

Unit 9: Sorting, Filtering, Indexing and Creating Relationship Database

Introduction

You can sort data. You can view records in the order you want to view them, and you can filter data, so that you only see the records which you want to see. We will learn how to sort and filter an Access table in this lesson. Access data is stored in multiple tables. Relationships join tables together so you can work with the data from multiple tables. This lesson also teaches you how to create relationships.

Lesson 9.1: Understanding Sorting and Filtering

Learning Objectives

On completion of this lesson you will be able to learn:



- about sorting.
- about filtering.

9.1.2 Sorting a Table

When sorting records in Microsoft Access table, you can view a column of information in alphabetical, numerical, or date order. You can sort in ascending order (alphabetical from A to Z, lowest number to highest number, previous date to latest date) or descending order (alphabetical from Z to A, highest number to lowest number, latest date to previous date). You can also sort within a sort. For example, you can sort by state and then sort within each state by city. When sorting within a sort, perform the innermost sort first. For example, if you are sorting by state and then city, sort the state first and then sort by city.

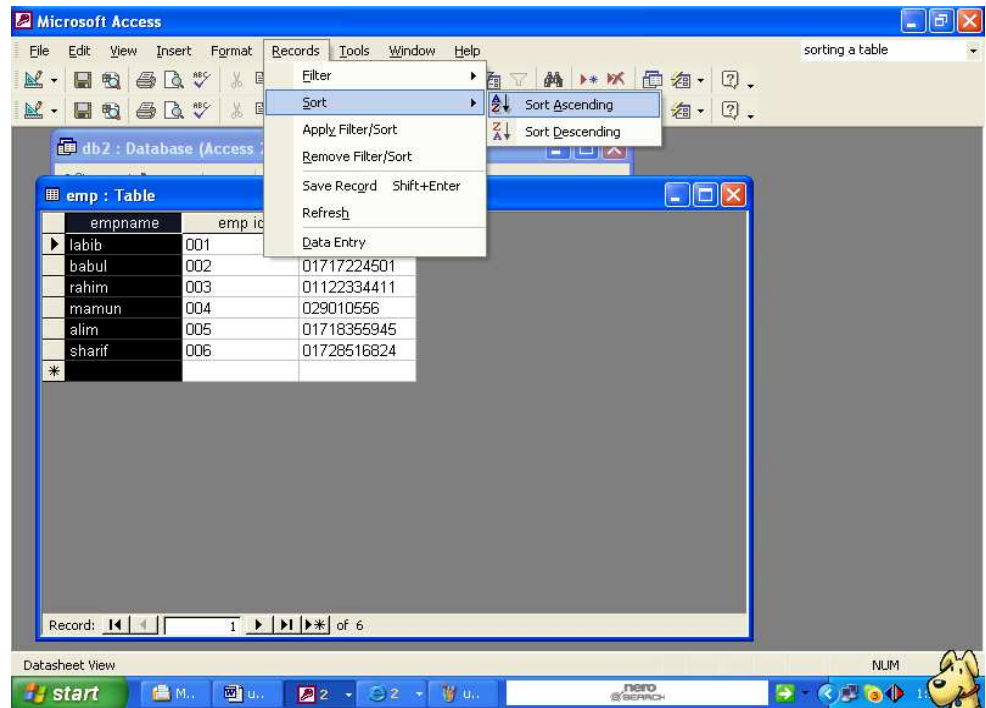
Sorting Records in a Microsoft Access Table

To sort records in Datasheet view, follow these steps:

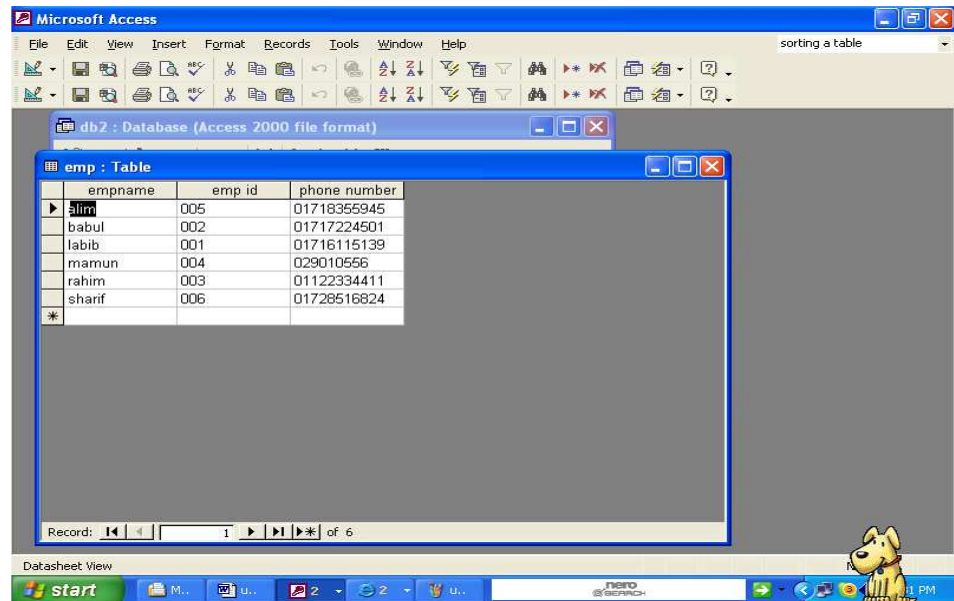
1. Start Microsoft Access, and then open the database that you are working with.
2. Open the table whose data you want to sort.
3. Click the field that you want to use for sorting records.
4. On the Records menu, point to Sort, and then click Sort Ascending  or Sort Descending .

Example: Sorting with datasheets

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After Sorting the Access table looks like as follows:



To remove a sort:


On the Records menu click remove sort.

9.1.3 Filter a Table

You can apply filter to see only the records which you want to view. For example, perhaps your database contains emp id 001,002,003,004,005,006 from these you only want to see the emp id 003. You can filter your data so that only emp id 003 will display.

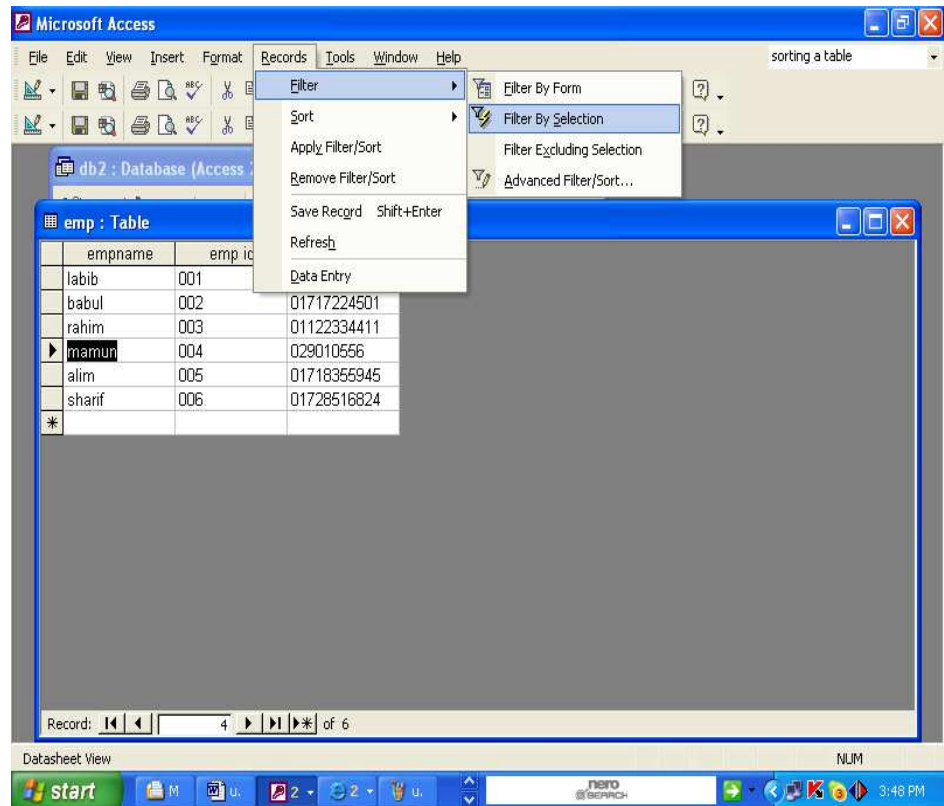
Each time you apply a filter to a column, it replaces any previous filter you applied to that column. For example, if you apply a filter so that you only see emp id 003, and later you apply a filter so you only see emp id 005, Access clears the 003 filter and then applies the 005 filter.

