



# Software Application Training Tutorial

## Microsoft Access 2000 Introduction

Copyright 2002, Software Application Training Unit, West Chester University. No Portion of this document may be reproduced without the written permission of the authors.

**For Assistance call Ext. 3350**

**A Member of the Pennsylvania State System of Higher Education**

# Microsoft Access 2000

## Introduction

### Table of Contents

Introduction.....	3
The Access Environment .....	4
Naming Conventions .....	6
Tables.....	7
Field Properties .....	10
Records .....	11
Columns .....	13
Spelling & Printing .....	15
Find, Sort & Filter.....	16
Relationships.....	19
Queries .....	22
Forms .....	25
Reports .....	29
Importing.....	32
Exporting.....	33

# Microsoft Access 2000

## Introduction

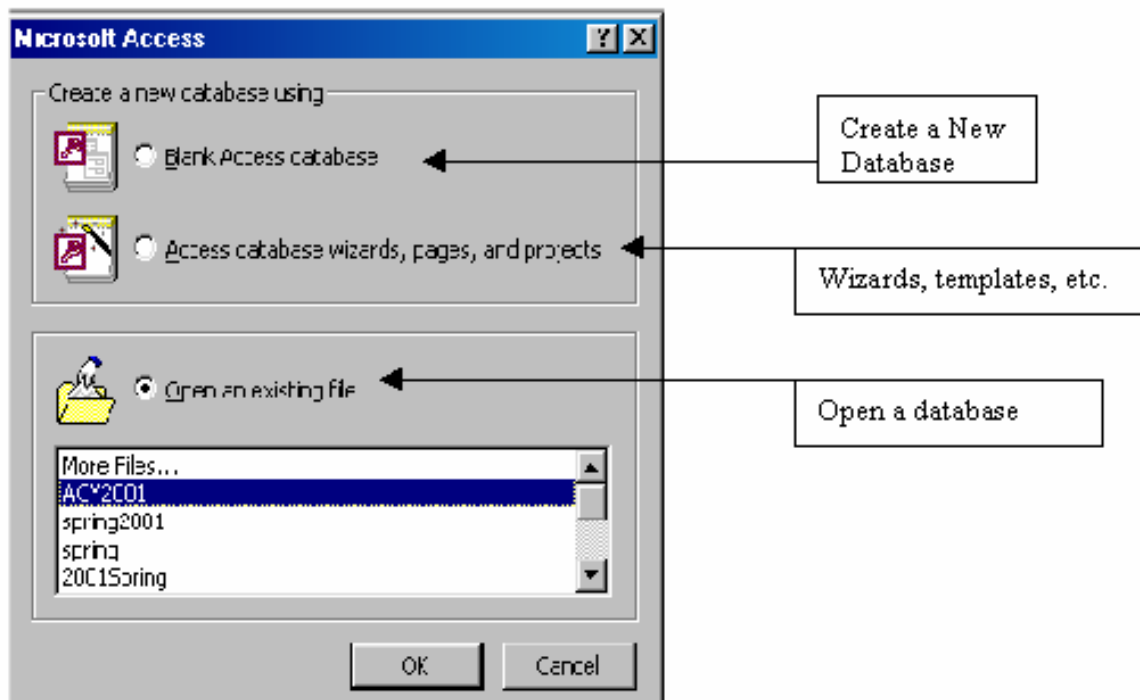
Microsoft Access is a relational database management system. It enables you to easily store, organize, and manipulate collections of information in an electronic format. Data can be organized in separate tables of related data, then linked together to form relationships.

Planning a database (use index cards)

1. What is the purpose of your database?
2. What questions do you think might be asked of that data?
3. What report might you need to produce?
4. How should the data be displayed or inserted into the database?
5. How might you want to group or sort the data?

Starting Access (Start – Programs – Microsoft Access)

The Open Database dialog box will appear



Access automatically saves data input (name your database first)

# THE ACCESS ENVIRONMENT

**History** – Access displays a list of shortcuts to previously opened databases

**My Documents** – MS default location to store files

**Desktop** – provides option to save or open a file on the desktop

**Favorites** – shortcut stores databases and files used frequently

**Web Folder** – Stores folders that are shortcuts to Web servers

## Opening an existing database

1. Select “Open an existing File”
2. Highlight more files, then click OK
3. From the My Documents folder, **select (database name) Click Open**

## The Title Bar

- Control menu icon
- Program title
- Minimize button
- Maximize button
- Close button

## Menu Bar

- Adaptive menus – they change as you use them
- Dimmed – The light gray appearance of a menu choice, toolbar button, or dialog box option when it cannot be selected.
  1. Double-click on the menu name. The first click displays the short menu, and the second expands it to the full menu.
  2. Click on the downward pointing expand arrows located at the bottom of the short menu to expand the full menu.
  3. Pause 5 to 10 seconds over the displayed menu’s name or over the expand arrows to display the full menu.

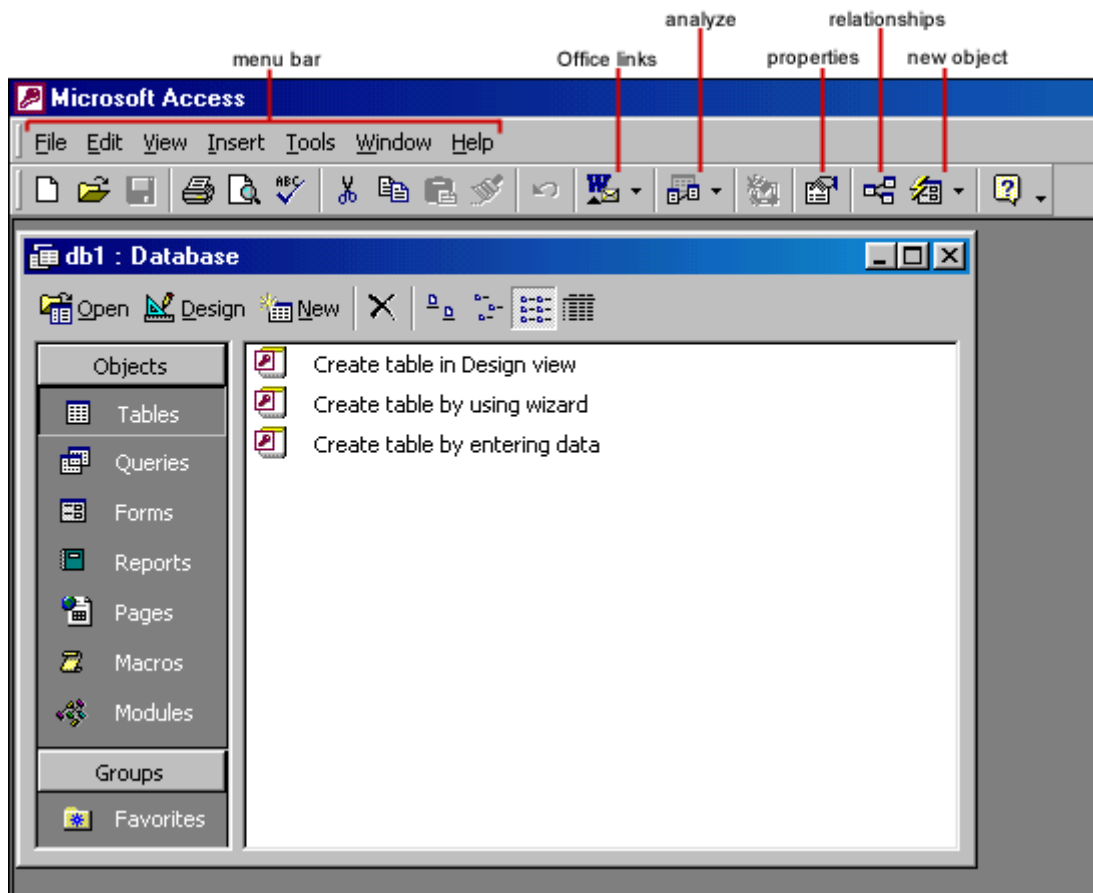
## The Tool Bar

Includes buttons with icons that you can use to perform actions quickly. To display the name of the button, place the mouse pointer directly over the button and pause. Access displays the name in a ScreenTip under the button.

## The Status Bar

The status bar is the area at the bottom of the window that displays messages that enable you to use the menus more efficiently and guide you in performing task.

## ACCESS DATABASE OBJECTS



***Main Database Window***

An Access database is made up of objects with different functions. The most basic object is the table, since this is where source data is stored. Other objects can include forms, queries, reports, pages, macros, and modules; these are objects you use to work with data.

