

DATABASE DESIGN MODULE

WEEK 1

power learn project



WHAT YOU WILL LEARN

AT THE CORE OF THE LESSON:

YOU WILL LEARN HOW TO DO THE FOLLOWING:

- Identify different components of a database.
- Basics of databases: data, information, and databases in computing.
- Describe the purpose and functions of a Database Management System(DBMS).
- Different types of data models: hierarchical, network, relational, and object-oriented.
- Database terms: tables, rows, columns, primary keys, foreign keys.





WHAT IS DATA?

{

Data is nothing but raw and unprocessed facts.





WHAT IS INFORMATION ?

{ Information is data that has been processed, organized, and interpreted to give it meaning and context.





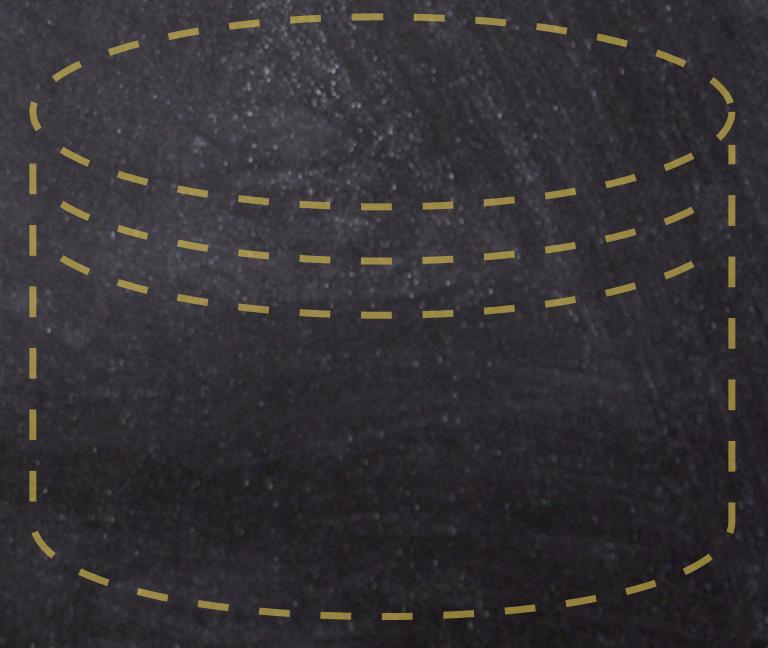
DATABASE

{ **DATABASE** is a collection of related data organized in a way that can be easily accessed, managed, and updated.



WHAT IS DBMS ?

A DBMS is a software that allows creation, definition and manipulation of a database, allowing users to store, process and analyze data easily.





ADVANTAGES OF DBMS

- Reduced Data Redundancy
- Efficient Data Retrieval
- Faster Development and Simplified Maintenance
- Seamless integration





