SNS COLLEGE OF ENGINEERING

Kurumbapalayam (Po), Coimbatore – 641 107

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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**

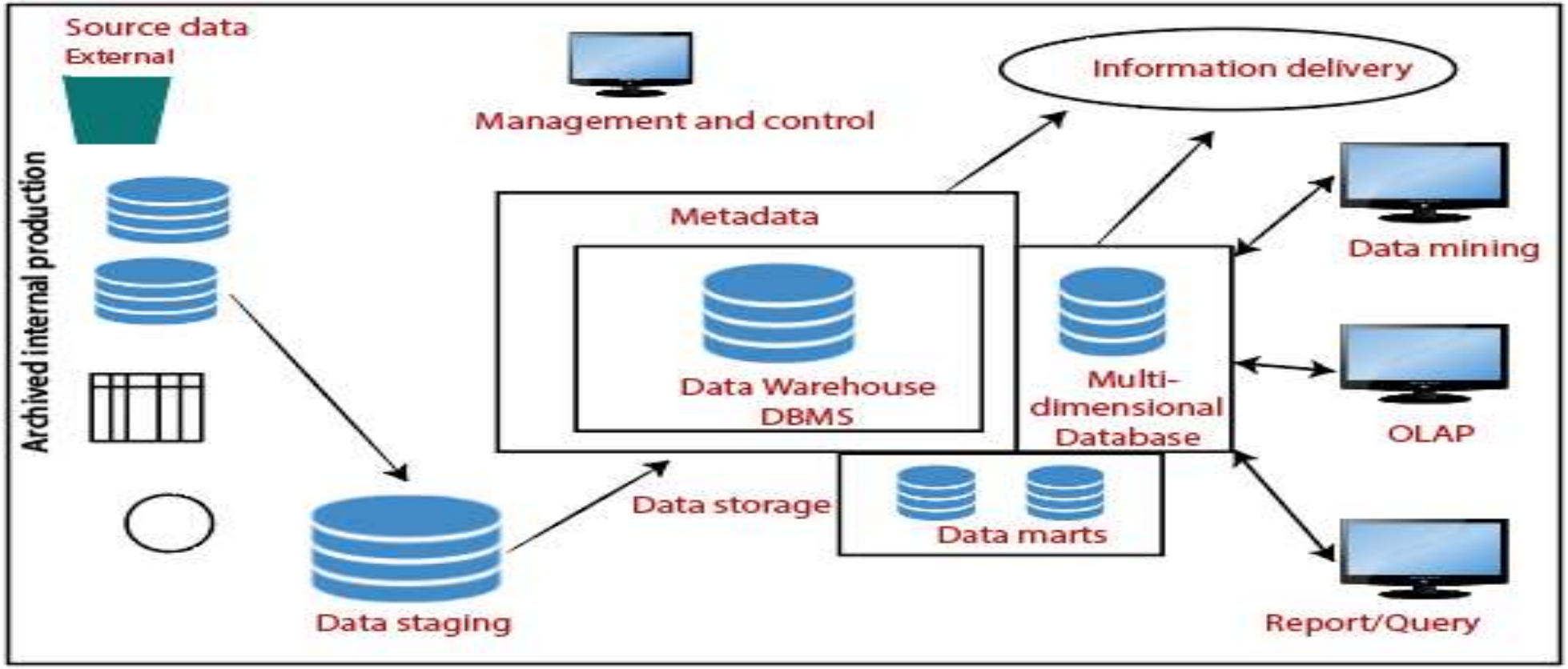
Topic : Basic Building Blocks

In a Database Management System (DBMS), the basic building blocks are **designed to efficiently store, manage, and retrieve data**.

These building blocks provide the foundation for **creating and maintaining databases**. The major components of a DBMS are as follows:

1.Database: This is the central component of a DBMS, where **data is organized and stored**. A database is a collection of **related data, structured in a way that enables efficient storage, retrieval, and management** of information.

2.Tables: A table is a fundamental structure in a database that **represents a collection of related data entries**. It consists of **rows and columns,** where each **row represents a record**, and each column represents a **specific attribute of that record**. Tables provide a structured way to organize and store data.



Components or Building Blocks of Data Warehouse

3.Fields/Attributes: Fields (also called attributes) are the **individual data elements** or properties that describe the entities represented by the table's rows. For example, in a table representing employees, fields could include "Employee ID," "Name," "Age," "Salary," etc.

4.Records/Tuples: A record, also known as a **tuple**, is a single row in a table. It contains a **set of values that correspond to the attributes** defined for the table. Each record represents a **unique entity** or instance within the data set.

5.Keys: Keys are used to **uniquely identify records within** a table. The Primary Key is a unique identifier for each record, ensuring that each row has a distinct and unambiguous identity. Foreign Keys establish relationships between different tables by referencing the Primary Key of another table.

6.Queries: Queries are used to **retrieve, update, insert, or delete data** from a database. They allow users to **interact with the database** and perform various operations on the data.

7. Indexes: Indexes are data structures used to **speed up data retrieval** from a database.

They provide quick access to specific data by **creating a searchable reference to the locations of rows** in a table based on the values in one or more columns.

8.Views: A view is a **virtual table derived from one or more existing tables** or other views.

It **does not store data** itself but presents data from the underlying tables in a specific way, providing an additional layer of abstraction and security.

9.Transactions: Transactions are **sequences of database** operations that are treated as a single unit of work.

They must follow the principles of **ACID** (Atomicity, Consistency, Isolation, Durability) to ensure data integrity and reliability.

10.Constraints: Constraints are **rules applied to fields** in a table to maintain the integrity of the data.

Common constraints include uniqueness, primary key, foreign key, and check constraints.

Any Query????

Thank you……