Data Base

* + **Database**

Two types of databases

* + Relational Database: Stores information in an organized table with a sequence of rows and columns. Uses SQL as standard to perform CRUD operations on data
  + Non-Relational Database (no SQL): Stores data in a document oriented form. There is no specified language for CRUD operations each DBMS uses its own language.
  + **DBMS (Database Management System)**

Divided into two types

* + RBDMS (Relational Database Management System)
  + NRDBMS (Non-Relational Database Management System)
  + Query is a request made to DBMS in order to fetch a specific type of data from Database.
  + **Tables and Keys:**
  + A table is a group of data stored in organized form of rows and columns.
  + A primary key uniquely identifies the attribute in the table. For example employee id, student is, customer id etc.
  + A surrogate key is a type of primary key that is not mapping to real world information, it is just uniquely identifying data in the table for example employee\_id, student\_id etc.
  + A natural key is a type of primary key that is uniquely identifying data as well as mapping to real world information for example employee\_ssns (social security number)
  + A foreign key relates the data of one table to another table. A foreign key is actually the primary key of another table.
  + A composite key is a group of two or more foreign keys in a table that together uniquely identifies an entity occurrence (row) in a table.

**Normalization:**

Normalization is used to remove data redundancy and duplicity

There are three type of anomalies used in normalization

Insertion Anomaly: It is a type of anomaly that occurs while inserting new data in the table

Deletion Anomaly: It is a type of Anomaly that occurs while deleting the data from the table

Updation Anomaly: It is a type of Anomaly that occurs while updating the data in the table

There are 4 types of normal form that are used to remove data redundancy

1st Normal Form: In this type all the attributes in the table should hold single value.

2nd Normal Form: In this type the candidate key (a set of two or more columns that uniquely identify the row in the table) should have full dependency on the non-prime attributes. If a part of primary key have dependency on non-prime attribute then it doesnot follows 2NF

3rd Normal Form: In this type there should be no transitive dependency of non-prime attribute. It means that a non-prime attribute should not have direct dependency on another non-prime attribute.