

MS Access Lab 2

Topic: Tables

Summary

- Introduction: Tables, Start to build a new database
- Creating Tables: Datasheet View, Design View
- Working with Data: Sorting, Filtering
- Help on Tables

Introduction

A table is a collection of data about a specific topic, such as products or suppliers. Using a separate table for each topic means you store that data only once, which makes your database more efficient and reduces data-entry errors. Tables organize data into columns (called fields) and rows (called records).

Suppliers : Table	
Supplier ID	Company Name
1	Exotic Liquids
2	New Orleans Cajun Delights
3	Grandma Kelly's Homestead
4	Tokyo Traders

Products : Table		
Product Name	Supplier ID	Units in Stock
Chai	1	39
Chang	1	17
Aniseed Syrup	1	13
Carnarvon Tigers	2	53

Fields

Records

A common field relates two tables

Creating a New Database

First, open MS Access. To build a new database, choose **File** → **New**. By selecting **New**, a dialog box will pop out, which allows us to create a blank database (with **General**), or to choose from other database template wizards (with **Databases**). For this session, we will focus on creating a database from a blank one, so choose **General** → **Database**.

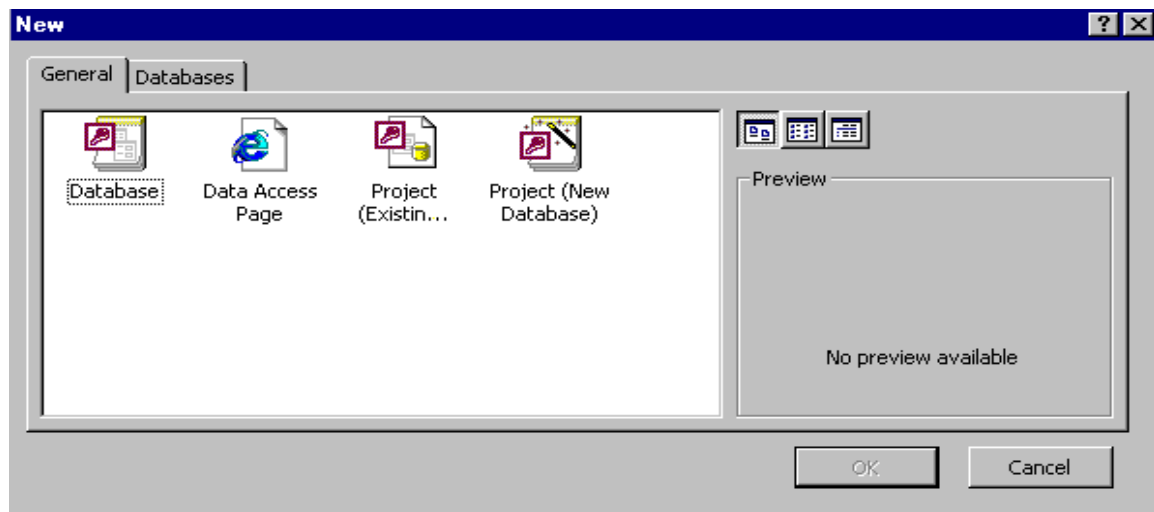


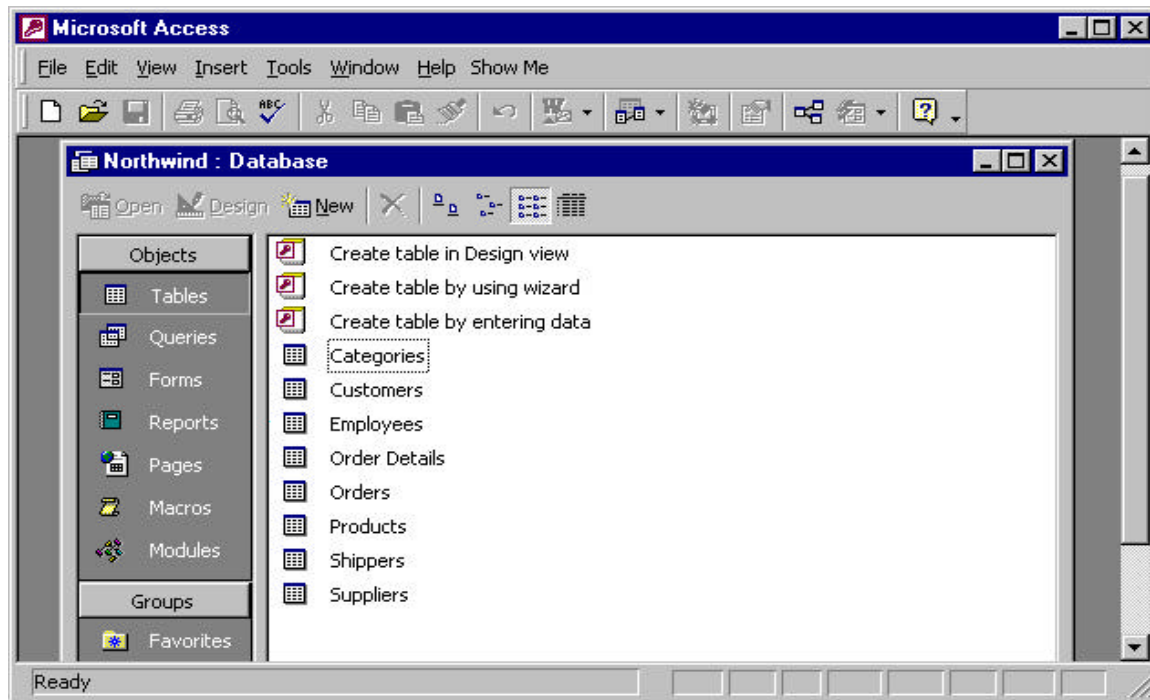
Fig. 1 : Creating a New Database

Once you created a blank da

you will see a dialog box with

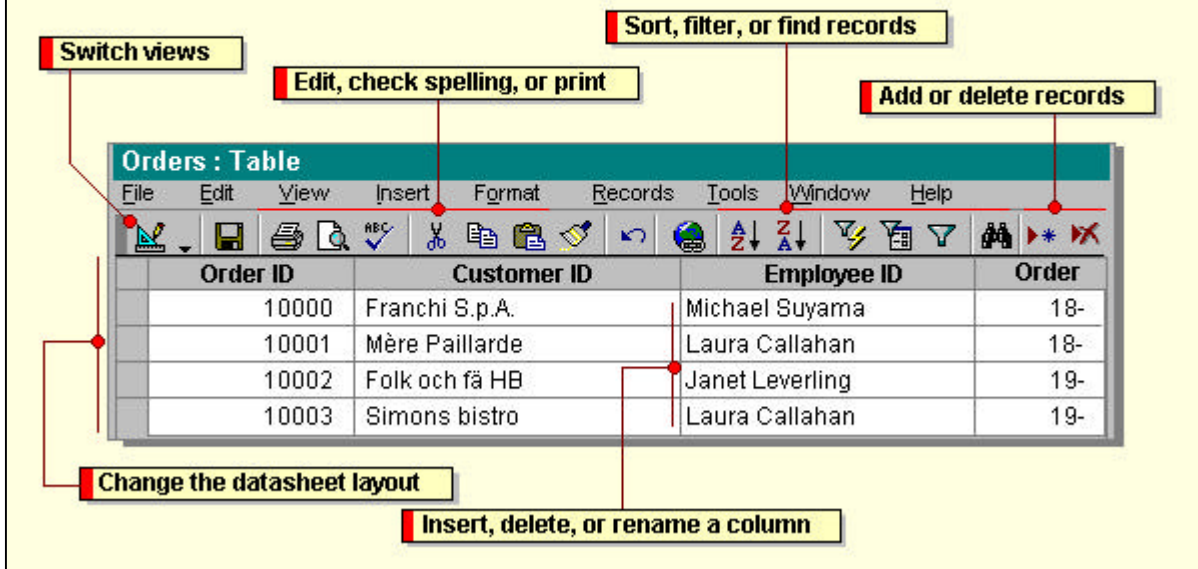
seven objects on the left, they are briefly described as follows,

- **Tables** - a collection of data about a specific topic, such as products or suppliers.
- **Queries** - a command for viewing or analyzing data in different ways or a result of the command.
- **Forms** - a friendly interface to add a new record
- **Reports** - an object that present data in a organized way according to your specification. Examples are telephone bills, sales summary etc.
- **Pages** - a web page that has connection to a database. It makes data available on the Internet or an intranet for interactive reporting, data entry, or data analysis.
- **Macros** - a set of one or more actions that each performs a particular operation, such as opening a form or printing a report. Macros can help you to automate common tasks. For example, you can run a macro that prints a report when a user clicks a command button.
- **Module** - a collection of Visual Basic for Applications declarations and procedures that are stored together as a unit.