**Table** – Enable you to store a collection of related information in an arrangement of rows and columns. Tables must be created first because they are the foundation of all the other objects in the database.

**Query** – Enable you to ask questions of, analyze, and locate data stored in tables.

**Form** – Enable you enter and view information in a table or query.

**Report** – Enable you to print data in a specific format.

## Naming Conventions

Sound database development requires that you name objects consistently. Naming conventions are not necessary, but they make your work consistent and easy to share. By using naming conventions, you clearly identify each object. This enables you to review and troubleshoot a database design without decoding your work.

This convention suggests that you precede object names with three letters, called a tag, that indicate what type of object it is. Tags always have lowercase letters, and the object name begins with an uppercase letter. To make reading and typing the object name easier, and to be compatible with other programming tools, do not use underscores or spaces.

The following table shows the tags for various types of objects in Access:

Object	Tag
Table	tbl
Form	frm
Query	qry
Report	rpt
Macro	mcr
Page	pge

Leszynski Naming Convention for field names

Data type	Tag
Binary	bin
Byte	byt
AutoNumber	ing
Currency	cur
Date/Time	dtm
Integer	int
Long	lng
Memo	mem
Text	str
Yes/No	ysn

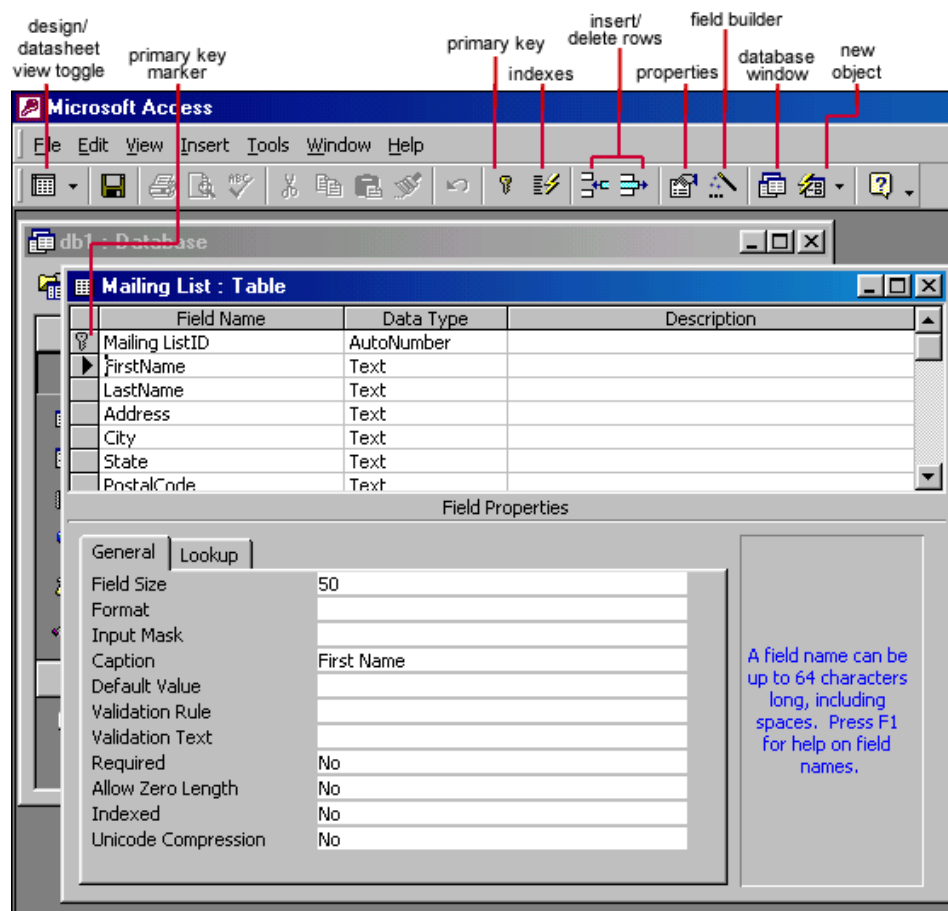
# TABLES

Tables are made up of rows and columns that store information similar to the way an Excel worksheet stores information in a workbook. Access provides three ways to create a table for which there are icons in the Database Window. Double-click on the icons to create a table.

- **Create table in Design view** will allow you to create the fields of the table. This is the most common way of creating a table and is explained in detail below.
- **Create table using wizard** will step you through the creation of a table.
- **Create table by entering data** will give you a blank datasheet with unlabelled columns that looks much like an Excel worksheet. Enter data into the cells and click the **Save** button.

## Create a Table in Design View

Design View allows you to define the fields in the table before adding any data to the datasheet. The window is divided into two parts: a top pane for entering the field name, data type, and an optional description of the field, and a bottom pane for specifying field properties.



- **Field Name** - This is the name of the field and should represent the contents of the field such as "Name", "Address", "Grade", etc. The name cannot exceed 64 characters in length and may include spaces.
- **Data Type** is the type of value that will be entered into the fields.

1. **Text** - The default type, text type allows any combination of letters and numbers up to a maximum of 255 characters per field record.
  2. **Memo** - A text type that can be used to store sentences, or large paragraphs in a field.
  3. **Number** - Any number can be stored.
  4. **Date/Time** - A date, time, or combination of both.
  5. **Currency** - Monetary values that can be set up to automatically include a dollar sign (\$) and correct decimal and comma positions.
  6. **AutoNumber** - When a new record is created, Access will automatically assign a unique integer to the record in this field.
  7. **Yes/No** - Use this option for True/False, Yes/No, On/Off, or other values that must be only one of two conditions.
  8. **OLE Object** - An OLE (Object Linking and Embedding) object is a sound, picture, or other object such as a Word document or Excel spreadsheet that is created in another program. Use this data type to embed an OLE object or link to the object in the database.
  9. **Hyperlink** - A hyperlink will link to an Internet or Intranet site, or another location in the database.
  10. **Lookup Wizard** - Create a field that lookup or lists values to quickly insert data in the field. Using the Lookup Wizard, you can create a field that displays either one of two kinds of lists to make data entry simpler:
    - A Lookup list that displays values looked up from an existing table or query.
    - A value list that displays a fixed set of values that you enter when you create the field.
- **Description** (optional) - Enter a brief description of the contents of the field. This text will be displayed in Datasheet View in the Status Bar.
  - **Field Properties** - Select any pertinent properties for the field from the bottom pane.

### **Create a table using Design View**

1. Use the following field names to create the table: Employee ID, FirstName, LastName, Address, City, State, Zip, Phone, DateHired.
1. Select Create Table in Design View. (Or click New, select Design View, and click OK.)
2. Enter the field name. Select the field type. Enter an optional description. Set the field properties.
3. Repeat this procedure for each additional field.
4. Click the Save button. Enter a table name (PersonalData) and click OK.

### **Creating a Table with the Table Wizard**

The Table Wizard makes creating tables easy and convenient. The Table Wizard assists you in creating a table by offering sample tables for different applications. Each sample table contains a set of fields specific to the application. You select the sample table and fields to include; Access builds the table.

To create a table using the Table Wizard:

1. Display the table objects in the Database window.

2. Double-click on Create Table by Using Wizard. (Or click the New button, select Table Wizard, and click OK.)
3. Observe the Table Wizard dialog box. A list of sample business tables is provided. If you want to see a list of sample personal tables, you would click the Personal radio button. (The option selected determines the type of tables listed.) Let's keep the Business radio button selected so that we can create a business table.
4. Notice that the field names for the selected sample table are displayed in the Sample Field list. The Table Wizard helps create a new table based on the fields you select.
5. From the Sample Tables list, select Employees. The Sample Fields list changes to display fields for the newly selected table.
6. Select the following fields from the Sample Tables list by clicking the arrow icon pointing towards the right:

EmployeeID  
FirstName  
LastName  
Address  
City  
StateOrProvince  
PostalCode  
HomePhone  
DateHired

7. Follow the dialog boxes to name your table and select a primary key, and then click **Finish** when done. (Table Name: MyTable, and let Access set a primary key)

# FIELD PROPERTIES

Properties for each field are set from the bottom pane of the Design View window.

**Field Size** is used to set the number of characters needed in a text or number field. The default field size for the Text type is 50 characters.

**Byte** - Positive integers between 1 and 255

**Integer** - Positive and negative integers between -32,768 and 32,768

**Long Integer (default)** - Larger positive and negative integers between -2 billion and 2 billion.

**Single** - Single-precision floating-point number

**Double** - Double-precision floating-point number

**Decimal** - Allows for Precision and Scale property control

**Format** conforms the data in the field to the same format when it is entered into the datasheet. For text and memo fields, this property has two parts that are separated by a semicolon. The first part of the property is used to apply to the field and the second applies to empty fields.

