

ADVANCE DATABASE MANAGEMENT SYSTEM



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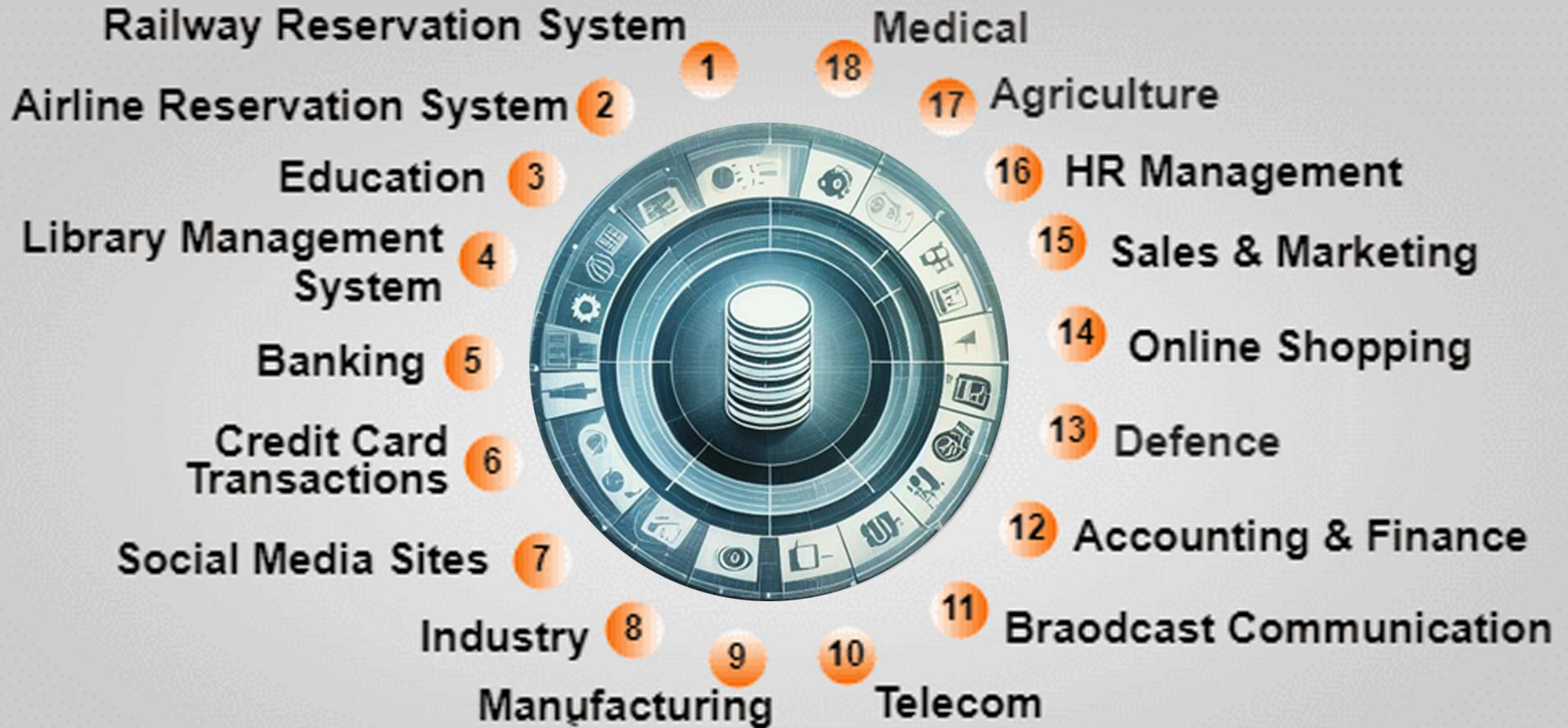
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Significance of Databases