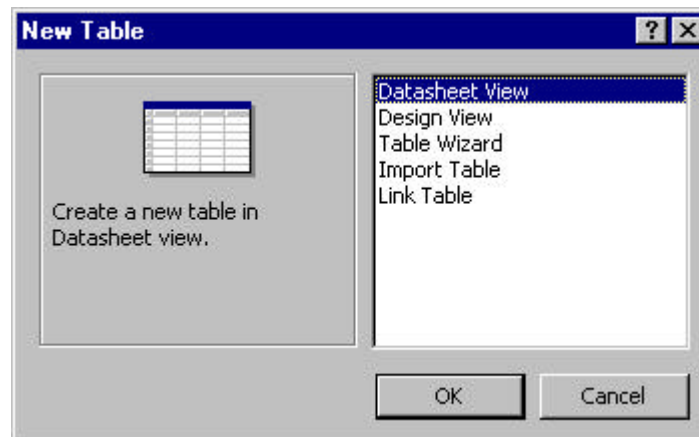
Creating a Table: Datasheet View

In table Datasheet view, you can add, edit, or view the data in a table. You can also check the spelling and print your table's data, filter or sort records, change the datasheet's appearance, or change the table's structure by adding or deleting columns.



There are 2 ways to create a table in Datasheet view:

- Go to **Insert → Table → Datasheet View**



- Look back at Fig. 2: Dialog Box in Database Window. Click on the **Tables → Create table by creating data**

You are then given a Datasheet view with column headings Field1, Field2, and so on, all across the top of the datasheet. Because the names of each field are not descriptive, you may want to rename the fields.

Renaming Fields:

1. Place the cursor over the column heading you want to rename and double click. The column heading will appear highlighted and the cursor will be blinking (you are now in edit mode)
2. Type the name you want to use and then press the Enter key.

3. Repeat the first two steps for the second column, and so on.

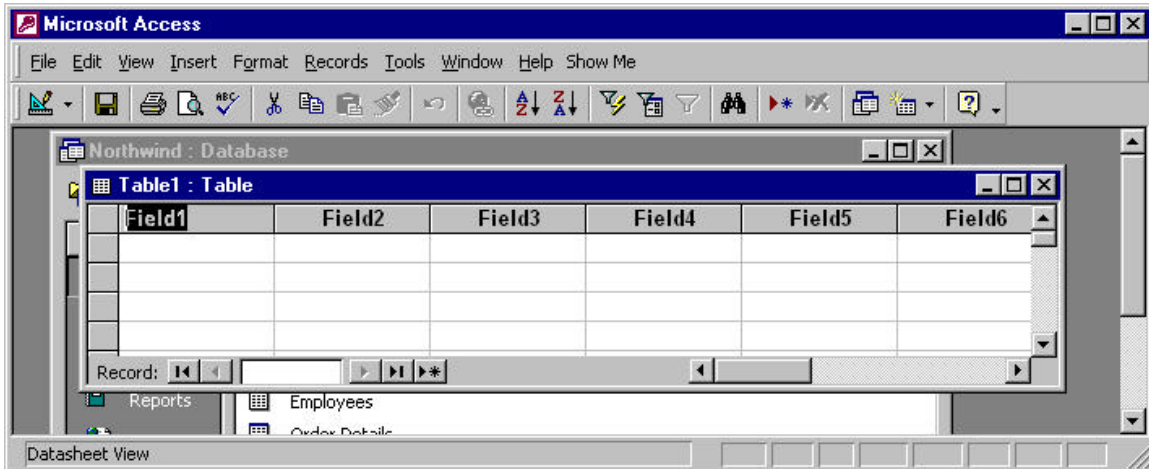


Fig. 3 : Creating a Table in Datasheet View (Renaming Fields)

As the column corresponds to the field, the row corresponds to the record. Now we are ready to add the information. Say that, if we are doing a database of a company, the first table we may have is Employee. And the fields of Employee may be SSN, LastName, FirstName, and so on.