## Indexes

Creating indexes allows Access to query and sort records faster. The Primary Key field is automatically set as an indexed field with no duplicates.

## Validation Rule

Validation Rules specify requirements for the data entered in the worksheet.

## Input Masks

An input mask controls the value of a record and sets it in a specific format.

## Caption

Specify a different field name for a field (column) in Datasheet view

## Default Value

There may be cases where the value of a field will usually be the same for all records.

## Primary Key

A primary key enables you find unique records and create relationships between tables. There are three types of primary keys: auto-number, single-field, and multiple-field.

## Adding Records

Add new records to the table in datasheet view by typing in the record beside the asterisk (\*) that marks the new record. You can also click the new record button at the bottom of the datasheet to skip to the last empty record.

1. If still in table design view, click the view button to switch to datasheet view.
2. Maximize the Table window, then type WCU-10, and press the enter key.
3. Type Carol, press enter or tab, then use the following information to complete the first record: Schaaf, 2306 Palisade Ave, Union City, NJ, 07087, 201-863-4283, 11/13/89.
4. Enter the following records using the information below:

WCU-12, Gayle, Murray, 1855 Broadway, New York, NY, 12390, 212-790-1253, 1/3/90  
WCU-15, Steve, Baranco, 742 Forrest St., Kearny, NJ, 07032, 201-439-6620, 10/4/85  
WCU-16, Kristine, Racich, 416 Bloomfield St., Hoboken, NJ, 07030, 201-861-9950, 8/31/94  
WCU -19, Barbara, Zumbo, 24 Central Avenue, Ritchfield Park, NJ, 07660, 201-842-1683, 9/16/93  
WCU -20, Daniel, Gordon, 2 Angelique St., Weehawken, NJ, 07087, 201-865-9127, 4/20/93  
WCU -22, Jacqueline, Rivet, 3600 Bergeline Ave., Union City, NJ, 07087, 201-867-8240, 9/6/93  
WCU -23, Betsy, Rosyln, 1800 Boulevard East, Weehawken, NJ, 07086, 201-845-0101, 10/31/89

## Editing Records

To edit records, simply place the cursor in the record that is to be edited and make the necessary changes. After you edit your data, simply move to the next field or record to save your new data. You can also save the current record by holding **Shift+Enter** keys.

1. Click in the Last Name field of employee number WCU-19.
2. Drag the mouse over the current data to highlight the current last name.
3. Type **Gumbo**, to replace the highlighted data.
4. Type **Shift+Enter** to save the changes to the current record.

## Copying Records

You may need to add a new record that is similar to an existing record. In order to save time you can copy data from a single field, or copy an entire record.

1. Click the record selector for employee number **WCU-20**.
2. Select **Edit|Copy** from the menu bar. This places the record to the computer's clipboard (memory). You can also use the keyboard combination **Ctrl+C** to copy information to the clipboard.
3. Click the New record button at the bottom of the datasheet. Note the blinking insertion point is located in the first field of the new record waiting for data to be inserted.
4. Select **Edit|Paste Append** (Ctrl+V) from the menu bar. A copy of the record has now been added as a new record, but it is not yet saved.

5. Change the Employee number to WCU-44, and save the record. This field is the primary key, and you can not have a duplicate value in this field.

### **Deleting Records**

Delete a record on a datasheet by placing the cursor in any field of the record row and select **Edit|Delete Record** from the menu bar or click the **Delete Record** button on the datasheet toolbar.

1. Click in any field of Employee number WCU-44.
2. Select **Edit|Delete Record** from the menu bar.
3. Click yes to confirm deletion of the record. You can also delete a record by clicking the record selector button, and press the delete key on the keyboard.

## Adding and Deleting Columns

Highlight the column that the new column should appear to the left of by clicking its label at the top of the datasheet and select **Insert|Column** from the menu bar.

Entire columns can be deleted by placing the cursor in the column and selecting **Edit|Delete Column** from the menu bar.

1. Click the **Hired Date** column heading to select it.
2. Select **Insert|Column** from the menu bar. A new column now appears to the left of the Hired date column.
3. Double-click the field name of the new column (Field1), and type **Termination Date** to change the name of the default field name. Press the enter key to save the new field name.

If you delete a column you will lose all data that is in the column for each record. A column can be deleted in datasheet view as well as design view. To delete a column in Data Sheet view do the following:

1. Click the field name Termination Date to select the column.
2. Select **Edit|Delete Column** from the menu bar.
3. Click yes to confirm deletion of the Termination Date column.

## Moving Columns

You can change the order of the information by rearranging the field order.

1. Click the field heading Hired Date to select the column to be moved.
2. The click the heading again with the left mouse button, and hold it down. Drag the column to its new position next between the Last Name and the Address columns. As you drag a dark line appears where the row will be placed. When you release the mouse button, Access places the column in its new location.

## Resizing Rows and Columns

The height of rows on a datasheet can be changed by dragging the gray sizing line between row labels up and down with the mouse. By changing the height on one row, the height of all rows in the datasheet will be changed to the new value.

Column width can be changed in a similar way by dragging the sizing line between columns. Double click on the line to have the column automatically fit to the longest value of the column. Unlike rows, columns on a datasheet can be different widths. More exact values can be assigned by selecting **Format|Row Height** or **Format|Column Width** from the menu bar.

## Freezing Columns

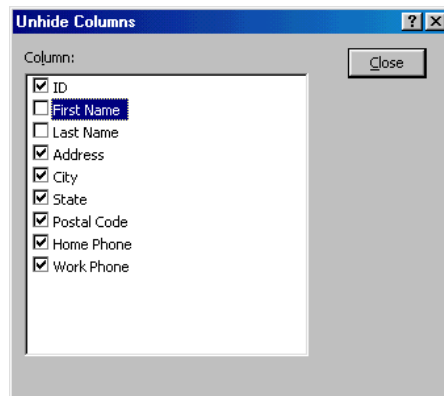
Similar to freezing panes in Excel, columns on an Access table can be frozen. This is helpful if the datasheet has many columns and relevant data would otherwise not appear on the screen at the same time. Freeze a column by placing the cursor in any record in the column and select **Format|Freeze Columns** from the menu bar. Select the same option to unfreeze a single column or select **Format|Unfreeze All Columns**.

## Hiding Columns

Columns can also be hidden from view on the datasheet although they will not be deleted from the database. To hide a column, place the cursor in any record in the column or highlight multiple adjacent columns by clicking and dragging the mouse along the column headers, and select **Format|Hide Columns** from the menu bar.

To show columns that have been hidden, select **Format|Unhide Columns** from the menu bar. A window displaying all of the fields in the table will be listed with check boxes beside each field name. Check the boxes beside all fields that should be visible on the data table and click the **Close** button. Use the following directions to hide the ID column:

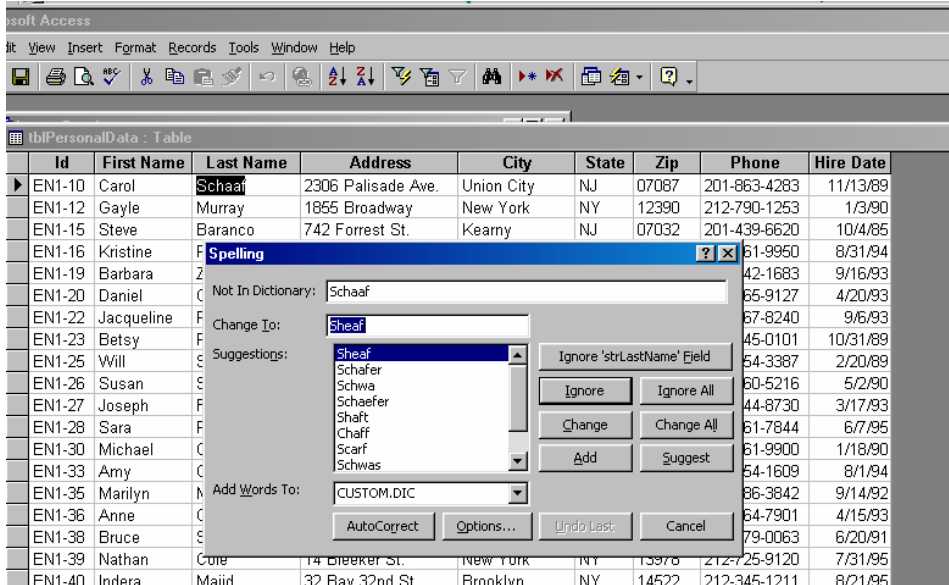
1. Click on any record in the ID column to select the column.
2. Select **Format|Hide Column** from the menu bar.



