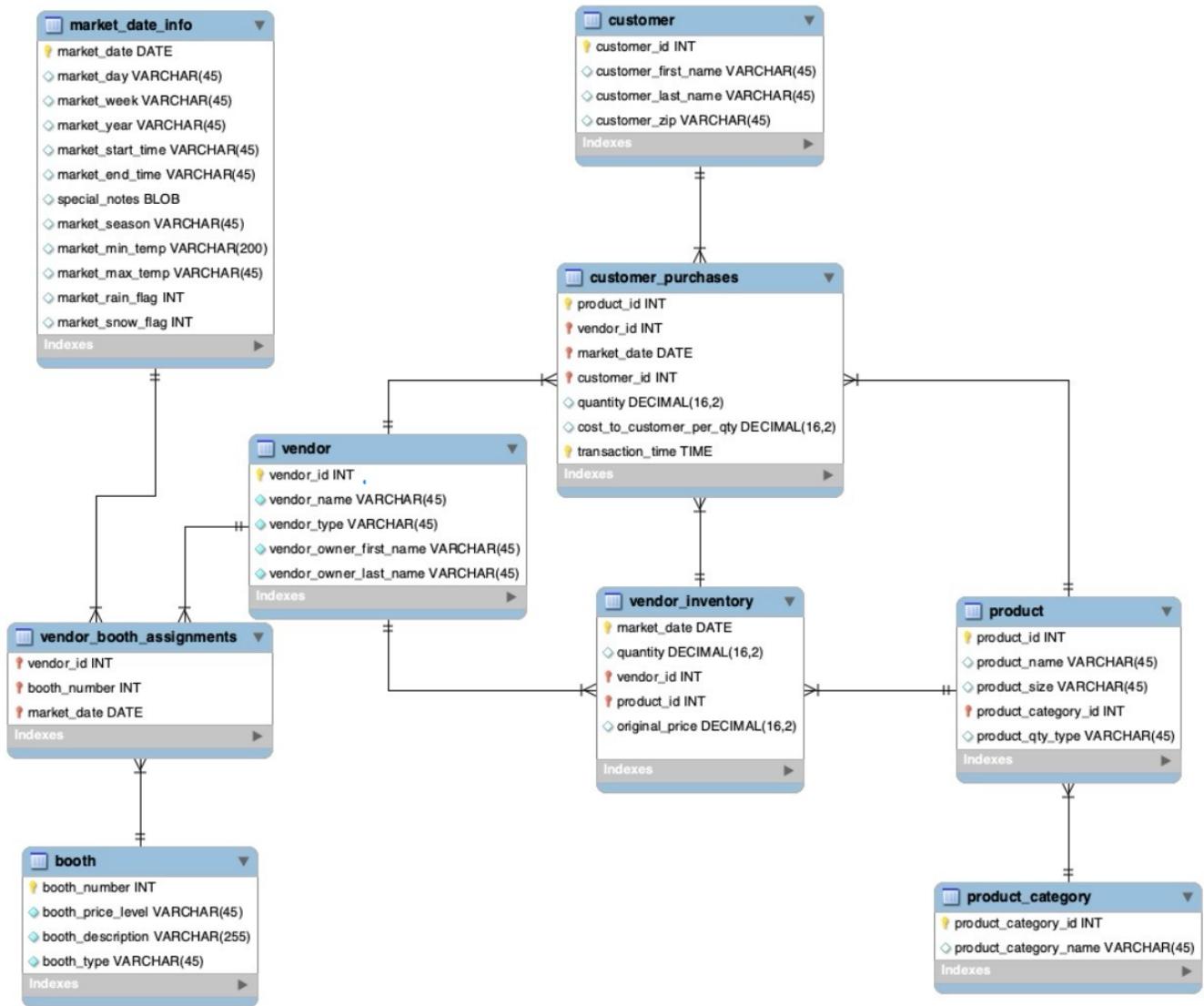
