

Normalization ..

- Report of Normalization ..

- Database normalization is : A systematic process of organizing data in a database to reduce redundancy and improve data integrity.

- Type of normalization



- 1) First Normal Form (1NF).
- 2) Second Normal Form (2NF).
- 3) Third Normal Form (3NF).

1) First Normal Form (1NF) \Rightarrow When data has repeating groups or multiple value in single field.

Example :-

Student ID	Name	Courses
1	Ahmed	IT, CS, Business
2	Zam Zam	CS, IT, Math

[Each column must contain indivisible value, and each record must be unique] ..

Applying 1NF ..

Student ID

Name

[1]

1

Ahmed

2

ZamZam

[2]

Student ID

Courses

1

IT

1

CS

1

Business

2

CS

2

IT

2

Math

2] Second Normal Form (2NF) ... when table has composite primary key, and some columns depend only on part of the key.
~~when table a~~ \Rightarrow Must be in 1NF and all non-key attributes must be fully functionally dependent on the entire primary key.

Example...

Student ID

Course ID

Student Name

Course Name

1

100

Ali

IT

2

102

Reem

CS

[1]

Student ID	Student Name
1	Ali
2	Reem

[2]

Courses ID	Courses Name
100	IT
102	CS

[3]

Student ID	Courses ID
1	100
2	102

3] Third Normal Form (3NF)...

when non-key attributes depend on other non-key attributes..

⇒ Must be in 2NF, and all attributes must depend only on the primary key (no transitive dependency)...

Student ID	Name	Dept ID	Dept Name
1	Noor	101	Eng
2	Amal	102	IT
3	Riham	103	Bu



Student ID	Name
1	Noor
2	Amal
3	Riham

Name	Dept ID	Dept Name
Noor	101	Eng
Amal	102	IT
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