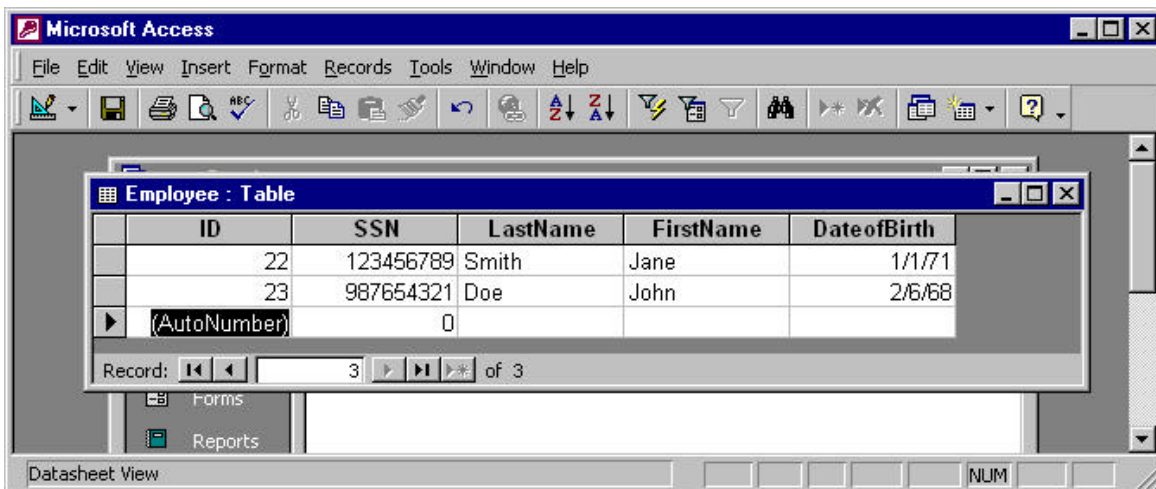
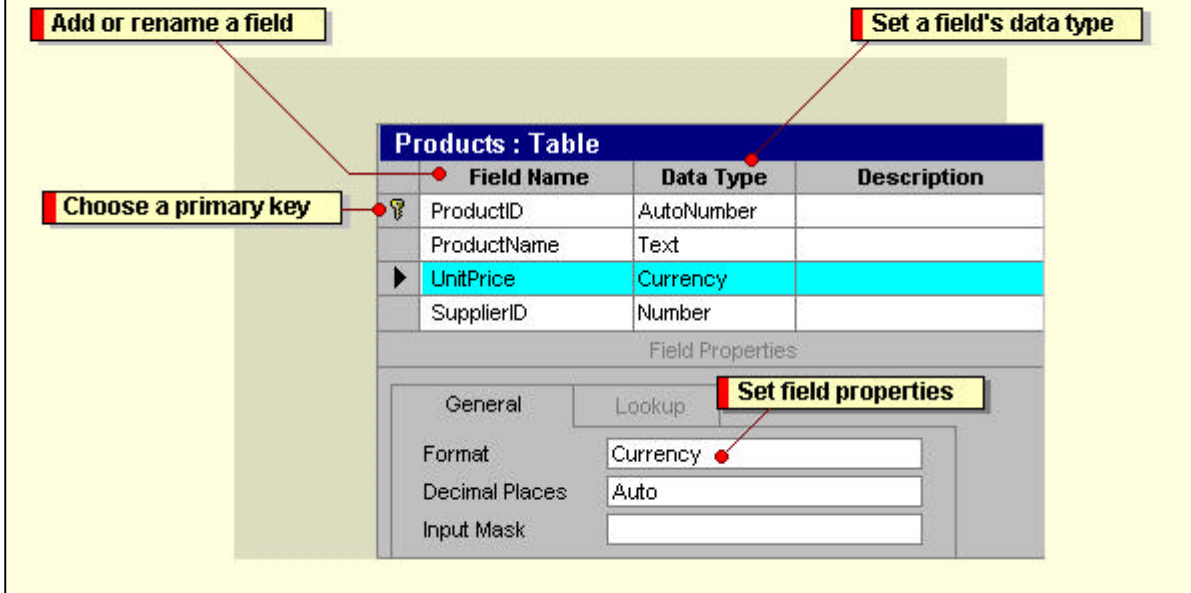


Fig. 4 : Datasheet View (Employees: Table)

Create a Table: Design View

In table Design view, you can create an entire table from scratch, or add, delete, or customize an existing table's fields.



In this view, we can specify detailed properties for each field. This includes the length and type of information used in the field. But if we were to enter data into the table, we must use **Datasheet View** or **Forms**.

When creating or modifying a table in the **Design View**, we see a Design Window.