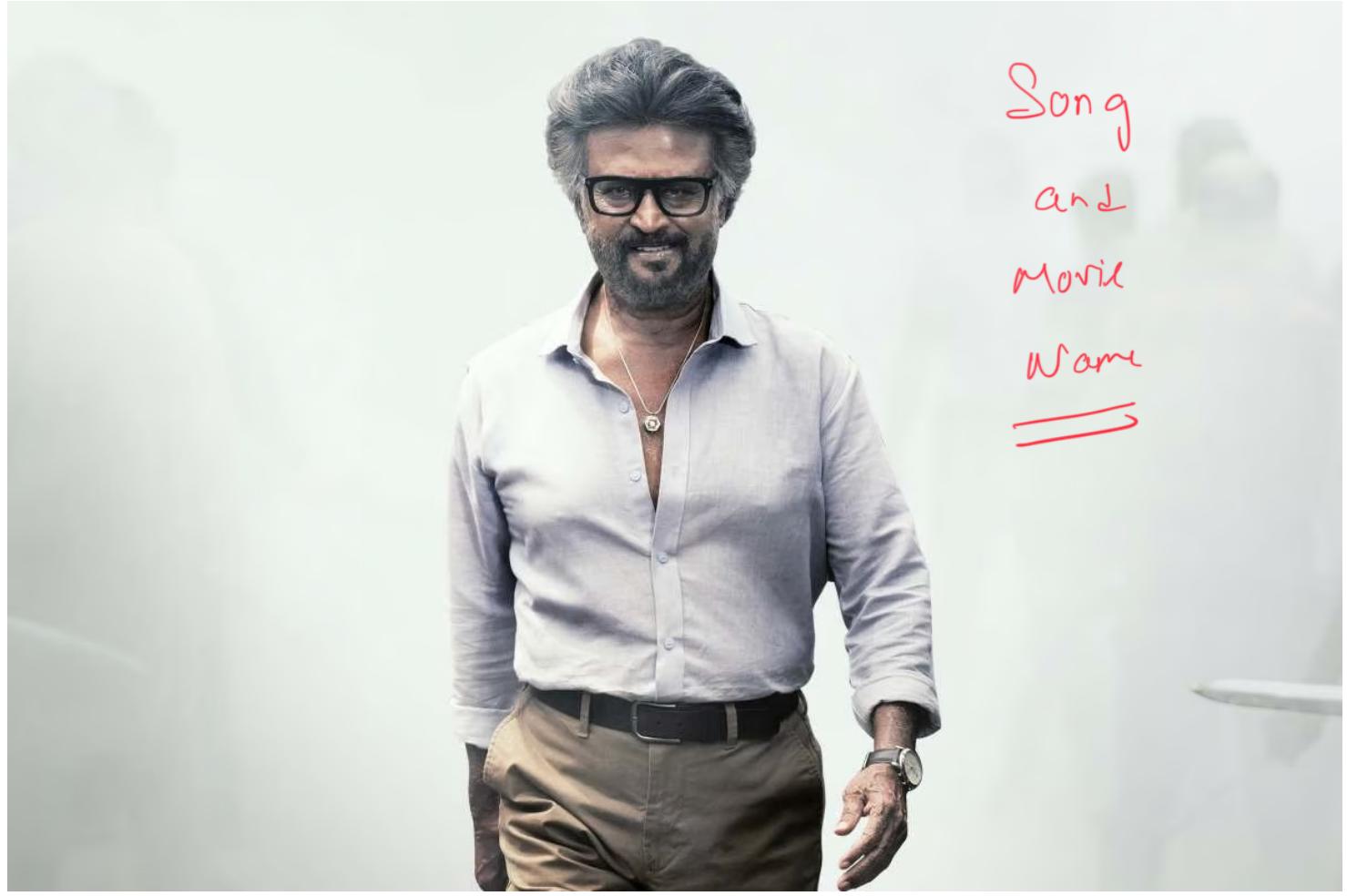


