# RDBMS:OLAP & OLTP

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## Abstract

A relational database is a digital database that uses the relational data model. A relational database management system is a system for maintaining relational databases (RDBMS). Many relational database systems allow you to query and maintain the database using SQL (Structured Query Language).It's a programme that lets us create, delete, and update relational databases. A relational database is a database system that stores and retrieves data in the form of rows and columns in a tabular format. The main DBMS, such as SQL, My-SQL, and ORACLE, are all based on relational DBMS concepts.The fact that the values of each table are connected to each other is the cornerstone of relational DBMS. It is capable of handling enormous amounts of data and easily simulating queries.Here in this paper we will look at the history of RDBMS and see what led to the formation of relational database, then we will look at the terminologies related to RDBMs and how to store objects in relational database, followed by advantages, disadvantages, and some applications of the same, and finally we will try to have a deeper look at the two major applications of RDBMS, OLAP (Online analytical processing) and OLTP (Online transaction processing) (Online transaction processing).

## Introduction

RDBMS is a concept that is used to give the user with the ability to store and retrieve data that is connected with any other relation, also known as the Relational. A relation in a relational database is based on a relational scheme and is made up of a number of properties. A relational database is composed of several relations and a relational database architecture. Users have the ability to access and alter the data stored in the database in a convenient and functional manner. Furthermore, as we have previously learned and understood, the DBMS exerts centralised control over the database,

prohibits unauthorised users from accessing the data, and secures data privacy.The fact that the values of one table are connected to others is the foundation of relational DBMS. It is capable of handling bigger amounts of data and quickly simulating queries. Relational Database Management Systems ensure data integrity by imitating the following characteristics:

1. Entity Integrity: No two records in the database table may be identical.

2. Referential Integrity: Only those rows of those tables that are not utilised by other tables can be erased. Otherwise, data discrepancy may occur.

3. User-defined Integrity: Rules based on confidentiality and access that are established by the users.

4. Domain integrity: The database table columns are contained inside certain specified limitations based on default values, data type, or ranges.

In RDBMS, data must be saved in a DB file in tabular form, that is, in the form of rows and columns. Each table row is referred to as a record/tuple. The cardinality of the table refers to the collection of such items. Each column in the table is referred to as an attribute/field. The arity of the table is a collection of similar columns. There can be no duplicate records in the DB table. By employing a candidate key, data duplication is eliminated. A Candidate Key is a collection of properties that must be present in order for each record to be uniquely identified. Tables are linked to one another via foreign keys.Database tables also support NULL values, which means that if the values of any of the table's elements are not filled in or are missing, the value becomes a NULL value, which is not equal to zero. RDBMS often include data dictionaries and metadata collections that aid in data management. These provide for the programmatic support of well-defined data structures and relationships. Data storage management is a typical RDBMS functionality, and it has been characterised by data objects ranging from binary large object strings to stored procedures. This type of data item extends the scope of conventional relational database operations and may be handled in a number of ways by different RDBMSes.For acessing data in RDBMs SQL is usedData manipulation language and data definition language statements are its primary language components. RDBMS employs complicated algorithms that allow several concurrent users to access the database while preserving data integrity. Another overlay function provided by the RDBMS for the fundamental database when used in business settings is security management, which enforces policy-based access.