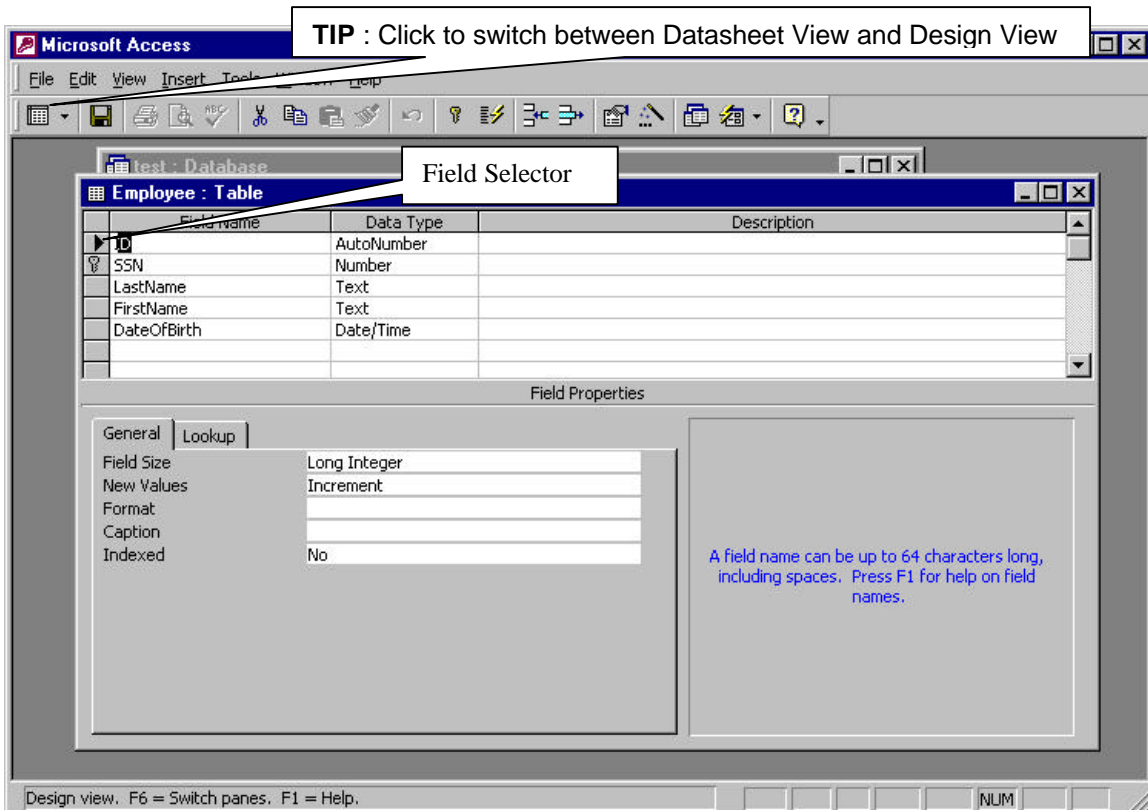


Fig. 5 : Design View (Employees: Table)

There are three columns in the top portion of the window. The **Field Name** is the name of the fields. For example, SSN, FirstName, LastName. The name for a field must follow MS Access **object-naming rules**¹. The **Data Type** is like the domain of an attribute. It provides a list of data types that we can choose from, including Text, Memo, Number, Date, and so on. The **Description** column allows us to describe the field and it is optional. It is always good practice to be descriptive in your comments. This allows new users to easily understand the specifications and meaning of your fields. The following table (Table 1) has the description of each data type.

Setting	Type of data	Size
Text	(Default) Text or combinations of text and numbers, as well as numbers that don't require calculations, such as phone numbers	Up to 255 characters or the length set by the FieldSize property, whichever is less. Microsoft Access does not reserve space for unused portions of a text field
Memo	Lengthy text or combinations of text and numbers	Up to 65,535 characters.
Number	Numeric data used in mathematical calculations.	1, 2, 4, or 8 bytes (16 bytes if the FieldSize property is set to Replication ID).
Date/Time	Date and time values for the years 100 through 9999.	8 bytes.
Currency	Currency values and numeric data used in mathematical calculations involving data with one to four decimal places. Accurate to 15 digits on the left side of the decimal separator and to 4 digits on the right side.	8 bytes.
AutoNumber	A unique sequential (incremented by 1) number or random number assigned by Microsoft Access whenever a new record is added to a table. AutoNumber fields can't be updated.	4 bytes (16 bytes if the FieldSize property is set to Replication ID).
Yes/No	Yes and No values and fields that contain only one of two values (Yes/No, True/False, or On/Off).	1 bit.
OLE Object	An object (such as a Microsoft Excel spreadsheet, a Microsoft Word document, graphics, sounds, or other binary data) linked to or embedded in	Up to 1 gigabyte (limited by available disk space)