Agenda

1. Distributed Systems
2. Leveraging the Big Data technology into building our own platform.
3. Schema design of the farmer's market
4. Concept of Keys
5. Types of relationships
6. Intro to SQL, Types of SQL
7. SQL basic keywords
8. Inline calculations





Song
and
Movie
Name
==

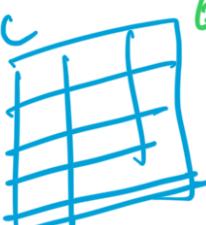
OLTP

→ Online Transaction Processing

→ It is a way of
storing data for a longer
period of time, typically
ranging from 1yr / 10yr / 20yr /
100yr

→ Data bases ✓
↳ Oracle ✓ MySQL
↳ MySQL ✓ PostgreSQL
...
...

→ Actual Data is stored
in form of **tables**

→ OLTP stores & manages
data in two Dimensional
format ↳ 

→ Use case : Hot data is
... to maintain consistency.

OLAP

→ Online Analytical Processing

→ It is a way to
store data for a longer
period of time, typically
ranging from 1yr / 10yr / 20yr /
100yr

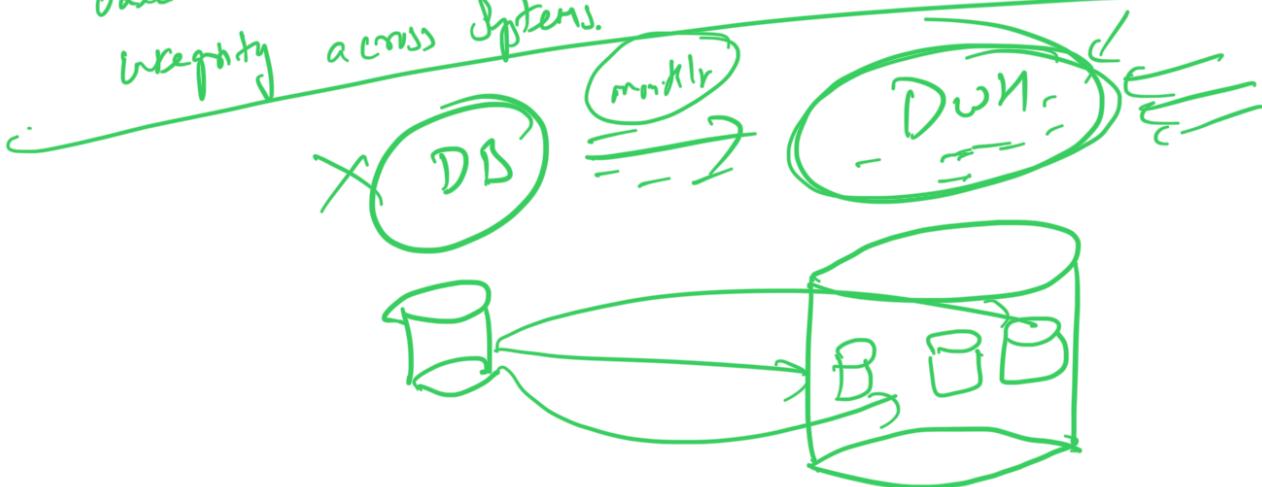
→ Data warehouse ✓
↳ BigQuery
↳ Oracle Exadata
↳ Redshift
↳ Teradata

→ Actual Data is
stored in form of
tables (structure)

→ OLAP stores data in
multi-dimensional data.
R ↗ Q ↗

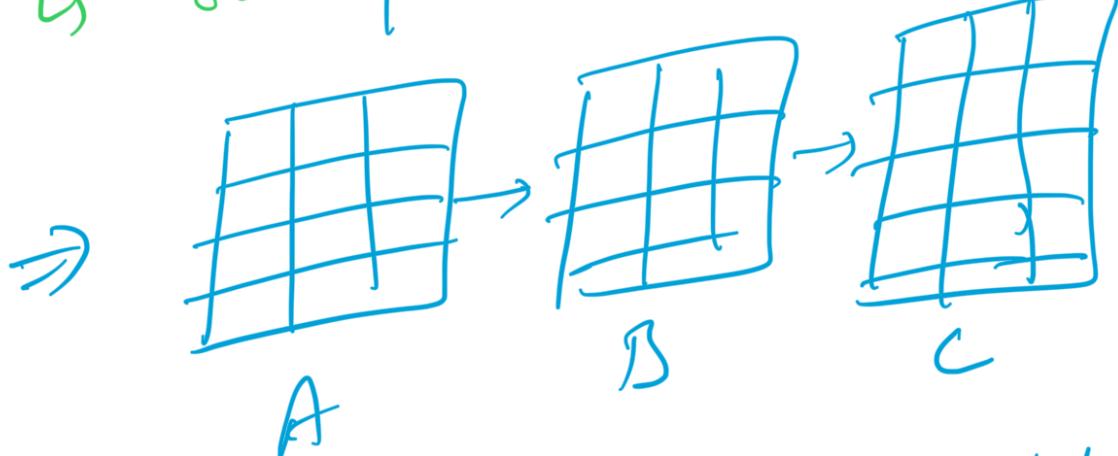
use cases :
① Data Archival
② Reporting & Analysis

