

WHAT ARE DATABASE AND WHY DO WE NEED THEM?

Chapter 1

DIFFERENCE BETWEEN DATA AND INFORMATION

Data

Information

Meaning

Data are raw facts and figures that are processed to produce information. Data can be something simple and seemingly random and useless until it is organized.

When data is processed, organized, structured or presented in a given context so as to make it useful, it is called Information.

Example

Each student's test score is one piece of data

The class' average score or the school's average score is the information that can be concluded from the given data.

WHAT IS DATABASE?

- If you want to understand the databases then don't start with the feature of database software.

Database are design the solve the problem. Try to understand what problems the databases solving.

DBMS - DATABASE MANAGEMENT SYSTEM

- ✓ A database management system (DBMS) is a collection of programs that enables you to store, modify, and extract information from a database.
- ✓ Main function of the DBMS store Database Information with comfortable way.
- ✓ DBMS also provides protection and security to database.
- ✓ It maintains data consistency in case of multiple users.

CONT.....

- If you have data, you need a database to store it.
- It could be information about customers, suppliers, employees etc.
- This data could be in any format. Text, numbers, dates, amounts, images, documents, audio, videos etc.
- You can store these data in text files or spreadsheets. You can use folders to organize your files.

THEN WHY DO WE NEED DATABASES?

- Many small businesses start with it's setup they use spreadsheets and text files and continue to use them for years.
- This setup might work, just fine.
- Because just having data is not good reason to have a database.
- Having the data is not main problem what comes next is the problems.

EXAMPLES OF PROBLEMS

- Size of data
- Updating data
- Accuracy
- Security
- Redundancy

SIZE OF DATA

- The spreadsheet solution is fine when we have 100 record. It may not work if you have million records. You have to split up your file into multiple sub files. This will create problems of speed. It will few long time to find records.

UPDATING PROBLEMS

- Also there will be updating problem if we use spreadsheet or text files.. Multiple people can't edit the file at same time. There will be overwriting.

ACCURACY

- Data accuracy is hard to maintain. There no validation data entry. Any one can type anything. You can enter wrong spelling and wrong date.

SECURITY

- You can't secure data in spreadsheet and text files. Any one can access the files and see data with in the files.

REDUNDANCY

- There will be problems of redundancy, modification of data. Multiple copies of same data will found its way in the spreadsheet and documents.
- It is not easy to update multiple copies of same data at once.
- It is because of the problems a database is required.

IN DATABASE MANAGEMENT SYSTEM

- Let's you store data and let's grow.
- You can modify the data. multiple people can do the modification at the same time.
- The data is validate base on business rules.
- You can control the security. For example who can view, who can modify the data, you can track.
- Database let's you take backup easily and perform recovery.

WHAT IS DATABASE?

- Database is organized collection of information. Information means sales record of shops, student details or Fee details in institution, stock record of goods etc. we store these information in different type of software or electronic form.

OVERVIEW OF DATABASE

- A Database is a collection of related data organized in a way that data can be easily accessed, managed and updated.
- Any piece of information can be a data, for example name of your school.
- Database is actually a place where related piece of information is stored and various operations can be performed on it.



