

LIBREOFFICE BASE

1

LibreOffice Base is a software used for creating and managing databases

2

It is provided by LibreOffice

3

Its file extension is .odb

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DATA AND INFORMATION



Data are raw facts, which can be related to a person, place, activity, or thing. It can be stored as text, graphics, audio, or video.



Information is the processed or organized form of data. A report card is an example of information processed from data like student marks and roll numbers.

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DATABASE

DATABASE

- A database is an organized collection of logically related data items
- Information stored in a database can be added, modified, deleted, or displayed as needed by the user

DATABASE MANAGEMENT SYSTEM (DBMS)

- A DBMS is software used to create, update, and retrieve data
- It helps with the planning and maintenance of a database
- Examples of DBMS include MS Access, LibreOffice Base, Oracle, and MySQL

ADVANTAGES OF DBMS



ORGANIZED STORAGE

Data is stored in an organized manner, making retrieval fast and accurate



DATA ANALYSIS

It helps analyze data based on specific criteria, making it easy to find maximum, minimum, or average values



DATA SHARING

Databases can be shared with other applications, allowing data to be used repeatedly



MINIMAL DATA REDUNDANCY

Reduces the repetition of data fields across multiple tables

ADVANTAGES OF DBMS



DATA CONSISTENCY

Minimizing redundancy reduces the chances of inconsistent data being stored



INCREASED EFFICIENCY, ACCURACY, AND VALIDITY

Organized data tables allow for efficient and accurate searching, and data properties can be checked at the entry stage to ensure validity



SECURITY

Unauthorised access can be controlled using passwords and encryption

DATA MODELS

A data model is the structure of a database that describes how data will be stored and retrieved.

It consists of components that describe data, relationships, and constraints.

Common types of data models include hierarchical, network, and relational models.

TYPES OF DATA MODELS



HIERARCHICAL DATA MODEL

Data is organized in a tree-like structure, with records linked to each other at various levels. A record is a collection of fields and their data values.



NETWORK DATA MODEL

Multiple records are linked to the same master file. It is considered an inverted tree where the master file is at the bottom.



RELATIONAL DATA MODEL

This model is based on setting relationships between two or more tables in the same database. It was proposed by E. F. Codd in 1970 and is the most common type of database model. Data elements are stored in tables with rows and columns, and tables are related through common fields.

TERMS RELATED TO RDBMS

ENTITY

A real-world object about which information is stored in a database

DATA VALUES

The raw data stored in numeric, character, or alphanumeric form

RECORD/ROW

The data values for all fields related to a single person or object. It is presented as a row in a table

FIELDS/COLUMNS/ATTRIBUTES

The smallest entity in a database. They hold one type of data for several records

TABLE

A collection of logically related records, organized as columns and rows

TERMS RELATED TO RDBMS

PRIMARY KEY

A field or combination of fields that uniquely identifies a row in a table. The values cannot be duplicated or left blank. A composite key uses more than one field to identify a record

CANDIDATE KEY

All field values that are eligible to be the primary key. They cannot be left blank or have duplicate values

ALTERNATE KEY

A candidate key that is not chosen as the primary key

FOREIGN KEY

A field in one table that uniquely identifies records in another table, helping to build a relationship between the two

OBJECTS OF AN RDBMS

An object is a structure used to store, represent, or retrieve data.



TABLE

The basic unit of a DBMS, storing data in a row-and-column format



FORM

A user-friendly interface for entering data into a table. It can include text boxes, labels, and radio buttons



QUERIES

Used to retrieve specific information from a database by asking a question or setting a criterion. The result is displayed in a tabular form



REPORTS

The output of a query can be presented in a formal and customized layout

DATA TYPES IN LIBREOFFICE BASE

A data type refers to the type of data that will be stored in a field, which affects its memory size.

TEXT DATA TYPE

A combination of letters, numbers, or special characters on which no arithmetic calculations can be performed

NUMERIC DATA TYPE

Consists of integers or real numbers on which arithmetic calculations can be performed

CURRENCY DATA TYPE

Indicates monetary values

DATE DATA TYPE

Used to indicate dates and time

BOOLEAN DATA TYPE

Can have only two values: True or False

BINARY DATA TYPE

Used to store digitized images and sounds as long strings of zeros and ones

STARTING LIBREOFFICE BASE

1

OPEN THE APPLICATION

Go to Start > LibreOffice >
LibreOffice Base

2

DATABASE WIZARD

A Database Wizard will open

3

CREATE OR OPEN DATABASE

You can choose to create a new
database or open an existing one

4

REGISTER DATABASE

The option to register the database makes it public
and accessible to others

5

SAVE AND EDIT

You will then be prompted to open the database for
editing and save it

USER INTERFACE OF BASE

TITLE BAR

Displays the name of the database and application

MENU BAR

Contains seven menu items: File, Edit, View, Insert, Tools, Window, and Help

STANDARD TOOLBAR

Located below the menu bar, it provides access to frequently used tools

STATUS BAR

Located at the bottom, it displays information about the view of the database object

DATABASE PANE

Located on the left, it holds related data objects such as Tables, Forms, Queries, and Reports

CREATING A TABLE

A table can be created in two ways: Wizard or Design View.