data "integrity across systems."



Databases. (OLTP)

→ Database → Collection of interrelated tables.
↳ MySQL
↳ schema | ER Diagram



Management System:-

It is a S/W which helps to CRUD on tables.

? DBMS :-
S/W

a DBMS is a collection of soft

RDBMS

Examples:-

- ↳ Oracle
- ↳ MySQL
- ↳ MS SQL
- ↳ PostgreSQL ...

Databases

SQL ✓

↳ follows rigid structure/schema

id	name	addr	dept
1	John	123 Main St	IT
2	Jane	456 Elm St	HR
3	Bob	789 Oak St	Finance
4	Sarah	234 Pine St	Marketing

Schema = Column Name
 Column Datatype

①

↳ Oracle | MySQL

↳ MySQL

* NoSQL

↳ follows flexible schema

R1 → D D D
R2 → D D D DD
R3 → D D D ... IM

②

MongoDB
Apache HBase

Postgres | MySQL | MongoDB

DB2 . . .

Cassandra

Redis

AWS dynamoDB

Schema | ER

↳ blueprint of DB

↳ not created by DE.
(Database engineers)

Keys ?

↳ helps you to identify any data row
on a table.

→ Super Key

Customer

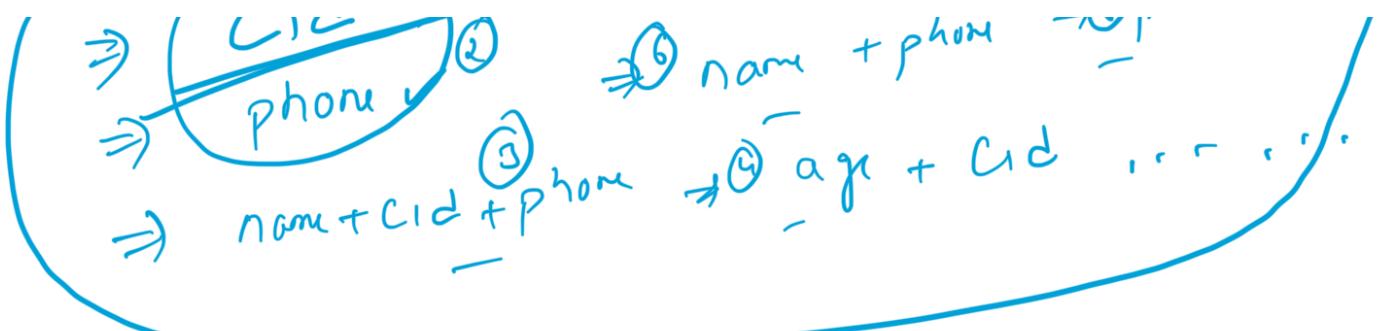
Cid	name	Phone	age
1	Akon	123	12
2	Bkon	456	19
3	Akon	789	18
4	Ckon	124	19
5	Dkon	156	17