DIFFERENT TYPE OF SOFTWARE FOR RECORD

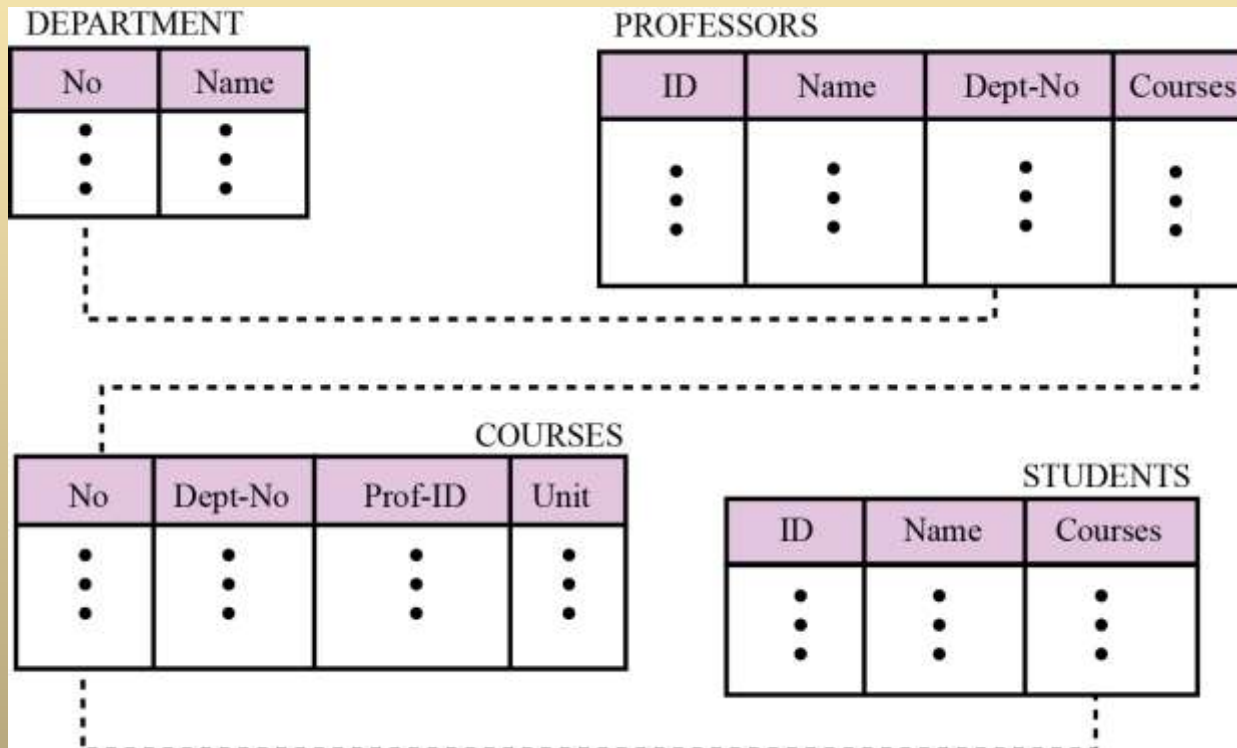
- ✓ Microsoft Word
- ✓ Microsoft Excel
- ✓ Microsoft Access
- ✓ Borland Dbase
- ✓ Microsoft FoxPro
- ✓ Oracle
- ✓ Microsoft SQL Server
- ✓ MySQL
- ✓ IBM's Information Management System

TYPES OF DATABASE

- Flat file Database
- DBMS

RELATIONAL DATABASE MODEL

- In the relational model, data is organized in two-dimensional tables called relations. The tables or relations are, however, related to each other, as we will see shortly.



RELATIONS

- A relation appears as a two-dimensional table. The RDBMS organizes the data so that its external view is a set of relations or tables. This does not mean that data is stored as tables: the physical storage of the data is independent of the way in which the data is logically organized.

RDBMS CONCEPTS

- RDBMS is used to manage Relational database. Relational database is a collection of organized set of tables from which data can be accessed easily.
- Relational Database is most commonly used database. It consists of number of tables and each table has its own primary key.



DATABASE SYSTEM APPLICATION

- ✓ Banking
- ✓ To Make Schedule for Airline Reservation and Information
- ✓ Universities & Institutions
- ✓ To Store the Information of Sales and Purchase
- ✓ Manufacturing
- ✓ To Store the information of Employee, Salary, Payroll, tax in Human Resources
- ✓ Household and family Management
- ✓ Database in use Everyday

ADVANTAGE OF FLAT FILE DATABASE

Easy to set up

Easy to understand

Cheaper than DBMS

ADVANTAGE OF DBMS

- ✓ Insert / Update / Delete information based on conditions.
- ✓ Accept SQL Queries
- ✓ Redundancy Control:
- ✓ Access Control:
- ✓ Full Storage for Program Object and Data Structure:
- ✓ Limitation for Data Entry:
- ✓ Data Sharing:
- ✓ Data Abstraction: For Modification
- ✓ Provide Latest Information of Database to Users:

DISADVANTAGE OF DBMS

- ✓ High Cost
- ✓ Security and Recovery System Needed
- ✓ Large size
- ✓ Could not use all Features for all situation

INSTANCES & SCHEMA

The collection of information, which we store in database is called Database Instances.

