Database Management System

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Topics

- Functional dependency

- Relation

- Types of relations

- Anomalies

- NF1

- NF2

- NF3

Functional Dependency

Q. What does the 01 mean?

Here ,

R(id, name, phone, address, email)
Id -> name, phone , address , email

```
=>def nameof(id):

        return id.name

=>nameof(01)
```

NB. "->" is called 'Defines'

Client

Id	Name	Phone	Address	Email
01	mojnu	0123	dhaka	mojnu@g
02	RAHIM	0344	dhaka	rahim@g

Types of Functional Dependencies

- **Multivalued Dependency (1NF)**

- **Transitive Dependency (2NF)**

- Trivial Dependency

- Non- Trivial Dependency

NB. There are some Important rules of Functional Dependencies , But those are not related to this talk. But I recommend you to check those.

Anomalies

- Update

- Insert

- Delete

NB. These are the only operations we do on a Database (DML)

Normal form 1 (NF 1)

Also Called First Normal Form

Example:

1st What is the problem here?

2nd We have a multivalued attribute

3rd R(id, name, {phone}, address, email)

Client

Id	Name	Phone	Address	Email
01	Mojnu	1233,121	dhaka	mojnu@
02	RAHIM	2211,333	dhaka	rahim@

ID	Name	Phone1	Phone2	Address	Email
01	Majnu	123	121	Dhaka	mojnu@
02	Rahim	2211	333	Dhaka	rahim

NB. Same Applies for composite attribute

So, What can we do?

The answer is we decompose and make it beautiful. But how?

R(<u>id,</u> name, {phone}, address, email)

Decompose :

R1(<u>id</u> , name , address , email) **[table]**

  id-> name , address , email

R2(<u>id,</u> Phone) **[table]**

Id -> phone

Client

Id	Name	Phone	Address	Email
01	Mojnu	1233,121	dhaka	mojnu@
02	RAHIM	2211,333	dhaka	rahim@

Client

ID	Name	Address	email
01	Majnu	Dhaka	mojnu@

Phone

ID	Phone
01	123
01	121

Normal form 2 (NF 2)

Also Called Second Normal Form

Example:

1st What is the problem here?

2nd Do We have a multivalued attribute?

3rd R(<u>no, date,</u> driver , color)

    no, date -> driver ,color

    No -> color

    Decompose:

    R1(<u>No, date</u>, driver)

    R2(<u>No</u>, color)

CarInfo

Id	Date	Driver	Color
123	2-feb	Mojnu	Green
457	5-mar	Max	Yellow
123	6-jan	Karim	Green

DrivingInfo

No	Date	Driver
123	2-feb	Mojnu
123	6-jan	Karim

CarInfo

No	Color
123	Green

NB. Date = Date of Driving and Partial Functional Dependency is important

Normal form 3 (NF 3)

Also called 3rd normal form

Example:

1st What is the problem here?

2nd Do We have Redundency ?

R(id, name, skill_id, descrip)

id-> name, skill_id, description

skill_id-> description

id-> skill_id

skill_id-> description

(transitive relation)

Decompose:

R1(id, name , skill_id)

id-> name, skill_id

R2(skill_id, description)

skill_id-> description

StudentInfo

Id	Name	Skill_id	Description
123	X	Prog	Developer
124	Y	Prog	Developer
134	Z	Doc	Doctor

ID	Name	Skill_ID
123	X	Prog
124	Y	Prog
134	Z	Doc

Skill_ID	Description
Prog	Developer
Doc	Doctor

Thank You