① Cid

② Cid + Phone

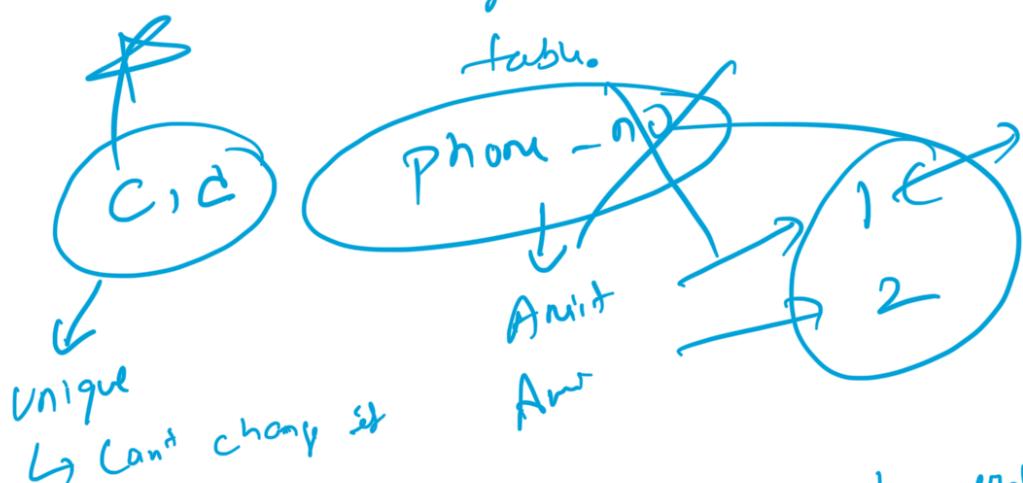
③ Cid + name + phone + age
④ phone + age



↳ Super Key

↳ An attribute or a set of attributes which can uniquely identify a row in a tabl.

→ Primary key: It is the minimal set of Super Key which is used to identify unique row in a tabl.



↳ Pk must be assigned when inserting a record and can never be updated.

↳ Value of a Pk must be unique and can never be null.

~ ~ ~ 1. Inst. Key: minimal set of fields that a record

(2) Candidate Key :- Can uniquely identify each record in a table, but are not

PK

(3) Foreign Key :- a type of key which will allow to get data from more than 1 table.

- ↳ FK references the PK of other table.
- ↳ FK can have null also.

(4) Composite Key :-

CID	Bid	Crane	Crashers
1	1	Diphi	Mumbai
2	2	Diphi	Mumbai
3	3	Diphi	Pune
1	4	Sarath	Bj
2	4	Sarath	HGN
3	1	Nishtha	Bj

B2	B3
1	JPI
2	ODFL
3	ICOT
4	Krok

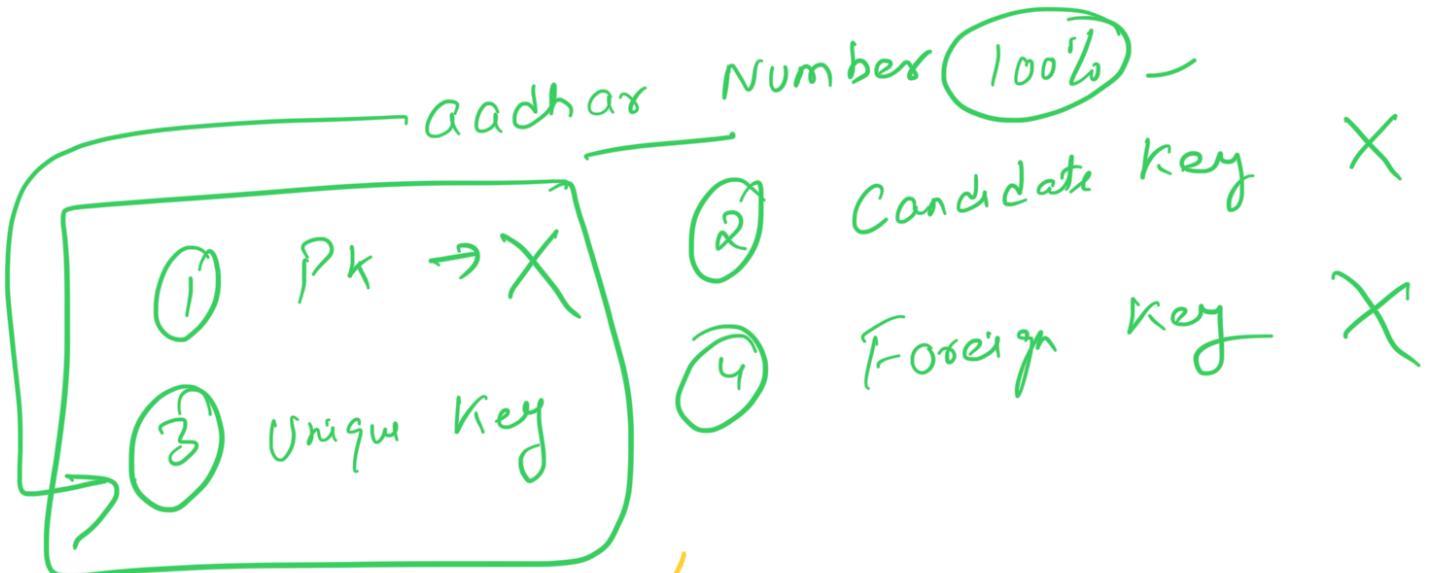
→ Key consists of more than 1 col which uniquely identifies a record in table

