

Introduction to DBMS

Rajeev Srivastava

ToC

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- Database Design
- ER Model

Basic Terminology

- **Data** – Raw information,
A value representing a quality or quantity
A recorded fact.
- **Information** – Processed data
- **Record** – A collection of related data/information.
- **Data Dictionary** – Data dictionary is a detailed description of data objects exists in a system.
- **Data Warehouse** – Centralized repository of data from one or more sources and used for reporting and data analysis.
- **Type of Data – Structured, Semi-Structured, Unstructured**

Basic Terminology

- Data
- Database
 - Manual Databases
 - Computerized Database
 - File System Database
 - Database Management System
 - Relational Database Management Systems (SQL Database)
 - NoSQL Database Management Systems

Database & DBMS

Database – A database is an organized collection of data, that can be easily accessed, managed and manipulated.

OR

A database is a collection of interrelated data stored together without harmful or unnecessary redundancy.

DBMS

A database management system(DBMS) is a software package used to store and manage data.

Problems in Manual/File System Database

- No Sharing
- Data isolation
- Diffused responsibilities
- Poor coordination
- Data redundancy
- No/Weak Security
- Cumbersome Retrieval Process
- Cumbersome/No Update Possible
- Weak (data) integrity

Features & Advantages of DBMS

- Data Representation
- Data Manipulation Management
- Transaction Management
- Data Access Management
- Storage and Data Redundancy Management
- Increased Security
- Performance/Faster Retrieval
- Analysis Summary Reports
- Centralized Management and Control
- Data Sharing

Applications of DBMS

- Banking
- Railway
- Airlines
- Educational Organizations / University
- Data Warehouses
- And many more...
- Enterprise Business
 - Manufacturing
 - Sales
 - Human Resource
 - Payroll
 - And many more...

Find at least 3
more applications
of DBMS

DBMS Examples

Find names of at least 5 additional popular DBMS

- Oracle
- Microsoft SQL Server
- IBM DB2
- Microsoft Access
- PostgreSQL (Open Source)
- MySQL (Open Source)
- MariaDB (Open Source)
- SQLite
- Teradata

- NoSQL Databases
 - MongoDB
 - Apache CouchDB
 - Apache Cassandra
 - Apache Hbase
 - Neo4J
 - Oracle NoSQL

Find more about these listed databases – Type, License, Uses, Latest Versions, Underlying Data Modals, Owner Companies etc.

A Sample Table: Employee

empid	empname	designation	salary	bonus	dept	report_to
1001	Aniket	Project Engineer	40000	5000	SE	1002
1002	Avinash	Team Lead	50000	10000	SE	1003
1003	Shweta	Project Manager	70000		SE	1005
1005	Sachin	HR Head	60000		HR	1006
1006	Vikash	CEO		10000		