



SNS COLLEGE OF ENGINEERING

Kurumbapalayam (Po), Coimbatore – 641 107

An Autonomous Institution

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Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING(IoT and
Cybersecurity Including BCT)**

COURSE NAME : 19SB502 DATABASE MANAGEMENT SYSTEMS

III YEAR / V SEMESTER

Unit I- INTRODUCTION TO DATA BASE SYSTEM

Topic :DBMS



Definition:

A Database Management System (DBMS) is software that enables users and applications to interact with a database.

It provides a set of tools and services to create, maintain, and manipulate databases, allowing users to store, retrieve, update, and manage large volumes of data efficiently.

The main functions of a DBMS include:

Data Definition: DBMS allows users to define the structure of the database, specifying data types, relationships, constraints, and rules through data definition language (DDL).

Data Manipulation: DBMS supports data manipulation operations, such as inserting, updating, deleting, and querying data, using data manipulation language (DML). Common DML commands include SELECT, INSERT, UPDATE, and DELETE.



Data Retrieval: Users and applications can retrieve specific data from the database using queries. DBMS processes these queries and returns the relevant data, often using Structured Query Language (SQL) for relational databases.

Data Security: DBMS provides mechanisms for user authentication, access control, and data encryption to ensure data security and prevent unauthorized access.

Data Integrity: DBMS enforces data integrity rules and constraints to maintain the accuracy and consistency of data in the database.



Concurrency Control: DBMS manages concurrent access to the database by multiple users or applications, ensuring data consistency and preventing conflicts.

Backup and Recovery: DBMS allows for data backups and provides recovery mechanisms to restore data in case of system failures or data loss.

Popular examples of DBMSs include Oracle, MySQL, Microsoft SQL Server, PostgreSQL, and MongoDB, each tailored to specific data models and application requirements.