(5) Unique Key

PK

- ↳ it is unique to all records of table
- ↳ once assigned, its value can't be changed

1 change
↳ it may have a null value.

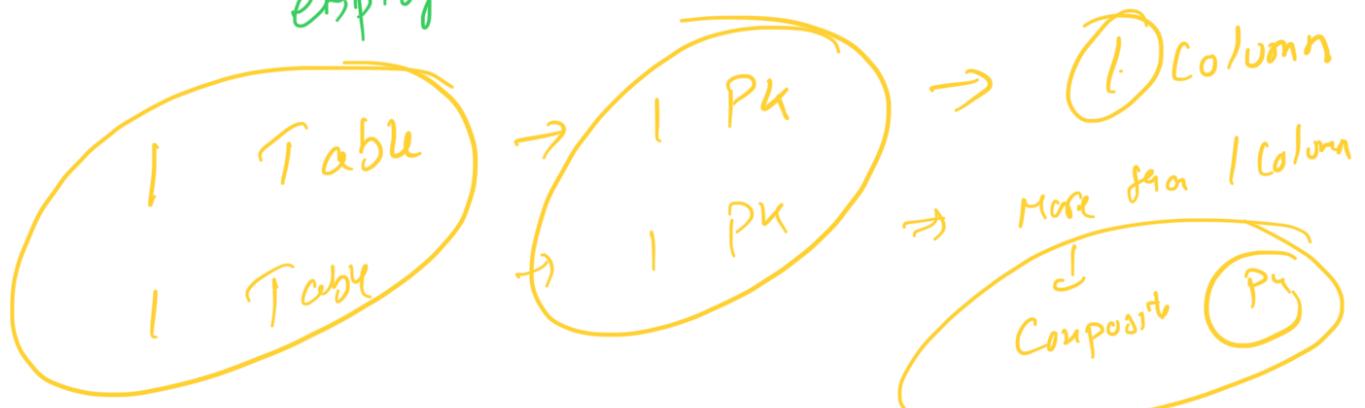


employee

	ename	dept_id
1	A	101
2	B	null
3	C	102
4	D	null

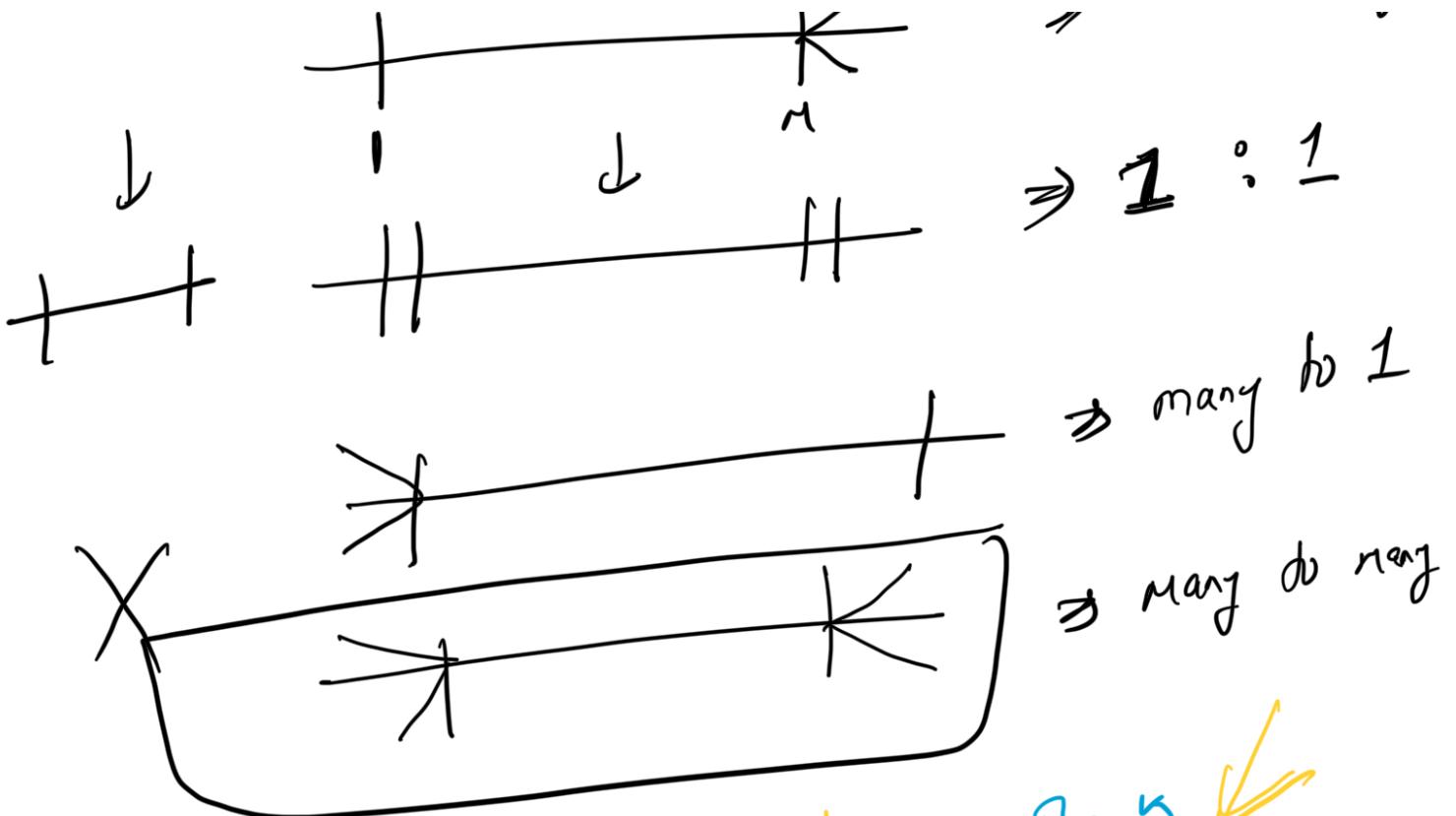
Dept⁺

dept_id	name
101	IT
102	AD
103	HR



Relationships

1 / → one to many



Customer

Cid	Bid	CName	Location
101	1	A	DL
101	2	A	DL
102	1	P	Mum
102	3	P	Mum

