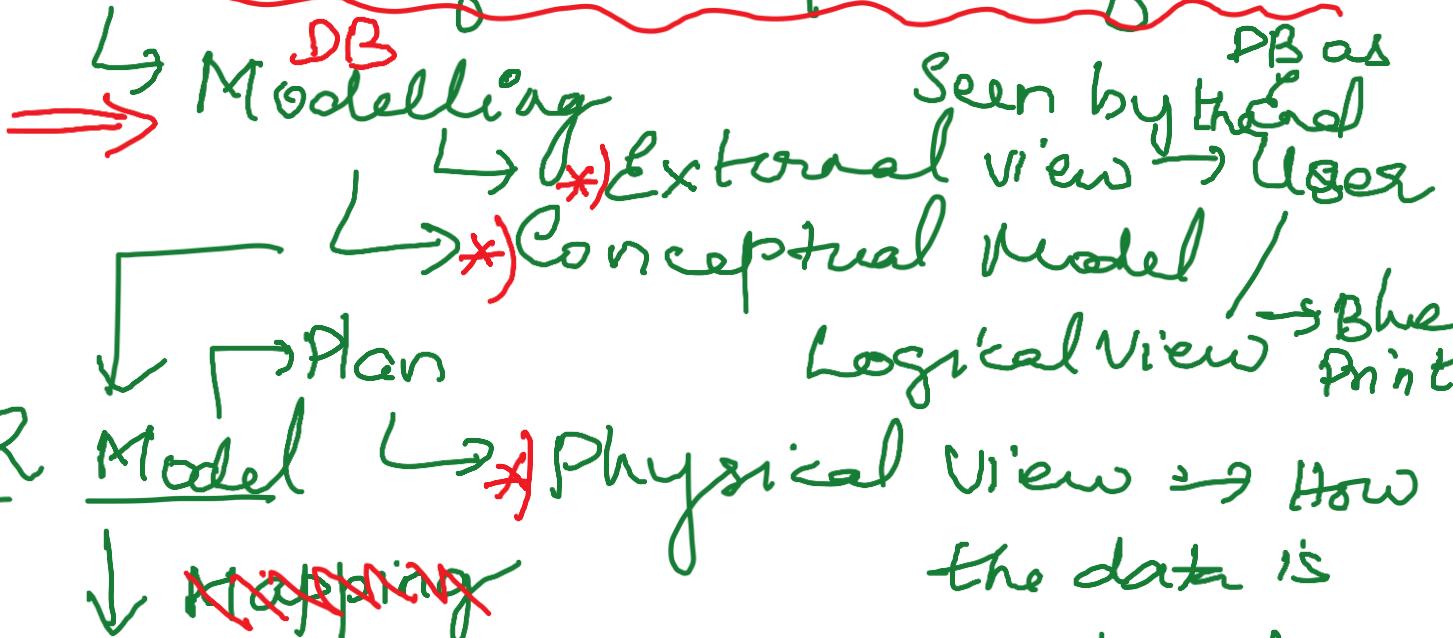


16/5/2021 . Database Normalisation .

I Phase of development of DB



Relational Model
or

Implementational

model (Shows Constraints)

* II Phase of Development of DB

~~Design Phase~~

↳ Design Phase

↳ Map ER → RM / IM

↳ DB Normalisation.

Splitting / dividing the table/reln vertically ↳ Decompose the tables / relations

Why Decompose? Sometimes there will be data redundancy in some design

Decomposition Relation / table

way 1

way 2

Horizontally
All attrb
Employee \downarrow (E#, DNo) \rightarrow CPK.