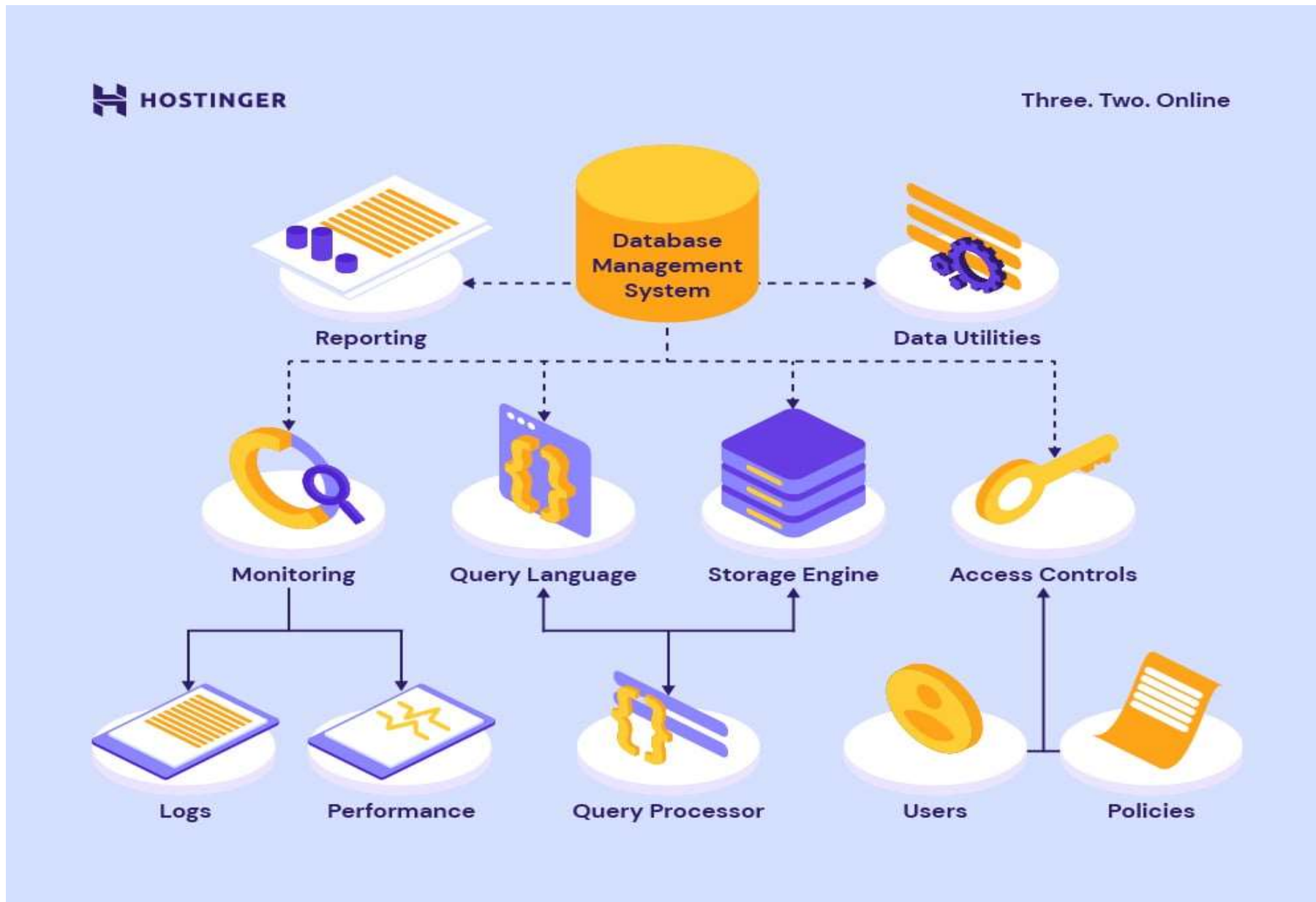


What is Database

The database is a collection of inter-related data which is used to retrieve, insert and delete the data efficiently. It is also used to organize the data in the form of a table, schema, views, and reports, etc.

For example: The college Database organizes the data about the admin, staff, students and faculty etc.

Using the database, you can easily retrieve, insert, and delete the information.





Characteristics of DBMS

- ✓ It uses a digital repository established on a server to store and manage the information.
- ✓ It can provide a clear and logical view of the process that manipulates data.
- ✓ DBMS contains automatic backup and recovery procedures.
- ✓ It contains ACID properties which maintain data in a healthy state in case of failure.
- ✓ It can reduce the complex relationship between data.
- ✓ It is used to support manipulation and processing of data.
- ✓ It is used to provide security of data.
- ✓ It can view the database from different viewpoints according to the requirements of the user.