¹ object-naming rules

A set of specific rules for naming Microsoft Access objects. In Microsoft Access, names can be up to 64 characters long and can include any combination of letters, numbers, spaces, and special characters except a period (.), an exclamation point (!), an accent grave (`), and brackets ([]). Note that you also can't use leading spaces or control characters (ASCII values 0 to 31). For information on Visual Basic naming conventions, search the Help index for "naming conventions."

Tips

- Avoid including spaces in object names if you'll frequently refer to the objects in expressions or Visual Basic code.
- Avoid using extremely long names because they are difficult to remember and refer to.


	a Microsoft Access table.	
Hyper Link	Text or combinations of text and numbers stored as text and used as a hyperlink address. The easiest way to insert a hyperlink address in a field or control is to click Hyperlink on the Insert menu in the datasheet view.	Each part of the three parts of a Hyperlink data type can contain up to 2048 characters.
Lookup Wizard	Creates a field that allows you to choose a value from another table or from a list of values by using a list box or combo box. Clicking this option starts the Lookup Wizard, which creates a Lookup field. After you complete the wizard, Microsoft Access sets the data type based on the values selected in the wizard.	The same size as the primary key field used to perform the lookup, typically 4 bytes.


Table 1: Data Type

You can set up properties of fields in the field properties window. The following table has description of each item in the field properties window.

Field Property	Description
Field Size	The maximum number of characters you can enter in the field. The largest maximum you can set is 255.
Format	The display layout for the field. Select a pre-defined format or enter a custom format.
Input Mask	A pattern for all data to be entered in the field.
Caption	The label for the field when used on a form. If you don't enter a caption, the field name is used as the label.
Default Value	A value that is automatically entered in the field for new records.
Validation Rule	An expression that limits the values that can be entered in the field.
Validation Text	The error message that appears when you enter a value prohibited by the validation rule.
Required	Specify whether the field is required data entry.
Allow Zero Length	Specify whether allow zero-length strings in the field.
Indexed	An index speeds up searches and sorting on the field, but may slow updates. Selecting "Yes - No Duplicates" prohibits duplicate values in the field.

Table 2:Field Properties

Before we save the table and quit, we need to specify the **primary key**. In our Employee table, SSN will be good for primary key. To define SSN as the primary key, click the **Field Selector** (shown in Fig. 5) for the SSN field. Field Selector is the gray bar on the left side of the Table Design grid by each of the fields. When we click here, the whole row appears highlighted. Then choose Edit, Primary Key or click the Primary Key button (the key symbol , shown in Fig. 6) on the toolbar in design view, a key symbol will appear on the Field Selector. Save the table as Employee. Now we have created one table.²

² You can set combination of more than two attributes as a primary key. To do so, first highlight attributes you wish to set as primary key, and click Primary Key button  in design view.