# SPELLING & PRINTING

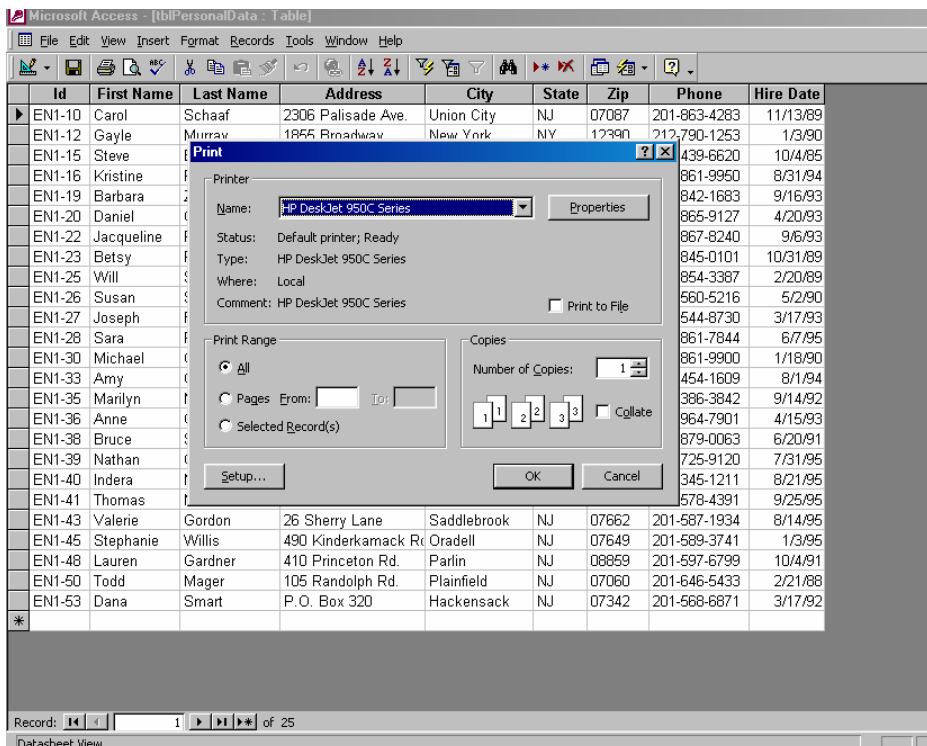
## Check Spelling

The spell checker can be used to help correct spelling errors in text and menu fields in a datasheet. Select **Tools|Spelling** from the menu bar to activate the spell checker and make corrections just as you would using Word or Excel.



## Print a Datasheet

Datasheets can be printed by clicking the **Print** button on the toolbar. For more control of how or what is printed select **File|Print** from the menu bar. You can change the default printer, number of copies, if to collate, etc...



# FIND, SORT & FILTER

## Finding Data

Data in a datasheet can be quickly located by using the **Find** command.

1. Close any database that you may have open. If you accidentally close Access, then just reopen it by clicking the start button and select programs. Then, click on the Microsoft Access.
2. Select **File|Open** from the menu bar. Check the Look in dialog box. If it does not display My Documents, click on the My Documents folder on the left side of the Open dialog box.
3. Use the scroll buttons to find the Access folder. Open the Access folder, and select the **WcuAccessIntro.mdb** database, then click open.
4. Click the Table objects button, and select the PersonalData table. Click the Open button to open the PersonalData table in datasheet view.
5. Place the cursor in any record in the **Last Name** field and select **Edit|Find...** from the menu bar.
6. Type Cole in the **Find What:** box. From the **Look In:** drop-down menu, define the area of the search by selecting the entire table or just the field in the table you placed your cursor in during step 5 (Last Name).
7. Select the matching criteria from **Match:** Select Start of Field. to Click the **More >>** button for additional search parameters.
8. When all of the search criteria is set, click the **Find Next** button. If more than one record meets the criteria, keep clicking **Find Next** until you reach the correct record. After you reach the correct record close the Find and Replace dialog box.

## Replace

The replace function allows you to quickly replace a single occurrence of data with a new value or to replace all occurrences in the entire table. Find and correct the name Zumbo to Gumbo by following the following directions.

1. Select **Edit|Replace...** from the menu bar (or click the **Replace** tab if the Find window is already open).
2. Type **Zumbo** in the **Find What:** box, and type **Gumbo** in the **Replace With:** box.
3. Click the **Find Next** button to step through occurrences of the data in the table and click the **Replace** button to make single replacements. Click **Replace All** to change all occurrences of the data in one step.

## Sorting

Sorting and filtering allow you to view records in a table in a different way either by reordering all of the records in the table or view only those records in a table that meet certain criteria that you specify.

You may want to view the records in a table in a different order than they appear such as sorting by a date or in alphabetical order, for example. By default records are sorted based on the value in the

primary key field. Follow these steps to execute a sort of records in the PersonalData table based on the Last name field:

1. Place the cursor in any record in the Last Name column.
2. Select **Records|Sort|Sort Ascending** or **Records|Sort|Sort Descending** from the menu bar or click the **Sort Ascending** or **Sort Descending** buttons on the toolbar.

To sort by more than one column highlight the columns by clicking and dragging the mouse over the field labels and select one of the sort methods stated above.

### **Filter by Selection**

This feature will filter records that contain identical data values in a given field such as filtering out all of the records that have the value "Johnson" in a name field. To Filter by Selection follow the steps below.

1. Place the cursor in any record under the State field that has a NJ value.
2. Click the **Filter by Selection** button on the toolbar or select **Records|Filter|Filter By Selection** from the menu bar.

### **Remove a Filter**

To view all records in a table again, click the depressed **Apply Filter** toggle button on the toolbar.

### **Filter by Form**

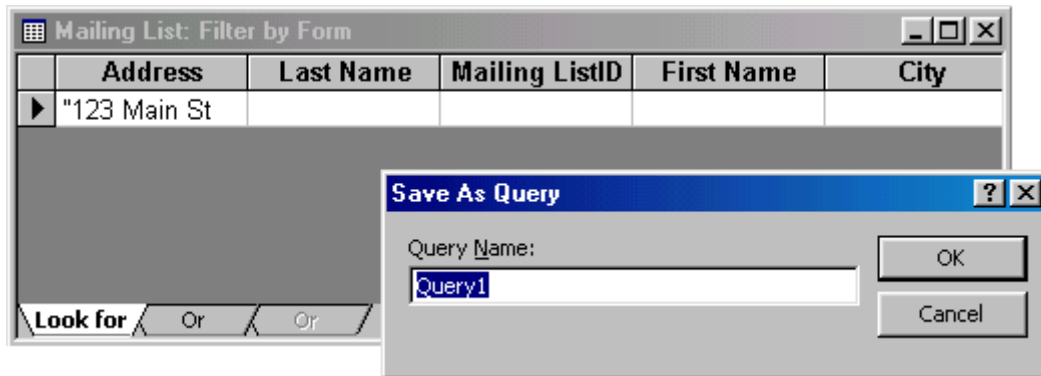
If the table is large, it may be difficult to find the record that contains the value you would like to filter by so using Filter by Form may be advantageous instead. This method creates a blank version of the table with drop-down menus for each field that each contains the values found in the records of that field.

Under the default **Look for** tab of the Filter by Form window, click in the field to enter the filter criteria. To specify an alternate criteria if records may contain one of two specified values, click the **Or** tab at the bottom of the window and select another criteria from the drop-down menu. After you have selected all of the criteria you want to filter, click the **Apply Filter** button on the toolbar.

1. Click the Filter by Form button on the toolbar.
2. Click the City field, and select New York from the drop down list.
3. Click the State field, and select NY from the drop down list.
4. To apply the filter click Apply Filter button. Only those employees that live in New York, NY will be displayed

## Saving A Filter

The filtered contents of a table can be saved as a query by selecting **File|Save As Query** from the menu bar. Enter a name for the query and click **OK**. The query is now saved within the database with the query objects.



1. Click the Filter by Form button on the toolbar. Select the filter criteria.
2. Select **File|Save As Query** from the menu bar.
3. Type **NY Employees**, then click OK to save the query.