The whole Design of Database is called Schema.

ABOUT ACCESS

Access is a relational database management system. In a relational database, you divide your information into separate, subject-based tables. You then use table relationships to bring the information together as needed.

THE MAIN COMPONENT OF MS ACCESS

Table

Keys (Primary Keys and Foreign Keys)

Form

Query

Report

Macro

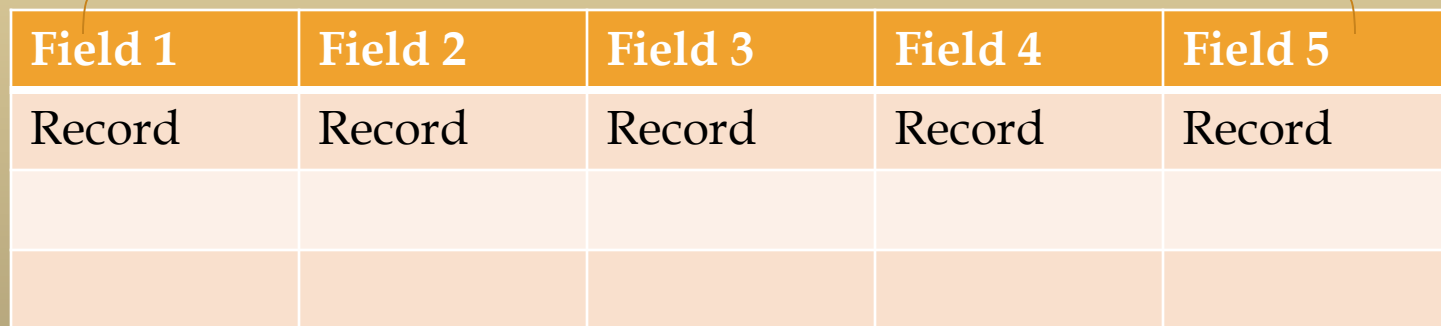
Module

TABLE

It is just a structure that contains data and keeps it separated from other columns.

Table is a database object that stores data in records (rows) and fields (columns). The data is usually about a particular category of things, such as employees or orders.

Attributes



Field 1	Field 2	Field 3	Field 4	Field 5
Record	Record	Record	Record	Record

KEYS (PRIMARY KEYS AND FOREIGN KEYS)

Keys are used to relate one table for another.

One field (columns) whose values uniquely identify each record in a table. A primary key cannot allow Null values and must always have a unique index. A primary key is used to relate a table to foreign keys in other tables.

One or more table fields (columns) that refer to the primary key field or fields in another table. A foreign key indicates how the tables are related.

FORM

Forms are used to enter or look at data. They are the screens that make up the application that allows us to enter and retrieve data. Each “field” on a form usually relates to a column on the database.

Form is an Access database object on which you place controls for taking actions or for entering, displaying, and editing data in fields

QUERY

Queries are little programs that let the user ask questions. Things like “give me a list of all the customers who ordered something last month” or “List all customers in a specific area”.

Query is a question about the data stored in your tables, or a request to perform an action on the data. A query can bring together data from multiple tables to serve as the source of data for a form or report.

REPORT

An Access database object that you can print containing information that is formatted and organized according to your specifications. Examples of reports are sales summaries, phone lists, and mailing labels

MACRO & MODULE

Macro is an action or set of actions that you can use to automate tasks

Macro & Module is use for extending the functionality of database applications.