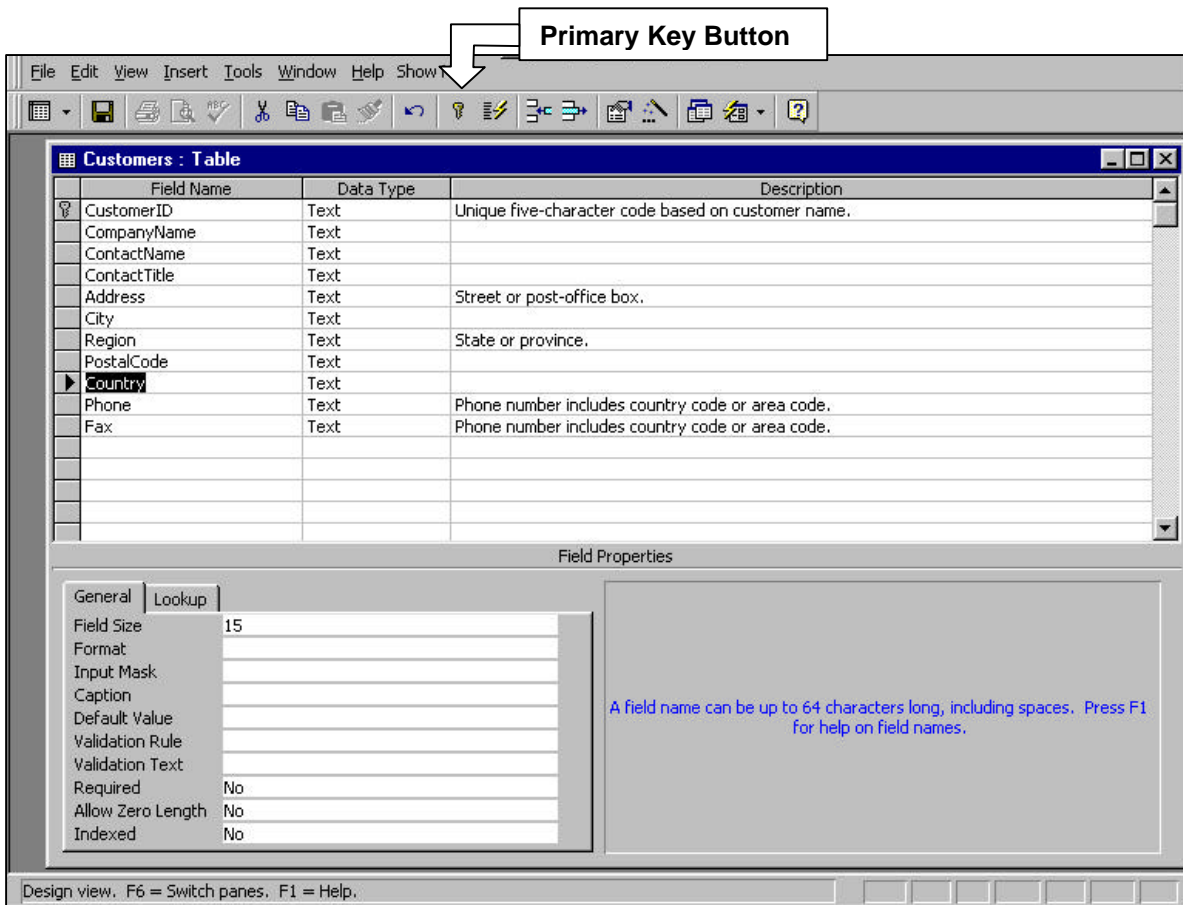


Fig. 6: Table Design View

Working with Data

In this section, we will learn how to work with existing data. The sample database file, we will use in this section is "Northwind.mdb". It is a sample database comes with Microsoft Access. You can find it in "C:\Program Files\Microsoft Office\Office\Samples\" folder. First, go to the folder and open "Northwind.mdb" file. And double click "Orders" table to open it.

Sorting Rows

In the **Datasheet View**, we can sort the records in ascending or descending orders. To sort a single column, place the cursor anywhere in the column desired. Simply click either the Sort Ascending or Sort Descending toolbar buttons. We can also right-click and choose Sort Ascending or Sort Descending from the shortcut menu.

If we want to sort multiple columns, we need to do a little more work. The two columns we want to sort by must be adjacent to each other; the one that we want to sort by first must be to the left of the other. Let's work with "Orders" table in "Northwind.mdb" file. Now we will try sorting by 'Order Date' then by 'Shipped Date', we must first move 'Shipped Date' column to the left of 'Order Date' column. Here are the steps,

1. Highlight the 'Shipped Date' column by clicking the 'Shipped Date' column heading.
2. Let go of the mouse button and then press it again, holding it this time.
3. Now drag the 'Shipped Date' column over the 'Required Date' column. When we get just to the right of the 'Order Date', let up on the mouse button. Then 'Order Date' and 'Shipped Date' should sit side by side now.

