Microsoft Office 2007 PDF Picture Tutorial Series

Databases

Tables, Forms, Queries, Lookup Wizard, Relationships

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SEE GRADING CRITERIA

Database | Tables | Lookup Wizard | Relationships | Forms | Queries | Reports

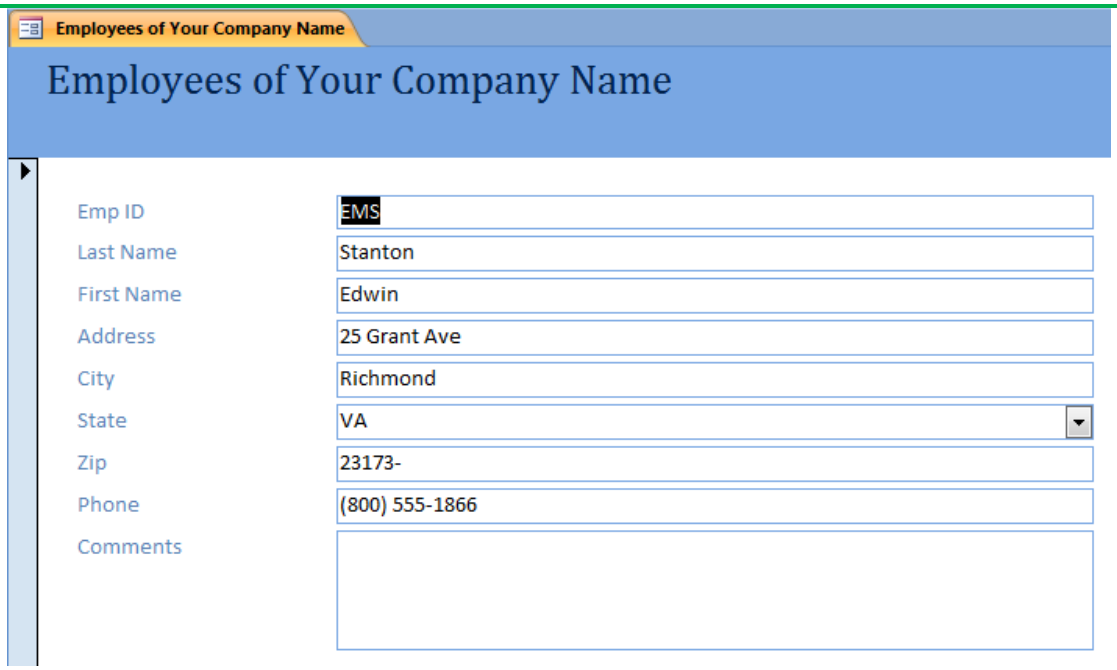
In this project, you will create an Invoice database with the following features:

- Four **tables**: Invoice, Invoice Details, Employees, Products.
- **Primary keys**, such as such as EmployeeID that link corresponding records in the tables.
- Default Values and Field Size Limits and Formats
- Data validation
- You will use the **Form Wizard** to create an invoice form
- You will use the **Query Wizard** to create a query that calculates price times quantity
- You then use the result of the query in a report you create using the Report Wizard

Background Terms:

- A **Database** is a collection of related objects that store, manage, manipulate, and retrieve information. A database can also be referred to as a collection of related tables that are linked by key fields, such as EmployeeID or InvoiceNumber.
- **Database objects** are tables, queries, forms, reports, and macros.
- **Relationships** are basically links that join tables based on key fields such as EmployeeID or InvoiceNumber.
- **Tables** store the data in records (rows) and fields (columns).
- **Queries** perform an action with the data in the tables, such as finding certain specific data based on criteria. The results of a query can then serve as a source of data for a report.
- **Forms** are used for easily entering, displaying, and editing data.
- **Reports** are a printed form of data formatted and organized to your specifications.
- **Macros** are actions that you can use to automate tasks.

The first form is shown below (a good form has one record on one screen in **Columnar** layout):



The finished report is shown below (a good report shows multiple records in **Tabular** layout):

YourCompany Name

Product Sales by Employee

EmpID	Invoice Date	InvoiceID	Product Name	Sum Of Quantity	Total Price
GEP					
	1/1/2009	101	wcs General Ledger	2	$600.00
	1/1/2009	101	wcs Accounts Receivable	1	$425.00
Sum					$1,025.00
JFH					
	1/2/2009	102	wcs Tax Forms	1	$300.00
	1/2/2009	102	wcs Backorder Tracker	1	$275.00
Sum					$575.00
Grand Total					$1,600.00

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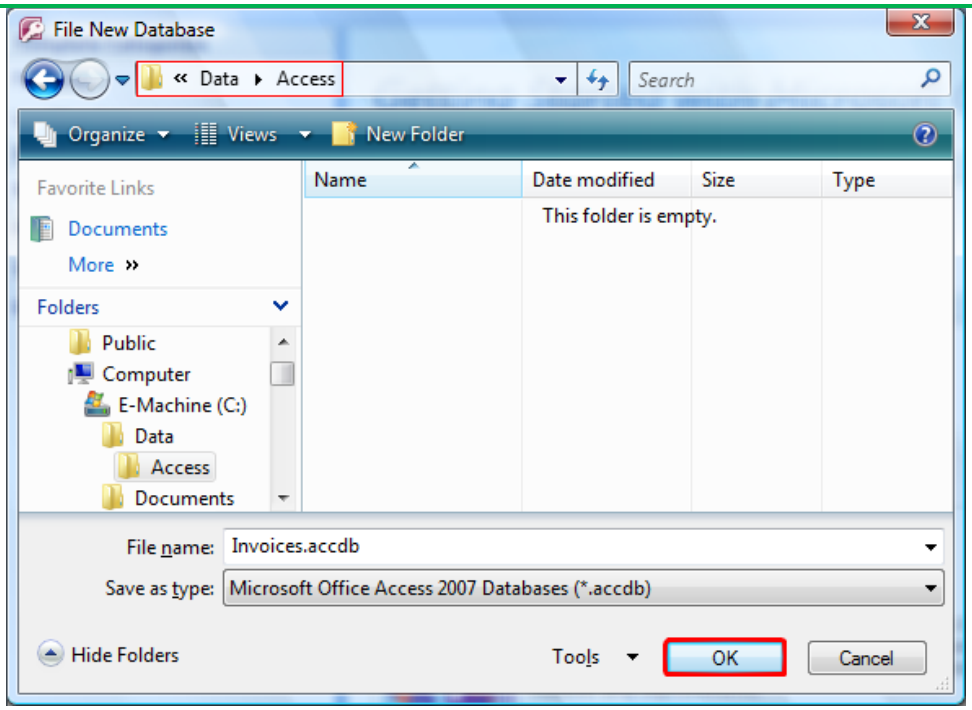
Step 1: Create the Invoices Database (Go to Top)

- Start Access
- Select Blank Database
- Name the database *Invoices.accdb*

Next, select where the file will be saved.

- Click the folder icon to the right of the File Name
  The File New Database dialog box opens.

Possible Problem: Unlike Microsoft Word and Excel, you can NOT resave or rename an Access database file while in Access. So pay special attention to what you name your file and specifically what folder or what drive you save it in. If you need to modify the file name or location, you can copy it, move it, or rename it in the Windows Explorer, but not in Access.

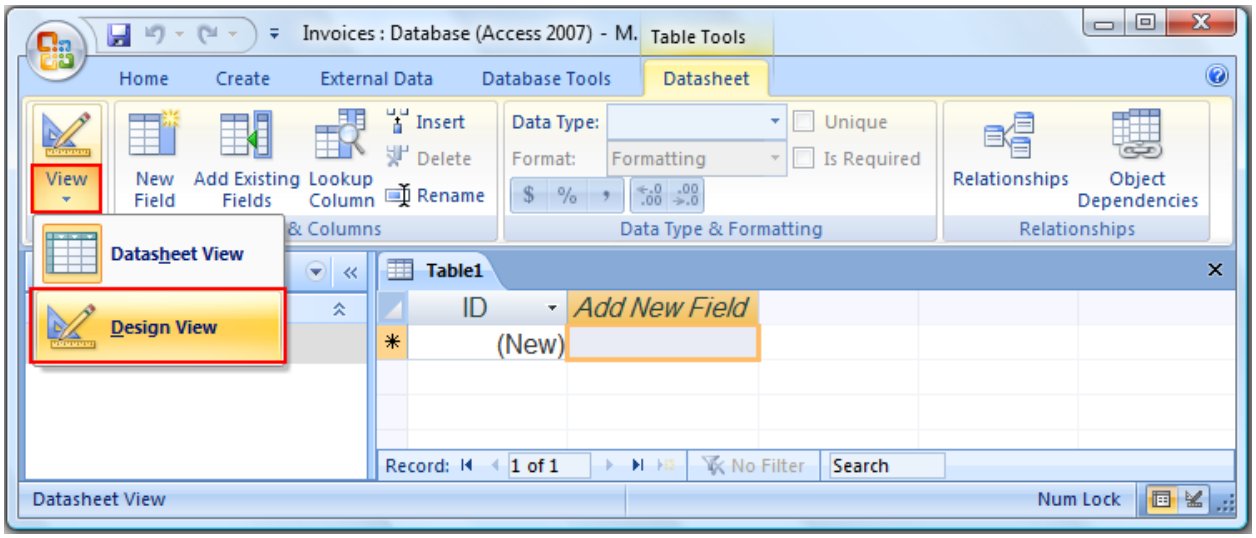


- Browse to the desired folder and click OK
  The File New Database dialog box closes.

➢ **Creating Tables** (Go to Top)

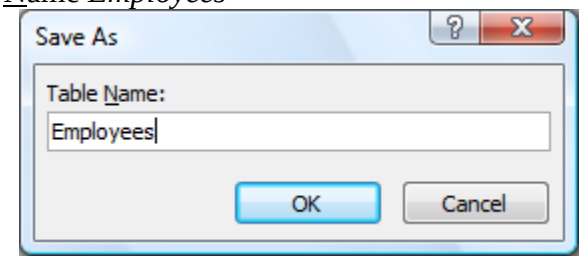
Tables store the actual data in a database. Typically, each set of related data is stored in a separate table. For instance you would have an Employees table for all of your employees and a Products table for all of your products.

- Click Create
  The newly created database opens in Table Datasheet View.
- Click View in the Views group of the Datasheet tab
- Select Design View



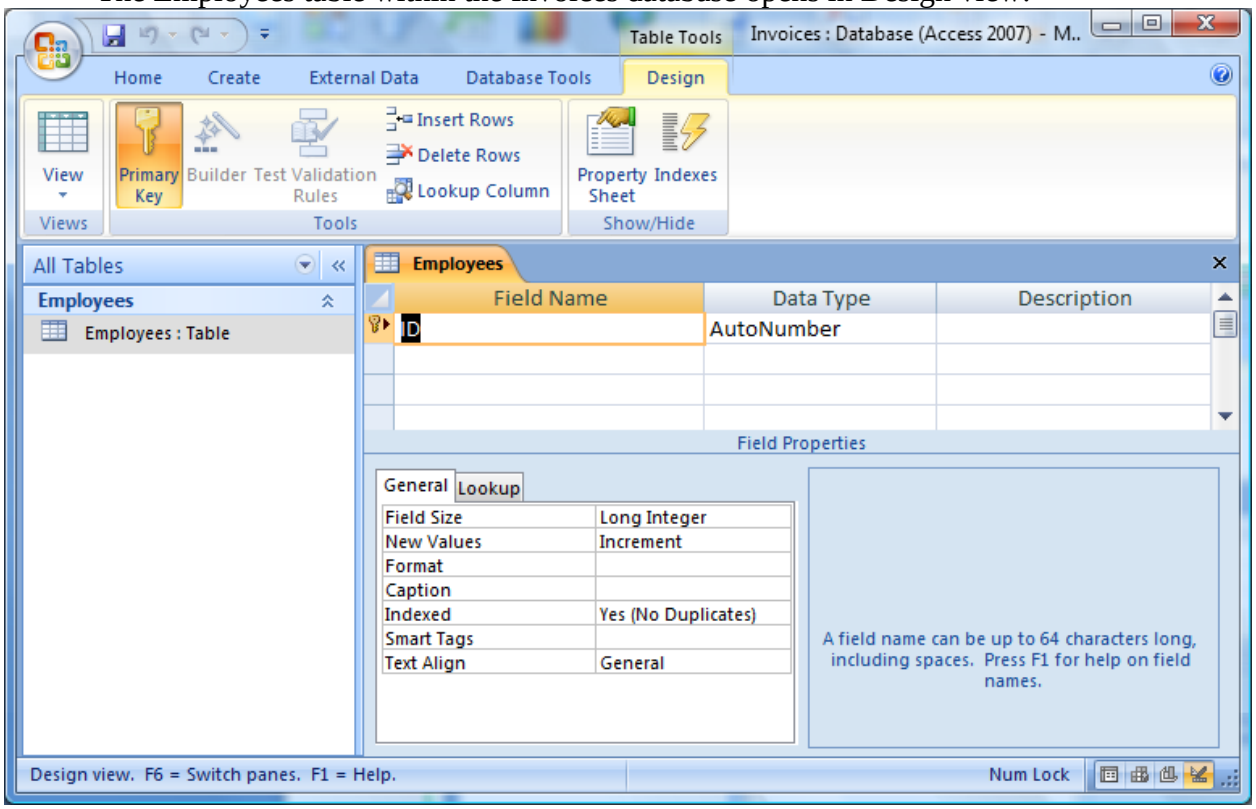
The Save As dialog box opens.