# RELATIONSHIPS

## Introduction to Relationships

Relationships give the flexibility to combine information from many tables. To access information from more than one table, you must be able to join the tables in queries, or link them in a form or report. You can view the information from all of the tables at the same time by joining, or relating, the tables to one another. After you define relationships between the tables, you can combine the data from multiple tables together in a query, form, or report.

## Common Field

When creating relationships between your tables, you always work with two tables at a time. To join two tables, each table must contain a common field. These common fields contain identical information for each record. The field name does not have to be identical, but in order to build a relationship between the fields, the data type must be the same for both fields.

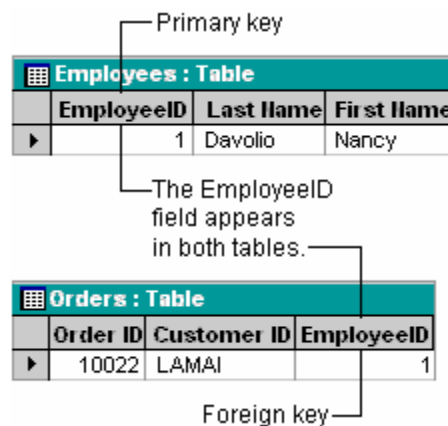
## Types of Relationships

- One-to-one
- One-to-many
- Many-to-many

After you've set up different tables for each subject in your database you need a way of telling Access how to bring that information back together again. The first step in this process is to define relationships between your tables. After you've done that, you can create queries, forms, and reports to display information from several tables at once.

## How do relationships work?

A relationship works by matching data in key fields — usually a field with the same name in both tables. In most cases, these matching fields are the primary key from one table, which provides a unique identifier for each record, and a foreign key in the other table. For example, employees can be associated with orders they're responsible for by creating a relationship between the Employees table and the Orders table using the EmployeeID fields.



## A one-to-one relationship

In a 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 relationship is not

common, because most information related in this way would be in one table. You might use a one-to-one relationship to divide a table with many fields, to isolate part of a table for security reasons, or to store information that applies only to a subset of the main table.

**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.

### A many-to-many relationship

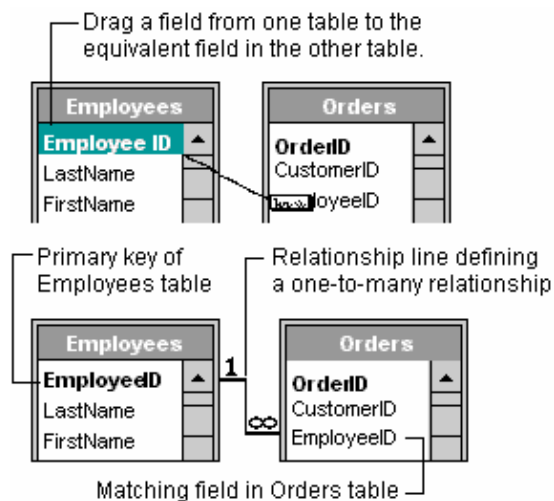
In a many-to-many relationship, a record in Table A can have many matching records in Table B, and a record in Table B can have many matching records in Table A. This type of relationship is only possible by defining a third table (called a junction table) whose primary key consists of two fields — the foreign keys from both Tables A and B. A many-to-many relationship is really two one-to-many relationships with a third table. For example, the Orders table and the Products table have a many-to-many relationship that's defined by creating two one-to-many relationships to the Order Details table.

### Defining relationships

1. Open the Intro.mdb database. Take a look at all of the tables, and then close any tables you have opened. You can't create or modify relationships between open tables.
2. If you haven't already done so, switch to the Database window. You can press F11 to switch to the Database window from any other window.
3. Click **Relationships** on the toolbar.



You define a relationship by adding the tables that you want to relate to the Relationships window, and then dragging the key field from one table and dropping it on the key field in the other table.



The kind of relationship that Microsoft Access creates depends on how the related fields are defined:

A one-to-many relationship is created if only one of the related fields is a primary key or has a unique index.

A one-to-one relationship is created if both of the related fields are primary keys or have unique indexes.

A many-to-many relationship is really two one-to-many relationships with a third table whose primary key consists of two fields — the foreign keys from the two other tables.

4. If your database doesn't have any relationships defined, the **Show Table** dialog box will automatically be displayed. If you need to add the tables you want to relate and the **Show Table** dialog box isn't displayed, click **Show Table**. Double-click the names of the tables you want to relate, and then close the **Show Table** dialog box.
5. Drag the field strEmployeeid from the strEmployeeInformation table to strEmpID field in the strHumanResourcesData table.
6. In most cases, you drag the primary key field (which is displayed in bold text) from one table to a similar field (often with the same name) called the foreign key in the other table. The related fields don't have to have the same names, but they must have the same data type and contain the same kind of information. In addition, when the matching fields are Number fields, they must have the same **FieldSize** property setting.
7. The **Edit Relationships** dialog box is displayed. Check the field names displayed in the two columns to ensure they are correct. You can change them if necessary. Set the relationship.
  - a.) Enforce Referential Integrity
  - b.) Cascade Update Related Fields
  - c.) Cascade Delete Records
8. Click the **Create** button to create the relationship.
9. Repeat steps 5 through 8 for each pair of tables you want to relate.
10. When you close the Relationships window, Microsoft Access asks if you want to save the layout. Whether you save the layout or not, the relationships you create are saved in the database.

# QUERIES

Once you have created tables and entered data, how do you get information out of your database to help you make important decisions? Queries are a way for you to ask questions of your data. With queries, you can get information when you need it, from almost any combination of fields, and even from multiple tables.

## Select Query

To view only certain fields or records from a table you use a select query. They enable you to select specific fields or records from a table. Select queries have three components:

- The data source (for example, a table, multiple tables, or another query)
- The question (the query design). The design of your query tells Access what data to retrieve.
- The answer (the temporary result called the query Datasheet view). In Access, the result of a select query is placed in a temporary datasheet.

## Examining an existing query

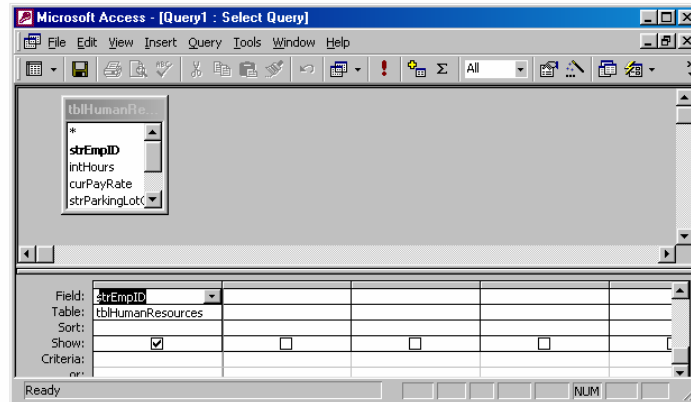
1. Open the WcuAccessIntro.mdb database. Maximize the Database window.
2. We'll begin by displaying the query objects in the Database window. Click on Queries in the Objects bar.
3. Observe the Database window. These are the queries that currently exist in the database.
4. Open the qryTDSaffAndRates query by double clicking or select it then, click open.
5. This datasheet displays the results of the query. The query was designed to display the ID numbers and pay rates for employees working in the Training and Development (TD) department. To help understand queries, look at the design of this query. Click on the design icon, or select View from the menu bar, then select Design View.
6. Observe the Design view window, which is divided into two panes. The upper pane shows the table on which the query was based. As you can see, this query was based on the tblHumanResourcesData table.
7. Observe the lower pane of the query Design view window. The lower pane of the Query Design window contains the query's design grid. Each column is a field included in the query's Datasheet view.
  - a.) **Field** – Contains the fields that are included in the query. The fields in the query Design view window are displayed in the same order as in the query Datasheet view.
  - b.) **Table** – Contains the table in which the included fields were extracted.
  - c.) **Show** – Used to indicate whether or not you want the field to be visible in the table
  - d.) **Criteria** – Enables you to define the conditions that identify the records you want to view.

- e.) **Or** – Enables you to provide criteria for which only one of two or more conditions must be met

### Creating a query in Design view

Create a query from the current database that will enable you to view all department names and employee Ids.

1. Click on Create Query In Design View, then click **Open**.



2. The Show Table dialog box is immediately displayed, on top of the query Design view window. By using the dialog box, you can select the tables and queries contained in the database. Select tblHumanResourcesData table. Click add, then close.
3. Notice the upper pane of the query Design view window. The upper pane contains the field list of the table (or tables) on which the query is based. In this case, the field list is for the tblHumanResourcesData table.
4. The Show Table dialog box remains open, enabling you to select additional tables or queries. Close the Show Table box by clicking the close button.
5. Select the strDept and drag it to the first empty field cell in the design grid. The mouse pointer changes to a field icon when you drag it.
6. Click in the next empty Field cell. It contains a button with a drop-down arrow. Display the drop-down list. Add the SstrEmpID, and curPayRate fields to the design grid.

