**NORMALIZATION AND DENORMALIZATION**

**Normalization:-** Normalization is a process of organizing data in database .Normalization removes the duplicate data from the table .

Normalization is devided into several stages called normal forms. The most common normal forms are

1. First Normal Form(1NF) :- 1NF removes repetated data from the table and each record should be unique.

Example of 1NF are given below :

|  |  |  |
| --- | --- | --- |
| Stud\_id | Name | Subject |
| 1 | Rajni | Maths,Marathi |
| 2 | Shreya | English,Hindi |
| 3 | Mani | Science |

After converting to 1NF

|  |  |  |
| --- | --- | --- |
| Stud\_id | Name | Subject |
| 1 | Rajni | Maths |
| 1 | Rajni | Marathi |
| 2 | Shreya | English |
| 2 | Shreya | Hindi |
| 3 | Mani | Science |

1. Second Normal Form ( 2NF) : Achieved when the table is in 1NF . All not-key attributes are fully functionally dependent on the primary key.

|  |  |  |
| --- | --- | --- |
| Stud\_id | Name | Age |
| 1 | Rajni | 30 |
| 1 | Shreya | 30 |
| 2 | Mani | 23 |
| 3 | Prerna | 50 |

After coverting to 2NF

|  |  |
| --- | --- |
| Stud\_id | Age |
| 1 | 30 |
| 2 | 23 |
| 3 | 50 |

|  |  |
| --- | --- |
| Stud\_id | Name |
| 1 | Rajni |
| 1 | Shreya |
| 2 | Mani |
| 3 | Prerna |

3.Third Normal form(3NF) :- Achieved when the table is in 2NF

3NF ensures that no transitive dependency exist.

4.Boyee codd normal form(BCNF):- BCNF is also called As 3.5NF

Table must be in 3 NF. Ensures that every determinant in a candidate key.

**DENORMALIZATION**

Denormalization is the process of combining table from normalization to reduce the complexity.

Using Denormalization we can retrieve the data quiquly.

Customer Table

|  |  |
| --- | --- |
| Custo\_id | Custo\_name |
| 1 | Rajni |
| 2 | Mani |

Employee table

|  |  |
| --- | --- |
| Emp\_id | \_Emp\_mail\_id |
| 3 | rajnipethe@gmail.com |
| 4 | mani@gmail.com |

Now we have denormalized data by merging table

|  |  |  |  |
| --- | --- | --- | --- |
| Custo\_id | Emp\_id | Custo\_name | Emp\_Email\_id |
| 1 | 3 | Rajni | rajni@gmail.com |
| 2 | 4 | Mani | Mani@gmail.com |