

# **Englische Access 2016-Trainingskripte für IT Seminare und EDV Schulungen als Word-Dokument zum Ausdrucken und fürs Intranet**

Aus technischen Gründen wurde in dieser  
Musterunterlage dieses Deckblatt zusätzlich eingefügt,  
und anders als im Original-Worddokument haben wir  
das Inhaltsverzeichnis am Ende platziert.  
Darüber hinaus entsprechen hier auch die Kopf- und  
Fußzeilen nicht dem Original.

## 9 Data analyses

To analyze data, a tabular preparation of the data or a chart are very suitable. Using crosstabs or pivot tables, you present the selected data in tabular form and with a pivot chart, you display them as a chart.

### 9.1 Crosstabs

In Datasheet view, traditional queries look like regular tables: field names serve as column headings and each record appears in a row. On the other hand, crosstab queries group data by two different criteria and use them as column and row headings (in our example, the **Company** and **ItemName** fields of the **Sales data** query (**Order** database) with the **Ladies' pants**, **Ladies' shoes**, and **Sweatshirt** values). By shifting one of the groupings from the rows on the left to the columns at the top, you cross one or several groupings on the left with one grouping at the top. At their intersection, you'll find the calculated values. In addition to grouping and sorting data, crosstabs serve to execute functions such as the calculation of totals or average values.

Company	Total price	Ladies' pants	Ladies' shoes	Sweatshirt
Amag	\$44,052.00	\$41,004.00	\$3,048.00	
Flygt	\$76,200.00		\$76,200.00	

#### Procedure:

Open the **Order.accdb** database in case it is closed. In our example, we want to create a crosstab for the **Sales data** query with the **Company**, **ItemName**, and **Sales price** fields:

Company	ItemName	Quantity	Sales price
Amag	Ladies' pants	300	\$41,004.00
Amag	Ladies' shoes	20	\$3,048.00
Flygt	Ladies' shoes	500	\$76,200.00
Hanibal	Ladies' shoes	80	\$12,192.00
Hanibal	Sweatshirt	200	\$20,832.00
MAT	Ladies' shoes	100	\$15,240.00
MAT	Ladies' pants	250	\$34,170.00
Talbot Pumps	Sweatshirt	170	\$17,707.20

Sales data query

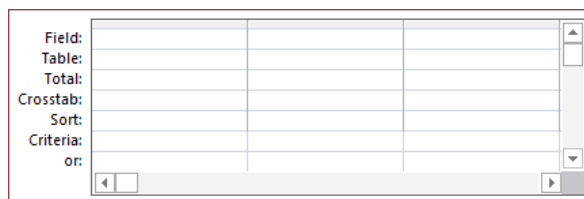
1. On the **Create** tab, in the **Queries** group, click the **Query Design** button.
2. The **Show Table** dialog box appears. On the **Queries** tab, select **Sales data**.
3. Click the **Add** and **Close** buttons.
4. On the **Design** tab (**Query Tools**), in the **Query Type** group, click the **Crosstab** button. Afterward, the **Field Properties** area contains all the necessary rows; the **Total** and **Crosstab** rows have been added:



Queries group (Create tab)



Query Type group, Design tab (Query Tools)



Query design with the Total and Crosstab rows

- Now, the **Company**, **ItemName** and **Sales price** fields are inserted and in the **Total** and **Crosstab** rows, the appropriate criteria are selected. Adding **Sales price** twice and selecting **Sum** and **Row Heading** in the relevant fields also calculates the sum total. To add an informative heading to the sum total, we type in **Sum total** followed by a colon in front of **Sales price**, as usual:

First column: Select the field for the first grouping: Drag the **Company** field from **Sales data** to the **Field** row using the mouse. The **Total** row automatically displays **Group By**. In the **Crosstab** row, select **Row Heading**.

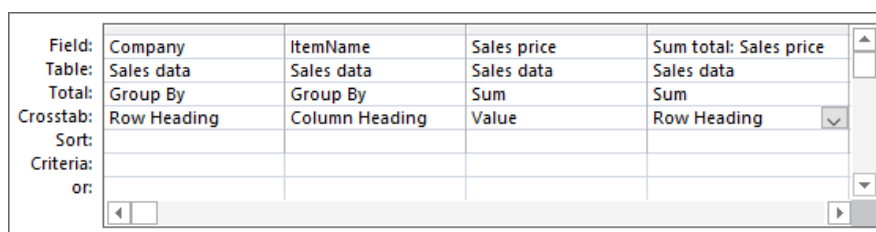
Second column: Specify the **ItemName** field as the second grouping. In the **Crosstab** row, select **Column Heading**.

Third column: Add **Sales price** from **Sales data**. In the **Total** row, select the **Sum** function and in the **Crosstab** row, select **Value**.

Fourth column: Optional: Use the field of the third column again, place the cursor in front of the first letter and type in **Sum total:**. In the **Total** row, select **Sum** and in the **Crosstab** row, select **Row Heading**.

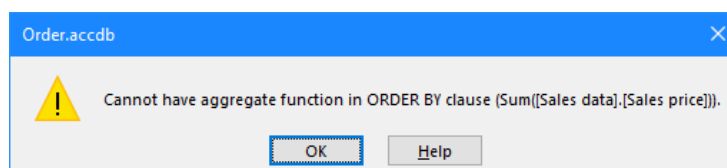
Now, the following entries must be in the Crosstab row:

**Row Heading** for the first grouping  
**Column Heading** for the second grouping  
**Value** for the subtotals  
**Row Heading** for the sum total.



Selection in the Total and Crosstab rows

Unfortunately, sorting by the columns of the **Sum** aggregate function isn't possible; Access displays a message:



Aggregate function not possible

6. To create the crosstab query, click the **Run** button on the **Design** tab (**Query Tools**) in the **Results** group.

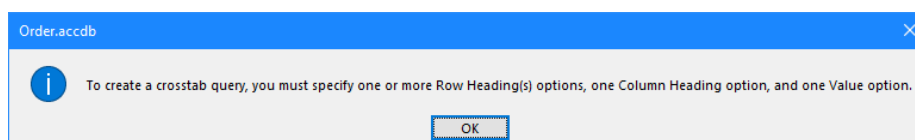


Results group  
(Design tab)

Company	Sum total	Ladies' pants	Ladies' shoes	Sweatshirt
Amag	\$44,052.00	\$41,004.00	\$3,048.00	
Flygt	\$76,200.00		\$76,200.00	
Hanibal	\$33,024.00		\$12,192.00	\$20,832.00
MAT	\$49,410.00	\$34,170.00	\$15,240.00	
Talbot Pumps	\$17,707.20			\$17,707.20

Crosstab result with sum total

If a criterion is missing, Access will notify you:



Notification

If you don't want to display a sum total, three columns with one criterion each in the **Crosstab** row are sufficient.

7. Save the query with the name **Crosstab**.



The crosstab can also be created with the help of the query wizard. You will then be led through the single dialogs.