- Type in the Table Name *Employees*



- Click OK

The Employees table within the Invoices database opens in Design view:

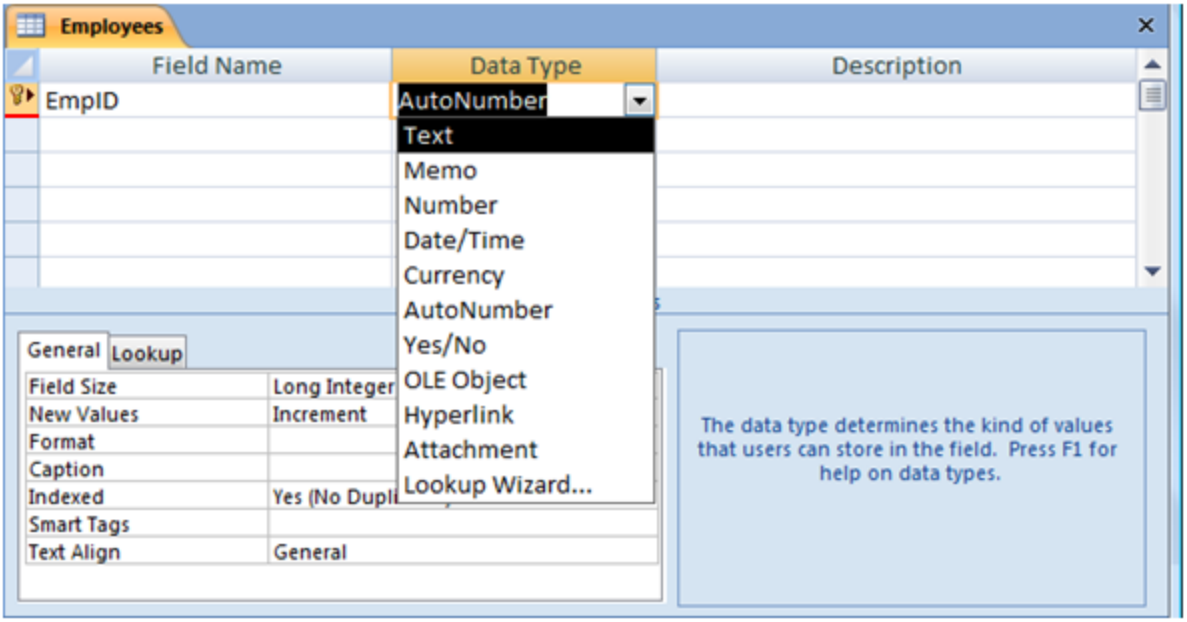


By default, Access sets the first field as the Primary Key, names it *ID* and uses the AutoNumber data type.

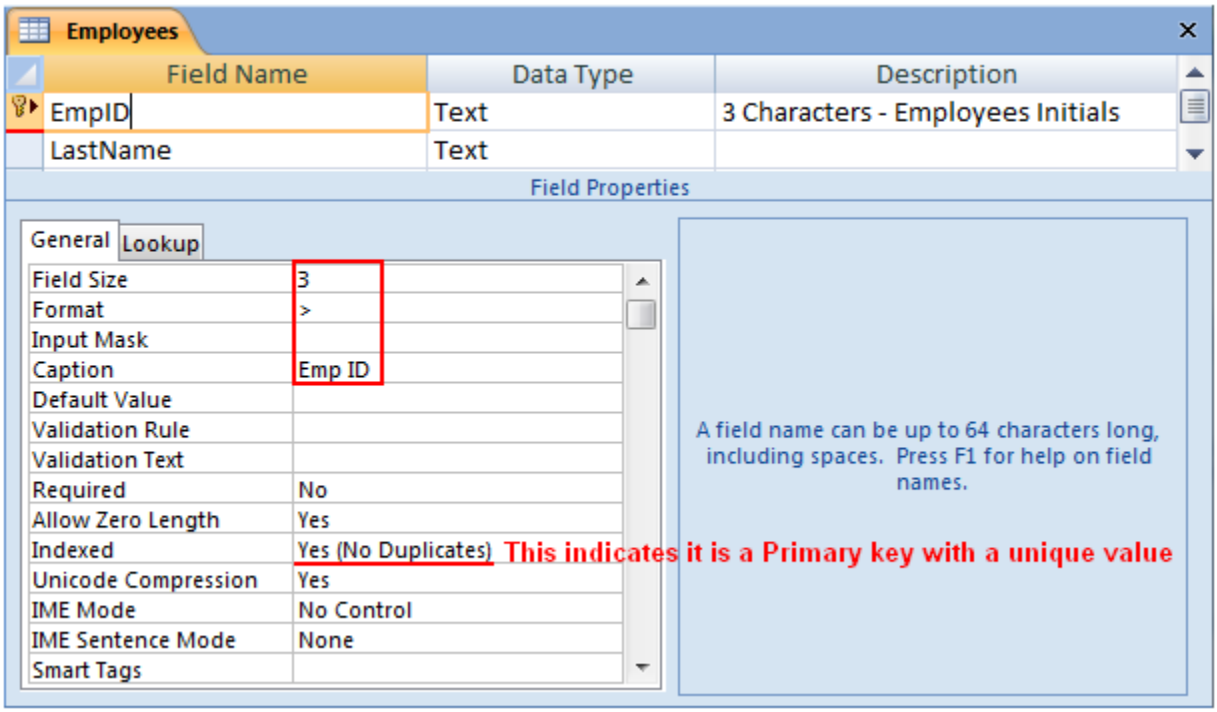
A **Primary** key is unique identifying field by which a table can be searched, sorted, or linked to another table. Example: an EmployeeID or ProductID.

A **Foreign** key is a corresponding key field in another table that identifies records that are linked through the primary key. Example: a foreign EmployeeID key field in an Invoices table that links to employee information in the Employee table which has the Primary EmployeeID key field.

- Change the name of the Primary Key field from ID to *EmpID*
- Click in the Data Type column, click the list arrow, and select Text



- Type in the Description *3 Characters – Employees Initials*
- In the EmpID Field Properties, enter *3* for the Field size and > for the Format



- Enter *LastName*, *FirstName*, *Address*, *City*, *State*, *Zip*, and *Degree*
- Assign each the Text data type
  Text comes up as the default data type for each subsequent field.
- For the *State* field, enter the Description: *2 character abbreviation*
- In the *State* Field Properties, enter *2* for the Field size, > for the Format, and "VA" for the Default Value
- After *Degree*, the next field is *MOSCertified* and has the Yes/No data type and the

description: *Microsoft Office Specialist Certified*

- Enter *HireDate* with the Date/Time data type
- Enter *BaseSalary* with the Number data type
- Enter *Phone* with the Text data type and the description: *Home Phone*
- Enter *Comments* with the Memo data type

Using the steps above create a *Products* table that includes the following fields: ProductID, ProductName, ProductDescription, and Price.

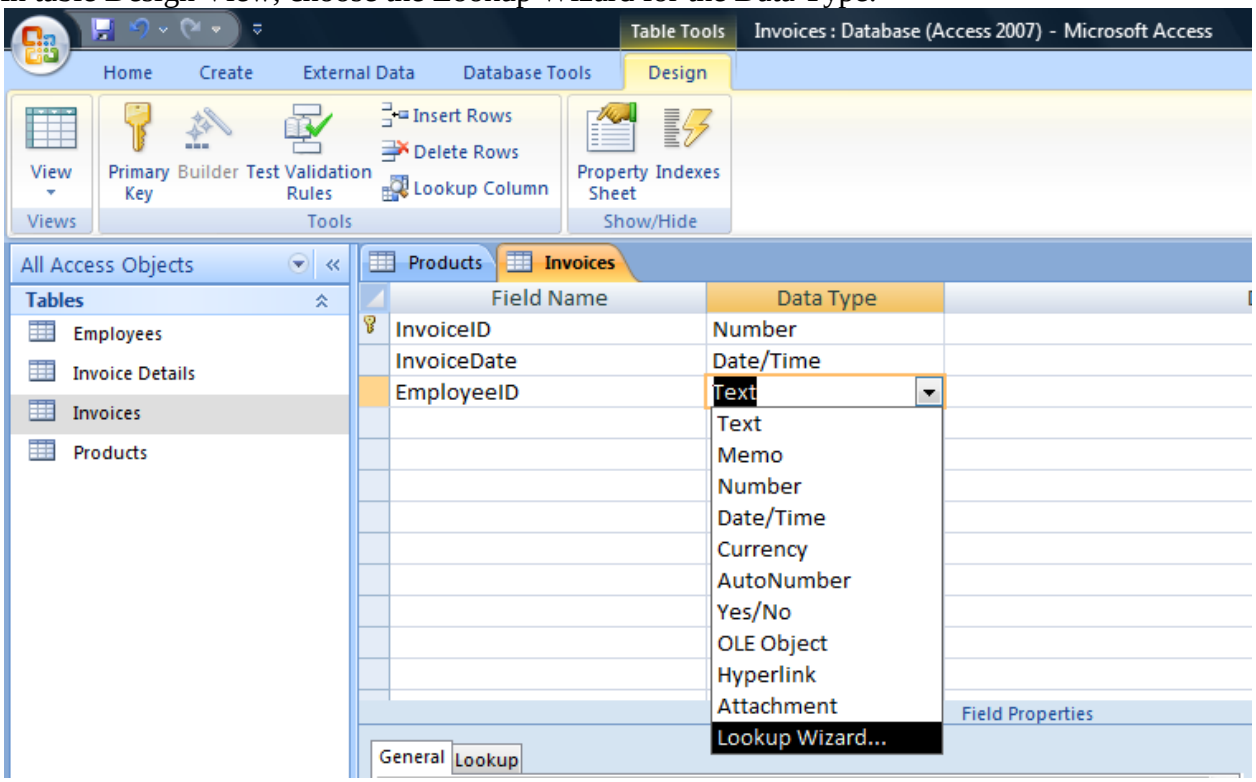
Using the steps above create an *Invoice* table that includes the following fields: InvoiceID, InvoiceDate, and EmployeeID.

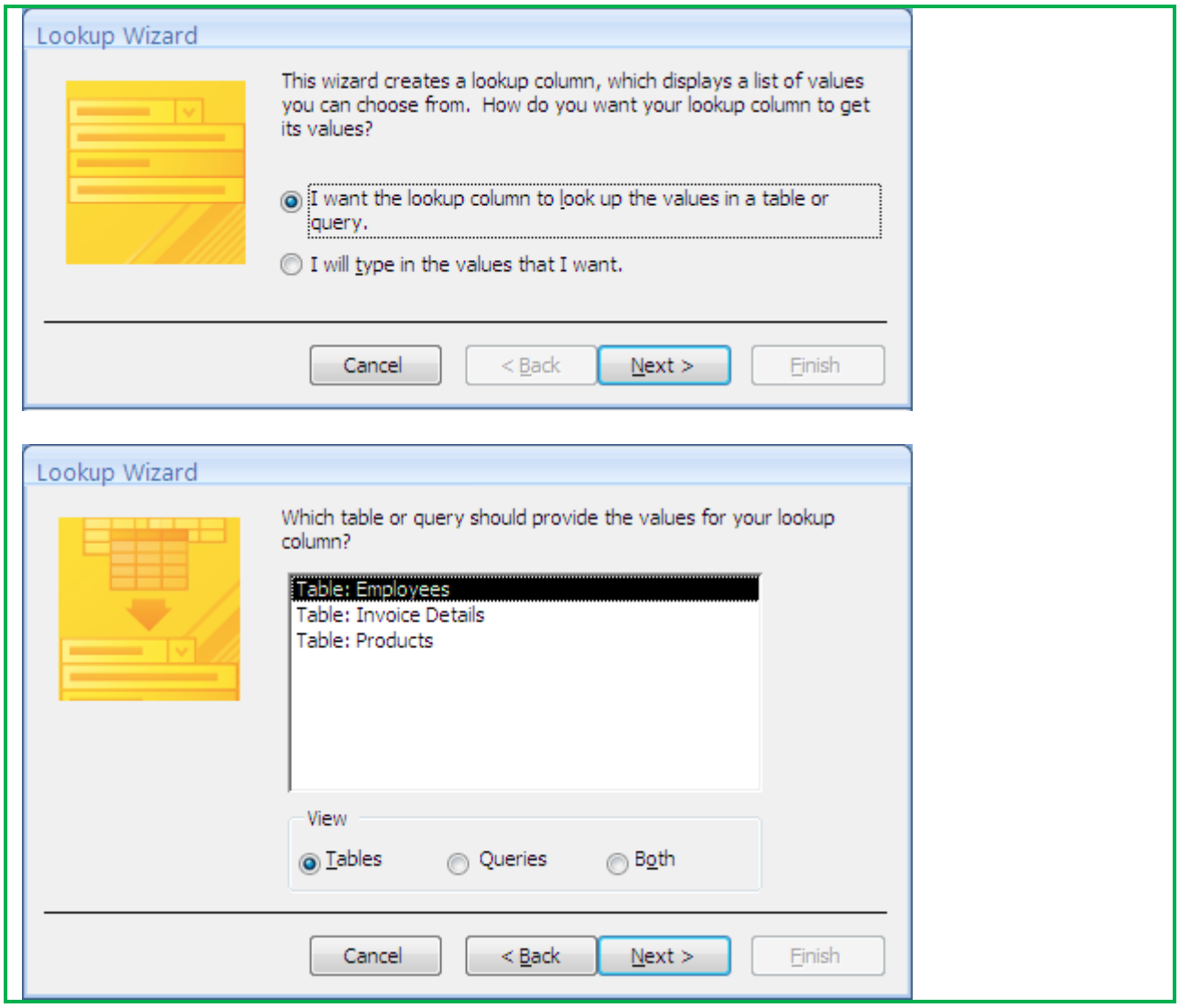
Using the steps above create an *InvoiceDetails* table that includes the following fields: InvoiceID, ProductID, and Quantity.