### Using Operators in Query Criteria (specify certain criteria)

You can select records using an expression that includes an operator. Operators are often used to define a range of values for the criteria. A common Access operator is the wildcard. You can use the asterisk wildcard to select a group of records.

#### Like Operator

1. Open qryEmployeeNames. Modify the query to only display employees whose last names begin with the letter M.
2. Display the View menu, and click on Design view.
3. In the column for strLastName, click in the Criteria cell. Type m\* and press the enter key.

4. Run the query and note the results.

## Comparison Operators

<	Less than
>	Greater than
=	Equal to
<=	Less than or equal to
>=	Greater than or equal to
<>	Not equal to

1. Use a comparison operator to view records for those employees who make less than \$18.00 per hour. Open the qryPayRates query.
2. Click in the Criteria cell for curPayRate. Type < 18 and press the enter key.
3. Run the query and view the results.

## AND Conditions

An AND condition requires that two or more criteria must be true for the records to be included in the result. In the design grid, you can create two basic types of AND conditions: AND condition that contain criteria in multiple fields, and AND condition that contain multiple criteria in one field.

## OR Condition

An OR condition is composed of two or more criteria where at least one of the conditions must be true for the record to be included in the result.

## Creating calculated fields

A calculated field is a “virtual field” in a query for which the value is a function of one or more fields in the underlying table

The syntax of a calculated field is always the same:  
<calc field name>: <definition>

The calculated field name can be just about anything, as long as it is unique. The definition is any expression that Access can evaluate.

When you use field names in expressions, Access normally adds square brackets. This is not cause for concern because in Access, square brackets simply indicate the name of a field (or some other object in the Access environment). However, if your field name contains blank spaces (e. g., Dept Code), the square brackets are NOT optional—you must add the square brackets yourself.

## The ampersand (&) operator

The ampersand operator is like any other operator (e. g., +, -, ', ,) except that it is intended for use on strings of characters. What the ampersand does is simply add one string on to the end of another string (hence its other name: the “concatenation” operator).

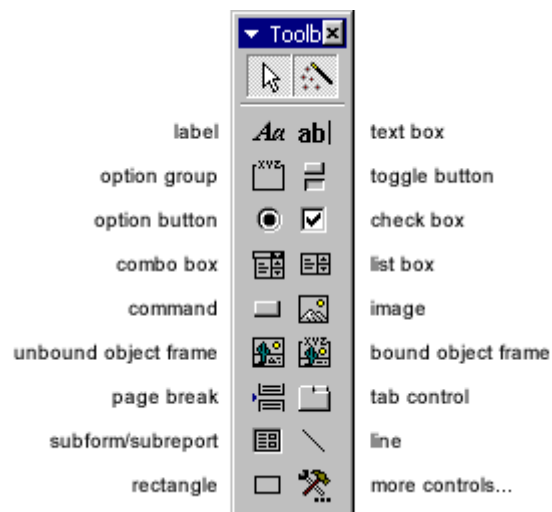
# FORMS

By using a form, you can customize the display of data in a table or query. Forms that contain selected fields are usually designed to display one record at a time. You can select certain fields for display on the form, and you can add a title to the form. You can also print records from a form.

## Create Form in Design View

To create a form from scratch without the wizard, follow these steps:

1. Click the **New** button on the form database window.
2. Select "Design View" and choose the table or query the form will be associated with the form from the drop-down menu.
3. Select **View|Toolbox** from the menu bar to view the floating toolbar with additional options.



4. Add controls to the form by clicking and dragging the field names from the Field List floating window. Access creates a text box for the value and label for the field name when this action is accomplished. To add controls for all of the fields in the Field List, double-click the Field List window's title bar and drag all of the highlighted fields to the form.

## AutoForm

The quickest way to create a form is with Autoform. You tell Access which table to use, and Access does the rest! Select a table in the Database window or open a table. Display the New Object button menu and select AutoForm. Access creates a columnar form that contains' all of the tables fields and opens the form so that you can start using it.

## The Form Wizard

1. Open the Forms database. If necessary, maximize the Database window.
2. You will start by viewing the list of form objects. Click on Forms in the Object bar. The database has two form objects
3. You are going to use the Form Wizard create another form. Select the option Create Form by Using Wizard. Click **Open**.
4. The Form Wizard is displayed. The Table/Queries selection box identifies the qryEmployeeInformation query as your data source. You want your form to use tblPersonalData. Let's make this change. Click the Table/Queries drop-down arrow. Select tblPersonalData.
5. The Available Fields list changes to display fields for the newly selected table. Move all of the available fields to selected fields. Then click next.
6. Choose the Columnar layout and click **Next>** to advance to the next dialog box.
7. Observe the Form Wizard. Select the Sandstone style and click **Next>**.
8. Name the form frmMyEmployeeData, and click **Finish**. The Form can be opened to view or enter information or you can modify the form's design.

## Editing Forms

The follow points may be helpful when modifying forms in Design View.

**Grid lines** - By default, a series of lines and dots underlay the form in Design View so form elements can be easily aligned. To toggle this feature on and off select **View|Grid** from the menu bar.

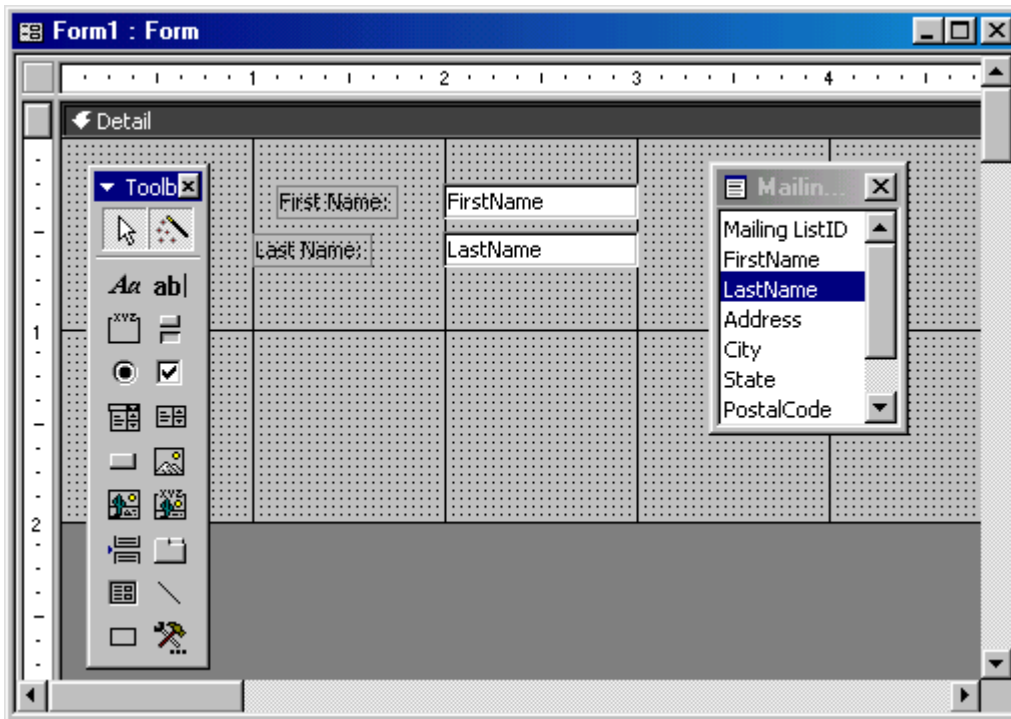
**Snap to Grid** - Select **Format|Snap to Grid** to align form objects with the grid to allow easy alignment of form objects or uncheck this feature to allow objects to float freely between the grid lines and dots.

**Resizing Objects** - Form objects can be resized by clicking and dragging the handles on the edges and corners of the element with the mouse.

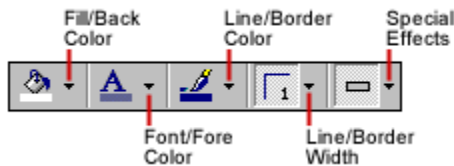
**Change form object type** - To easily change the type of form object without having to create a new one, right click on the object with the mouse and select **Change To** and select an available object type from the list.

