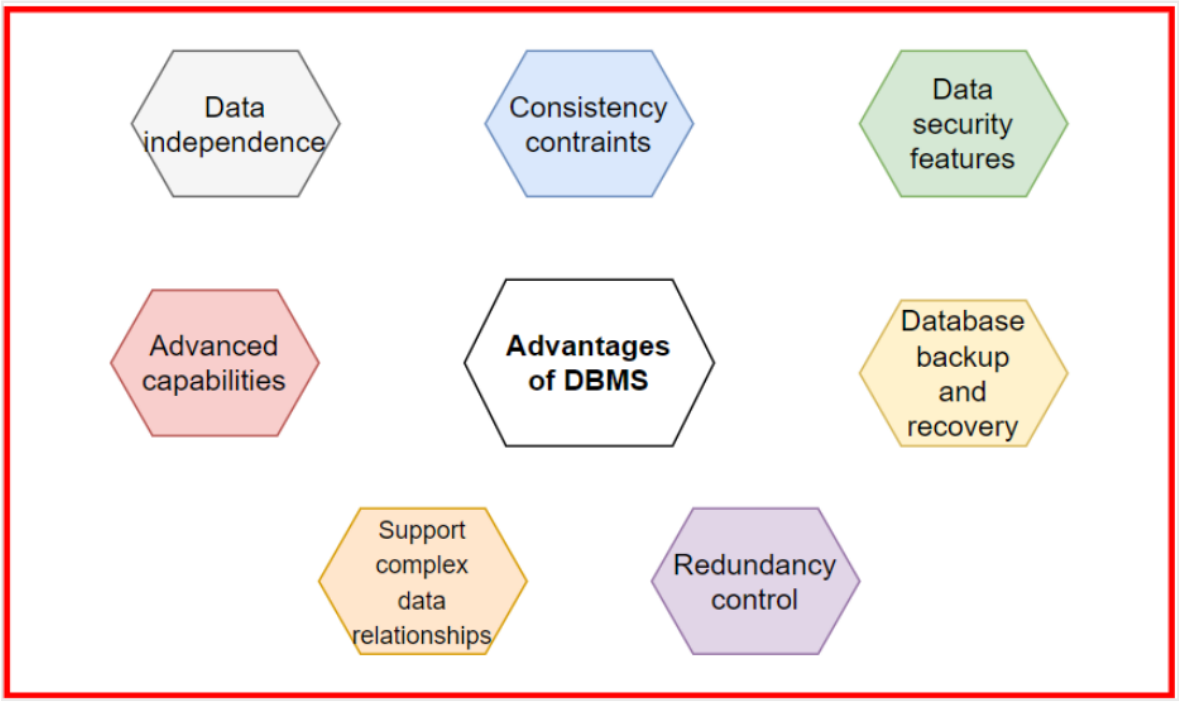
Need, advantages and disadvantages of DBMS

Need of DBMS

DBMS plays a vital role for businesses, institutions, and organizations to effectively manage and utilize their data. It helps in the following ways:

- **Managing Data**:DBMS assists in managing operations like inserting, deleting, and manipulating data effectively.
- **Ensuring Data Accuracy and Security**:DBMS provides access control, ensuring that data is not accessible to unauthorized parties, which guarantees security and data accuracy.
- **Supporting Decision-Making**:DBMS provides control over how data is handled, which supports essential decision-making for businesses and organizations.

DBMS serves as the core of contemporary information systems, facilitating efficient data management and serving as a foundation for a wide range of applications and services.