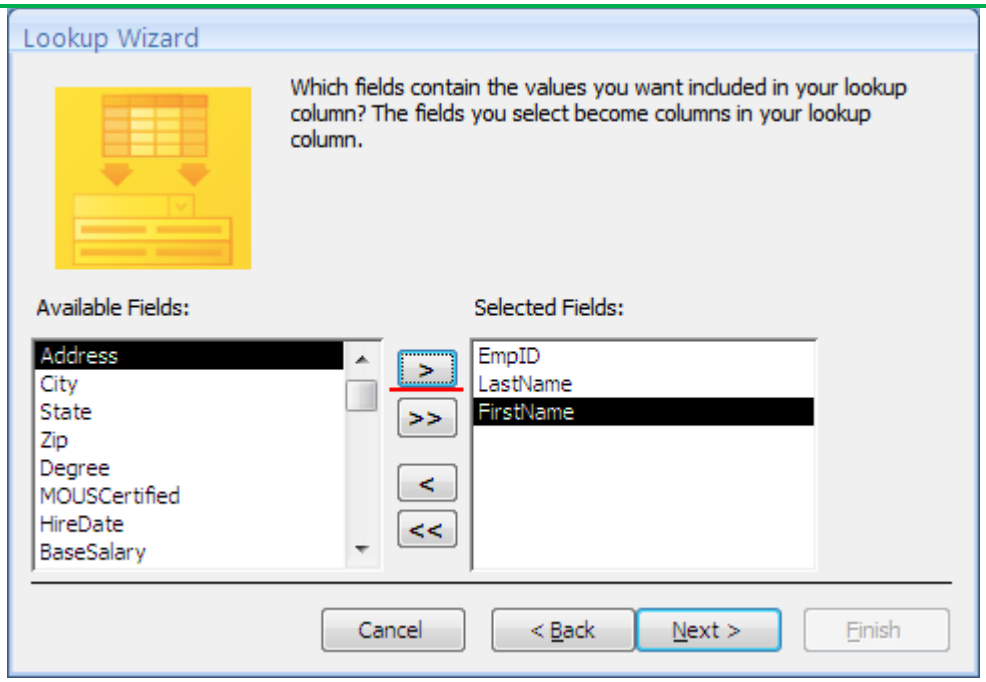
➢ **Using the Lookup Wizard** (Go to Top)

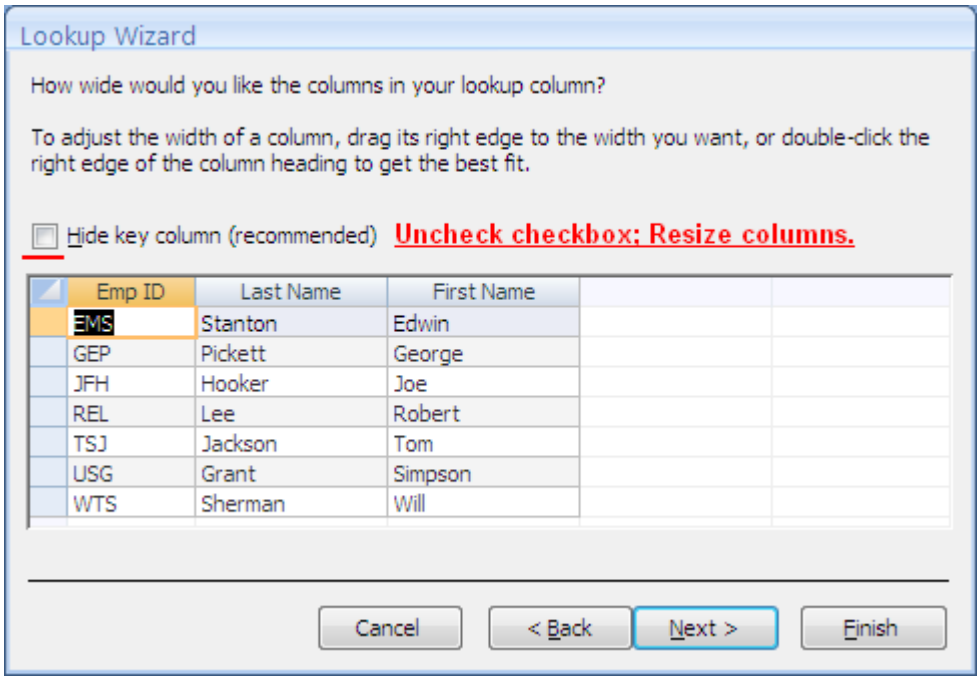
When you create your tables, use the **Lookup Wizard** for foreign key fields like EmployeeID and ProductID so that dropdowns will allow for quick data entry. In the end you will have a **One-to-Many Relationship**. There is one unique Primary EmployeeID key field in the Employee table that is related to many foreign EmployeeIDs key fields in the Invoices table. In other words, one employee can have many sales.

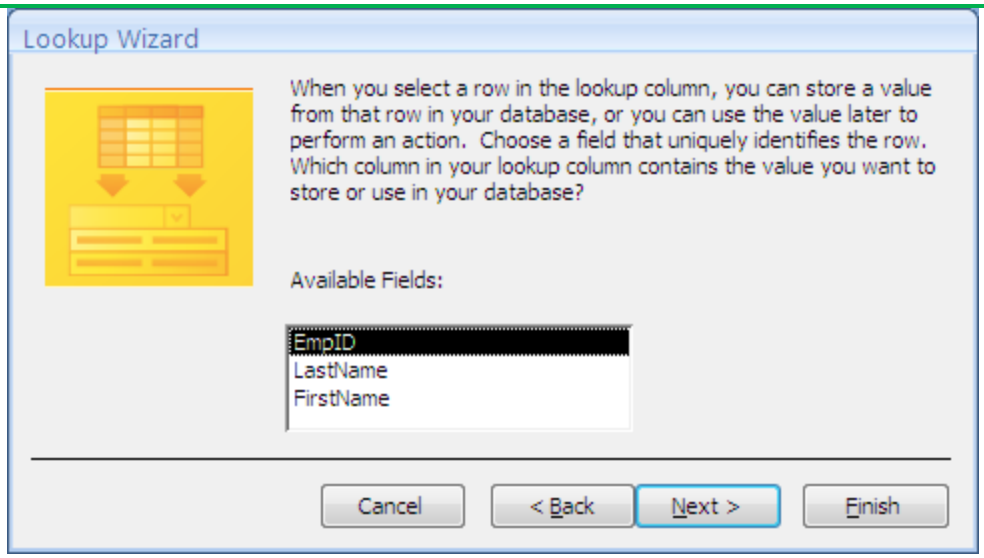
In table Design View, choose the Lookup Wizard for the Data Type:




Lookup Wizard
This wizard creates a lookup column, which displays a list of values you can choose from. How do you want your lookup column to get its values?
I want the lookup column to look up the values in a table or query.
I will type in the values that I want.
Cancel
< Back
Next >
Finish
Lookup Wizard
Which table or query should provide the values for your lookup column?
Table: Employees
Table: Invoice Details
Table: Products
View
Tables
Queries
Both
Cancel
< Back
Next >
Finish


Lookup Wizard
Which fields contain the values you want included in your lookup column? The fields you select become columns in your lookup column.
Available Fields:
Address
City
State
Zip
Degree
MOUSCertified
HireDate
BaseSalary
>
>>
<
<<
Selected Fields:
EmpID
LastName
FirstName
Cancel
< Back
Next >
Finish

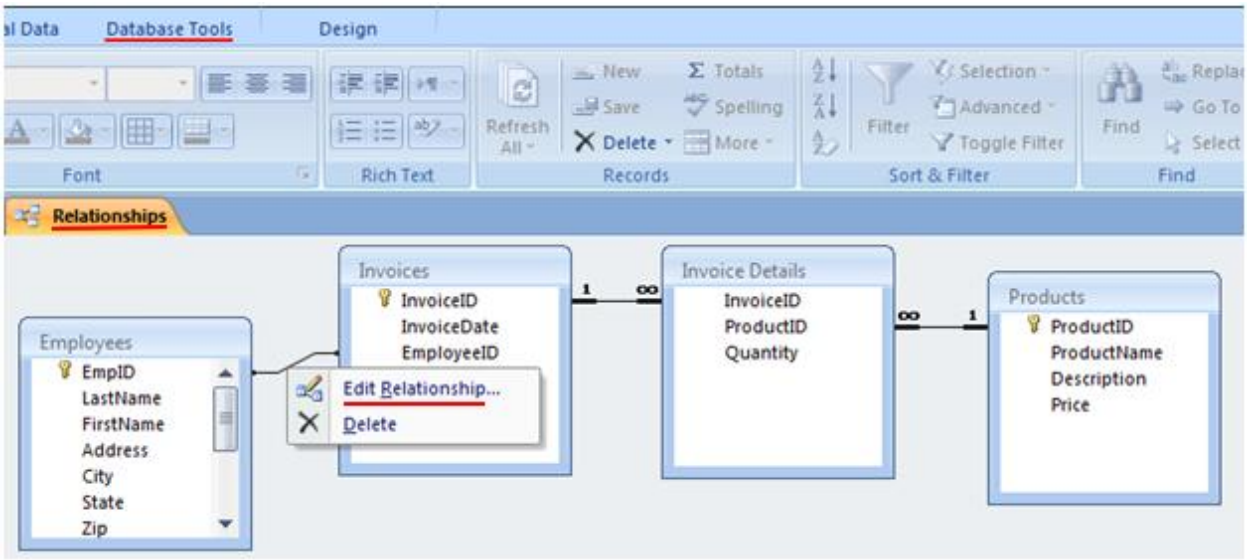

Lookup Wizard
How wide would you like the columns in your lookup column?
To adjust the width of a column, drag its right edge to the width you want, or double-click the right edge of the column heading to get the best fit.
Hide key column (recommended)
Uncheck checkbox; Resize columns.
Emp ID
Last Name
First Name
EMS
Stanton
Edwin
GEP
Pickett
George
JFH
Hooker
Joe
REL
Lee
Robert
TSJ
Jackson
Tom
USG
Grant
Simpson
WTS
Sherman
Will
Cancel
< Back
Next >
Finish



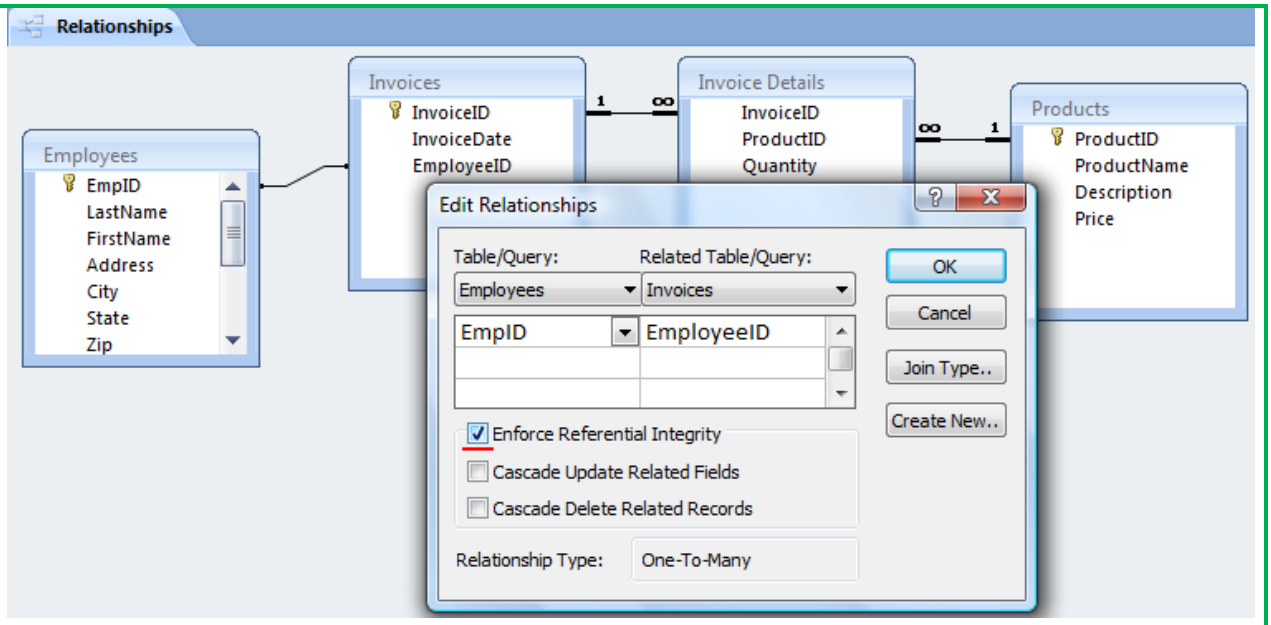
➢ **Setting Relationships** (Go to Top)

After you define your tables and set up your Lookup Wizard, you must finish setting up your relationships. **Relationships** refer to how related tables in a database are linked or joined together by key fields (such as EmployeeID) to avoid data redundancy, to provide for easier data entry, to ensure data consistency, and to avoid potential errors.