## 9.2 Exercise

1. Open the Customer management.accdb file.
2. From the **Price per customer and course** query, we want to create a crosstab with the following values:

**Last name, Course name, and Total price.**

3. Save the query with the name **Crosstab1 customer management**:

Last name	Total price	Basics	Databases	Presentation	Word Processing
Drury	\$150.00	\$150.00			
Hainsey	\$200.00			\$200.00	
Miller	\$530.00	\$150.00		\$200.00	\$180.00
Quick	\$570.00	\$150.00	\$220.00	\$200.00	
Rafalski	\$550.00	\$150.00	\$220.00		\$180.00
Rose	\$530.00	\$150.00			\$380.00

Crosstab result

The solution can be found on page 150.

## 9.3 Creating pivot tables in Excel

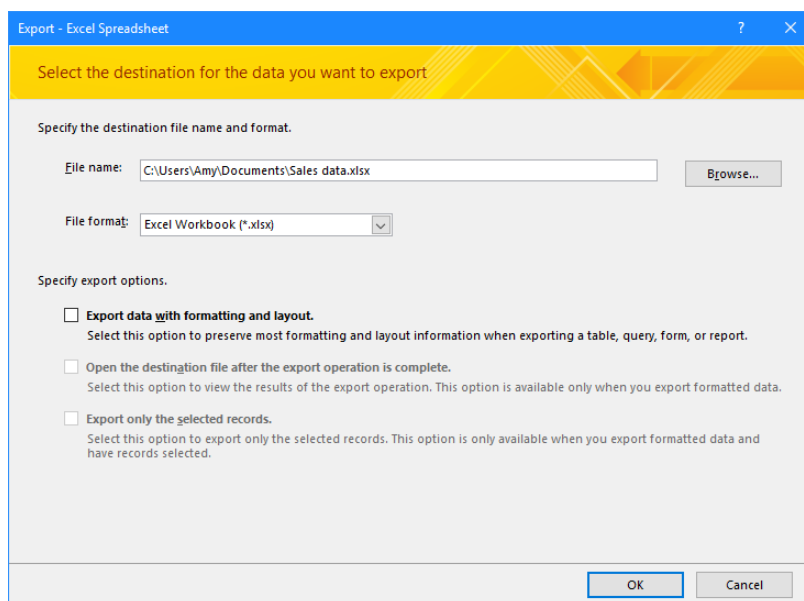
Pivot tables cannot be created in Access anymore, but only in Excel. They are interactive tables to summarize large amounts of data quickly. You can use a pivot table to analyze and view data from different perspectives. It provides users with a tool for convenient analysis options and flexible evaluations. Thanks to the pivot function, you can view your data from a completely different perspective. In addition, you can view the overall result of each column and the detail

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data can be hidden. As far as the presentation is concerned, they are very similar to crosstabs. When creating a pivot table, the Excel **PivotTable Tools** help you maximize your performance.

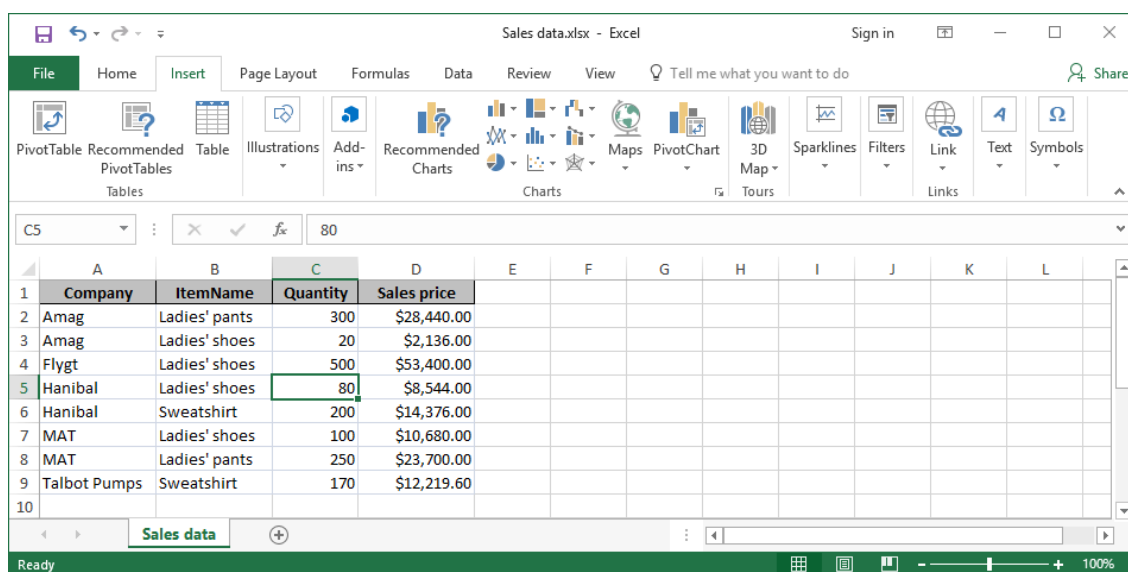
The **Sales data** query is to be exported to Excel as a table:

1. Open the **Order.accdb** database and select the **Sales data** query.
2. On the **External Data** tab, in the **Export** group, click the **Excel** button.
3. In the following dialog box, the file name of the destination file has already been entered. If need be, you can change the path by clicking **Browse**.



Exporting to Excel

4. Select the  **Export data...** and  **Open the destination file...** export options and click **OK**. The **Sales data.xlsx** file is opened in Excel:

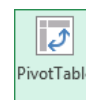


The Sales data database query as a table in Excel

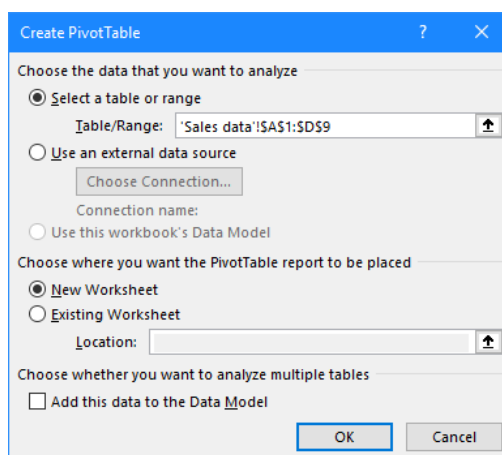
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To create a pivot table, Excel provides you with **PivotTable Tools** that make handling pivot tables easier.