DISADVANTAGES OF DBMS

Complexity
Cost
Large Size and Resource Requirements



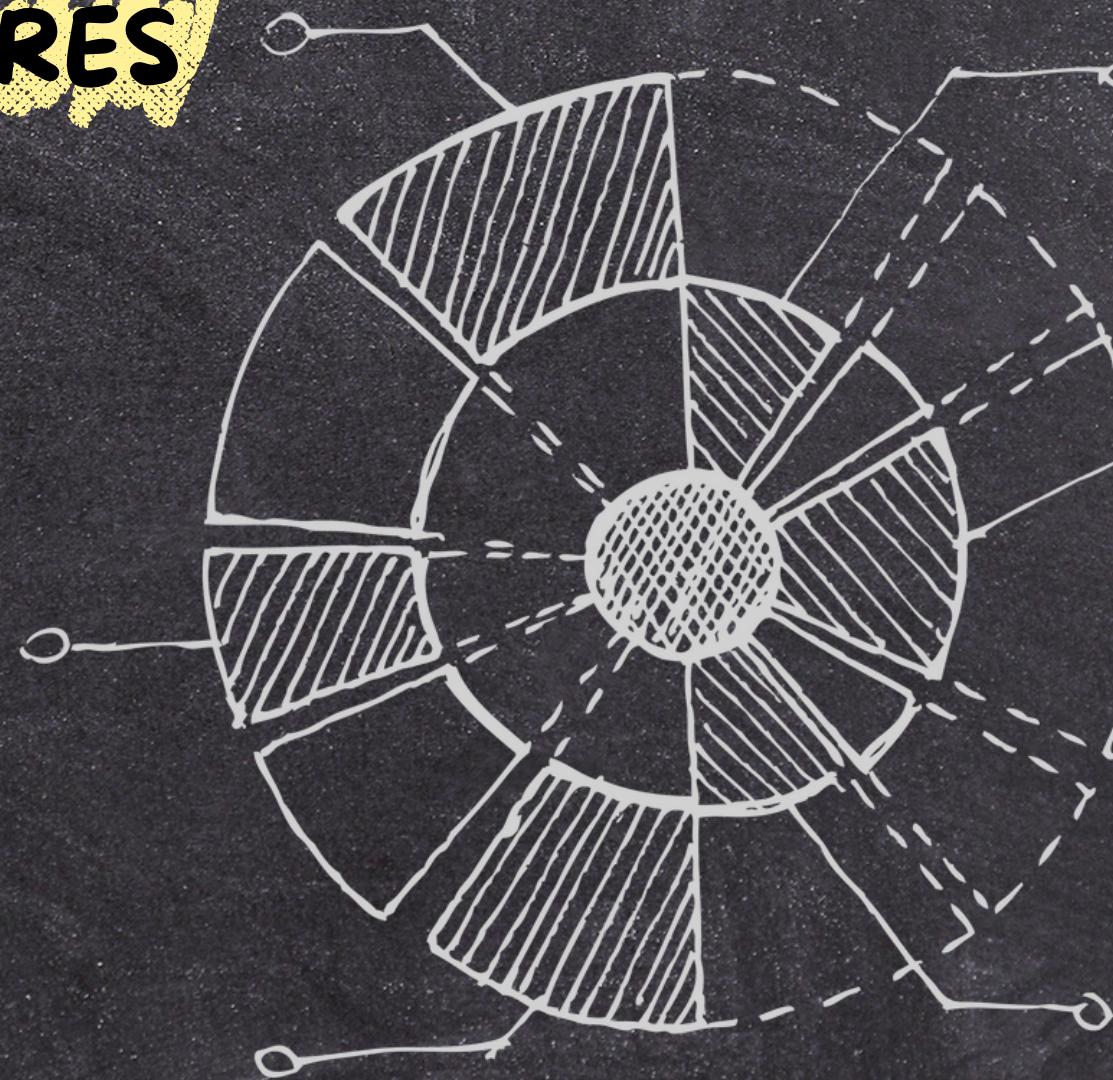
COMPONENTS OF DBMS

①
②
③

PROCEDURES



D.A.L



HARDWARE



SOFTWARE



DATA



1 Database
Administrators



2 Software
Developer



3 End
User



USERS





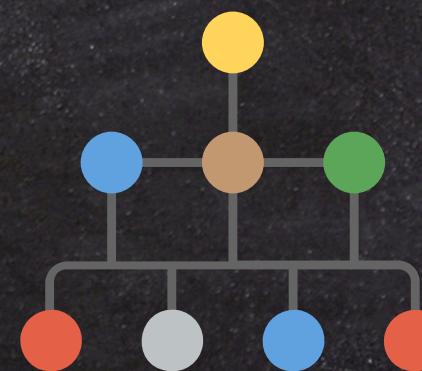
DATABASE MODEL



A Database model defines the logical design and structure of a database. It defines how data will be stored, accessed, and updated in a database management system.

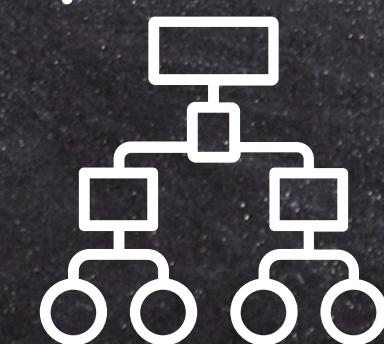
HIERARCHICAL MODEL

The hierarchical database model organizes data into a tree-like structure, with a single root, to which all the other data is linked.