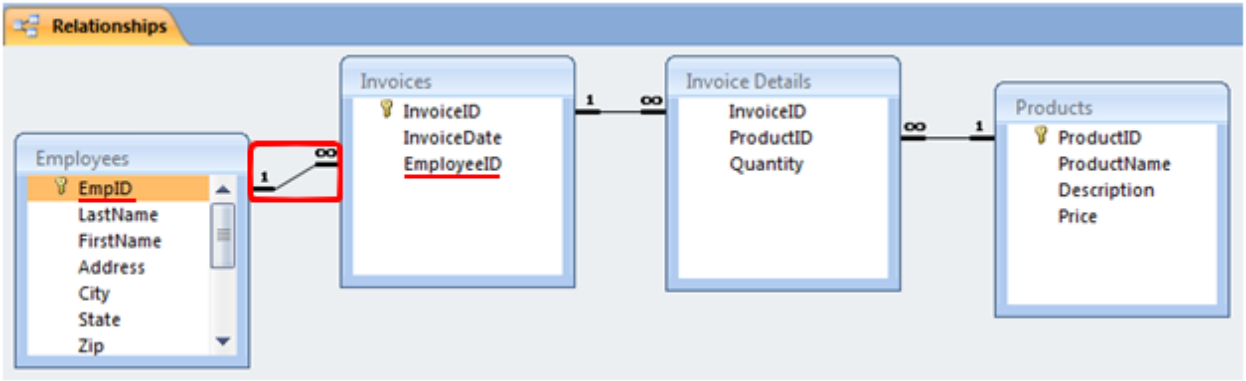
Choose **Database Tools** tab > **Relationships**. Right-click on the line connecting related tables through their key fields to enforce **Referential Integrity** to make sure there are no Invoice Detail records without matching Invoices (you cannot have children without parents).



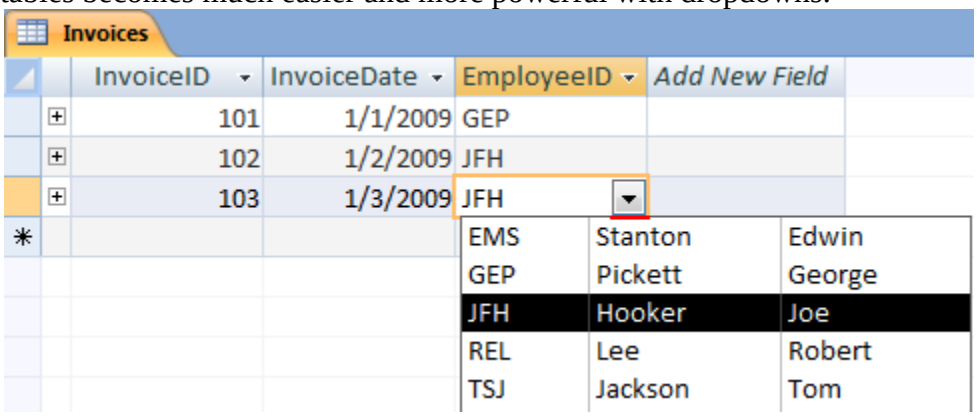
Possible problem: If there is not line connecting the EmployeeIDs from the Employees table and the Invoices table: drag the EmpID **Primary key** from the Employees table to the EmployeesID **Foreign key** in the Invoices table.



When done your relationships should look like this, with each many table having a **1-to-Many** (1 to ∞) **Relationship** with the other tables (1 employee can have many sales):



If your Lookup Wizard and **1-to-Many** Relationships are set correctly, data entry with your tables becomes much easier and more powerful with dropdowns:



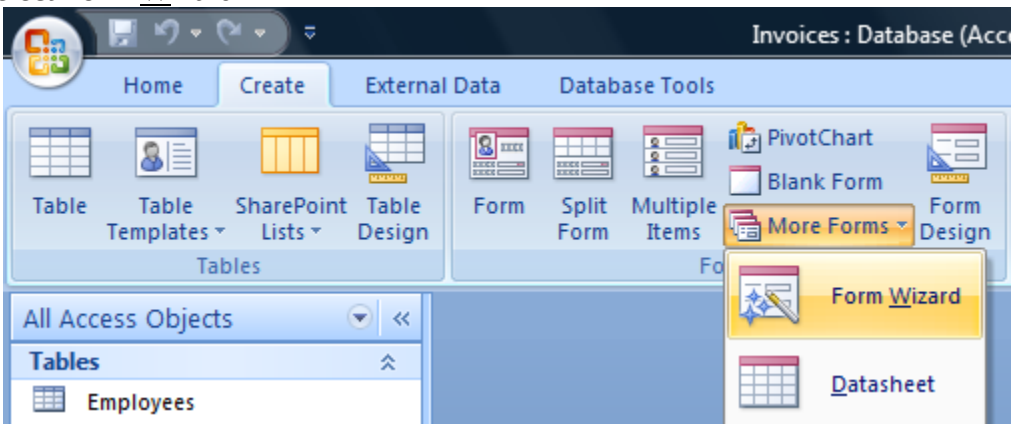
Using the steps above use the Lookup Wizard to link the InvoiceDetails table to the Products table through ProductID.

Once you have set up your Relationships properly and used the Lookup Wizard to link to related tables it is much easier to create good forms and subforms for data entry.

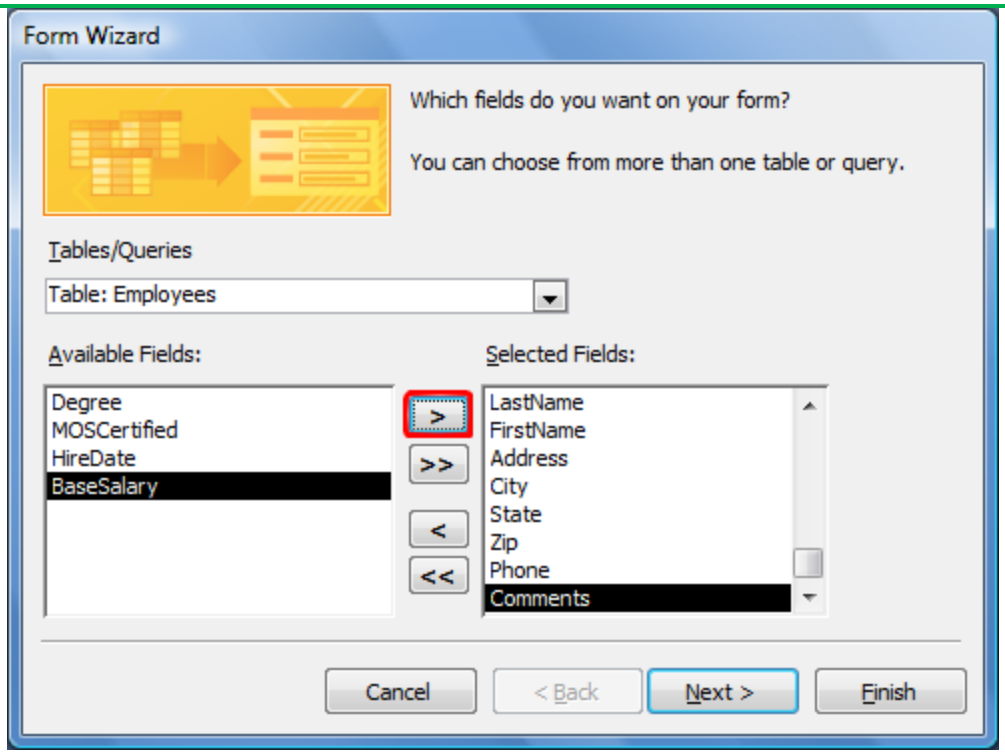
➢ **Creating Forms** (Go to Top)

A **Form** is used to enter, edit and delete information stored in a table. Forms are more attractive and easier to use than tables. We will build two forms. The first is a basic Employees form. The second is an Invoice form with a **Subform** (an itemized detail form within a main form).

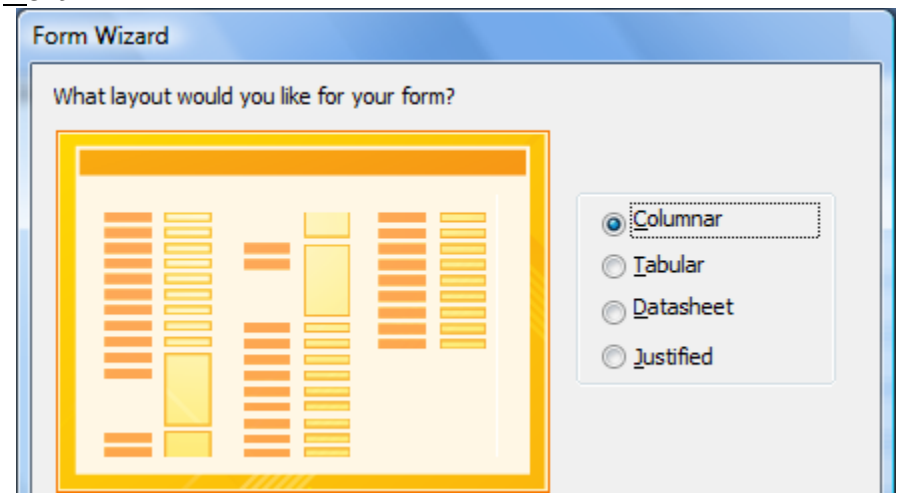
- Click More Forms in the Forms group on the Create tab
- Select Form Wizard



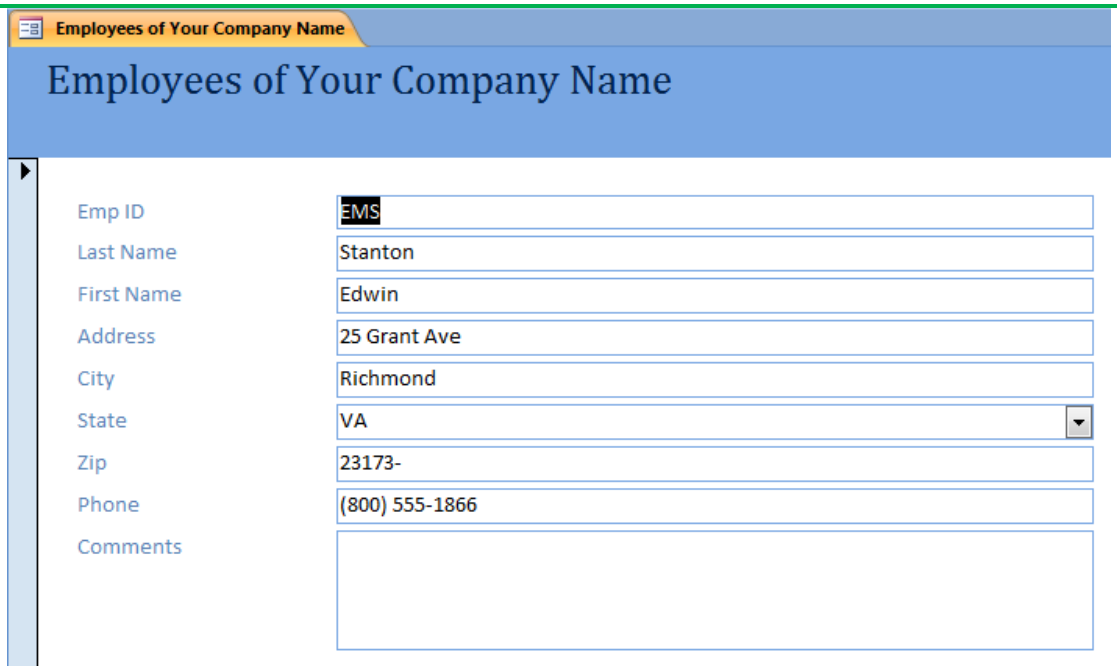
- If necessary, click the dropdown arrow next to the Tables/Queries box and select the *Employees* table.
- Click the [>] button to move EmpID, LastName, FirstName, Address, City, State, Zip, Phone, and Comments to the Selected Fields list



- Click Next



- Leave **Columnar** selected and click Next
  Note: a good form has one record on one screen in **Columnar** layout
- Choose a style and click Next
- Name the form *Employees of Your Company Name* and click Finish
  The new form opens in Form view:

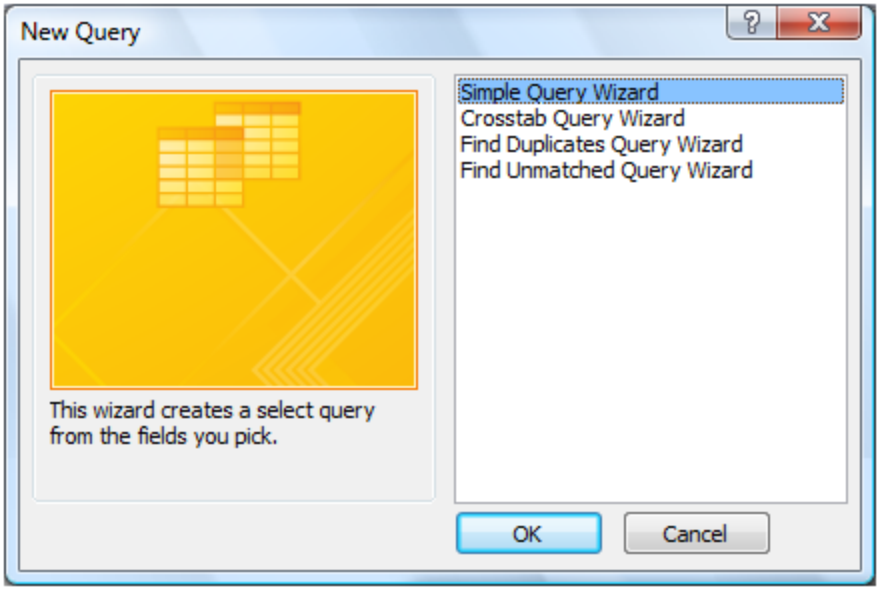


➢ **Building Queries** (Go to Top)