Dear learners if you want to apply filter records in Datasheet view, follow these steps:

1. Start Microsoft Access, and then open the database that you are working with.
2. Open the table whose data you want to filter.
3. Click the field that you want to use for filtering records.
4. On the Records menu, point to filter, and then click filter by selection .

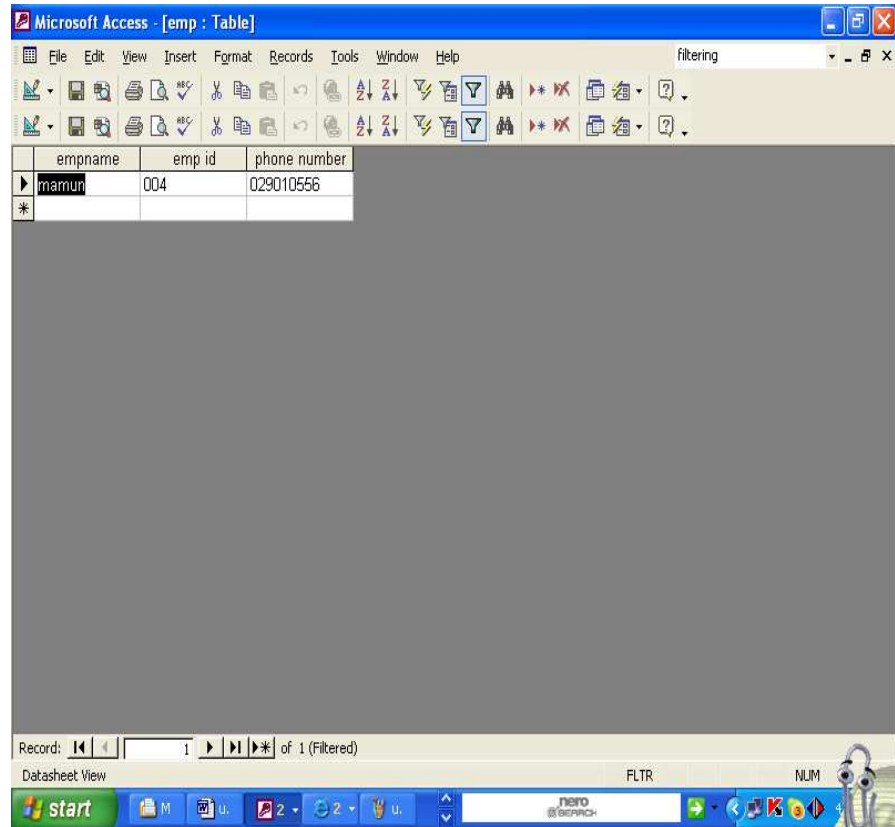
Or Click filter by selection  from toolbar.

Example: Filtering



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After filtering:



To remove a filter:

On the Records menu click remove filter or click remove filter from toolbar.



Exercise

1. Multiple choice questions

- a. Each time you apply a filter to a column.
 - i) it replaces any previous filter you applied to that column.
 - ii) it does not replaces any previous filter you applied to that column.
 - iii) it replaces record.
 - iv) none of the above.
- b. You can apply a filter to see.
 - i) only records which you want to view.
 - ii) only field which you want to view.
 - iii) only table which you want to view.
 - iv) none of the above.
- c. When sorting records you can view.
 - i) a column of information.
 - ii) one record of information.
 - iii) all record of information.
 - iv) a column of information in order.