WIZARD

- Use the Use Wizard to create a table option and follow the instructions



DESIGN VIEW

- Use the Create Table in Design View option
- The upper half of the window has columns for Field Name, Field Type, and Description

SETTING A PRIMARY KEY

SETTING A PRIMARY KEY

- To set a field as a primary key, right-click on the field name and select Primary Key from the pop-up menu
- A key icon will appear to indicate it's a primary key

SAVING AND ENTERING DATA

SAVING A TABLE

- Use File > Save As or Ctrl + S
- To update, use File > Save

ENTERING DATA

- Double-click the table icon or right-click and select Open
- In the datasheet view, use Tab to move to the next field

NAVIGATING AND EDITING DATA

NAVIGATING DATA

- The record pointer is the black arrow before the field name
- You can navigate using the navigation box at the bottom of the datasheet window

EDITING DATA

- To edit data, place the cursor on the value and enter the new one
- Press Esc to cancel changes

DELETING AND SORTING DATA

DELETING RECORDS

- Select the record and press the Delete key or go to Edit > Delete Record
- You can also right-click and select Delete Rows

SORTING DATA

- Select the field you want to sort by and click the Sort Ascending or Sort Descending icons on the toolbar

WORKING WITH MULTIPLE TABLES

EDITING/DELETING TABLES

- Right-click the table name and select Edit or Delete
- You can also rename a table by selecting Rename

RELATIONSHIPS

- Relationship means to connect two tables.
- The main prerequisite for a relationship is a common field between two tables

TYPES OF RELATIONSHIPS



ONE-TO-ONE

One record in a master table corresponds to only one record in a transaction table



ONE-TO-MANY

One record in a master table corresponds to more than one record in a transaction table



MANY-TO-MANY

Multiple records in a master table correspond to multiple records in a transaction table

ADVANTAGES OF RELATIONSHIPS

- Prevents data redundancy
- Helps prevent missing data (referential integrity)
- Restricts invalid data entry in referenced fields
- Updates in the master table are automatically reflected in transaction tables

CREATING RELATIONSHIPS

OPEN RELATIONSHIPS TOOL

Go to Tools > Relationships

ESTABLISH RELATIONSHIP

Drag and drop the common field from the main table to the related table

REFERENTIAL INTEGRITY

According to the principle of referential integrity, there should be no unmatched foreign key values in a database.

Referential integrity helps to **avoid** several issues:

Adding Records

Adding records to a related table if there is no corresponding record in the primary key table

Changing Primary Key Values

Changing values in a primary key if dependent records are present in an associated table

Deleting Records

Deleting records from a primary key table if there are matching related records in the associated table

REFERENTIAL INTEGRITY

LIBREOFFICE BASE OPTIONS TO MAINTAIN REFERENTIAL INTEGRITY:

1

NO ACTION

This is the default option. It prevents a user from updating or deleting a record in the master table if a related record exists in a transaction table

2

UPDATE CASCADE

This option allows the user to delete or update a referenced field. It will also automatically delete or update all related records in any transaction tables

3

SET NULL

This option assigns a NULL value to all related fields if the master record is deleted or updated

4

SET DEFAULT

This option assigns a fixed default value to all related fields if the master record is deleted or updated

QUERIES IN BASE

WHAT IS A QUERY?

A query retrieves and displays data from one or more tables. It filters records based on specific criteria.

A query can be created using a Wizard, in Design View, or in SQL view.

WORKING WITH NUMERICAL DATA IN QUERIES

- You can use mathematical functions like count, sum, minimum, maximum, or average
- In the Function row, you can select Group to group data values or Average to perform calculations

CREATING A QUERY WITH THE WIZARD

01

Click the Queries button in the Database Pane

02

Click Use Wizard to Create Query...

03

Select the tables and fields

04

Set the sorting order and search conditions

05

Provide an alias name for the column headers if desired

06

The final step shows an overview and allows you to name the query

CREATING A QUERY IN DESIGN VIEW

01

Click Create Query in Design View...

02

Add the tables to be used

03

Select the fields to be displayed

04

Use the Criterion row to apply conditions and the Sort row to set the order

05

To run the query, click Run Query or press F5

FORMS

A database object that provides a user-friendly interface for data entry and modification. It contains field controls with labels and text boxes.

CREATING A FORM WITH THE WIZARD

01

Click the Form icon in the Database Pane and select Use Wizard to Create Form...

02

Select the tables or queries and their fields

03

Choose a layout and apply styles

04

Name the form and click Finish

MODIFYING A FORM

CHANGING BACKGROUND COLOR

Right-click the form and select Page Style...

EDITING LABELS

Select the label (Ctrl+Click), right-click, and choose Control Properties... to change the text or other properties

MOVING CONTROLS

Click and drag the control to a new location

ADDING A TOOL-TIP

Select a control, right-click, choose Control Properties..., and type the help text in the Help Text property

ADDING NEW RECORDS

Switch to Form View, click the New Record button on the Records toolbar, and enter data

REPORTS

Used to present retrieved data in an attractive and customized manner. A report can be created based on a table, a query, or both.

CREATING A REPORT WITH THE WIZARD

01

Click the Reports icon and select Use Wizard to Create Report...

02

Select the table and fields for the report

03

Label the fields, group the data, and set the sorting options

04

Choose a layout and orientation (Tabular, Landscape, or Portrait)

05

Name the report and specify whether it is Dynamic (updates automatically) or Static

INSERTING CONTROLS IN A REPORT



ADDING TITLES OR HEADINGS

Right-click the report name, select Edit..., and use the Label tool from the Report Controls toolbar



ADDING DATE AND TIME

Click in the Page Header area and select Insert > Date and Time...



GROUPING DATA

You can group data in a report by specifying the field name for grouping in Step 3 of the wizard

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धन्यवाद

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