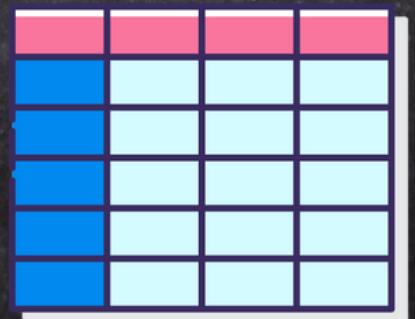
NETWORK MODEL

The Network Model is an extension of the Hierarchical model. In this model, data is organized more like a graph, and allowed to have more than one parent node.



RELATIONAL MODEL

The basic structure of data in the relational model is tables. All the information related to a particular type is stored in rows of that table.





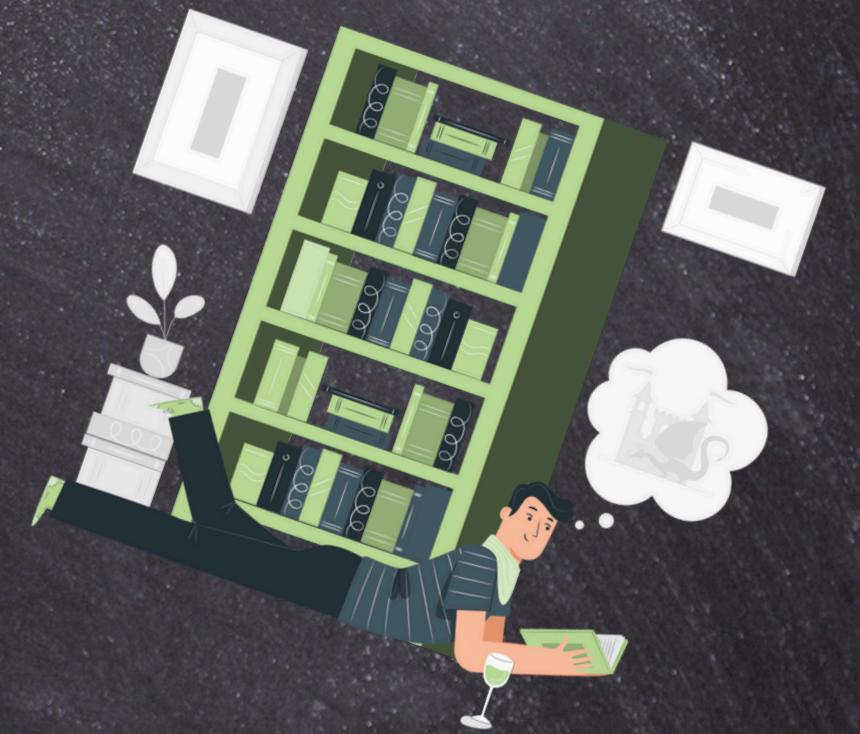
SQL

SQL stands for the structured query language.

SQL is the standardized language used to access the database.

SQL is composed of **three** parts:

- a. **Data definition language (DDL)** includes statements for defining the database and its objects such as tables, views, and procedures.
- b. **Data manipulation language (DML)** contains statements for updating and querying data.
- c. **Data control language (DCL)** allows you to grant permissions to users to access specific data in the database.





DATABASE BASICS

Tables: Think of a table as a well-organized spreadsheet. It's a collection of data arranged in rows and columns.

Rows: A row represents a single record or entry.

