Database Normalization is a technique of organizing the data in the database.

Normalization is used for mainly two purposes,

* Eliminating redundant (useless) data.
* Ensuring data dependencies make sense i.e data is logically stored.

## **Normalization Rule**

Normalization rules are divided into the following normal forms:

* First Normal Form
* Second Normal Form
* Third Normal Form
* BCNF
* Fourth Normal Form
* Fifth Normal form

## **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) value per column
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

## **Second** **Normal** **Form**

For a table to be in the Second Normal Form, it must satisfy two conditions:

* The table should be in the First Normal Form.
* There should be no Partial Dependency.

## **Third Normal Form (3NF)**

For a table to be in the third Normal Form, it must satisfy two conditions:

* It should be in the Second Normal form
* It should not have Transitive Dependency , i.e. A non-prime attribute should always depend upon prime attribute.

**Boyce**-**Codd** **Normal Form (BCNF)**

For a table to be in the BC Normal Form, it must satisfy two conditions:

* It should be in the Third Normal Form.
* And, for any dependency A → B, A should be a super key . In simple words, it means, that for a dependency A → B, A cannot be a non-prime attribute, if B is a prime attribute.

## **Fourth** **Normal** **Form**

For a table to be in the fourth Normal Form, it must satisfy two conditions:

* It should be in the Boyce-Codd Normal Form.
* And, the table should not have any Multi-valued Dependency.

## **Fifth** **Normal** **Form**

For a table to be in the fifth Normal Form, it must satisfy all the above forms. this is the final phase.