2. Analytical questions

- 1. What is sorting? How you can sort records in Microsoft Access table.
- 2. What is filtering? How you can filter records in Microsoft Access table.

Lesson 9.2: Understanding Indexing and Relationship

Learning Objectives

On completion of this lesson you will be able to learn:

- about indexing.
- about relationship.

9.2.1 Indexing Fields and Records in an Access Database

An index speeds up queries on the indexed fields as well as sorting and grouping operations. Access uses indexes in a table as you use an index in a book: to find data, it looks up the location of the data in the index. For example, if you search for specific employee names in a department field, you can create an index for this field to speed up the search for a specific name. You can create indexes based on a single field or on multiple fields. Multiple-field indexes enable you to distinguish between records in which the first field may have the same value.

9.2.2 Deciding Which Fields to Index

The primary key of a table is automatically indexed, and you can't index a field whose data type is OLE Object. For other fields, you should consider indexing a field if all the following apply:

- The field's data type is Text, Number, Currency, or Date/Time.
- You anticipate searching for values stored in the field.
- You anticipate sorting values in the field.
- You anticipate storing many different values in the field. If many of the values in the field are the same, the index may not significantly speed up queries.

Indexed Property


You can use the Indexed property to set a single-field index. The Indexed property uses the following settings.

	Description
No	(Default) No index.
Yes (Duplicates OK)	The index allows duplicates.
Yes (No Duplicates)	The index doesn't allow duplicates.

Creating a Single-Field Index

- Open a table in Design View.
- In the upper portion of the window, click the field that you want to create an index for.
- In the lower portion of the window, click in the Indexed property box, and then click Yes (Duplicates OK) or Yes (No Duplicates).

9.2.3 Edit or Delete an Index

- Open the table in Design view.
- Click Indexes on the toolbar .
- Change indexes or index properties as desired.
- To delete an index, select the index name as desired click right mouse button and click delete rows in the Indexes window.

Dear learners Delete index removes only the index, not the field itself.

9.2.4 Relationship in Access Database

This section describes how to define relationships in a Microsoft Access database. It includes the following topics:

- What Are Relationship?
- Types of Relationship.

9.2.5 Creating Relationship

In Access, you store data in multiple tables and then use relationships to join the tables. After you have created relationships, you can use data from all of the related tables in a query, form, or report. A primary key is a field or combination of fields that uniquely identify each record in a table. A foreign key is a field in one table that must refer the primary key in another table. You use primary keys and foreign keys to join tables together. In other words, you use primary keys and foreign keys to create relationships.

There are three valid types of relationships between tables:

- One-to-one relationship.
- One to many relationship.
- Many to many relationship.

One-to-One Relationship

Suppose you have table A and table B. In one-to-one relationship, each record in Table A can have only one matching record in Table B and each record in Table B can have only one matching record in Table A. This type of relationships is rare because if there is a one-to-one relationship, the data is usually stored in a single table. A one-to-one relationship is created if both of the related columns are primary keys or have unique constraints. However, one-to-one relationship can occur when you want to store the information in a separate table for security reasons, when tables have a large number of fields, or for other reasons. The following figure illustrates one-to-one relationship.

Customer			Account	
customer-id	customer-name	city	account-no.	balance
C001	Rahim	Dhaka	A001	200
C002	Karim	Pabna	A002	100
C003	Salam	Dhaka	A003	350
C004	Rafiq	Comilla	A004	700
C005	Qader	Sylhet	A005	1200

In the above example one customer should have only one account number and each account no can be associated only with one customer-id.

One-to-Many Relationship

A one-to-many relationship is the most common type of relationship. In a one-to-many relationship, a record in Table A can have many matching records in Table B, but a record in Table B has only one matching record in Table A.

