

ELECTIVE 2 (IT 307)

LESSON 1

Components of database environment

- user
 - Database application
 - DBMS
 - Database
- Database users – anyone who have access in the system
 - Dbms – software package, that allows user to create, read, update, and delete data in database. Example: mysql, Microsoft sql server, etc.
 - Database application – hotel booking system, enrollment system, online learning platforms, airline reservation system, etc.
 - Database – is the organized collection of data or information to be able store, search and retrieve data.

Database application

Database applications are software applications that interact with a database to perform specific tasks, manage data, and support business processes..

It is an application program that is used to perform a series of activities on behalf of database users.

They are computer programs that allow users to manipulate the data in a DBMS through a user-friendly interface

Types of database application

four broad categories:

- **Personal:** Restricted to a single user
- **Departmental:** Referenced by hundreds of users over a shared system or network
- **Enterprise:** Extensions of departmental applications involving thousands of users
- **Internet:** Largest form of information sharing where billions of users are involved

DATA MODELS

- representation of more complex real---world data
- capture the nature of and relationships among data

1. conceptual data model

The conceptual data model represents the overall structure of the data and high-level relationships between the entities without going into the details of the attributes. It's used to establish the entities, their attributes, and their relationships, focusing on what data needs to be stored

2. Logical data model

The logical data model adds more detail to the conceptual model by specifying the attributes of the entities and defining the relationships with more precision. It doesn't focus on how data is stored physically but on how it can be organized logically

3. Physical data model

The physical data model describes how the data will be stored in the database. It includes details like table names, column names, data types, constraints, and indexes. It represents the actual implementation of the database.

DATA WAREHOUSE

A data warehouse is the processes, tools, and facilities to manage and deliver complete, timely, accurate, and understandable business information to authorized individuals for effective decision making."

Business Insights and Data Availability

- Business decisions are anchored on the business objectives that you want to achieve.
- Understand data management concepts and criticality of data availability in order to make reliable business decisions.
- Logistic regression

Types of analytics

- Descriptive analytics (what happen?)
- Diagnostic analytics (how this particular thing happen?)
- Predictive analytics (what will happen next?)
- Prescriptive/optimization analytics (giving the best possible options)

Big Data 5V's

- Volume (the number of data, how huge/big)
- Variety (diff kinds/forms of data. big data set typically contains structured, semi-structured, and unstructured data.)
- Velocity (quick generation of data, real time)
- Veracity (accuracy and reliability of data)
- Value (useful information)