**Label/object alignment** - Each form object and its corresponding label are bounded and will move together when either one is moved with the mouse. However, to change the position of the object and label in relation to each other (to move the label closer to a text box, for example) click and drag the large handle at the top, left corner of the object or label.

**Tab order** - Alter the tab order of the objects on the form by selecting **View|Tab Order...** from the menu bar. Click the gray box before the row you would like to change in the tab order, drag it to a new location, and release the mouse button.



**Form Appearance** - Change the background color of the form by clicking the **Fill/Back Color** button on the formatting toolbar and click one of the color swatches on the palette. Change the color of individual form objects by highlighting one and selecting a color from the **Font/Fore Color** palette on the formatting toolbar. The font and size, font effect, font alignment, border around each object, the border width, and a special effect can also be modified using the formatting toolbar:



**Page Header and Footer** - Headers and footers added to a form will only appear when it is printed. Access these sections by selecting **View|Page Header/Footer** on the menu bar. Page numbers can also be added to these sections by selecting **Insert|Page Numbers**. A date and time can be added from **Insert|Date and Time....** Select **View|Page Header/Footer** again to hide these sections from view in Design View.

### Modifying the Form Design

After you have used the Form Wizard to create a form, you can modify the form's design to meet your needs. To customize a form, you must display it in Design view.

### Form Controls

Each part of the form design is an object called a control. For instance, the labels, text boxes, Form Header section, Detail section and the form itself are all controls. They are called controls because the control some object that appears on the form.

### Form Sections

**Header:** top of form that can be used as a title section.

**Detail section:** takes up the majority of the form window. This is where the fields and their labels are displayed. The section contains data from the record source.

*Footer*: bottom section of the form that can be used to place a page number or other information

### Changing the Position of a Control

1. Click on the control to be modified
2. Drag the large handle to move only that control; or drag the control border to move the control and its associated text box or label.

### Changing the size of a Control

1. Click on the control to be modified.
2. Drag any of the small sizing handles surrounding the control, or choose Format-Size and select an option.

### Form Control Properties

Each control has a set of properties that determine the general appearance and behavior of that control.

### Viewing and changing control properties

1. Change the settings on the property sheet to change the way text is displayed for ID label. Select the ID label.
2. Click the Properties button. You now see the property sheet for the label. The property sheet is a dialog box with multiple pages. Each property has a box next to it where you can enter a value or choose from a list of values.
3. You need to change the Caption property to change the label on your form. Verify that the All tab is active to view all the properties of the label.
4. Select the Caption text and type Employee ID; then press enter.

### Adding Records Using A Form

Input data into the table by filling out the fields of the form. Press the **Tab** key to move from field to field and create a new record by clicking **Tab** after the last field of the last record. A new record can also be created at any time by clicking the **New Record** button at the bottom of the form window. Records are automatically saved as they are entered so no additional manual saving needs to be executed.

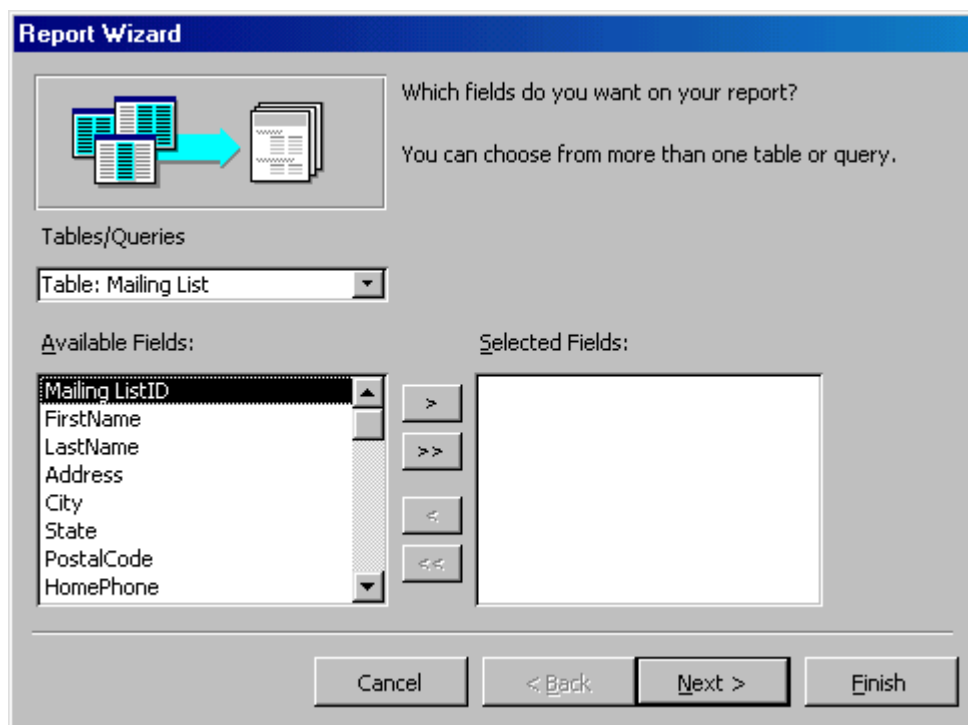
# REPORTS

Reports will organize and group the information in a table or query and provide a way to print the data in a database.

## Using the Wizard

Create a report using Access' wizard by following these steps:

1. Double-click the "Create report by using wizard" option on the Reports Database Window.
2. Select the information source for the report by selecting a table or query from the **Tables/Queries** drop-down menu. Then, select the fields that should be displayed in the report by transferring them from the **Available Fields** menu to the **Selected Fields** window using the single right arrow button > to move fields one at a time or the double arrow button >> to move all of the fields at once. Click the **Next >** button to move to the next screen.

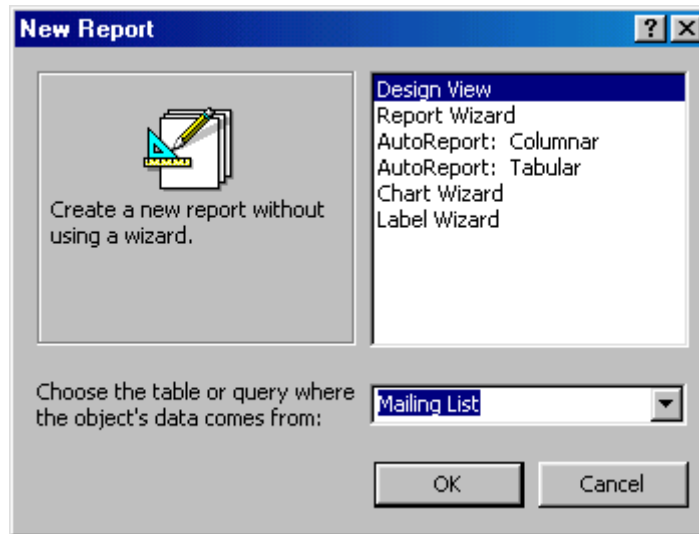


3. Select fields from the list that the records should be grouped by and click the right arrow button > to add those fields to the diagram. Use the **Priority** buttons to change the order of the grouped fields if more than one field is selected. Click **Next >** to continue.
4. If the records should be sorted, identify a sort order here. Select the first field that records should be sorted by and click the A-Z sort button to choose from ascending or descending order. Click **Next >** to continue.
5. Select a layout and page orientation for the report and click **Next >**.
6. Select a color and graphics style for the report and click **Next >**
7. On the final screen, name the report and select to open it in either Print Preview or Design View mode. Click the **Finish** button to create the report.

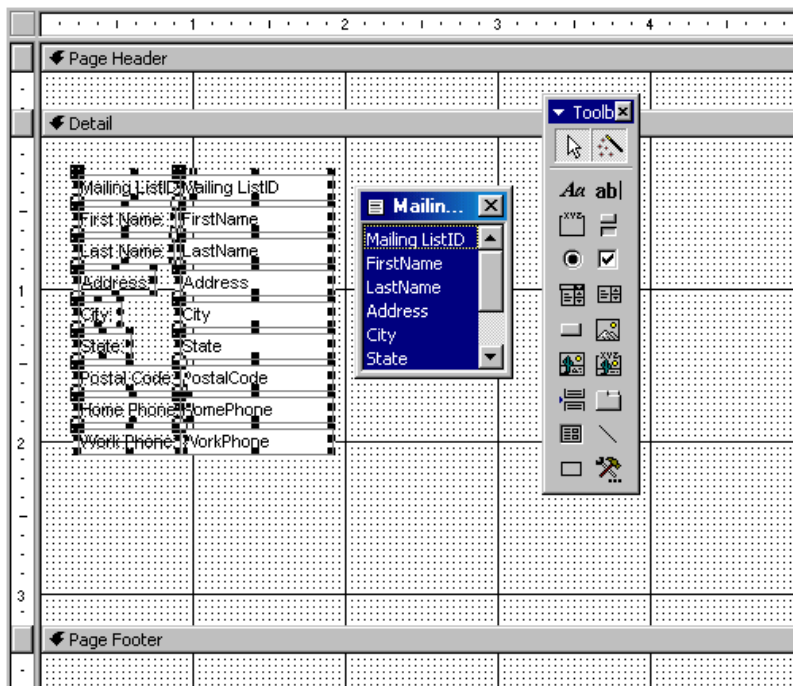
## Create in Design View

To create a report from scratch, select Design View from the Reports Database Window.