When tables have a one-to-many relationship, the table with the one value is called the primary table and the table with the many values is called the related table. Referential integrity ensures that the validity of the relationship between two tables remains intact. It prohibits changes to the primary table that would invalidate an entry in the related table.

For example, one customer can have two account numbers. The following figure illustrated the one to many relationship.

Customer			Account	
customer-id	customer-name	city	account-no.	balance
C001	Rahim	Dhaka	A001	200
C002	Karim	Pabna	A002	100
C003	Salam	Dhaka	A003	350
C004	Rafiq	Comilla	A004	700
C005	Qader	Sylhet	A005	1200

customer-id	account-no.
C001	A001
C002	A002
C003	A003
C004	A004
C005	A005

Many to Many Relationship

In a many-to-many relationship, a record in Table A can have many matching records in Table B, and a record in Table B can have many matching records in Table A. This type of relationship is only possible by defining a third table called a junction table whose primary key consists of two fields — the foreign keys from both Tables A and B. A many-to-many relationship is really two one-to-many relationships with a third table.

The following figure illustrated the many to many relationships. In this example one customer can have one or many accounts and one account-no can have one or many customer.


Customer			Account	
customer-id	customer-name	city	account-no.	balance
C001	Rahim	Dhaka	A001	200
C002	Karim	Pabna	A002	100
C003	Salam	Dhaka	A003	350
C004	Rafiq	Comilla	A004	700
C005	Qader	Sylhet	A005	1200


9.2.6 How to Define Relationship between Tables

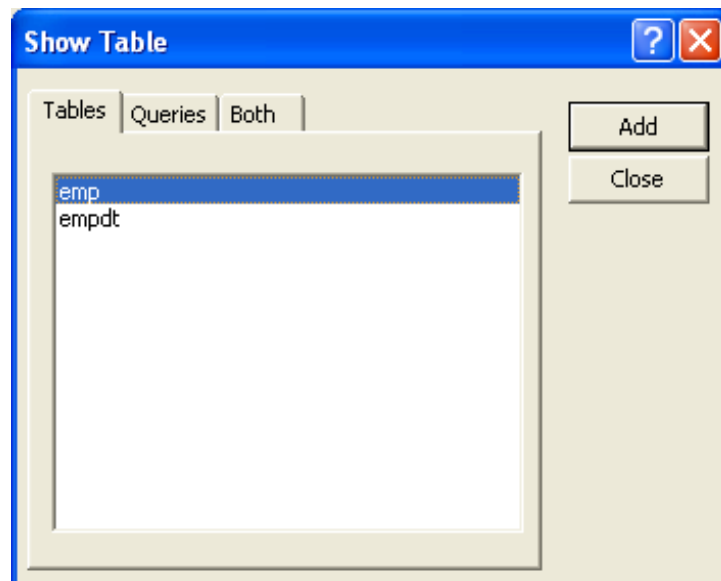
When you create a relationship between tables, the related fields do not have to have the same names. However, related fields must have the same data type unless the primary key field is an AutoNumber field. You can match an AutoNumber field with a Number field only if the Field Size property of both of the matching fields is the same.

To create relationship:

1. Close all tables and forms if you open because you can't create or modify relationships between open tables.
2. Activate the database window.