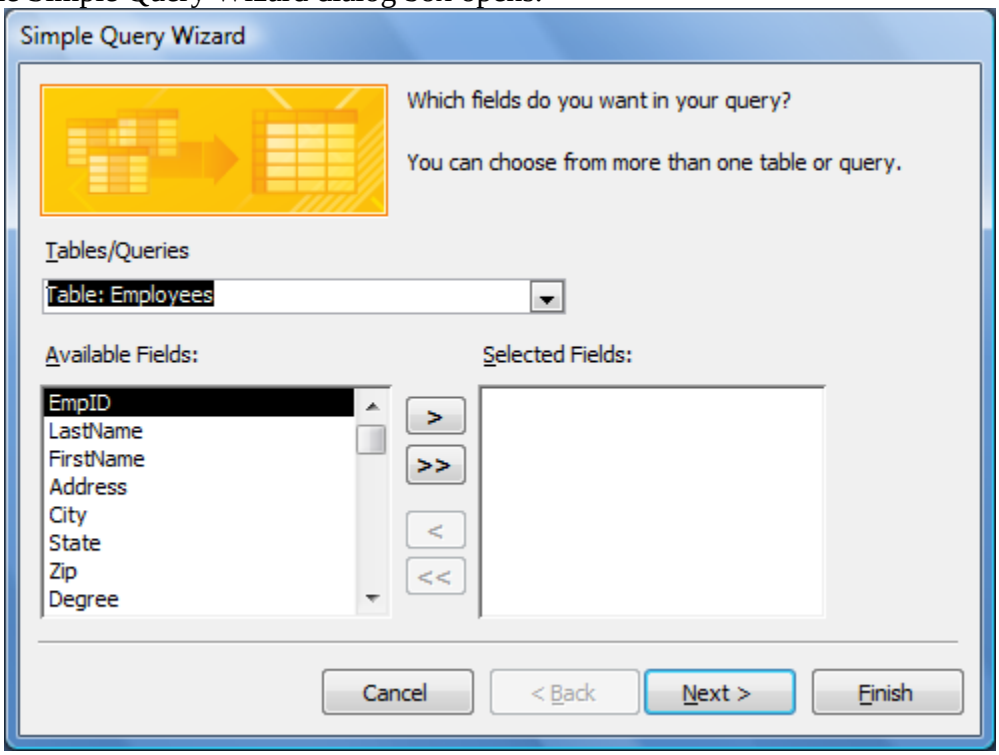
A **Query** can be used to find and arrange specific information and do on the fly calculations. We will create two queries. First we will create a simple Employees Query to list only Employee names and addresses.

- Click Query Wizard in the Other group on the Create tab

The New Query dialog box opens:



- With Simple Query Wizard highlighted, click OK
  The Simple Query Wizard dialog box opens.

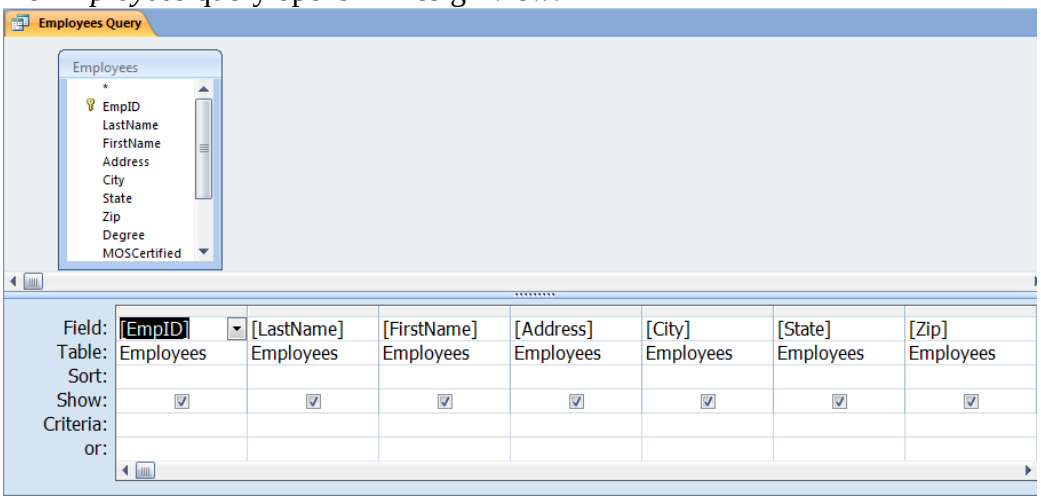


- If necessary, choose *Table: Employees* from the drop-down Tables/Queries list
- Click [>] with EmpID highlighted to move it to the Selected Fields list
- Repeat for LastName, FirstName, Address, City, State, and Zip
- Click Finish
  The new *Employees* query opens in Datasheet view:

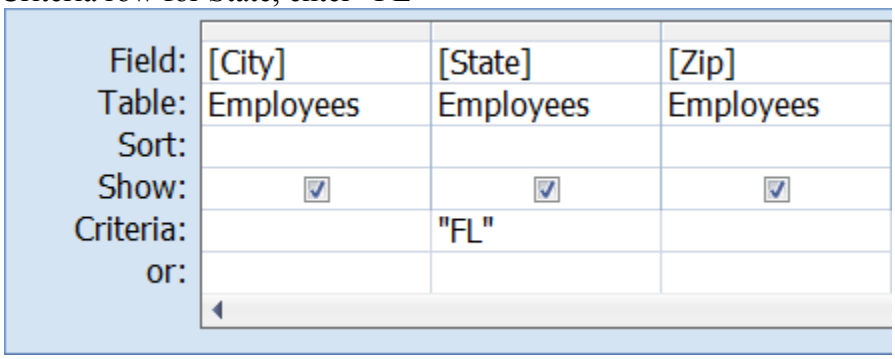
Employees Query

Emp ID	Last Name	First Name	Address	City	State	Zip
EMS	Stanton	Edwin	25 Grant Ave	Richmond	VA	23173-
GEP	Pickett	George	3600 Valley Street	Norfolk	VA	34404-1000
JFH	Hooker	Joe	1213 Lookout Mtn Way	Bradenton	FL	34209-
REL	Lee	Robert	1900 Arlington Blvd	Sarasota	FL	34288-
TSJ	Jackson	Tom	1012 Bull Run Road	Sarasota	FL	34229-
USG	Grant	Simpson	1776 Appomattox Drive	Bradenton	FL	34210-1
WTS	Sherman	Will	1532 Marching Drive	Ellenton	FL	34221-
*					VA	

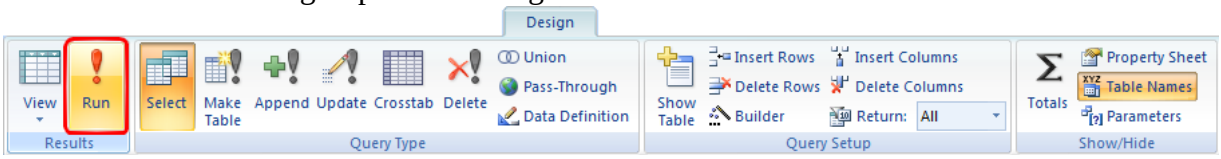
- Click View in the Results group on the Home tab
  The *Employees* query opens in Design view:



- In the Criteria row for State, enter “FL”



- Click Run in the group on the Design tab



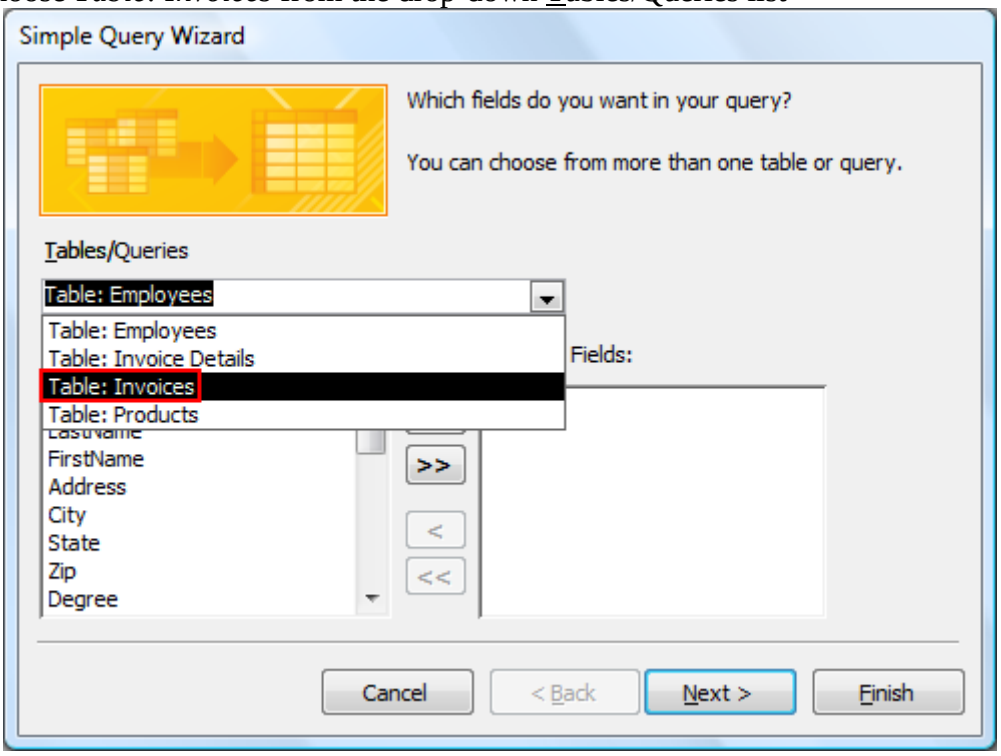
Only records having a State value of FL are included in the results:

Employees Query

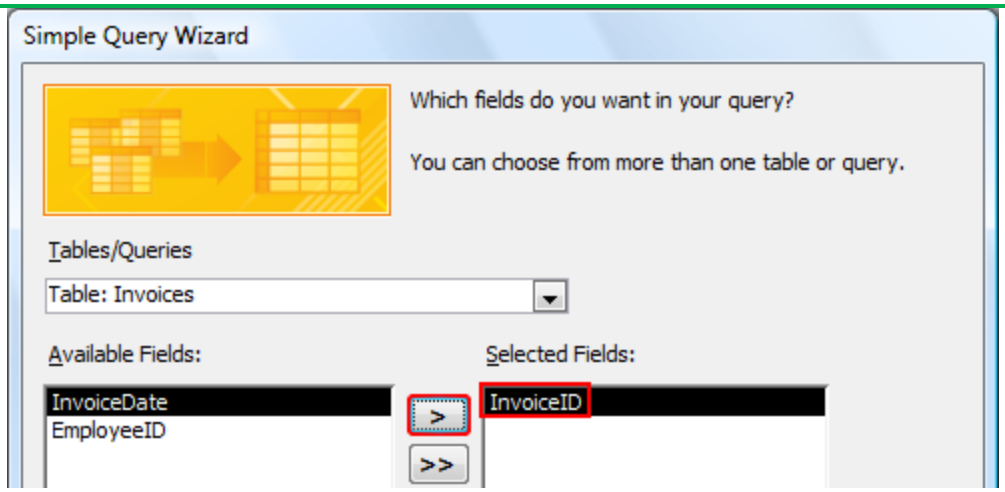
Emp ID	Last Name	First Name	Address	City	State	Zip
JFH	Hooker	Joe	1213 Lookout Mtn Way	Bradenton	FL	34209-
REL	Lee	Robert	1900 Arlington Blvd	Sarasota	FL	34288-
TSJ	Jackson	Tom	1012 Bull Run Road	Sarasota	FL	34229-
USG	Grant	Simpson	1776 Appomattox Drive	Bradenton	FL	34210-1
WTS	Sherman	Will	1532 Marching Drive	Ellenton	FL	34221-
*					VA	

Now let's create a Query that computes Price times Quantity that we can then use in a Product Sales by Employee Report.