1. Click the **New** button on the Reports Database Window. Highlight "Design View" and choose the data source of the report from the drop-down menu and click **OK**.

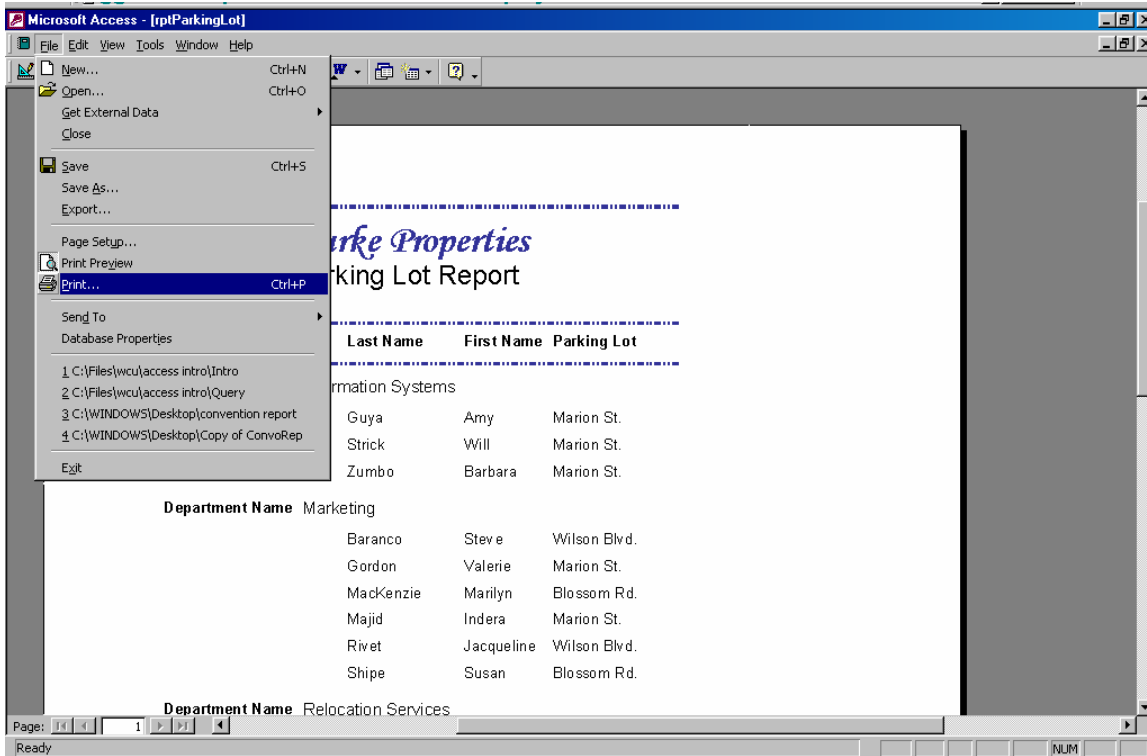


2. You will be presented with a blank grid with a Field Box and form element toolbar that looks similar to the Design View for forms. Design the report in much the same way you would create a form. For example, double-click the title bar of the Field Box to add all of the fields to the report at once. Then, use the handles on the elements to resize them, move them to different locations, and modify the look of the report by using options on the formatting toolbar. Click the Print View button at the top, left corner of the screen to preview the report.

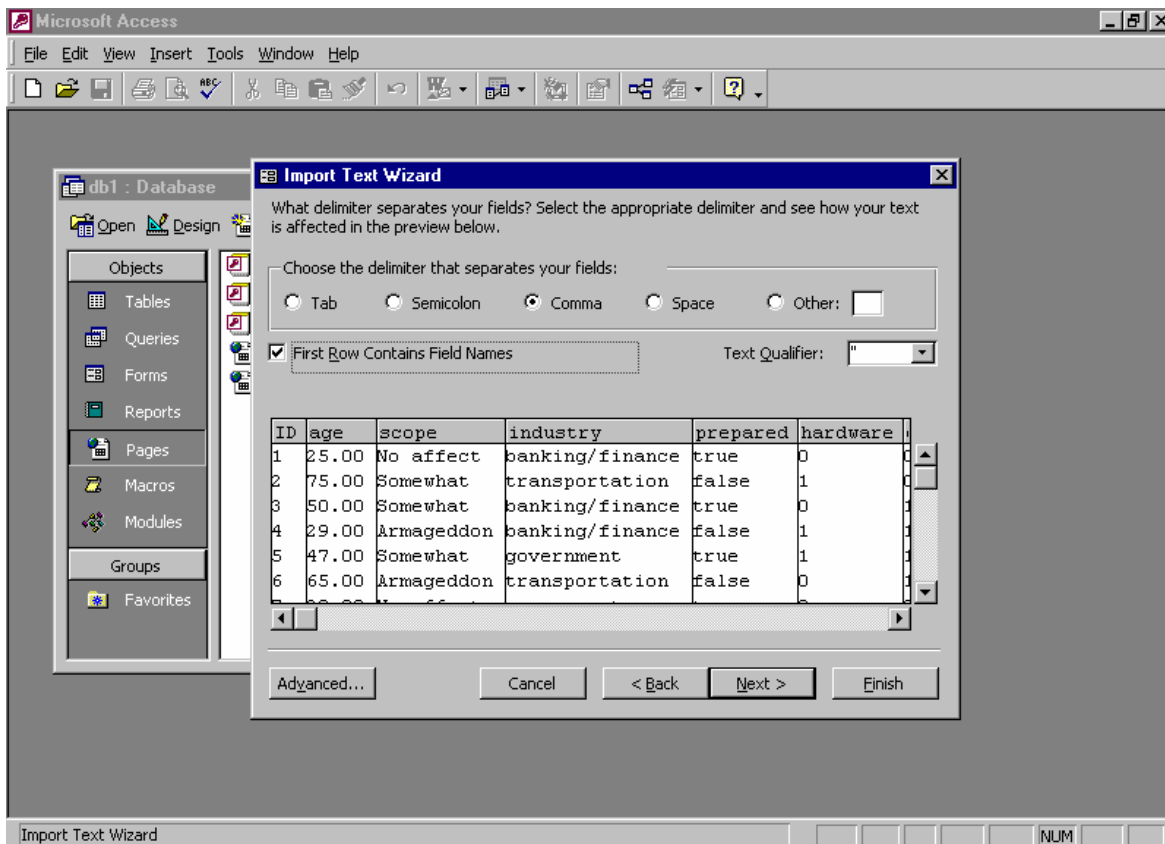


## Printing Reports

Select **File|Page Setup** to modify the page margins, size, orientation, and column setup. After all changes have been made, print the report by selecting **File|Print** from the menu bar or click the **Print** button on the toolbar.



Importing objects from another database will create a complete copy of a table, query, or any other database object that you select. Import a database object by following these steps:



1. Open the destination database.
2. Select **File|Get External|Import** from the menu bar.
3. Choose the database the object is located in a click the **Import** button.
4. From the **Import Objects** window, click on the object tabs to find the object you want to import into the database. Click the **Options >>** button to view more options. Under **Import Tables**, select "Definition and Data" if the entire table should be copied or "Definition Only" if the table structure should be copied but not the data. Under **Import Queries**, select "As Tables" if the queries should appear as regular tables in the destination database. Highlight the object name, and click **OK**.
5. The new object will now appear with the existing objects in the database.

## EXPORTING

The effect of importing can also be achieved using the opposite method of exporting.

1. Open the database containing an object that will be copied (exported) to another database.
2. Find the object in the Database Window and highlight it. Then, select **File|Export...** from the menu bar.
3. Select the destination database from the window and click **Save**.
4. You will be prompted to name the new object and may also be given other options, such as whether to copy the structure or data and structure of a table. Click **OK** to complete the export procedure.