SESSION 3: Perform Operations on Table

Relevant Knowledge

In a database you can define the structure of the data and manipulate the data using some commands. There are two types of languages for this task. These are:
- **Data Definition Language (DDL)**
  - **Data Manipulation Language (DML)**

Data Manipulation Language (DML)

A data manipulation language (DML) is a language that enables users to access and manipulate data in a database. The goal is to provide efficient human interaction with the system.

Data manipulation involves:

- Retrieval of information from the database- SELECT statement
- Insertion of new information into the database - INSERT statement
- Deletion of information in the database - DELETE statement
- Modification of information in the database - UPDATE statement

A query language is a part of DML involving information retrieval only. The terms DML and query language are often used synonymously.

A popular data manipulation language is Structured Query Language (SQL). This is used to retrieve and manipulate data in a relational database. Other forms of DML are those used by IMS/DLI,CODASYL databases, such as IDMS and others. Data manipulation language comprises the SQL data

change statements, which modify stored data but not the schema or database objects.
There are two types of DML:

• **Procedural**:
  The user specifies what data is needed and how to get it

• **Nonprocedural**:
  The user only specifies what data is needed. This is easier for the user but may not generate code as efficient as that produced by procedural languages.

INSERT statement

INSERT statement is used to add one or more records to a database. The general syntax of the insert statement is shown below.

INSERT INTO <table_name><column1, column2, column3...> VALUES <value1, value2, value3 ...>;
To add a record in the database created earlier, type the following and click Execute.
Insert into SDetails
("ID", "Name", "Rollno", "DOB", "Class", "Phone", "Email", "Color", "Location") values ('8', 'Ranjith Singh', '67', '12-03-99','X', '435363', 'ranjth99@gmail.com', 'White', 'Bihar');

After inserting the data into the table, use select query to view the updated table. After execution you should see a window similar to the one displayed below.

Figure 13

DELETE statement

Delete Statement is used to remove one or more records in a database. The general syntax of the delete statement is as follows:

DELETE FROM <table_name> [WHERE] <condition>;

To delete one of the records in the table created earlier using delete statement, type the following and click **Execute**:

Delete from SDetails where ID=8;

Execute select query to view the updated table. After execution you should see a window similar to the one displayed below.
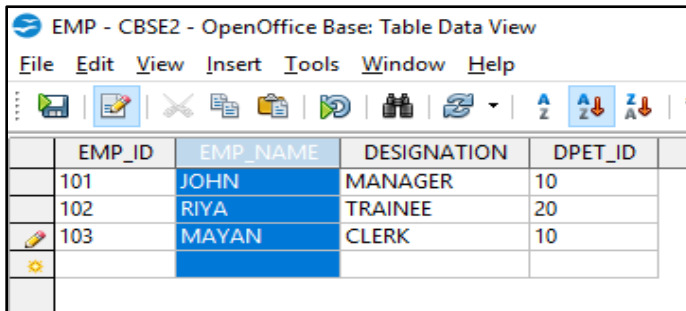

Figure 14

Notice the record with the Roll No 8 is deleted from the database.

SORTING DATA

Sorting means to arrange the data in either ascending order of descending order. Select the column(s) then click on sort buttons. The data will be displayed accordingly.
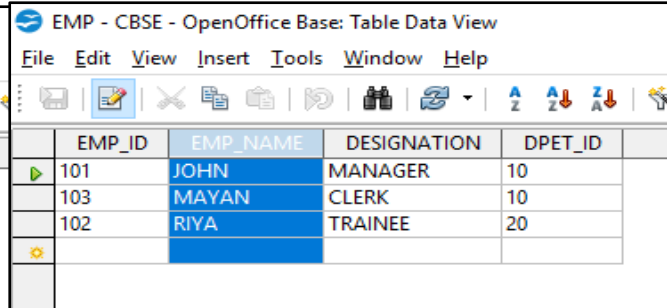
Unsorted Column (EMP_NAME)   **Sorted Column (EMP_NAME)**

Figure 15   **Figure 16**

Referential Integrity

Referential integrity is used to maintain accuracy and consistency of data in a relationship.

In Base, data can be linked between two or more tables with the help of primary key and foreign key constraints.

Referential integrity helps to avoid:

- Adding records to a related table if there is no associated record available in the primary key table.

- Changing values in a primary if any dependent records are present in associated table(s).

- Deleting records from a primary key table if there are any matching related records available in associated table(s).

Creating and Editing Relationships between Tables

A relationship refers to an association or connection between two or more tables. When you relate two tables, you don't need to enter the same data in separate tables.