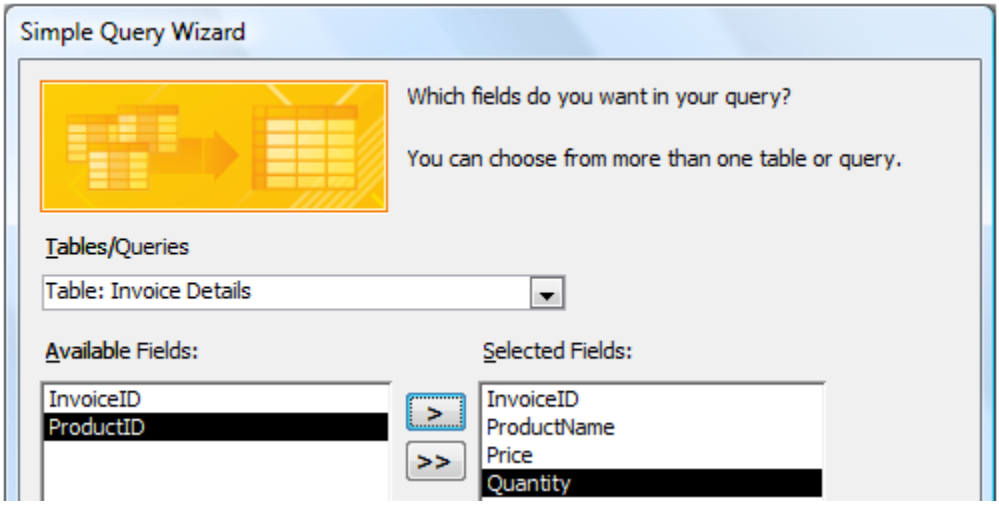
- Click Query Wizard in the Other group on the Create tab
- Select Simple Query Wizard
- Choose *Table: Invoices* from the drop-down Tables/Queries list



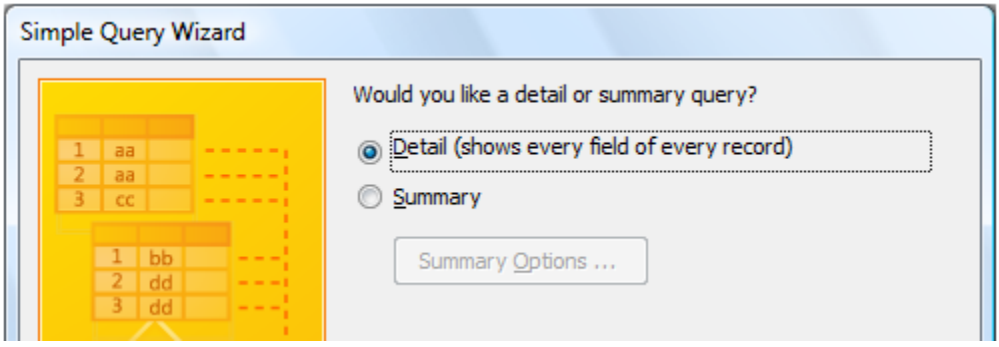
- With *InvoiceID* highlighted in the Available Fields list, click the single arrow > to move it to the Selected Fields list



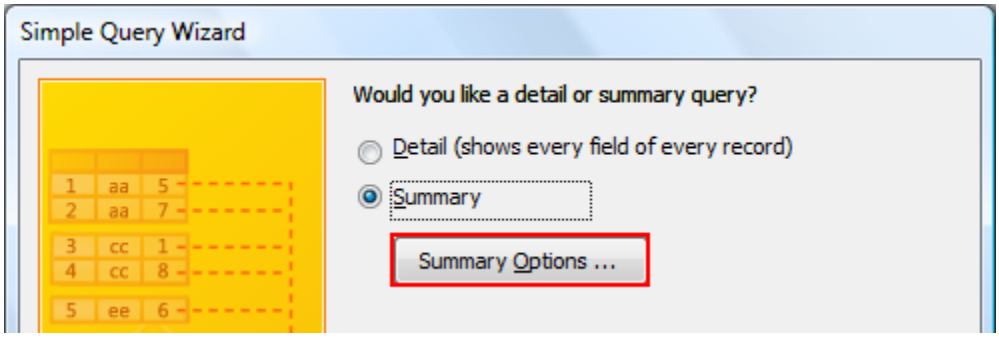
- Select the *Products* table from the Tables/Queries list
- Add *ProductName* and *Price* to the Selected Fields list
- From the *InvoiceDetails* table and add *Quantity* to the Selected Fields list



- Click Next
  The dialog box offers the choice between including every field from every record or a summary with simple calculations.

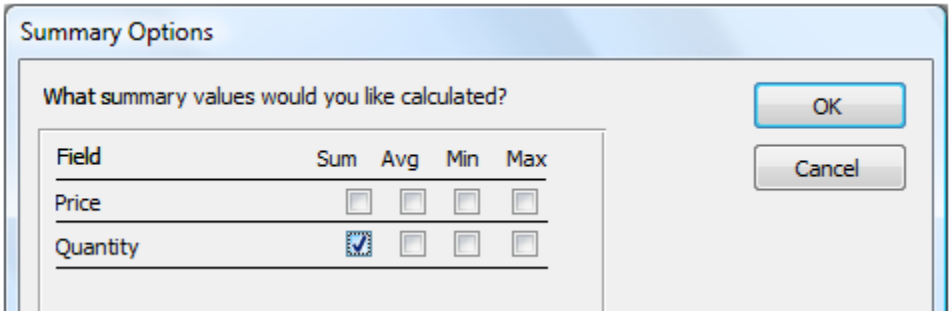


- Select Summary
  Summary Options becomes available.
- Click Summary Options

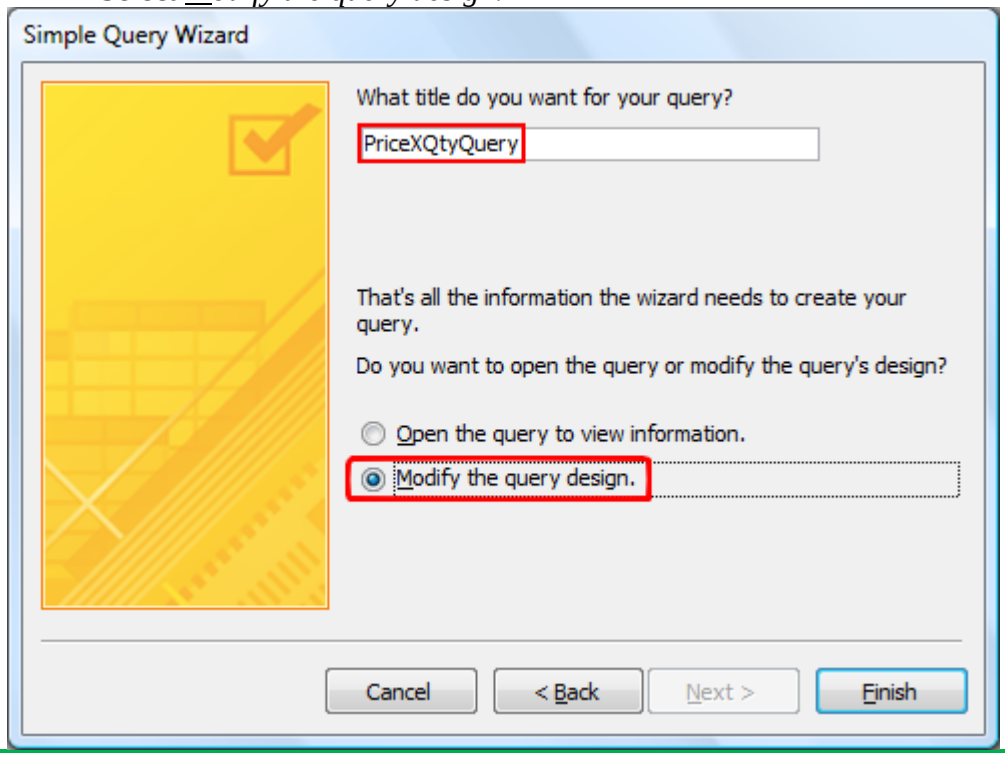


The Summary Options dialog box opens.

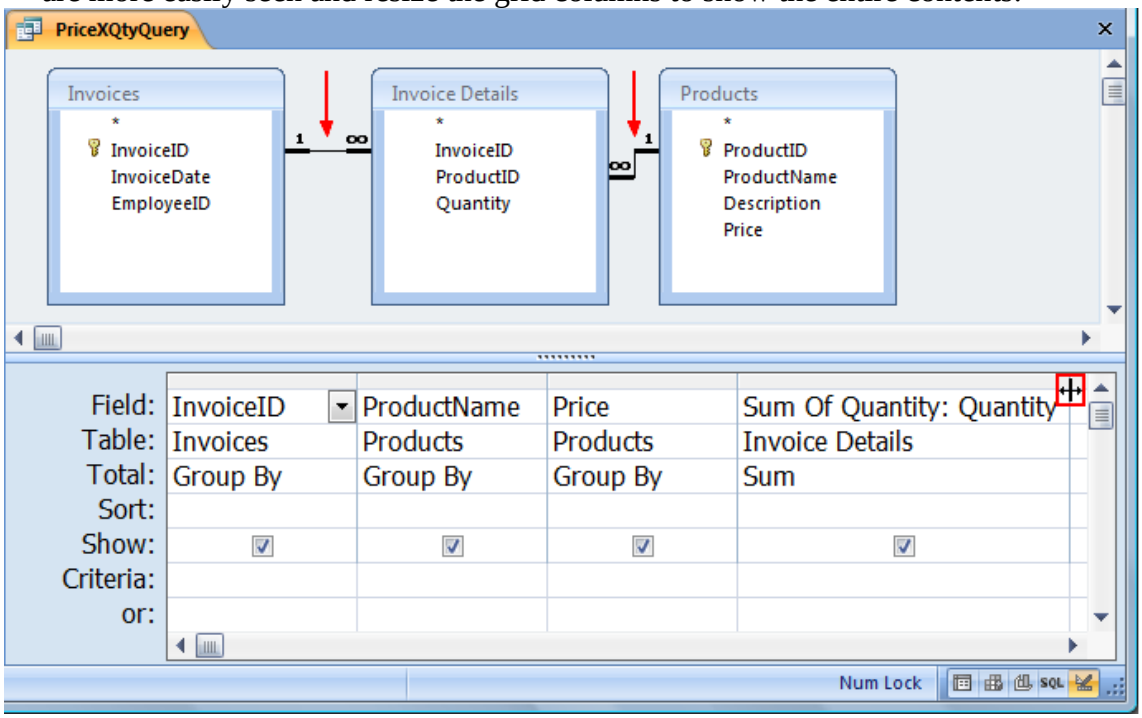
- Check the Sum box for the *Quantity* field; then click OK



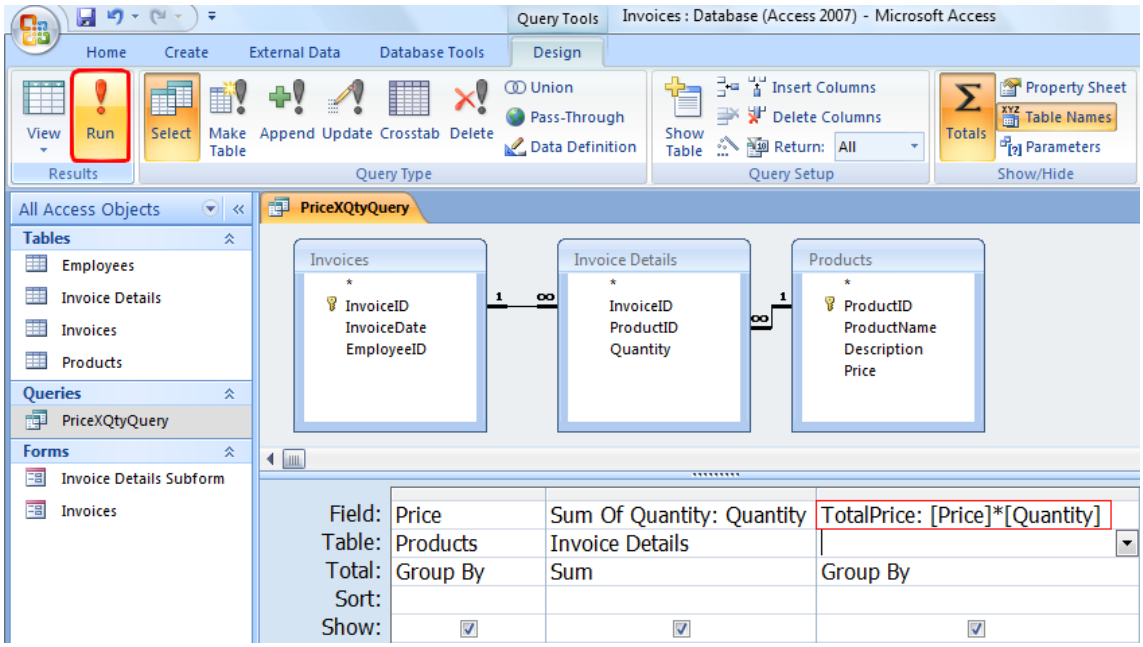
- Click Next after the Summary Options dialog box closes
- Change the title of the query to *PriceXQtyQuery*
- Select *Modify the query design.*



- Click Finish
  The query opens in Design view. You can rearrange the tables so the relationship lines are more easily seen and resize the grid columns to show the entire contents:



- In the Field line of the first empty column of the design grid enter
  *TotalPrice: Price*Quantity*
  and tap Enter



- Click the Run button in the Results group on the Design tab
  The query displays in Datasheet view with the newly calculated field:

PriceXQtyQuery

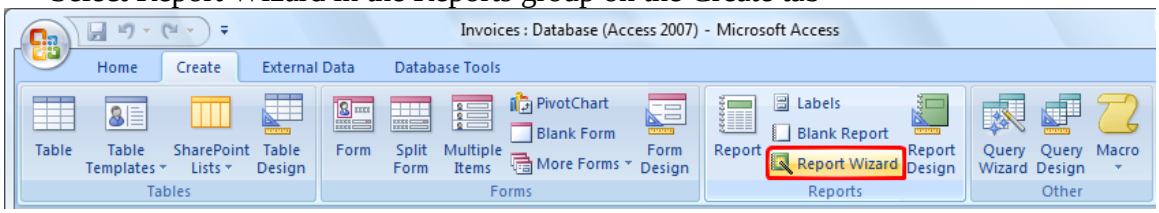
InvoiceID	Product Name	Price	Sum Of Quantity	TotalPrice
101	wcs Accounts Receivable	$425.00	1	$425.00
101	wcs General Ledger	$300.00	2	$600.00
102	wcs Backorder Tracker	$275.00	1	$275.00
102	wcs Tax Forms	$300.00	1	$300.00