Bank

Bid	Bank
1	HDFC
2	SBI
3	Kotak

Customer

Cid	CName	Location
101	A	Del
102	P	Mum
103	C	Bank

Composite PK Junction table

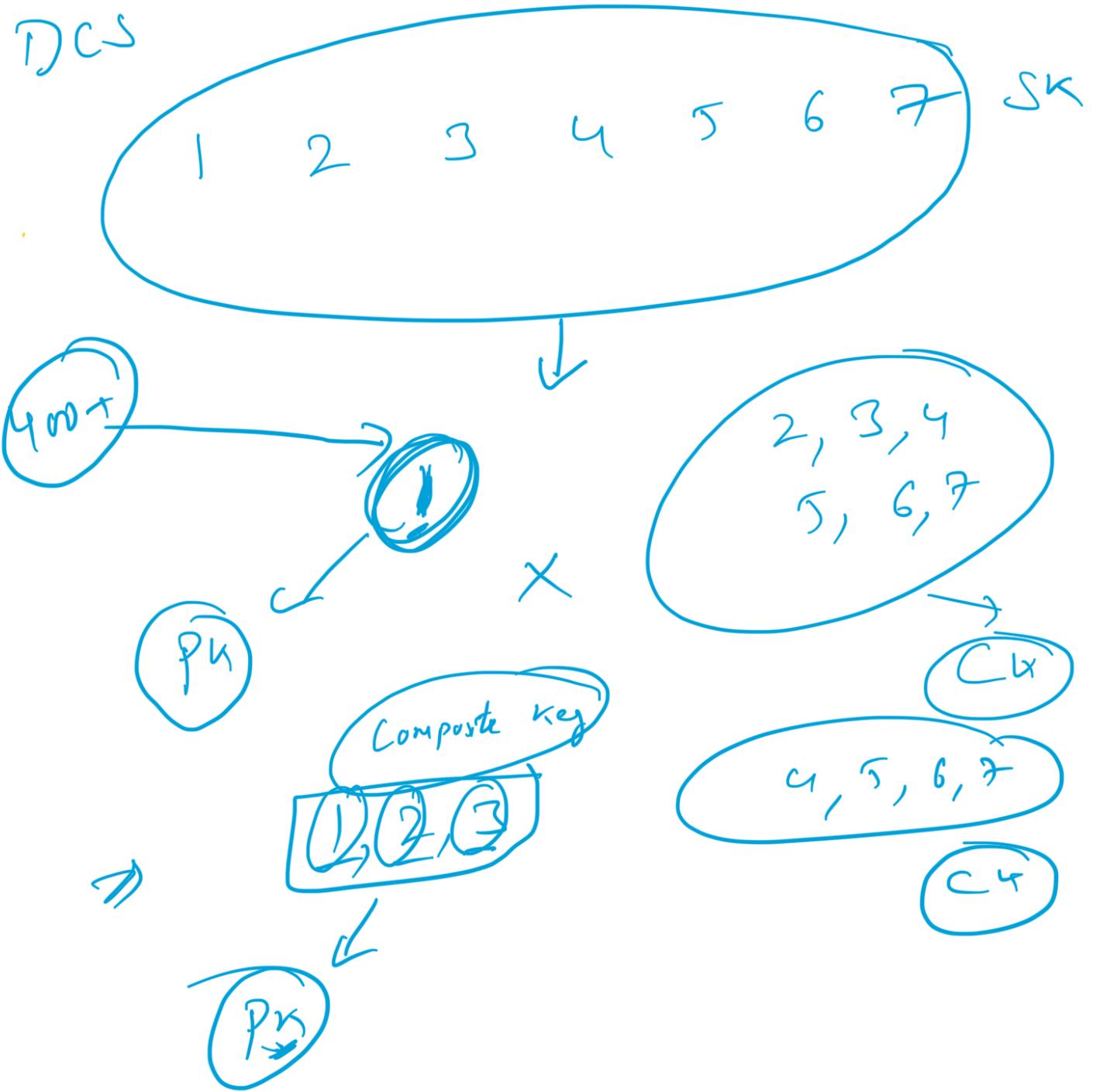
Cid	Bid
101	1
101	2
102	1
102	2

Rule: ... should be present

① → Pk from all tables
② → it can have other columns also

```
CREATE TABLE ExampleTable (
    ID INT PRIMARY KEY,
    UniqueColumn VARCHAR(255) UNIQUE
);
```

```
INSERT INTO ExampleTable (ID, UniqueColumn) VALUES (1, 'Value1');
INSERT INTO ExampleTable (ID, UniqueColumn) VALUES (2, NULL);
INSERT INTO ExampleTable (ID, UniqueColumn) VALUES (3, NULL);
```



for candidate key, this trick helped.

1 lady had 10 candidates for bf position, but only 1 was selected, and others got reply "i like you but as a friend". they got friendzoned and never won. They were left out candidates, "had potential but never got bf".

candidate are left overs = super keys - pk.