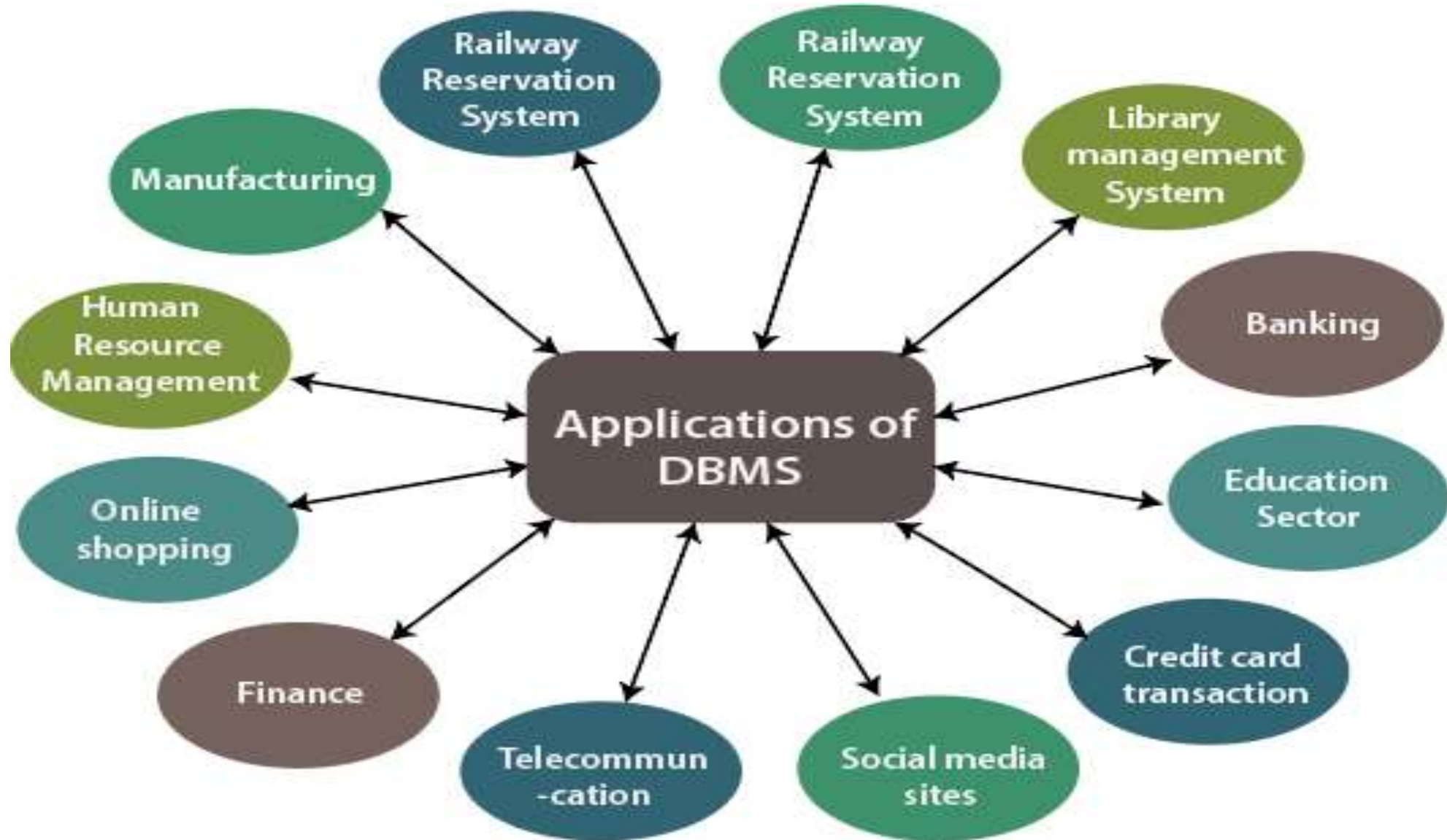
Advantages of DBMS

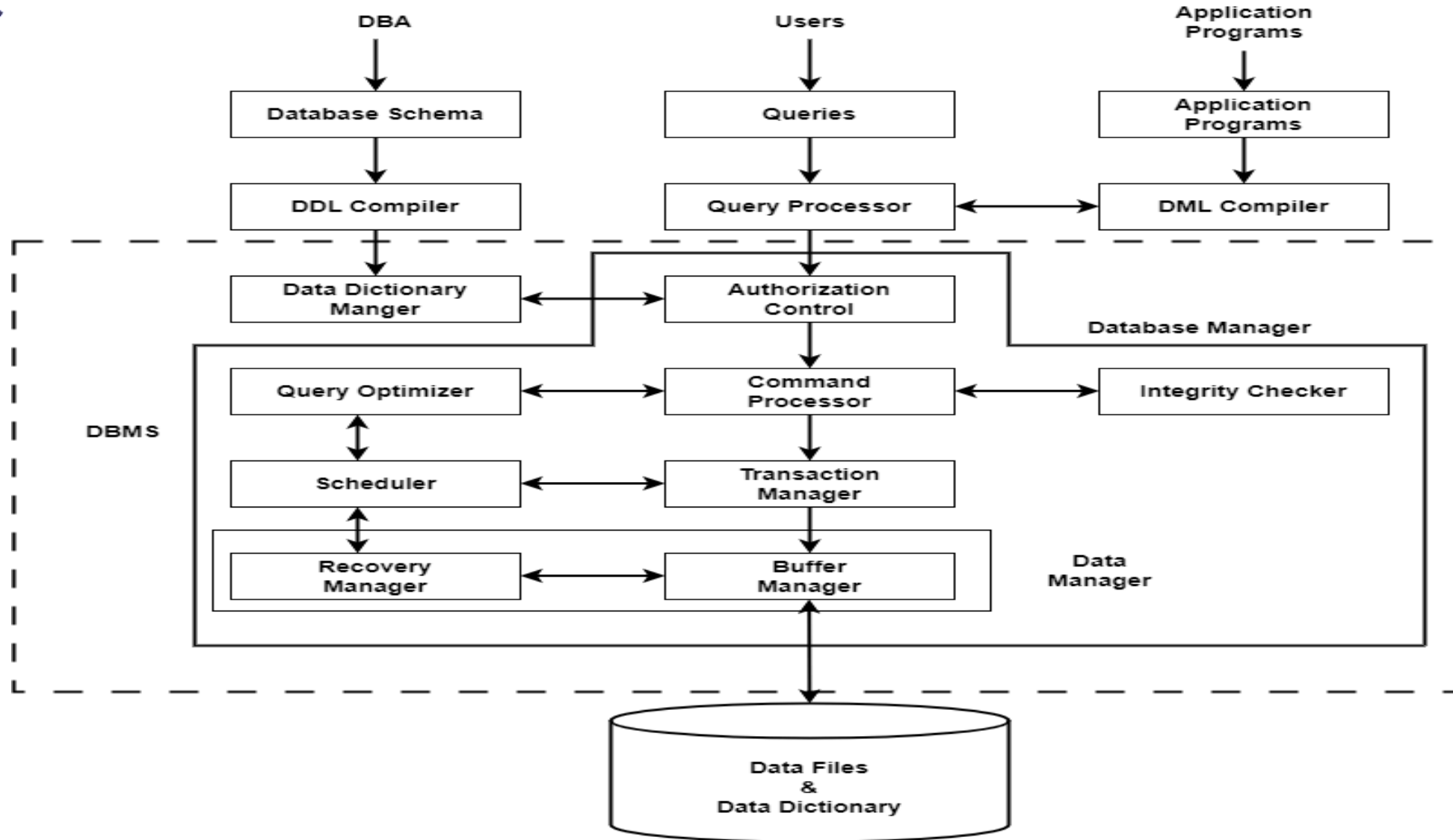
- **Controls database redundancy:** It can control data redundancy because it stores all the data in one single database file and that recorded data is placed in the database.
- **Data sharing:** In DBMS, the authorized users of an organization can share the data among multiple users.
- **Easily Maintenance:** It can be easily maintainable due to the centralized nature of the database system.
- **Reduce time:** It reduces development time and maintenance need.
- **Backup:** It provides backup and recovery subsystems which create automatic backup of data from **hardware** and **software** failures and restores the data if required.
- **multiple user interface:** It provides different types of user interfaces like graphical user interfaces, application program interfaces



Disadvantages of DBMS

- ✓ **Cost of Hardware and Software:** It requires a high speed of data processor and large memory size to run DBMS software.
- ✓ **Size:** It occupies a large space of disks and large memory to run them efficiently.
- ✓ **Complexity:** Database system creates additional complexity and requirements.
- ✓ **Higher impact of failure:** Failure is highly impacted the database because in most of the organization, all the data stored in a single database and if the database is damaged due to electric failure or database corruption then the data may be lost forever.







Any Query????

Thank you.....