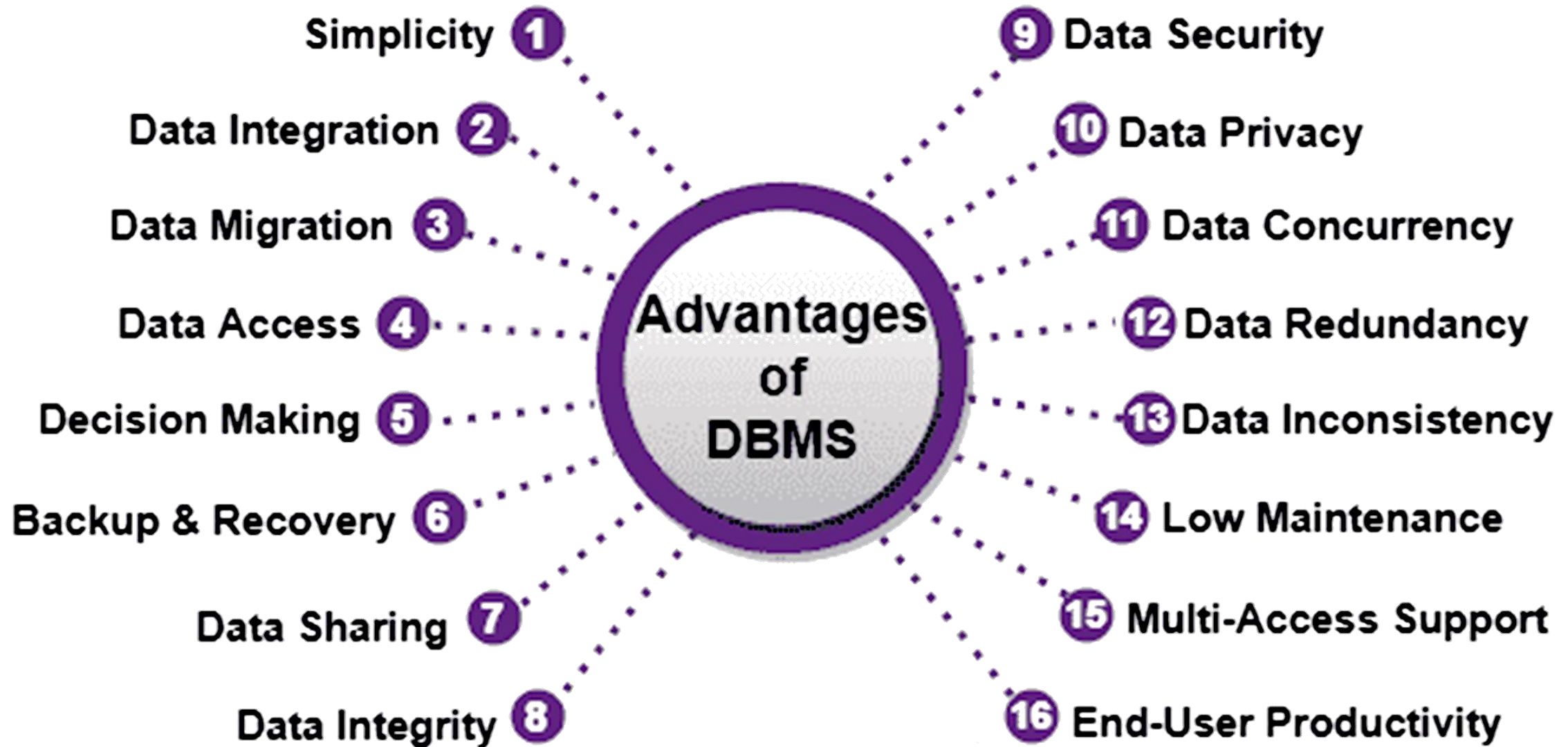
1. Data Storage and Organization
2. Data Retrieval and Querying
3. Data Integrity and Consistency
4. Concurrency Control and Transactions
5. Scalability
6. Data Security
7. Decision Making and Analysis
8. Application Support
9. Backup and Recovery
10. Regulatory Compliance



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Applications of DBMS



Disadvantage of Database System

- In spite of using DBMS, there are few situations in which such a program may involve unnecessary overhead cost as that would not be incurred in traditional file system.
- The overhead cost of using DBMS is due to the following.
 - High initial investment in software, hardware and training.
 - Overhead for providing security, recovery and integrity function.
 - Cost of the maintenances of the software which remain forever.
 - Cost of backup and recovery

