NORMAL FORMS IN DBMS

Content

NORMALIZATION OF DATABASE

Normalization is used for mainly two purposes,

- Eliminating redundant(useless) data.
- Ensuring data dependencies make sense

FIRST NORMAL FORM (1NF)

For a table to be in the First Normal Form, it should follow the following 4 rules:

1. It should only have single(atomic) valued attributes/columns.
2. Values stored in a column should be of the same domain
3. All the columns in a table should have unique names.
4. And the order in which data is stored, does not matter.

Example:

The following table has two different values on Department Column

Employee	Age	Department
Melvin	32	Marketing, Sales
Edward	45	Quality Assurance
Alex	36	Human Resource

To be in 1NF department values have to be single

Employee	Age	Department
Melvin	32	Marketing
Melvin	32	Sales
Edward	45	Quality Assurance
Alex	36	Human Resource

SECOND NORMAL FORM (1NF)

For a table to be in the Second Normal Form,

1. It should be in the First Normal form.
2. And, it should not have Partial Dependency.

Example:

Following table has to be divided in two different categories.

productID	product	Brand
1	Monitor	Apple
2	Monitor	Samsung
3	Scanner	HP
4	Head phone	JBL

These have to be the new tables following 2NF

productID	product
1	Monitor
2	Scanner
3	Head phone

brandID	brand
1	Apple
2	Samsung
3	HP
4	JBL

THIRD NORMAL FORM (1NF)

A table is said to be in the Third Normal Form when,

1. It is in the Second Normal form.
2. And, it doesn't have Transitive Dependency.

Example:

Following table has transitive dependency.

Torneo	Año	Ganador	Fecha de nacimiento del ganador
Indiana Invitational	1998	Al Fredrickson	21 de julio de 1975
Cleveland Open	1999	Bob Albertson	28 de septiembre de 1968
Des Moines Masters	1999	Al Fredrickson	21 de julio de 1975
Indiana Invitational	1999	Chip Masterson	14 de marzo de 1979

These have to be the new tables following 3NF

Torneo	Año	Ganador
Indiana Invitational	1998	Al Fredrickson
Cleveland Open	1999	Bob Albertson
Des Moines Masters	1999	Al Fredrickson
Indiana Invitational	1999	Chip Masterso

Jugador	Fecha de nacimiento
Chip Masterson	14 de marzo de 1977
Al Fredrickson	21 de julio de 1975
Bob Albertson	28 de septiembre de 1968