Database Management System

Database Management System (DBMS):

DBMS is a software which is used for storing the data and manage data in database.

DBMS can be defined as a collection of programs that enables, we to store, modify, delete, add, create and extract information from database.

Database management system (DBMS) is a computerized system that stores data, processes them, and provides information in an organized form.

DBMS basically deals with the creation of database, its management and retrieval process.

Advantages of DBMS:

1) Provides an organized way of storing data
2) Facilities quick and efficient retrieval of information
3) Reduces data redundancy
4) Improves the consistency of data
5) Allows sharing of Data
6) Provides data security
7) Large volume of data can be stored and updated easily.

Data:

Data is the raw facts which gives meaningless information. The processed form of data is known as information.

Information is the organized collection of inter-related data.

Database:

Database is the collection of related data. The data in a database are organized in rows and columns.

For e.g.: - marksheet, salary sheet, students record, address book, etc.

Components of Database:

Table:

Tables are the building block of database which is used to store data of a specific purpose or subject.

Record:

Table stores large volume of data into rows called records. It is also called tuple.

1) Field:

Table stores large volume of data into column called field.

Microsoft Access:

Microsoft Access is a relation database management system which comes as an integral part of MS-office suite of applications.

It is a powerful GUI based RDMS.

Advantages of MS-access:

1) Duplicate data is minimized
2) Information is more accurate and reliable.
3) Allows sharing of data
4) It is a powerful GUI
5) It helps to create customized database for self-use or for use by small business.

Objects of MS-access:

1) Table:

Table is a basic object of a database that hold the data element. Also, it is known as the primary building block of database.

2) Query:

It is another important object in MS access which is used to display the specific records from the database or table.

It also provides you to append, delete or modify the records on database.

3) Form:

Forms is another important database object in MS access which allows you to enter, edit, or display record from a table or a query.

Forms are the graphical representation of table so that it is easy to manage the data in the table.

4) Reports:

Reports is another important object of database in MS access which is used to display the required records from the table or query and make ready for printing.

Data Type:

Data Type is an attribute/feature for field that determines what type of data it can store.

Each field can store data have only a single data type.

Data types:

Data Type	What it holds	Field Size
Short Text	Short text like name, address etc.	255 characters
Long Text (Memo)	Lengthy text or combinations of text and numbers.	65,536 characters
Number	Only numbers	8 Bytes
Currency	Number with currency sign ($, etc.)	8 Bytes

Auto Number	Numbers unique to each record.	8 Bytes
Date/Time	Date and time for year 100 to 9999.	8 Bytes
Hyperlink	Used for hyperlinks.	2048 characters
Yes/No	0 or 1	1 bit
Attachment	attach any supported type of file	2GB
OLE object	TO store images and documents.	1 GB

Field Description:

You can enter the description of each field in the Description column. It helps you to remember the use and purpose of a particular field.

Primary Key:

Primary Key is a special field or group of fields in the table that uniquely identifies each record from the database.

The primary key is an identifier such as a student ID, a Product code, Exam roll no. etc. Hence, primary key is unique to each record.

Importance of Primary Key

- To identify each record of a table uniquely.
- To reduce and control duplication of the record in a table.

- To set the relationship between tables.

Field Properties:

1) **Field size:**
   You can use the Field Size property to set the maximum size for data stored in the field.

2) **Caption:**
   Caption field property is the alternative name given for any field.

3) **Format:**
   Format field property allows you to display data in a format different from the way.

4) **Validation Rule:**
   It is used to limit the values that can be entered into a field.

5) **Validation Text:**
   Validation Text is the error message that appears if the data entered is invalid according to the specified validation rule.

6) **Required:**
   You can use required property to specify whether a value is required in a field or not.

Editing Data:

a) **Design View –** it is related with table structure. You can add, edit or delete field and its properties in this view.

b) **Datasheet View –** it is related with records. You can add, modify, search or delete records in this view.

Query:

Query is a MS-access object which is used for view, retrieve, change, analyses, mathematical calculation and filtering the data.

Types of Queries:

1) **Select Query:**
   Select query is a query simply used to select and display the data from single or multiple tables of the database.

2) **Action Query:**
   An action query is a query that makes changes to or removes many records in just one operation.

   Types:

   i) **Update Query:**
   It is a query that makes entire changes to a record or group of records in one or more tables.

   ii) **Delete Query:**

It is a query that deletes a record or group of records from one or more tables.

Creating and Using Forms:

Forms:

A form is a MS-access database object which is used to interface the data to user and to make changes to existing records..

Importance:

i) It helps to interface the data to user.
ii) It helps to easy enter data.

Creating and Using Reports:

Reports:

Report is a MS-access object which is used for taking output such as; softcopy and hardcopy.

Report is one of the MS-Access database objects used to present information in an effective and organized format that is ready for printing.

Form	Report
It is used to interface data to user.	It is used to take output.

It is used for data entry.	It is final result i.e., information.

Sorting	Filtering
It means grouping all the records in a table either ascending or descending based on a key field of the record.	It is an option that selects or groups the required records of same type and display result.