- Save and close the query

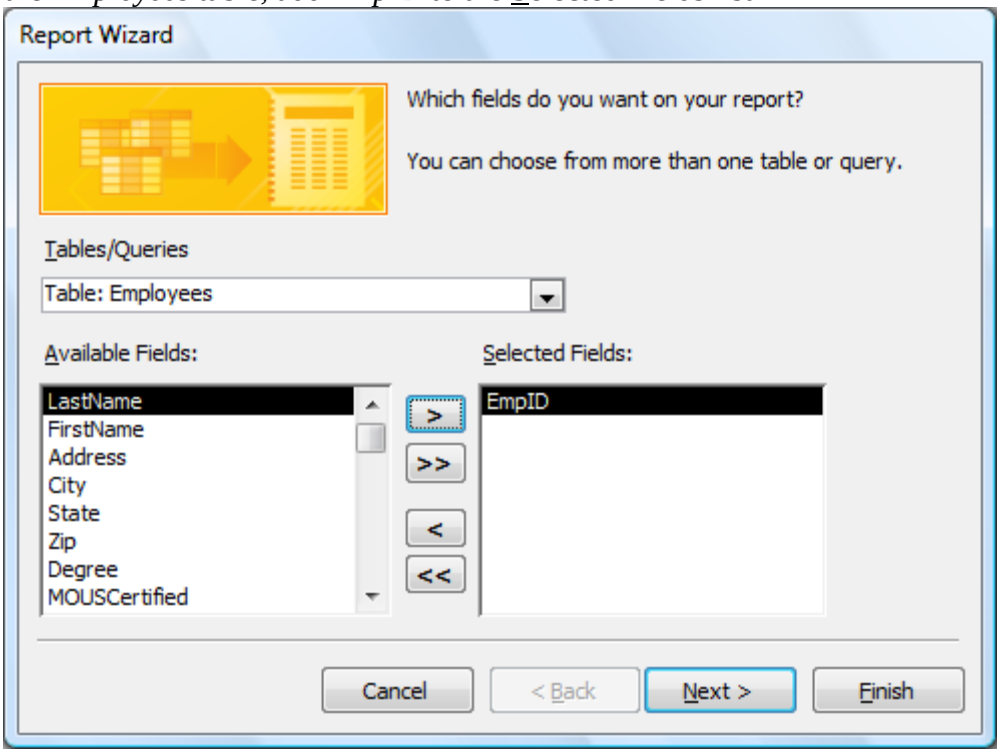
➢ Creating Reports (Go to Top)

Reports are used to display the information from a table or the results form a query in the desired field order, showing only the desired fields. Let's create a report based on our PriceXQtyQuery.

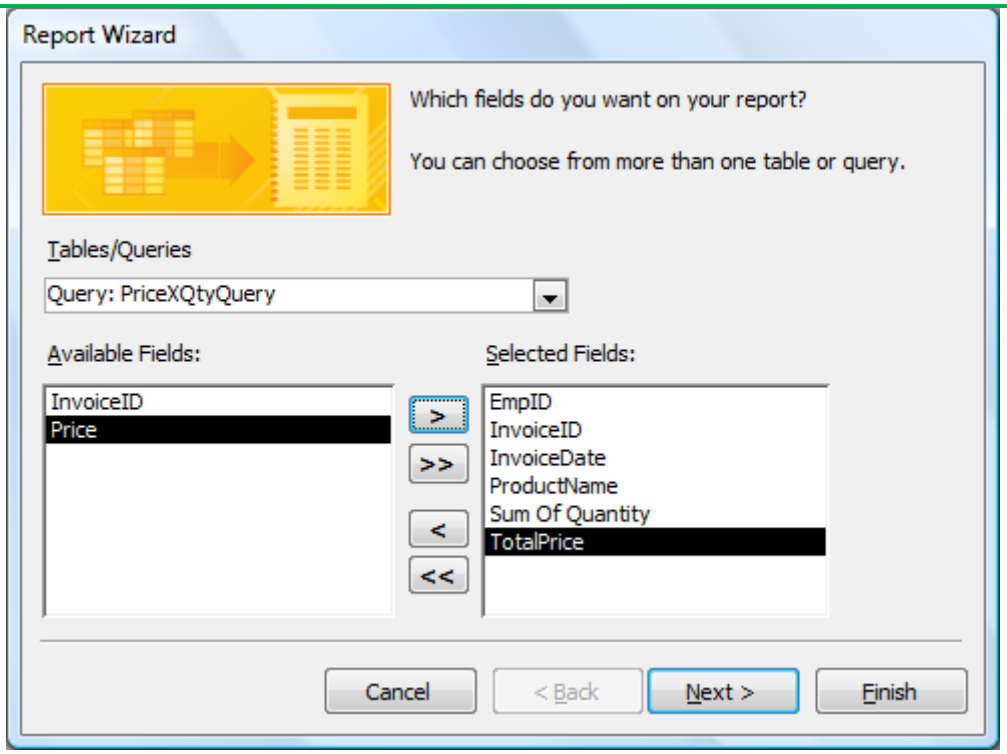
- Select Report Wizard in the Reports group on the Create tab



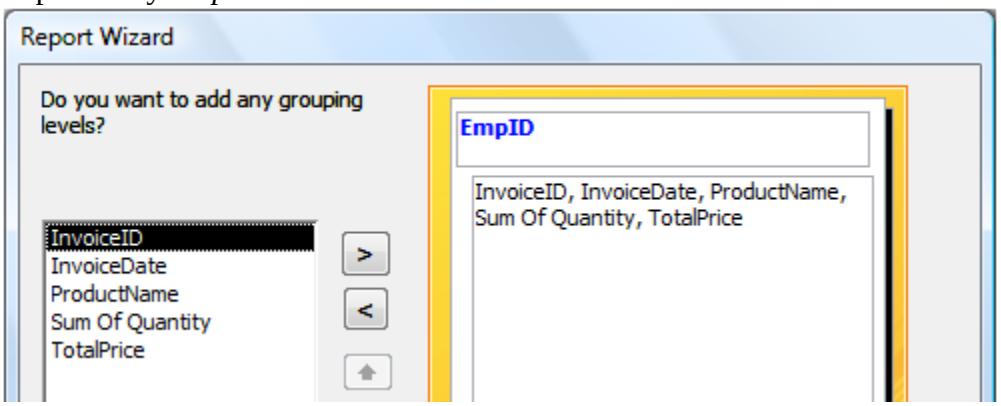
- The Report Wizard dialog box opens
- In the *Employees* table, add *EmpID* to the Selected Fields list



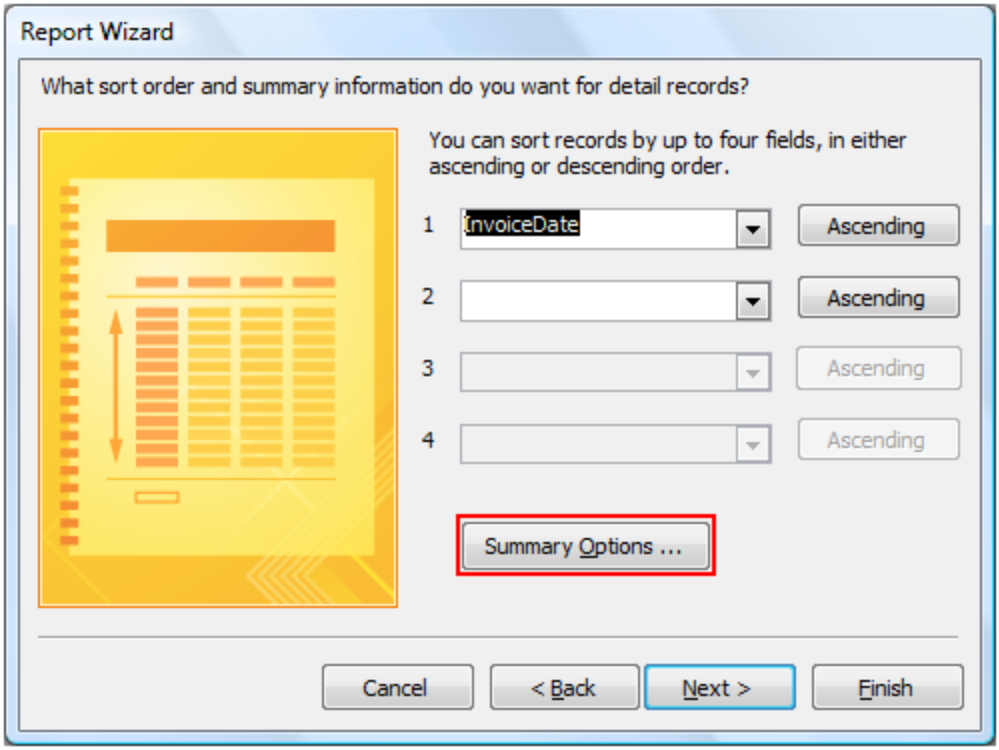
- From the *Invoices* table, add *InvoiceID* and *InvoiceDate* to the Selected Fields list
- From the new *PriceXQtyQuery*, add *ProductName*, *Sum of Quantity*, and *TotalPrice*



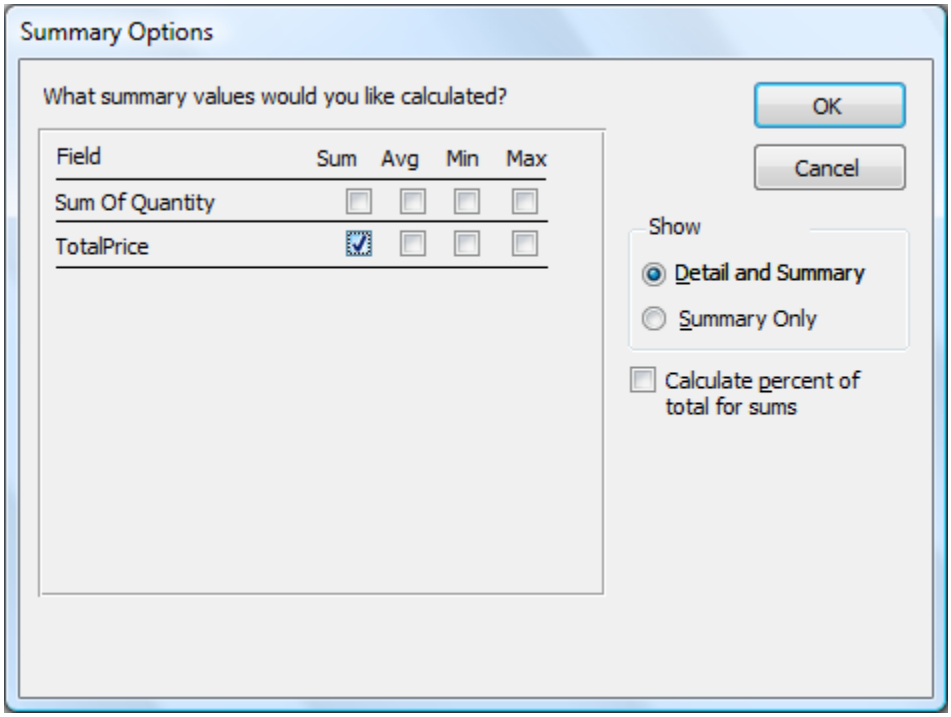
- Group level by *EmpID*



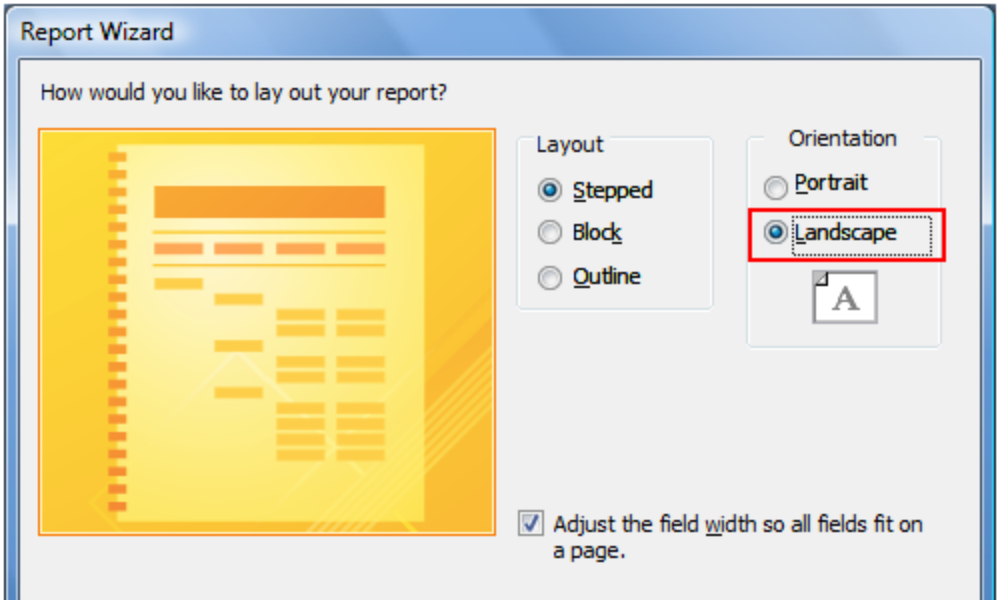
- Sort by *InvoiceDate*



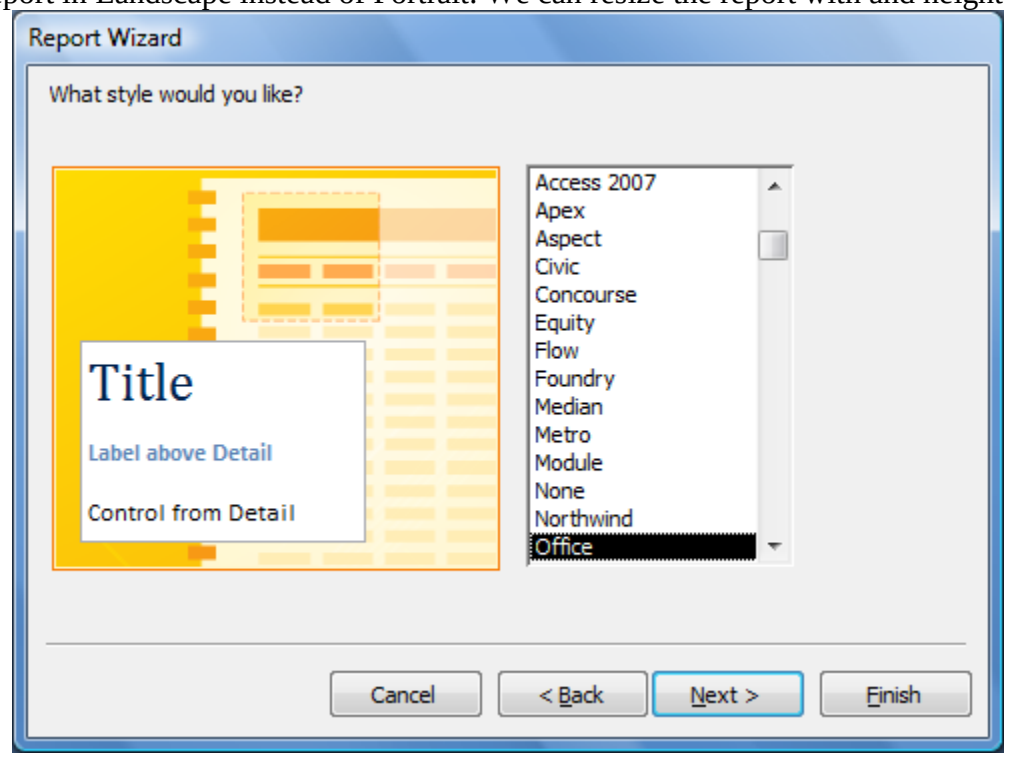
- Click the Summary Options button
- Check the Sum box for *TotalPrice* and click OK