Classification of DBMS

- **Classification Based on Data Model**
 - RDBMS, Hierarchical model, N/W Model(Classic)
- **Classification Based on User Numbers**
 - Single user and Multi user
- **Classification Based on Number of Sites**
 - Centralized and Distributed
- **Classification based on Cost**
 - Free / Open Source and Proprietary
- **Classification based on types of access path**
 - General Purpose and Special Purpose
 - OLTP vs OLA

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DBMS	RDBMS
It stands for , Database Management System	It stands for , Relational Database Management System
DBMS technology stores the data in the form of files .	RDBMS stores the data in the form of tables .
No relationship is formed between the data in DBMS.	In RDBMS, the data is stored in multiple tables and therefore can relate to each other with foreign keys.
The data in DBMS is typically stored in navigational or hierarchical forms .	In RDBMS, data is stored in a tabular form where the headers are column names, and the rows have corresponding data values. Any data can be easily accessed through the column name and row index.
DBMS allows managing the databases on the computer hard disks and computer networks .	RDBMS allows maintaining the relationships among the tables in databases.
Data elements through DBMS can only be accessed individually at a time.	In RDBMS, multiple data elements can be accessed at the same time.

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DBMS	RDBMS
DBMS provides support only for a single user at a time.	RDBMS provides support for multiple users at a time.
Data in regular databases may not be stored following the ACID (Atomicity, Consistency, Isolation, Durability) model, which typically inconsistencies in databases.	Although relational databases are harder to create, they are consistent, well-structured, and follow the ACID model .
There is no support for client-server architecture in DBMS.	RDBMS provides support for the client-server architecture .
DBMS is designed to handle small amounts of data .	RDBMS is designed to deal with a vast amounts of data .
Data fetching for the complex and large amount of data is relatively slower in DBMS.	Data fetching is quick in RDBMS due to the relational approach.
In DBMS, there is no support for the integrity constraints .	In RDBMS, there is support for integrity constraints at the schema level.

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DBMS	RDBMS
Data Redundancy is quite common in DBMS.	RDBMS utilizes keys and indexes in tables, which eliminates the Data Redundancy in this model.
Here, the data is subject to low-security levels when it comes to data manipulation.	The data in RDBMS has multiple security levels during data manipulation. Also, log files are created at the OS level, command level, and object level as well.
DBMS can efficiently work with low software and hardware requirements .	RDBMS requires higher software and hardware .
The examples of DBMS include XML, MS Access, file systems, Dbase, etc.	The examples of RDBMS include MySQL, SQL Server, Oracle, PostgreSQL, etc

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Basis of Comparison	Centralized database	Distributed database
Definition	It is a database that is stored, located as well as maintained at a single location only.	It is a database that consists of multiple databases which are connected with each other and are spread across different physical locations.
Access time	The data access time in the case of multiple users is more in a centralized database.	The data access time in the case of multiple users is less in a distributed database.
Management of data	The management, modification, and backup of this database are easier as the entire data is present at the same location.	The management, modification, and backup of this database are very difficult as it is spread across different physical locations.
View	This database provides a uniform and complete view to the user.	Since it is spread across different locations thus it is difficult to provide a uniform view to the user.

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Basis of Comparison	Centralized database	Distributed database
Failure	The users cannot access the database in case of database failure occurs.	In a distributed database, if one database fails users have access to other databases.
Data Consistency	This database has more data consistency in comparison to distributed database.	This database may have some data replications thus data consistency is less.
Cost	A centralized database is less costly.	This database is very expensive.
Efficient	A centralized database is less efficient as data finding becomes quite complex because of the storing of data and information at a particular place.	A distributed database is more efficient than a centralized database because of the splitting up of data at several places which makes data finding simple and less time-consuming.
Response Speed	The response speed is more in comparison to a distributed database.	The response speed is less in comparison to a centralized database.

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Basis of Comparison	Centralized database	Distributed database
Maintenance	Ease of maintenance because the whole of the data and information is available at a single location and thus, easy to reach and access.	It is difficult to maintain because of the distribution of data and information at varied places. So, there is a need to check for data redundancy issues and how to maintain data consistency.
Examples	<ul style="list-style-type: none">•A desktop or server CPU•A mainframe computer.	<ul style="list-style-type: none">•Apache Ignite•Apache Cassandra•Apache HBase•Amazon SimpleDB•Clusterpoint•FoundationDB.