1. On the **Insert** tab of the ribbon, in the **Tables** group, click the **Pivot-Table** button.
2. In the following dialog box, specify where Excel is to retrieve the data for the pivot table from. In case of an external data source, the program offers several connection options. Activate the  **Select a table or range** option.
3. Verify Excel's suggestion for the table range. For the current example, we need the range **A1 to D9**:

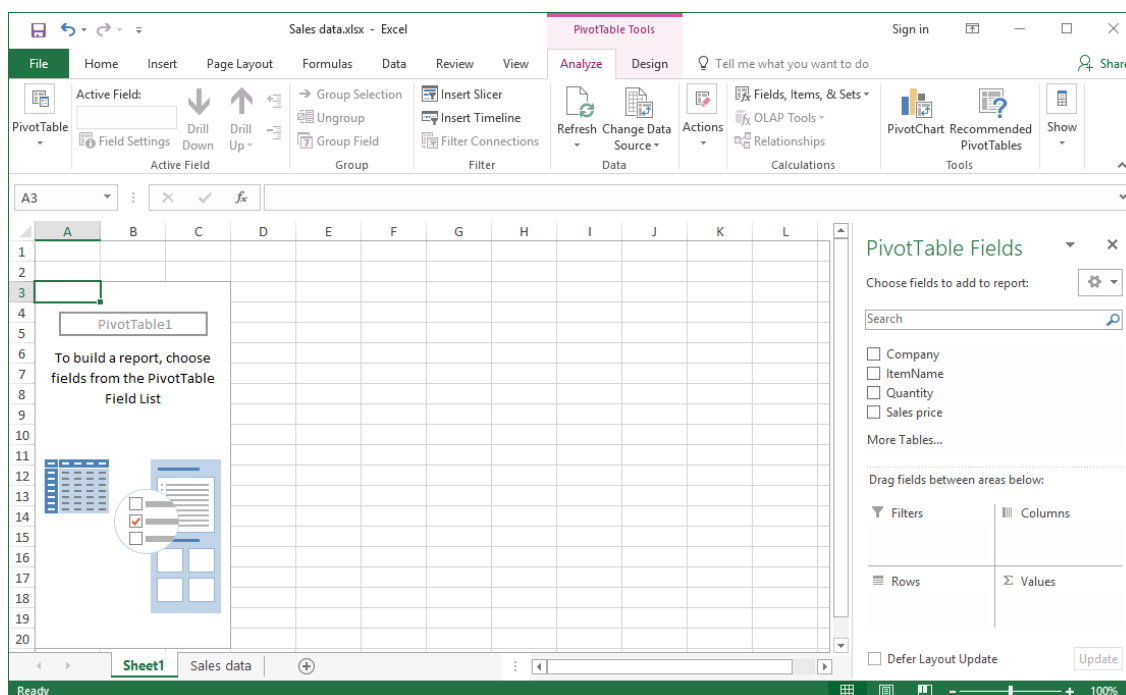


Insert tab,  
Tables group



Specifying the table range

4. Choose where you want the PivotTable report to be placed:  **New Worksheet**.
5. Click the  button. Excel inserts the **Sheet1** worksheet which shows some new things:



The new Sheet1 has been prepared for the PivotTable report


## Task pane

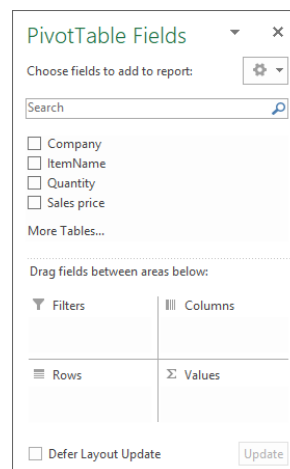
On the right side, there is a task pane with the **PivotTable Fields** list.

The border between the pane and the document can be moved with the mouse. Point the mouse to the vertical border. The mouse pointer becomes a double arrow:  $\longleftrightarrow$ . While holding down the left mouse button, move the border to a new position and then release the button.

You can also place the pane anywhere on the screen. Point the mouse to the pane's title bar, and, while holding down the left mouse button, drag the task pane to another position. For this task, the mouse pointer has the shape of a four-headed arrow.

With a double-click on the title bar, you can return the task pane to its former position at the right of your Excel window. As with all windows, you can close the task pane by clicking the **Close** icon  $\times$  in the title bar.

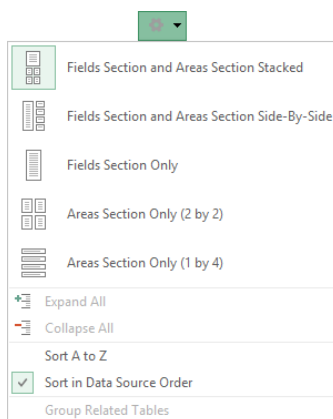
The **Tools** icon  below the title bar opens the following submenu. Here, the individual sections are rearranged, but only *within* the task pane:



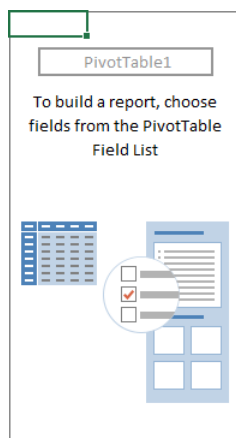
Task pane with the PivotTable Fields list



Dragging the task pane to another position via the title bar



Rearranging the sections *within* the task pane



Area for the PivotTable report

## The area for the PivotTable report

In the left part of the new Sheet1, an area has been prepared for the PivotTable report. The cell cursor is in this area.

## Contextual tabs

On the ribbon, the **PivotTable Tools** context tool with the **Analyze** and **Design** tabs for editing pivot tables has been added. The contextual tabs are automatically closed when the cursor exits the area for the PivotTable report.

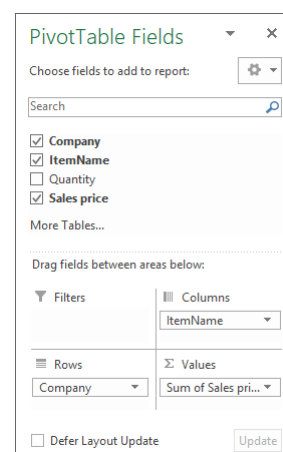
## Creating the PivotTable report

1. The cell cursor is in the area designated for the PivotTable report. Thereby, the **PivotTable Tools** appear on the ribbon.

If the **PivotTable Fields** task pane is closed, click the **Field List** button on the **Analyze** tab (**PivotTable Tools**) in the **Show** group.

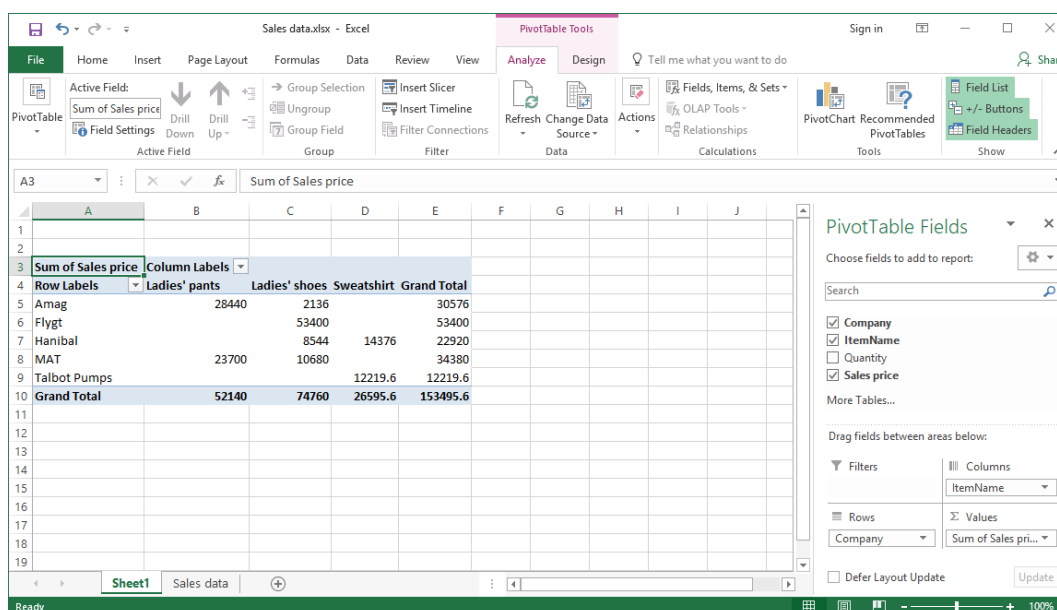


2. In the list, point to **Company**: . While holding down the left mouse button, drag the field name down to the **Rows** section of the task pane. After releasing the mouse button, the company names are placed in the **A** column.
3. In the same way, copy the **ItemName** field to the **Columns** section
4. and the **Sales price** field to the  $\Sigma$  **Values** section.