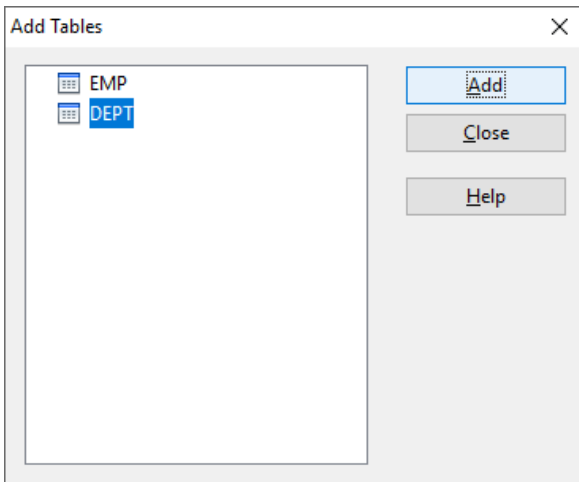Relationships between tables helps to:

- Save time as there is no need to enter the same data in separate tables.

- Reduce data-entry errors.

- Summarize data from related tables.

You can create a relationship between any two tables by selecting Relationships… option from the Tools menu.
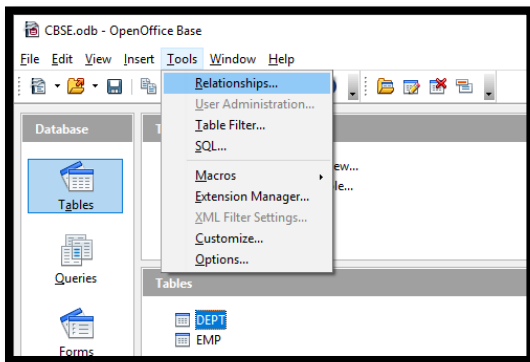
Figure 17

Add the tables in amongst which you want to create the relationship. Select the tables and click on Add button.
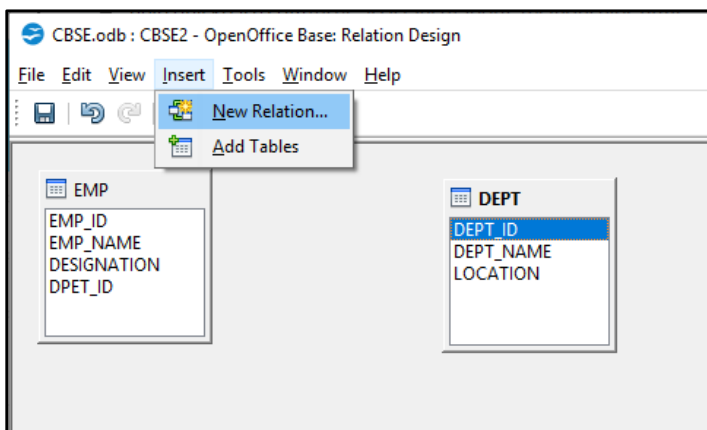
Figure 18

There are three types of relationships which can be created in tables:

1. **ONE to ONE**
2. **ONE to MANY OR MANY to ONE**
3. **MANY to MANY**

There are two ways to create the relationships between the tables:

a. Click on Insert option and select New Relation… option in Relation
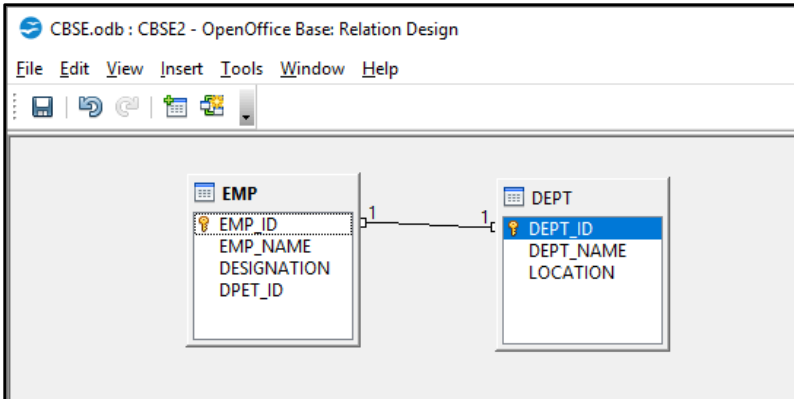
Design window.

Figure 19

Select the options as required:

Figure 20

b. Drag the primary key column from one table and drop it on the key column of another table.