- Click the mouse button on the '**Order Date**' header, highlighting the column. Holding the mouse button down, drag it over the '**Shipped Date**' column so that both the '**Order Date**' and '**Shipped Date**' columns appear highlighted.
- Click on **Records** → **Sort** → **Sort Ascending**

	Order ID	Customer	Employee	Order Date	Shipped Date	Required Date
+	10248	Vins et alcools Chevalier	Buchanan, Steven	04-Jul-1996	16-Jul-1996	01-Aug-1996
+	10249	Toms Spezialitäten	Suyama, Michael	05-Jul-1996	10-Jul-1996	16-Aug-1996
+	10250	Hanari Carnes	Peacock, Margaret	08-Jul-1996	12-Jul-1996	05-Aug-1996
+	10251	Victuailles en stock	Leverling, Janet	08-Jul-1996	15-Jul-1996	05-Aug-1996
+	10252	Suprêmes délices	Peacock, Margaret	09-Jul-1996	11-Jul-1996	06-Aug-1996
+	10253	Hanari Carnes	Leverling, Janet	10-Jul-1996	16-Jul-1996	24-Jul-1996
+	10254	Chop-suey Chinese	Buchanan, Steven	11-Jul-1996	23-Jul-1996	08-Aug-1996
+	10255	Richter Supermarkt	Dodsworth, Anne	12-Jul-1996	15-Jul-1996	09-Aug-1996
+	10256	Wellington Importadora	Leverling, Janet	15-Jul-1996	17-Jul-1996	12-Aug-1996
+	10257	HILARIÓN-Abastos	Peacock, Margaret	16-Jul-1996	22-Jul-1996	13-Aug-1996
+	10258	Ernst Handel	Davolio, Nancy	17-Jul-1996	23-Jul-1996	14-Aug-1996
+	10259	Centro comercial Moctezuma	Peacock, Margaret	18-Jul-1996	25-Jul-1996	15-Aug-1996
+	10260	Ottilies Käseladen	Peacock, Margaret	19-Jul-1996	29-Jul-1996	16-Aug-1996
+	10261	Que Delicia	Peacock, Margaret	19-Jul-1996	30-Jul-1996	16-Aug-1996

Fig. 7: Northwind Database: Sort Result

Filters

By using **Filter by Selection**, you tell Access that you want to see only certain records, based on the value in the field in which the cursor currently resides. For example, say that we want to see those orders shipped in Germany. To do this,

- In the '**Ship Country**' column, click a field that has "**Germany**" in this field.
- Click the right button of mouse and select "**Filter by Selection**" button. Or, you may click **Records** button in the menu bar and select **Filter** button and select **Filter by Selection**. Only those records that have Germany for their Ship Country appear.
- Click the right button again and select "**Remove Filter**" button to remove the filter.

With **Filter by Selection**, you were filtering records based on a field you selected in the datasheet, and then selected another field in the subset to narrow it further. When using **Filter by Form**, Access takes you to a different screen to specify the criteria you want to filter with. Using **Filter by Form**, although more complicated, allows you to be more specific and filter your data based on a combination of selected values from multiple fields. To do this,

- click on **Records** → **Filter** → **Filter by Form**
- The datasheet will suddenly look as if you deleted all the records. Now you can pick the fields you want to filter and display your information.
- Click **OrderID** field to see the drop-down list. You can use =, >, <, >=, and <= to specify your criteria.
- Finally, click on **Filter** → **Apply Filter** to see the result.

Finally, we will see how to use **AND** and **OR** criterion in a filter. The **AND** operator allows you to filter records based on two or more criteria. When you apply a filter using the AND operator, only those records that meet both (or all) criteria appear. To show how to use the AND operator, we will choose all orders shipped in USA **AND** freight is above \$100. To do this,

1. Click the **Filter by Form** button to return to the **Filter by Form** screen. The screen should be blank.
2. Click **Ship Country** and select **USA**.
3. Click **Freight** and type ">100" (without quotation mark).
4. Click the **Apply Filter** button. Now those orders shipped in USA and freight is above \$100 will appear. (there should be 40 records)

To show all the orders which is either shipped in USA **OR** whose freight is over \$100, follow the steps,

1. Click the **Record** menu.
2. Select **Filter** in the roll down menu and choose **Filter by Form**.
3. Press the right mouse button on any field and choose **Clear Grid** button.(this clears all previous filters' parameters)
4. Click **Ship Country** and select "**USA**". As soon as you enter the first criteria, Access enables an **OR** tab at the bottom of the **Filter by Form**.
5. Click the **Or** tab at the bottom of the **Filter by Form** screen.
6. Click freight and type ">100" (without quotation mark).
7. Press the right mouse button in any field and a menu will pop up. Click the **Apply Filter** button. Now those orders that are either shipped in USA or whose freight is over \$100 will appear. (there should be 269 records)

CONGRATULATIONS ! You have learned the basics of creating and manipulating tables of data