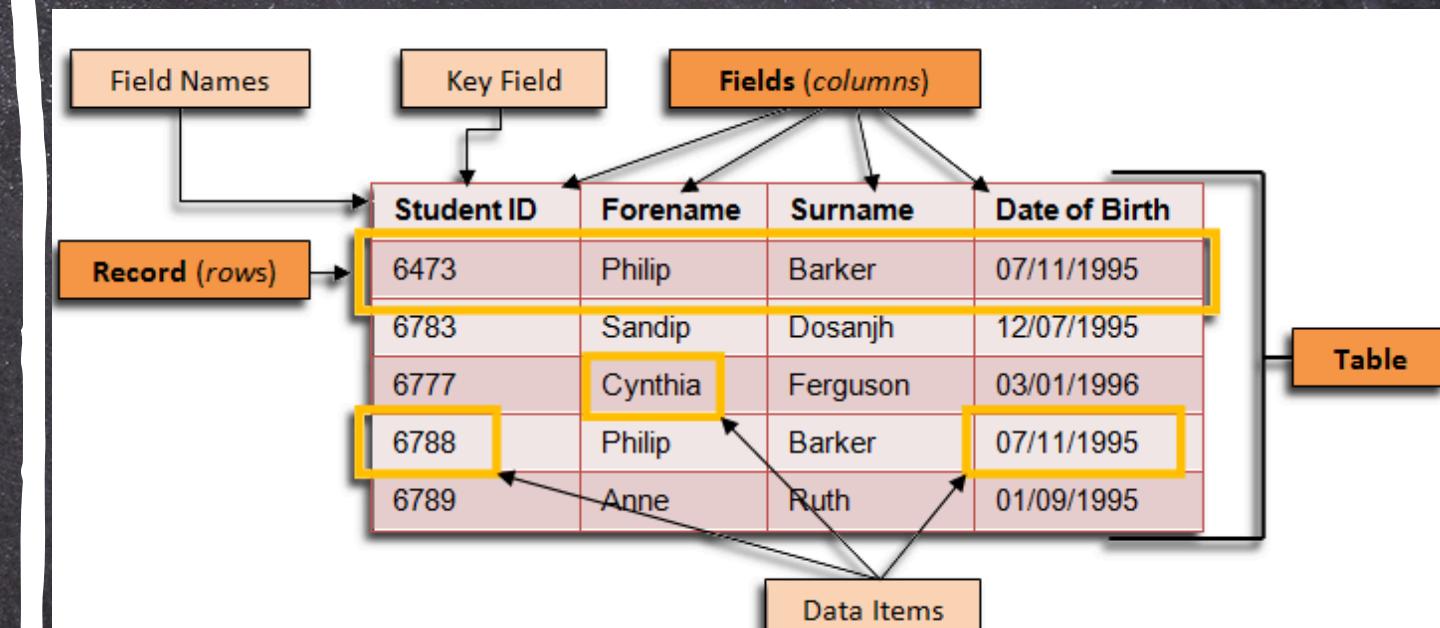
Columns: They define the specific types of information stored in each row.

Primary Key: This is a unique identifier for each row in a table.

Foreign Key: A foreign key is a column that references the primary key of another table. It's like a link between tables, helping us connect related information.

Data Types: To keep data organized and accurate, we use data types.

These are like labels that specify the kind of information a column can hold.



CHECKPOINT QUESTIONS



What is the purpose of a DBMS?



Name three Datatype used in SQL?



Name three component of a DBMS?



KEY TAKEAWAYS



A DBMS is software that provides database functionality.



A DATABASE is a collection of related data organized in a way

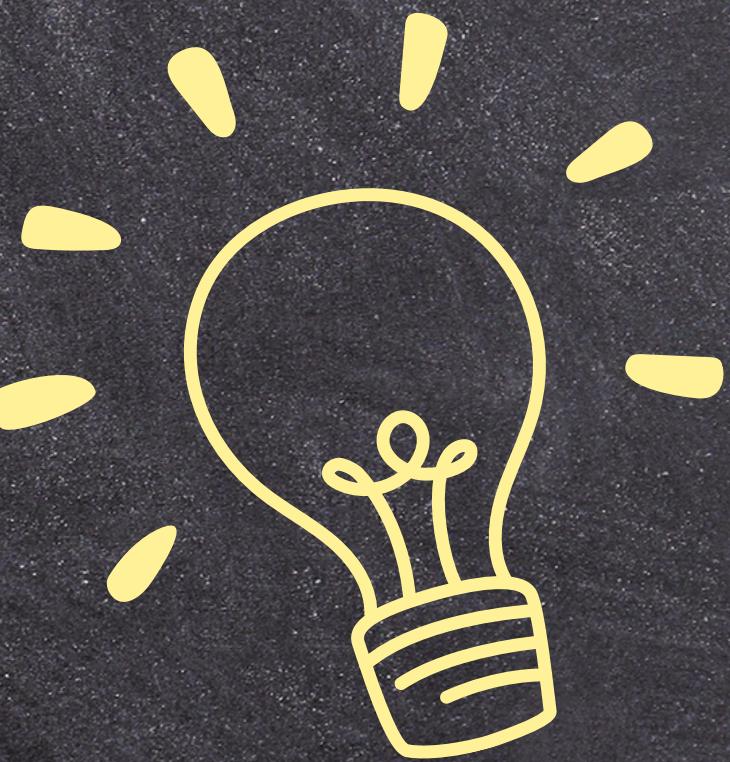


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QnA