RDBMS

RDBMS stands for Relational Database Management Systems. It is a program that allows us to create, delete, and update a relational database. A Relational Database is a database system that stores and retrieves data in a tabular format organized in the form of rows and columns. It is a smaller subset of DBMS which was designed by E.F Codd in the 1970s. SQL, My-SQL, and ORACLE are all based on the principles of relational DBMS.

Relational DBMS owes its foundation to the fact that the values of each table are related to others. It has the capability to handle larger magnitudes of data and simulate queries easily.

Relational Database Management Systems maintains data integrity by simulating the following features:

- **Entity Integrity:** No two records of the database table can be completely duplicate.
- **Referential Integrity:** Only the rows of those tables can be deleted which are not used by other tables. Otherwise, it may lead to data inconsistency.
- **User-defined Integrity:** Rules defined by the users based on confidentiality and access.
- **Domain integrity:** The columns of the database tables are enclosed within some structured limits, based on default values, type of data or ranges.

RDBMS History

The history of Relational Database Management Systems (RDBMS) starts in the 1970s with E F. Codd's work at IBM. Codd introduced the concept of relational databases in 1970 that use of [SQL (Structured Query Language)](#) for querying data. This model revolutionized data management by emphasizing data integrity and reducing redundancy. In the 1980s, commercial RDBMS products such as Oracle, IBM DB2, and Microsoft SQL Server emerged, making relational databases the industry standard for data management. Over the decades, RDBMS technology has continued to evolve, incorporating advancements in scalability, performance, and support for complex queries, cementing its role as a cornerstone of modern database management.

What is a Database Table?

A table is a **collection of related data** in an organized manner in the form of rows and columns. It is an organized arrangement of data and information in **tabular form** containing rows and columns, making it easier to understand and compare data. Here is the pictorial representation of the table and its different components containing the data about different students that is ID, name, Age, and course.

ID	NAME	AGE	COURSE
101	ASHA	17	BCA
192	RAM	18	BCA
132	MOHIT	17	BSC
106	RAVI	19	BCA

Features of RDBMS

- Data must be stored in tabular form in DB file, that is, it should be organized in the form of rows and columns.
- Each row of table is called record/tuple . Collection of such records is known as the cardinality of the table
- Each column of the table is called an attribute/field. Collection of such columns is called the arity of the table.
- No two records of the DB table can be same. Data duplicity is therefore avoided by using a candidate key. Candidate Key is a minimum set of attributes required to identify each record uniquely.
- Tables are related to each other with the help for foreign keys.
- Database tables also allow NULL values, that is if the values of any of the element of the table are not filled or are missing, it becomes a NULL value, which is not equivalent to zero. (NOTE: Primary key cannot have a NULL value).

How Relational Database Model Work?

The relational database, created by IBM's E.F. Codd in the 1970s, enables any table to be associated to another table by means of a common attribute. Codd suggested a change to a data model where data is stored, accessed, and related in tables without restructuring the tables that hold them in place of hierarchical structures.

Each spreadsheet in the relational database model is a table that contains data, which is shown as rows (records or tuples) and columns (attributes).

A data type is specified by an attribute (column), and the value of that particular data type is contained in each record (or row). A primary key is an attribute found in all tables in a relational database that serves as a unique row identifier. **Example:** The following table STUDENT consists of three columns Roll Number, Name, Section and four records of students 1, 2, 3 and 4 respectively. The records can't be completely same, the Roll Number acts as a candidate key which separates records.

Roll number	Name	Section
1	Ishita	A
2	Yash	B
3	Ishita	A
4	Mallika	C

Uses of RDBMS

- RDBMS is used in Customer Relationship Management.
- It is used in Online Retail Platforms.
- It is used in Hospital Management Systems.
- It is used in Business Intelligence.
- It is used in Data Warehousing