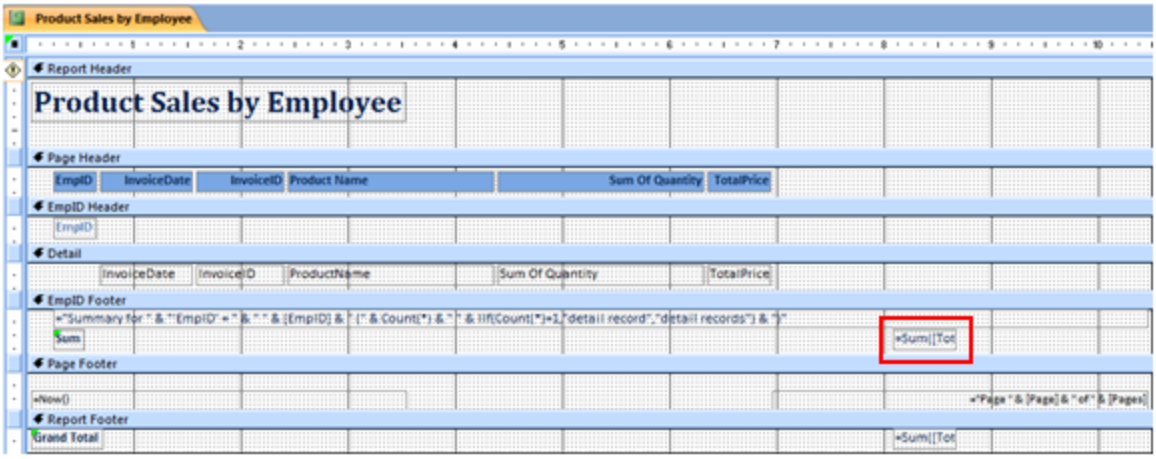
- Choose Stepped layout and Landscape orientation



- Select a Style (Note: **Microsoft Office 2007 has a bug** that may push the Grand Total or **Sum(TotalPrice)** summary off to the far right of the page so that it may not be viewable. If one style does not work try another. It is because of this bug that we must print this report in Landscape instead of Portrait. We can resize the report with and height later.)

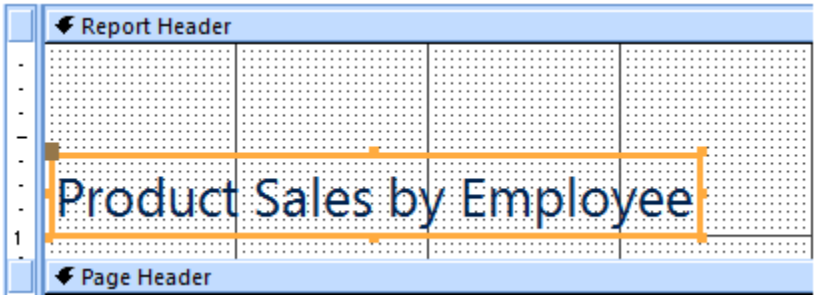


- Name the report *Product Sales by Employee*, select Modify the report's design, and click Finish
  The report opens in Design view:



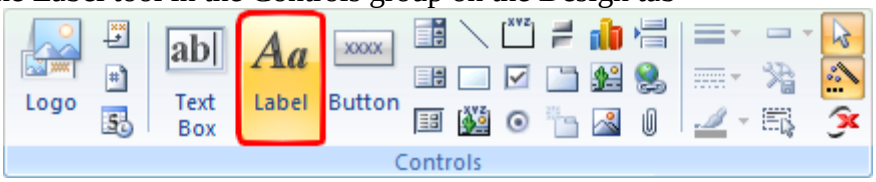
The Report Wizard generates a basic report that you can customize for your specific company. (Note the **Microsoft Office 2007 bug** pushed **=Sum(TotalPrice)** off to the far right of the page so that it would not be viewable in Portrait view.) In the following steps, you add your company name to the Report Header, rename the *Sum of Quantity* label, line up the totals, and move the page number.

- Hover the pointer over the vertical ruler near the bottom of the Report Header and drag the bottom edge of the Report Header to make it big enough for the company name
- Click and drag the report title down to make room for the company name

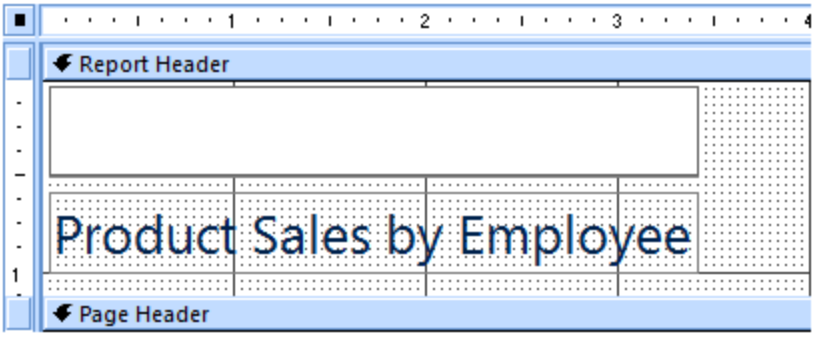


Possible problem: When you try to click and drag the label, after you click it you cannot drag it, you can only edit the text.
Solution: Do not release the mouse button after clicking the label. Click and drag in one step.

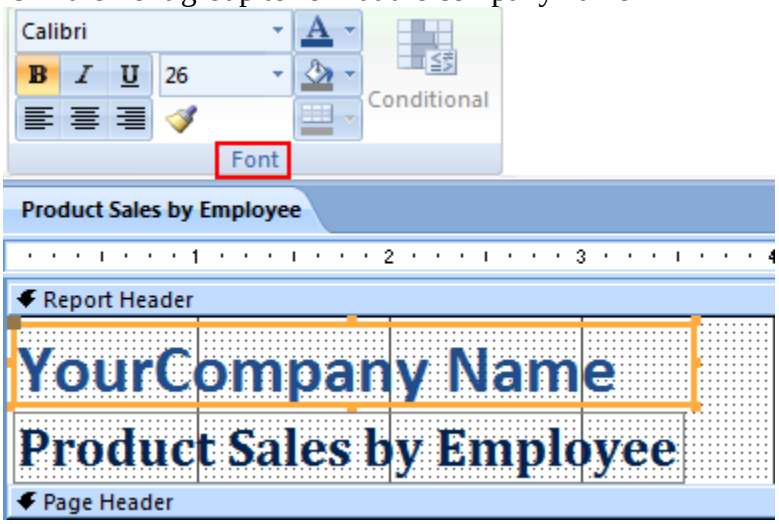
- Click the Label tool in the Controls group on the Design tab



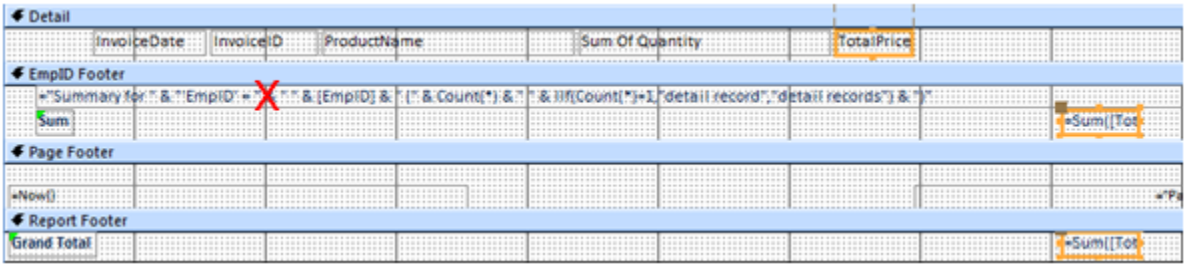
- Drag a new label above the title



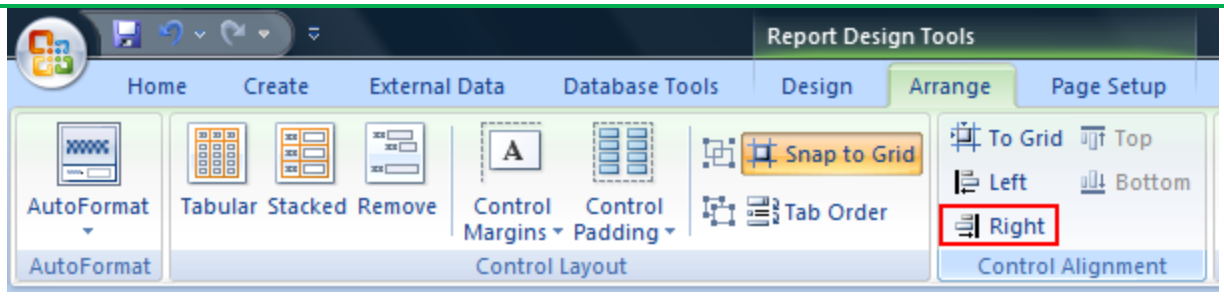
- Type in your company name and then click in an empty area of the report
- Click the label to select it
- Use the tools in the Font group to format the company name



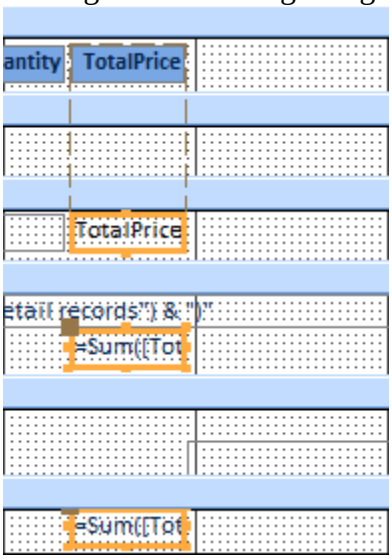
- In the EmpID Footer, select the “Summary for” text box and delete it
- Click TotalPrice in the Detail section
- Press and hold the [Shift] key and click =Sum(TotalPrice) in the EmpID footer and Report footer
  The three total fields are highlighted



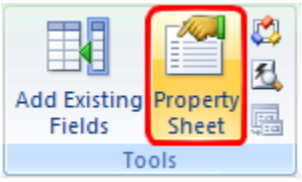
- Click the Align Right tool in the Control Alignment group on the Arrange tab



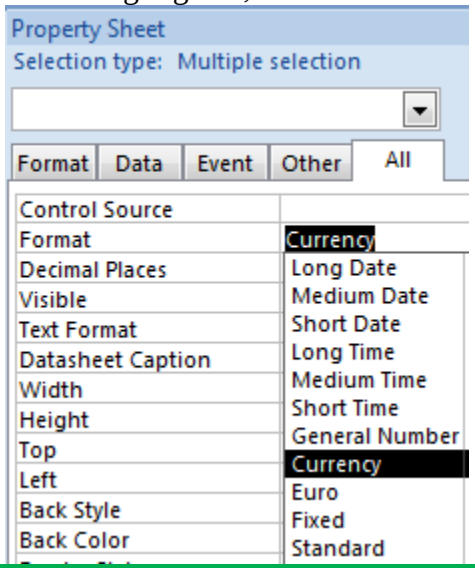
The three total fields are now aligned on their right edge.



- Open the Property Sheet, if necessary, by clicking Property Sheet in the Tools group on the Design tab



- With the three total fields still highlighted, set the Format to Currency



- In the Properties Sheet, adjust the Page Number field in the Page Footer and change its Width and Left properties to the best settings.

- Open the report in Report View (Home tab > View > Report View)
  Note 1: A good report shows multiple records on one page in **Tabular** layout.
  Note 2: Notice that it displays both Subtotals for each employee and a Grand Total for everyone.
  Note 3: Notice the spaces in the headers, as in Invoice Date and Product Name (instead of InvoiceDate and ProductName). These spaces are added in Design View. Also in Design View the column widths were adjusted to give the best presentation.