Advantages of DBMS

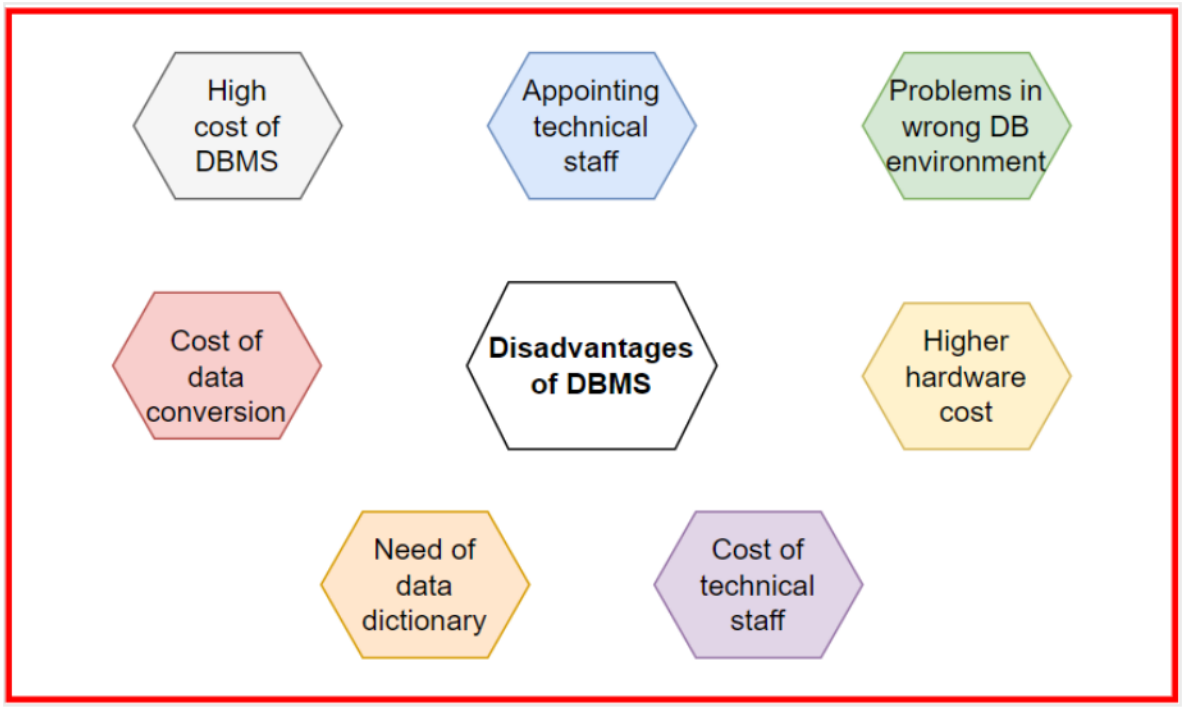
- **Data Security**:DBMS implements security mechanisms that regulate access to sensitive information, safeguarding it from unauthorized access and potential data breaches.
- **Data Redundancy and Inconsistency**:DBMS eliminates data redundancy, minimizing storage needs and ensuring consistency by maintaining a unified version of the data. *Example:* If multiple registers store the same information, they would unnecessarily consume

memory and increase the time required for updates.

- **Data Integrity**:DBMS ensures data integrity by enforcing rules and constraints that prevent incorrect or inconsistent data from entering the database. *Example:* If an age is to be entered in the database, the system can enforce that the input must be an integer.
- **Data Scalability**:DBMS can handle large datasets and scale to accommodate increasing amounts of data as an organization grows. *Example:* Adding 1200 new employees' details to a database originally containing 40 employees can be done seamlessly using DBMS.
- **Data Abstraction**:DBMS offers data abstraction, allowing users and applications to interact with the database without needing to understand its underlying complexities.

Disadvantages of DBMS

- **Cost**:Acquiring, deploying, and sustaining DBMS software can incur significant costs. Additionally, the hardware required for its operation may also be expensive.
- **Scale Projects**:For small-scale applications with minimal data storage needs, using a comprehensive DBMS may introduce unnecessary complexities and burdens. *Example:* If an organization only wants to store data for 20 people and does not plan to add more, a DBMS may be overkill and more streamlined alternatives would be better suited.
- **Vendor Lock-In**:Switching to a different DBMS can be challenging due to differences in data formats and query languages, leading to vendor lock-in. *Example:* A company using SQL to store data may find it difficult to switch to NoSQL due to their structural differences (SQL stores data in rows and columns, while NoSQL uses key-value pairs).


High cost of DBMS
Appointing technical staff
Problems in wrong DB environment
Cost of data conversion
Disadvantages of DBMS
Higher hardware cost
Need of data dictionary
Cost of technical staff