Task pane

Check the task pane on your screen: The check boxes of these three fields are now activated. The first PivotTable report is completed:



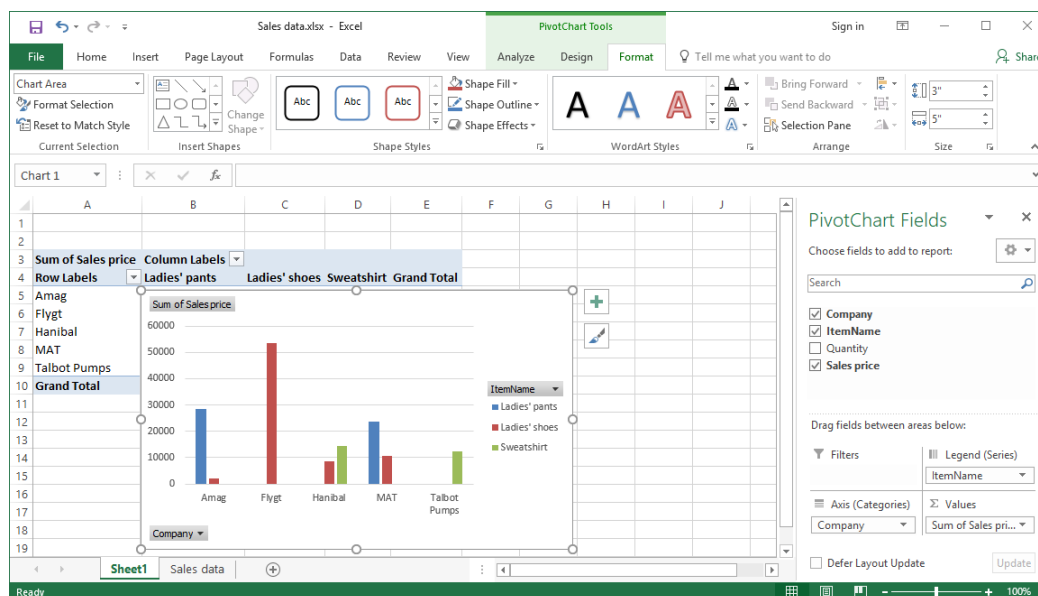
The completed pivot table

Now, you can alter the pivot table for you data analysis in mutliple ways. For example, in the  $\Sigma$  **Values** section, the values are automatically concatenated with a sum function. Instead of the sum, you can also use another function for the calculation. To do so, click the **Sum of Sales pri...** button in the  $\Sigma$  **Values** section. From the resulting menu, select **Value Field Settings**.

Moreover, you can change the fields and positions in the pivot table, e.g., transpose rows and columns or filter and sort the data. This provides you with a great variety of possibilities of analyzing your data from different perspectives.

To create a pivot chart, click the **PivotChart** button on the **Analyze** tab (**PivotTable Tools**) in the **Tools** group and select the chart from the **Insert Chart** dialog box.





Pivot table with pivot chart

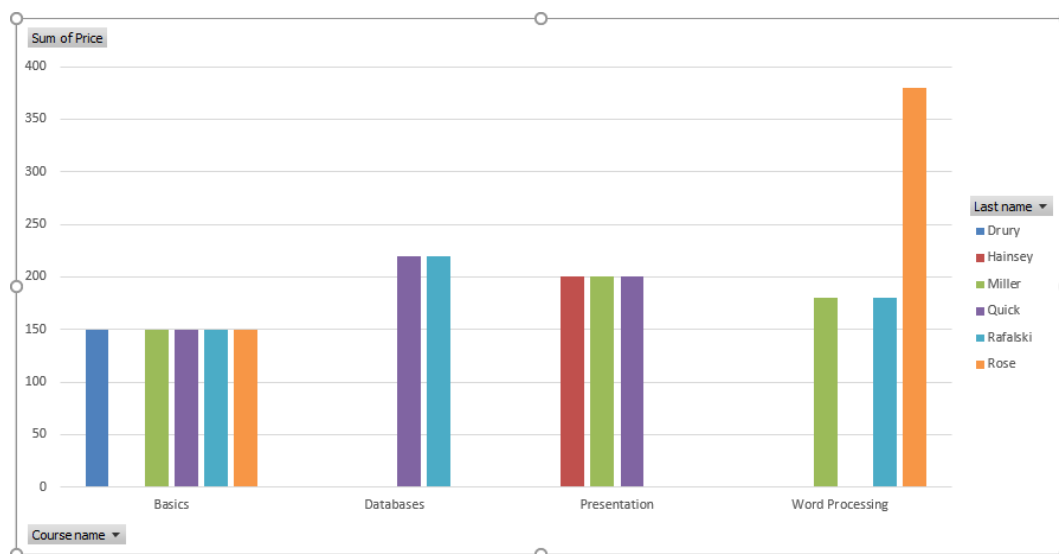
When you switch back to Access, the **Export - Excel Spreadsheet** window (page 107) is still open. It isn't necessary to **save** the export steps.  the window.

## 9.4 Exercise

Open the **Customer management.accdb** database and from the **Price per customer and course** query, create a pivot chart in Excel (**Insert** tab) with the following details:

- Course name in the **Legend (Series)** section
- Last name in the **Axis (Categories)** section
- Price in the  $\Sigma$  **Values** section.

In the end, **switch rows and columns** (**Design** tab (**PivotChart Tools**)):



Pivot chart after switching rows/columns

The solution can be found on page 151.

## 12 Data Exchange

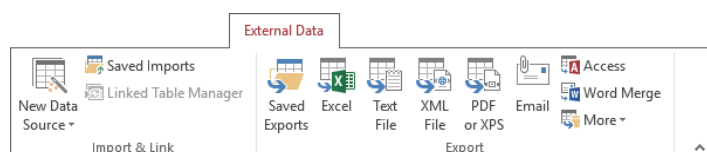
Data can be exported from Access to other applications in order to process them further there, e.g., in Excel. Similarly, data can be imported from other programs or linked.