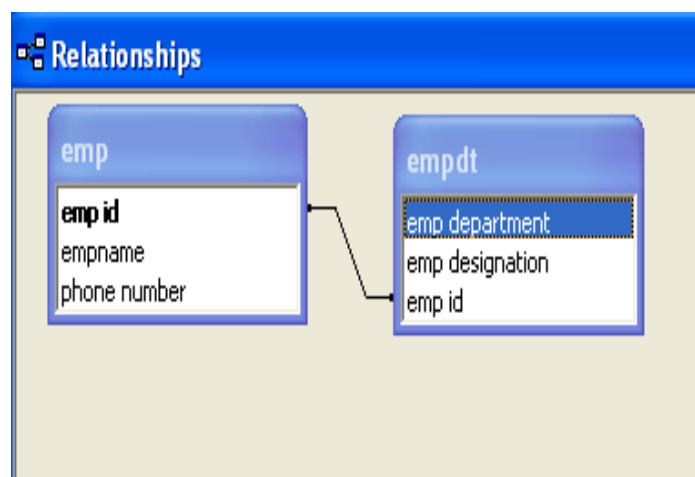
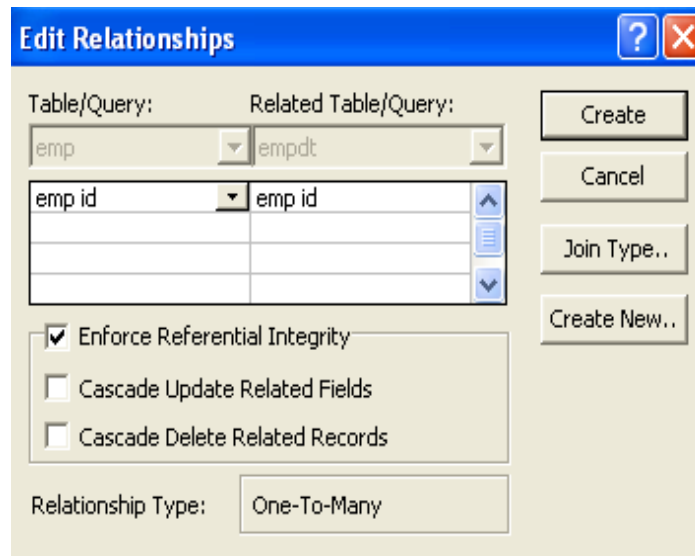
3. Click Relationships button  from the toolbar.

4. Click show table  from toolbar. The show table dialog box appears.



5. Activate the Tables tab if your relationships based on tables, activate the Queries tab if your relationships based on queries, or activate the both tab if your relationships will be based on both.
6. Double-click each table or query you want to use to build a relationship. The tables appear in the Relationships window.
7. Click the Close button to close the Show Table dialog box.

8. Drag the Primary table's primary key over the related table's foreign key. After you drag the primary key to the related table's box, the cursor changes to an arrow. Make sure the arrow points to the foreign key. The Edit Relationships Dialog box appears.
9. Click the Enforce Referential Integrity checkbox.
10. Click Create. Access creates a one-to-many relationship between the tables.
11. Click the Save button on the Quick Access toolbar to save the relationship.



Note: When you create a relationship, you can view the related table as a sub datasheet of the primary table. Open the primary table and click the plus (+) in the far left column. The plus sign turns into a minus (-) sign.


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If the Insert Sub datasheet dialog box opens, click the table that you want to view as a sub datasheet and then click OK. Access displays the sub datasheet each time you click the plus sign in the far left column. Click the minus sign to hide the sub datasheet.

9.2.7 Delete a Relationship

After a relationship has been created between two tables, you must delete the relationship before you can make modifications to the fields on which the relationship is based.

To delete a relationship:

1. Close any tables you have open because you can't delete relationships between open Tables.
2. Activate the database window.
3. Click Relationships  on the toolbar.
4. If the tables whose relationship you want to delete aren't displayed, click Show Table on the toolbar and double-click each table you want to add. Then click Close.
5. Click the relationship line for the relationship you want to delete (the line will turn bold when it's selected), and then press the delete key.
6. Click the Save button on the Access toolbar to save.

Exercise

1. Multiple choice questions

- a. An index helps to find and sort records.
 - i) faster
 - ii) slower
 - iii) similar
 - iv) none of the above.

- b. Which one is the most common type of relationship?
 - i) one to many relationship
 - ii) one to one relationship
 - iii) many to many relationship
 - iv) two to one relationship.

- c. You can create indexes based on.
 - i) a single field
 - ii) on multiple fields
 - iii) both i and ii
 - iv) none of the above.

2. Analytical questions

- 1. What is an indexing? Explain with example.
- 2. How can you create single field index?
- 3. How can you edit and delete an index?
- 4. Discuss the different types of relationships between tables.
- 5. Write down the steps required to define relationships.