Vertically
Split the table
Vertically

<u>E#</u>	<u>DOB</u>	<u>Email</u>	<u>DNo</u>	<u>Dname</u>
1001	D1	clical
1002	D1	clical
1001			D2	Purchase
:	:	:	D1	clical

Same table

\Rightarrow Redundancy
in Dname

Select * from Emp

where DNo = D1 \Rightarrow Filter
Record

All records related
to D1.

will have
all attrb

<u>E#</u>	<u>DOB</u>	<u>DNo</u>	<u>Dname</u>	<u>Email</u>
:	:	D1		
:	:	D1		
:	:	D1		

T_1	Name	T_2	Email	T_1, T_2	DName
E#		DOB		DNo	

Emp Redundancy
Dept ↓

T_1
Info about 2 tables
in a single table
leads to redundancy

*) Employee (T_1)

E#	Name	DOB	Email	DNo	PK
1001	:	:	:	D1	PK
1002	:	:	,	P1	PK
1003	:	,	,	D2	PK

FK. D1, P1, D2

uni que.

*) Department (T_2)

DNo	DName
1	clerical Admin
2	Purchase
3	Not loose

✓ Primary & FK Constraint.
Cascade → SQL

⇒ Delete Anomaly

D1, clerical →

1003 → Emp

Only occurs once

Replace clerical

to Admin
only 1 record.

or Anomalies:
Problems that arise due to
data Redundancy

- ① Insertion Anomaly }
② Update Anomaly }
③ Delete Anomaly }

CAT 2
10

Insertion Anomaly

Diagram illustrating the primary key constraint for the Employee table:

E#	Name	Dob	Email	DNO	Dntime
----	------	-----	-------	-----	--------

The table has columns: E#, Name, Dob, Email, DNO, and Dntime.

Annotations:

- An arrow points from the label "NN" to the "Name" column, indicating it is not nullable.
- An arrow points from the label "PNE" to the "Email" column, indicating it is not nullable.
- An arrow points from the label "NN" to the "Dntime" column, indicating it is not nullable.
- A bracket underlines the "E#" and "DNO" columns, labeled "CPK" (Candidate Primary Key), with an arrow pointing to the label "NN".
- A bracket underlines the "E#" and "DNO" columns, with an annotation below stating "cannot be Null".

(OU)
→ Forced to enter
file

→ Force due to center

Create a new De
E# ↑

- D1 Clerical
- D5 Foreign Reln
- 5 Foreign
Reln.

→ Recounting a new Emp 1002

1002 → PK.

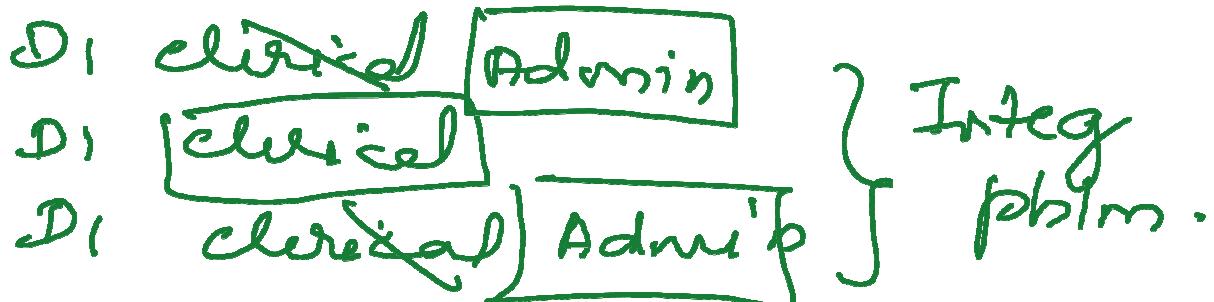
DND X → PK
Null

Cannot leave DNO as null (Forced to enter some Dept No).

E#	Name	DOB	email	DNo	Dname
1001	D1	Admin
1002	D1	Clerical

② Update Anomaly:

$D1 \rightarrow \text{clerical} \xrightarrow{\text{change Name}} \text{Admin}$



③ Deletion Anomaly

E#	Name	DOB	email	DNo	Dname
R1 1001	D1	Clerical
R2 1002	No..	D1	Clerical
R3 1003	Leave Job	D2	Purchase

- ① Delete Dept $[D1, \text{clerical}]$ 1003
 Loose 2 records / Details of lost
 2 Emp will be lost

- ② 1003 leaving job

↳ Delete (1003, Name, email) DOB lost D2 Purchase