Examples:

- Another Access database
- Excel
- HTML
- Text file

### Basic procedure:

On the **External Data** tab, you can find the **Import & Link** and **Export** groups.



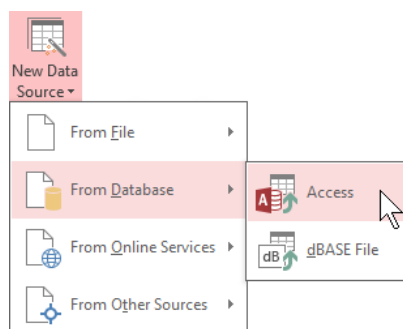
External Data tab

Select the required application. A dialog box appears which has to be confirmed with  after having entered the parameters.

### 12.1 Import – structure of a database

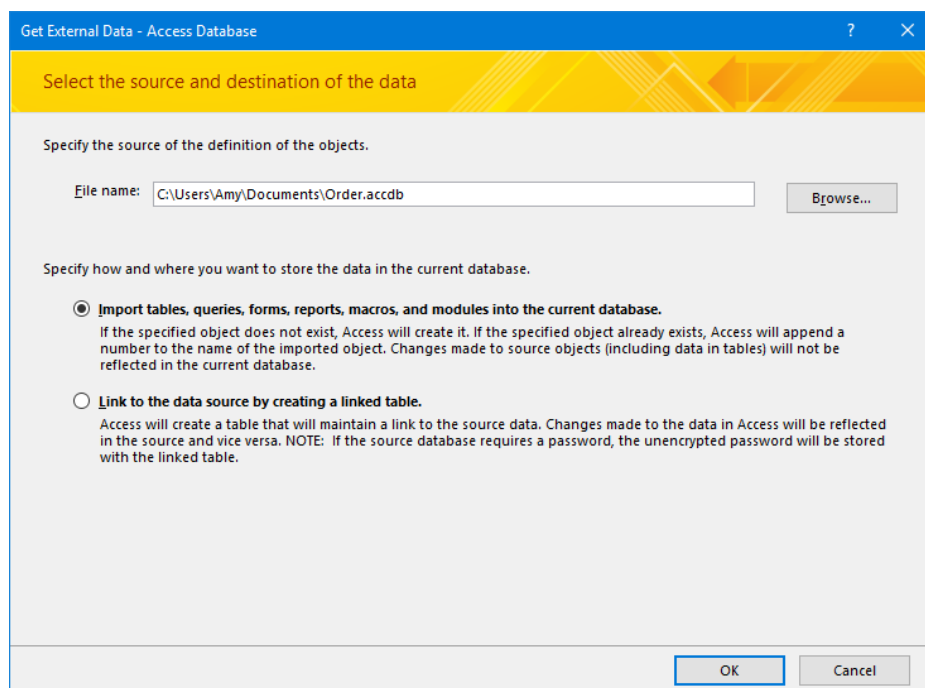
To archive the data at the end of each year, create a new database with the name **Order\_archive.accdb** which shall contain only the structure of the database. Therefore, only the structure of the tables are to be imported.

1. Open a new, blank database and on the **External Data** tab, in the **Import & Link** group, click the **New Data Source** button, point to **From Database** in the submenu, and select **Access**.



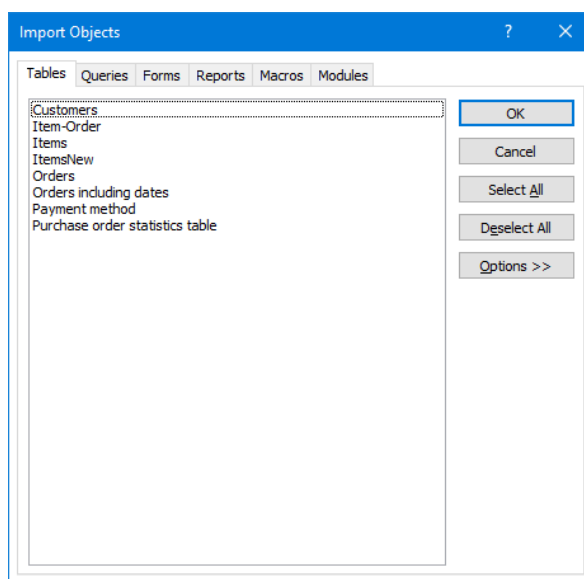
Submenu of the New Data Source button

2. In the following dialog box, enter the folder and Access file or click  and select the file in the **File Open** window.



Importing a database

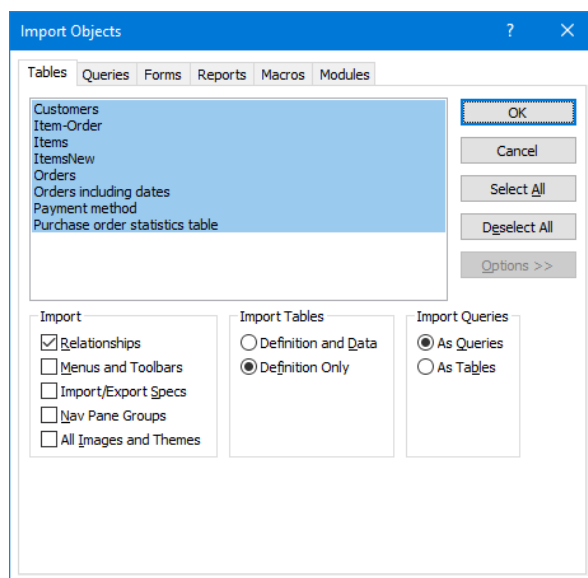
3. Select the  **Import...** option and click  .
4. The **Import Objects** dialog box with the corresponding tables appears:



Importing the tables

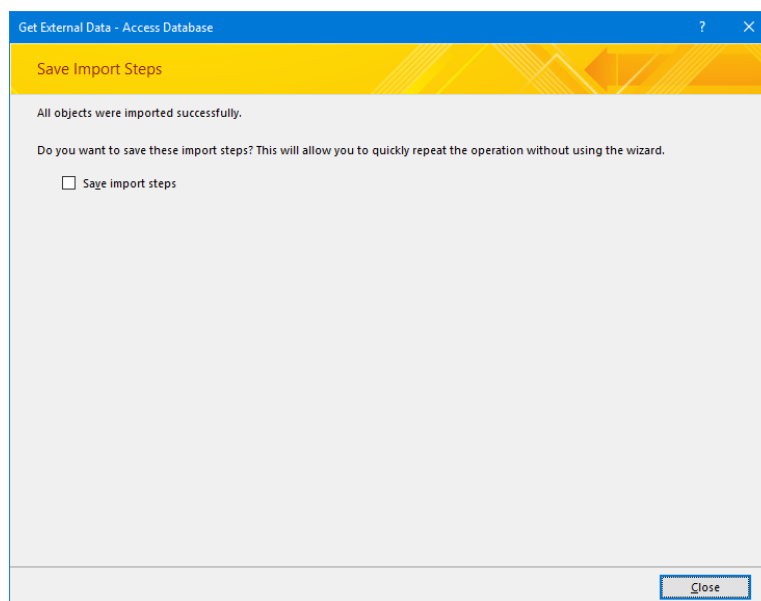
In this dialog box, click  .