One to One Relationship

In this relationship, both the tables must have primary key columns. Example: In the given tables EMP and DEPT, EMP_ID in EMP table and DEPT_ID in DEPT table are the primary keys.
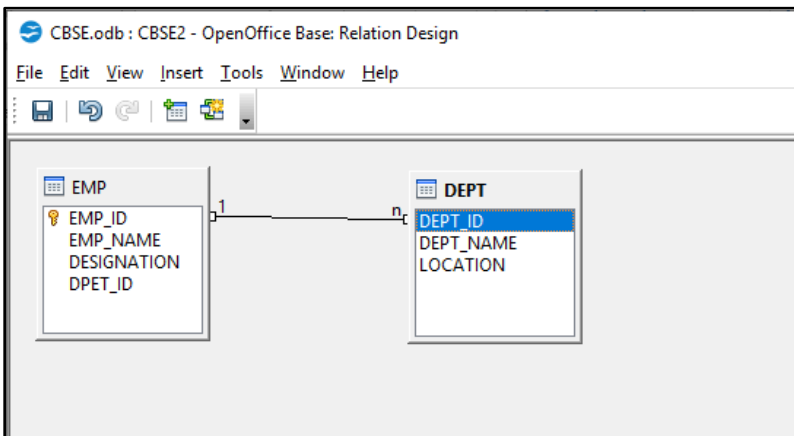
Figure 21

One to Many Relationship

In this relationship, one of the table must have primary key column. It signifies that one column of primary key table is associated with all the columns of associated table.

Example: In the given tables EMP and DEPT, EMP_ID in EMP table is the primary key.

Figure 22

Many to Many Relationship

In this relationship, no table has the primary key column.

It signifies that all the columns of primary key table are associated with all the columns of associated table.

Example: In the given tables EMP and DEPT, there is no primary key.
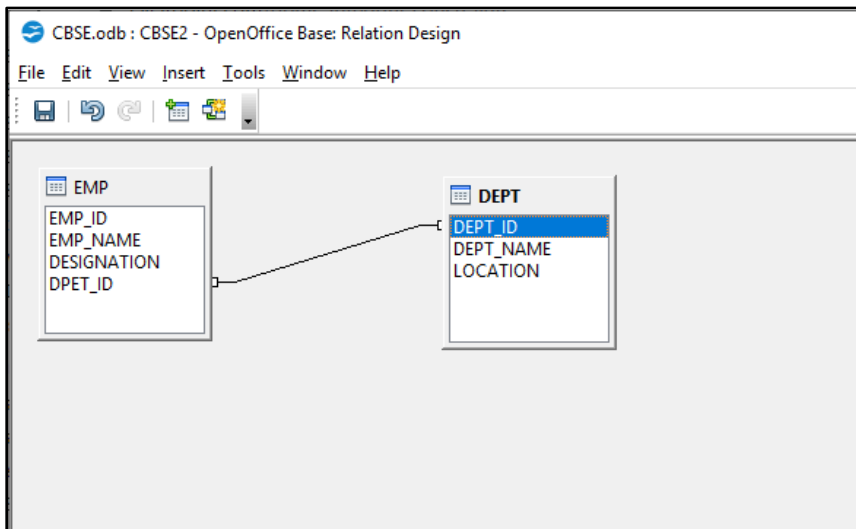

Figure 23

Remove the Relationships

The relationships applied on the tables can be removed also with the help of Delete option. Right Click on the relationship thread and select **Delete** option.
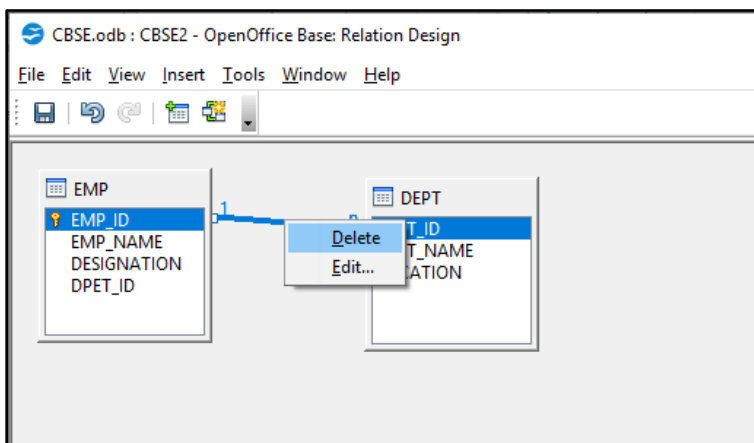

Figure 24

Activities

Perform the following activities till you are confident:

1. Create a database to store your academic records using the guidelines below:

- Use your roll number as the file name for your database.
- Create fields such as subject name, required score, passing score and your percentage.
- Set the subject name field as the primary key. Populate your database with your most recent exam results0

ASSESSMENT

Fill in the blanks:

1. The types of languages used for creating and manipulating the data in the Database are _____ & _____.
2. A _____is a standard for commands that define the different structures in a database.
3. A _____ is a language that enables users to access and manipulate data in a database.
4. A _____ is a part of DML involving information retrieval only.
5. A popular data manipulation language is _____.
6. _____ are the basic building blocks of a database.
7. There are _____ types of Relationships in a table.

Short Answer Questions:

1. What is the file extension for databases created using OpenOffice.Org Base?
2. List any three file formats that can be managed using OpenOffice.OrgBase?
3. How many types of relationships can be created in Base? Explain each of the them.
4. What do you mean by Sorting? In how many ways it can be done?
5. Explain Referential Integrity with the help of an example.