5. Select all the tables and below **Import Tables**, activate the  **Definition Only** option, as we don't want to insert the data until the end of each year.



Importing only the definitions of the tables

6. After clicking  , you can also choose whether to save the import steps. This makes sense, when the same import is to be carried out multiple times.



Saving the import steps?

The structure of the tables is created in the new database. In the same way, you can import all other objects of the selected database.

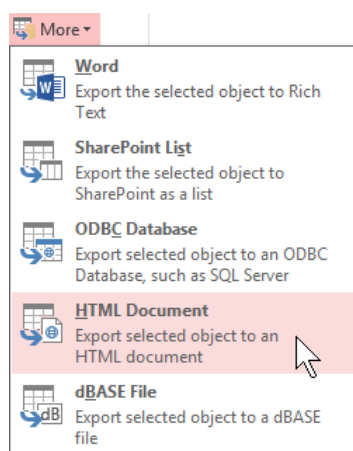
7. Save the database with the name Order\_archive.accdb (File menu, Save As, Save Database As).

## 12.2 Export

The **Sales data** query has already been exported to Excel as a table on page 107. Now, the **Sales per customer** query is to be saved as an HTML document:

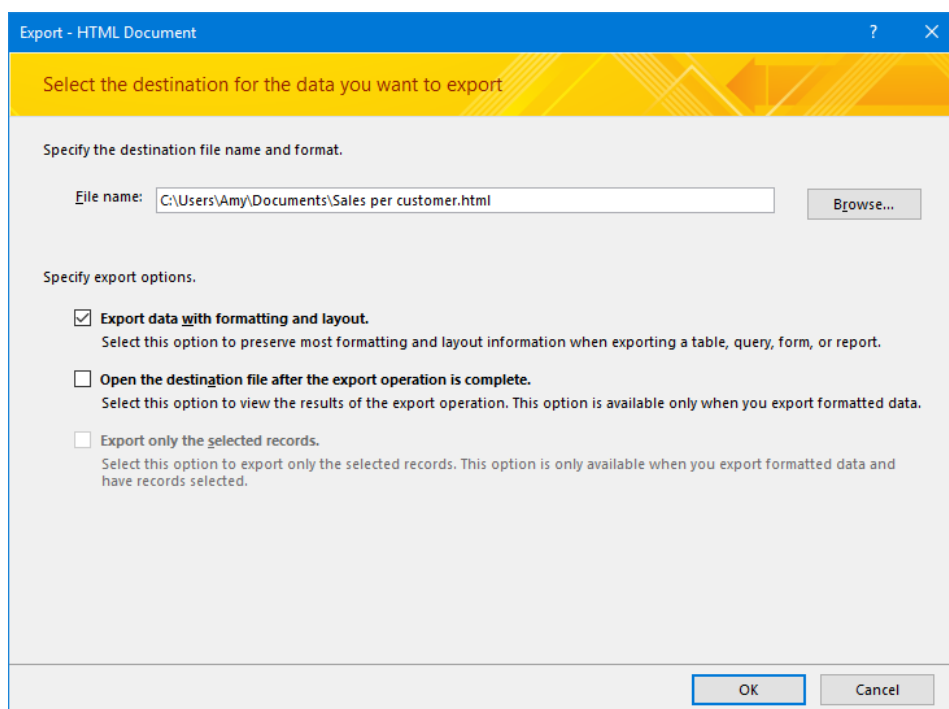
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1. In the **Order.accdb** database, select the **Sales per customer** query and on the **External Data** tab, in the **Export** group, click the **More** button and select **HTML Document** from the submenu.



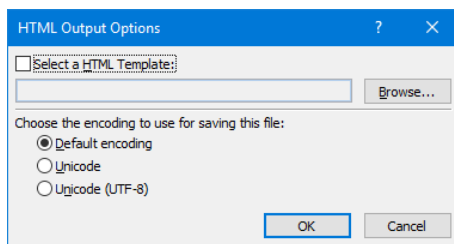
Export – HTML document

2. The first dialog box appears. The file name of the destination file with its entire file path has already been entered. If need be, change the path by clicking **Browse**. Select the first export option  **Export data ...** and click **OK**:



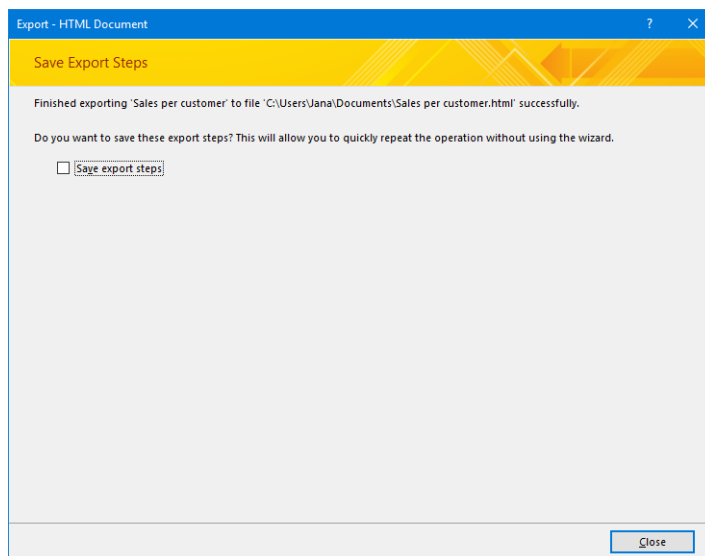
Exporting to HTML

3. In the following dialog box, keep the default settings:



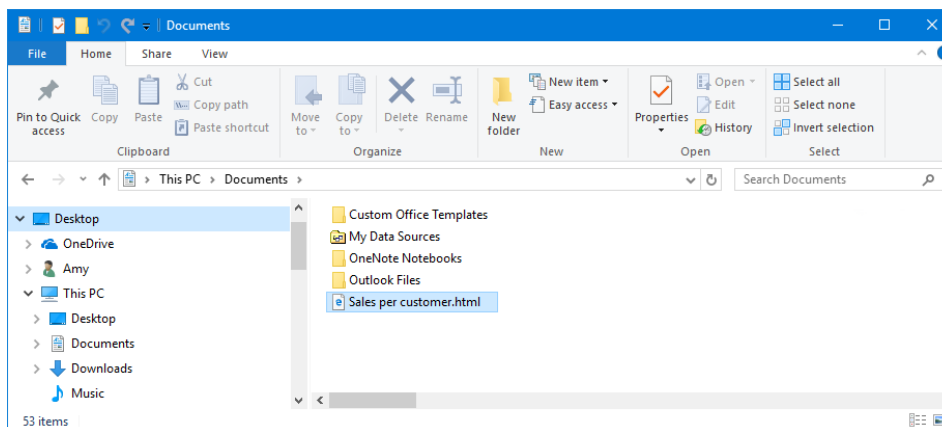
Default encoding

4. Here, you can **save the export steps**:



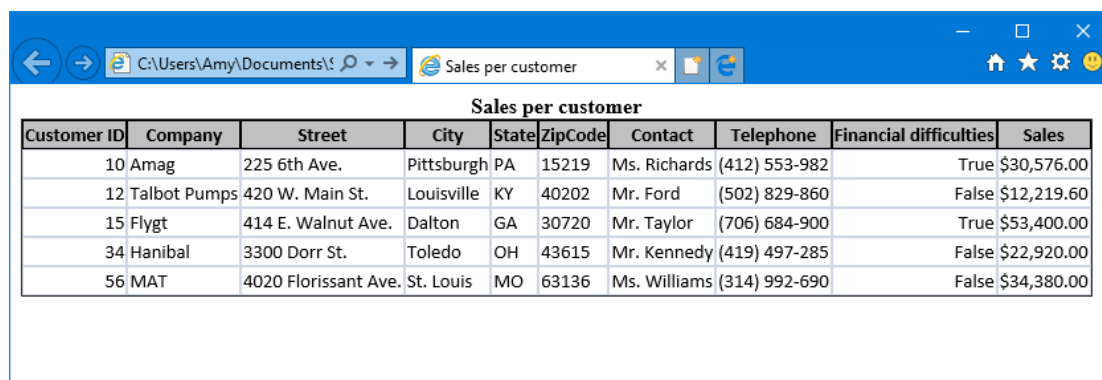
Here, you can save the export steps

5. To call up the file, open the file explorer, navigate to the folder in which you saved the file in step 2, and double-click the file name.



File explorer

6. The file is then opened in your default web browser, e.g., Internet Explorer.



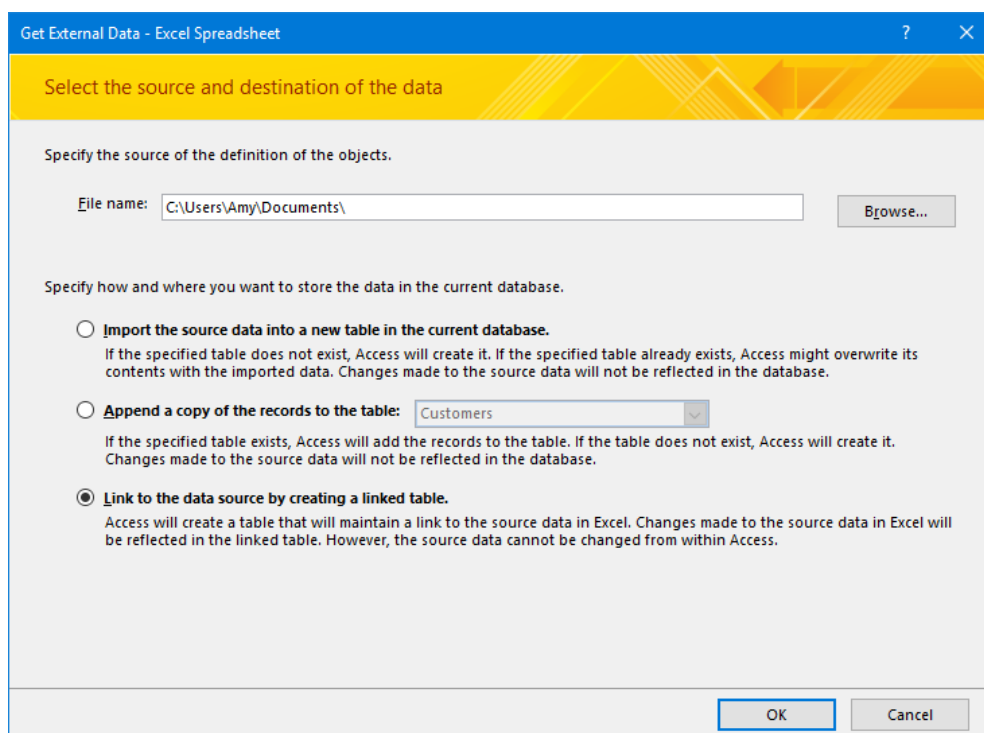
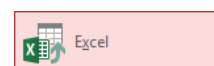
Customer ID	Company	Street	City	State	ZipCode	Contact	Telephone	Financial difficulties	Sales
10	Amag	225 6th Ave.	Pittsburgh	PA	15219	Ms. Richards	(412) 553-982	True	\$30,576.00
12	Talbot Pumps	420 W. Main St.	Louisville	KY	40202	Mr. Ford	(502) 829-860	False	\$12,219.60
15	Flygt	414 E. Walnut Ave.	Dalton	GA	30720	Mr. Taylor	(706) 684-900	True	\$53,400.00
34	Hanibal	3300 Dorr St.	Toledo	OH	43615	Mr. Kennedy	(419) 497-285	False	\$22,920.00
56	MAT	4020 Florissant Ave.	St. Louis	MO	63136	Ms. Williams	(314) 992-690	False	\$34,380.00

Sales per customer HTML file

## 12.3 Links

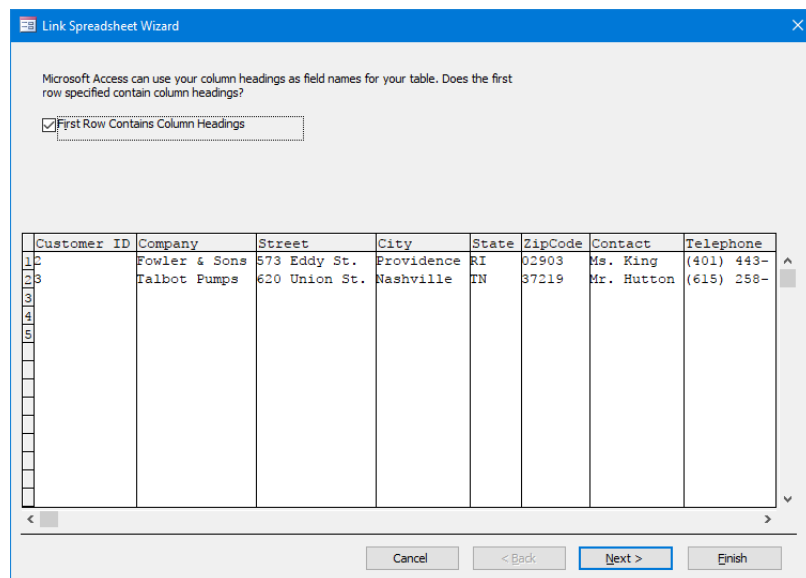
The Excel table **Customers.xlsx** is to be linked to a new database table in the **Order** database. Proceed as follows:

1. On the **External Data** tab, in the **Import & Link** group, click the **New Data Source** button, point to **From File** in the submenu, and select **Excel**. In the following dialog box, activate the  **Link to the data source...** option and select the path to the Excel table via the  **Browse** button:



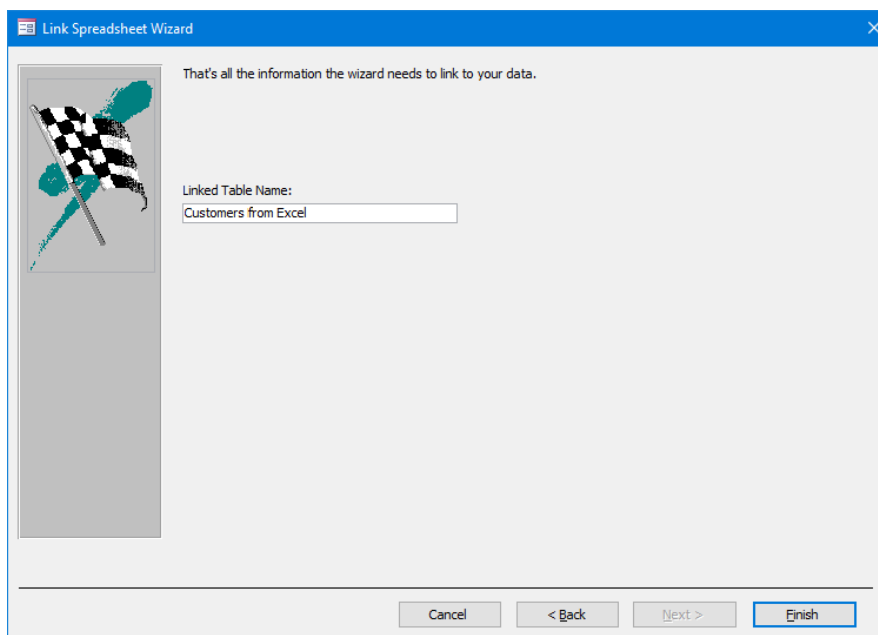
Linking an Excel table

2. Click  **OK**. The data of the table are displayed.



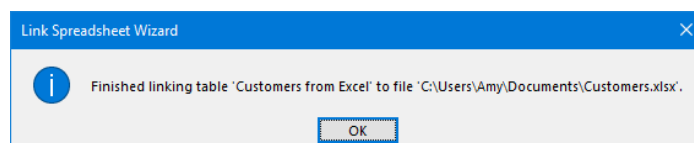
Customers Excel table

3. If the table contains a row with column headings, the  **First Row Contains Column Headings** option must be activated. Click .
4. Enter a name for the new database table, for example, **Customers from Excel**, and click the  button.



New database table

5. Confirm the following message with .



The linking is finished



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6. The database table has been created and will automatically be updated, when the original table – the Excel table – is altered.

Customer ID	Company	Street	City	State	ZipCode	Contact	Telephone	Financial diff
2	Fowler & Sons	573 Eddy St.	Providence	RI	02903	Ms. King	(401) 443-9647	Yes
3	Blythe Brothers	620 Union St.	Nashville	TN	37219	Mr. Hutton	(615) 258-3415	No

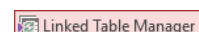
Customers from Excel database table

## Please note:

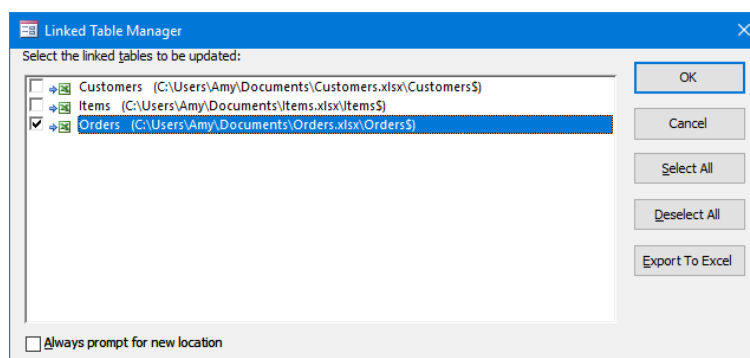
The path to the linked application must not be changed and the Excel table must not be moved. Otherwise, a message appears.

## 12.4 Linked Table Manager

In the version of 2016, Access provides you with a manager to update linked Excel tables: On the **External Data** tab, in the **Import & Link** group, click the button shown on the right. The following dialog box appears:



In the Import & Link group



Dialog box for updating the linked Excel tables (example)

To update a linked table, select the corresponding line(s) and click the **OK** button.

## 12.5 Exercise

### Importing an Excel table – adding records

Import the **Participants\_new.xlsx** Excel table into the **Course management** database. It contains new data that are to be added to the **Participants** table. Then save the import with a meaningful name.

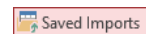
Customer ID	Last name	First name	Street	City	State	ZipCode
1	Miller	Ryan	433 E. Wardlow Rd	Long Beach	CA	90807
2	Quick	Megan	2908 DeI Amo Blvd	Lakewood	CA	90712
3	Rafalski	Craig	11279 Maple St	Los Alamitos	CA	90720
4	Hainsey	Rachel	11261 Weatherby Rd	Los Alamitos	CA	90720
5	Drury	Mary	2978 Tigertail Dr	Rossmoor	CA	90720
6	Rose	Tim	1122 Bennet Ave	Long Beach	CA	90804
*	(New)					

The Participants database table

The solution can be found on page 170.

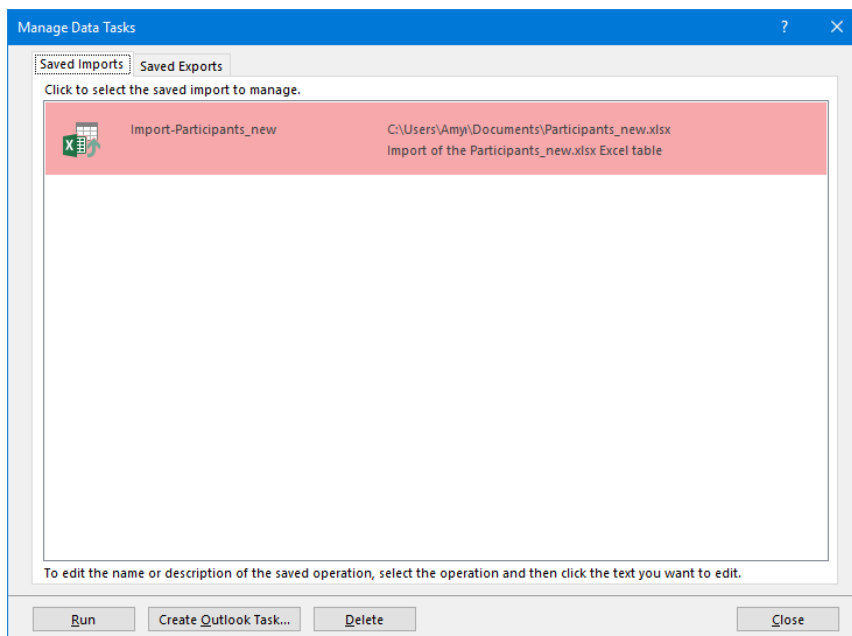
## Calling up saved imports

After extending and updating the **Participants\_new.xlsx** Excel table, you can now call-up the import via the **Saved Import** button on the **External Data** tab in the **Import & Link** group.



In the Import & Link group  
(External Data tab)

Select the relevant import and click the  button.



Calling up saved imports

The data you have added to the Excel table are appended to the database table.

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