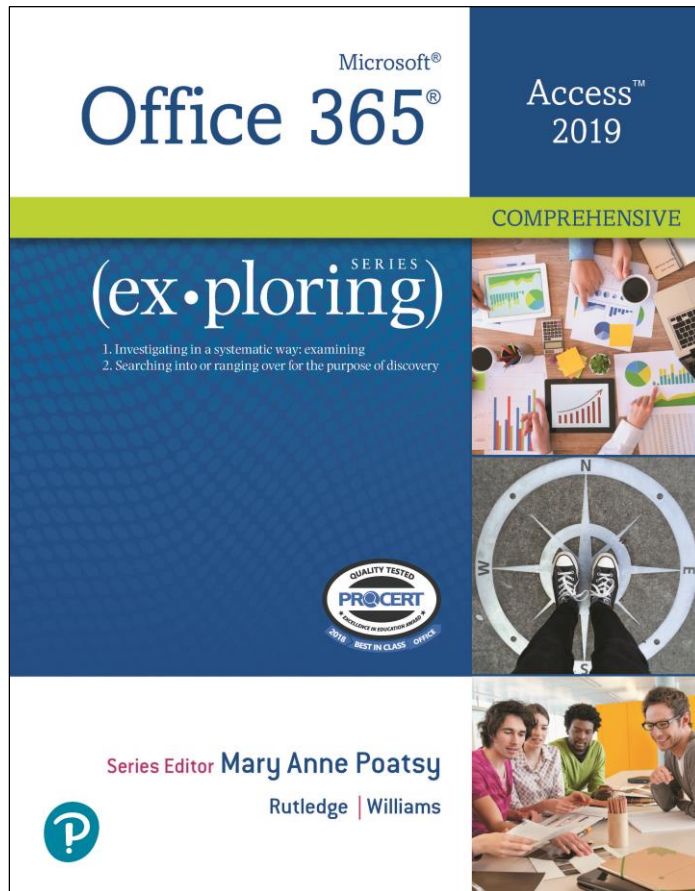


Microsoft® Office 365® Access™ 2019 Comprehensive



Chapter 10

Enhanced Database Techniques

Learning Objectives (1 of 2)

10.1 Understand the Purpose of a Macro

10.2 Create a Standalone Macro

10.3 Attach an Embedded Macro to an Event

10.4 Identify When to Use a Data Macro

10.5 Create an Event-Driven Data Macro

Learning Objectives (2 of 2)

10.6 Create a Named Data Macro

10.7 Understand the Fundamentals of SQL

10.8 Interpret an SQL Select Statement

10.9 Use an SQL Select Statement as a Record Source

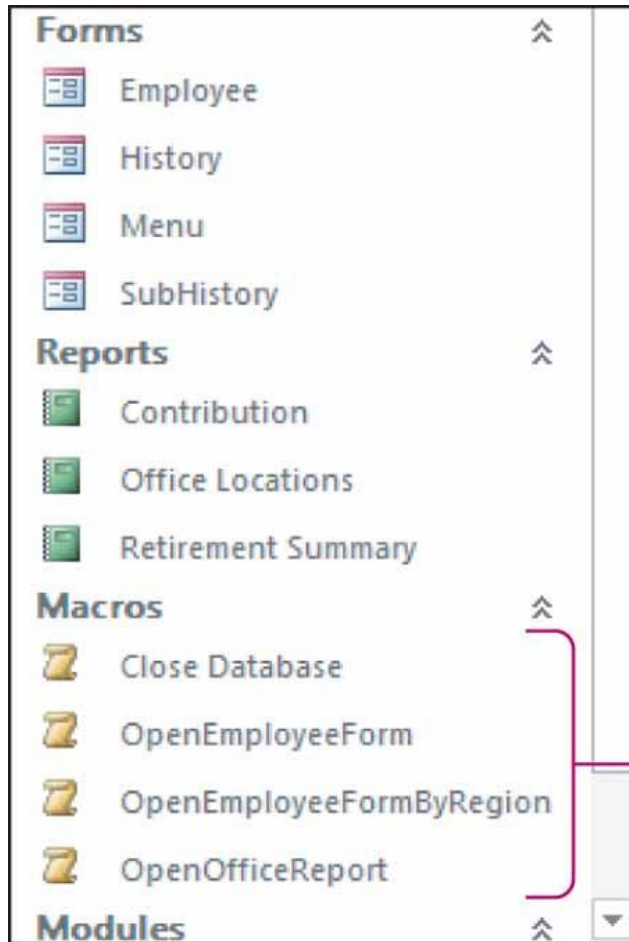
Understanding the Purpose of a Macro

(1 of 2)

- Macro—series of procedures that can be organized to automate tasks or provide user interaction
 - Standalone macro—database object created and used independent of other controls or objects
 - Embedded macro—executes when an event attached to a control or object occurs
- Event—user-initiated action

Understanding the Purpose of a Macro

(2 of 2)

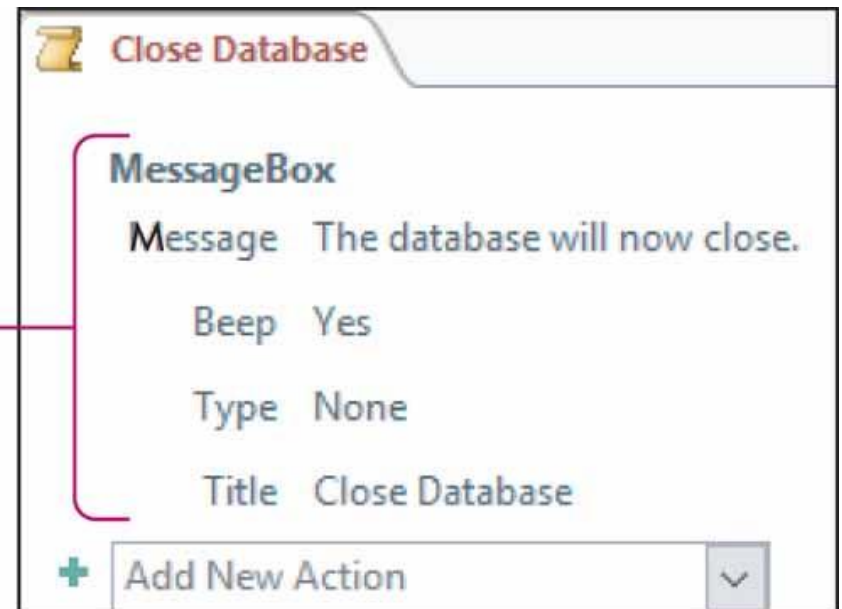


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Standalone macros display
in the Navigation Pane

Creating a Standalone Macro (1 of 2)

MessageBox has four arguments:
Message, Beep, Type, and Title



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Creating a Standalone Macro (2 of 2)

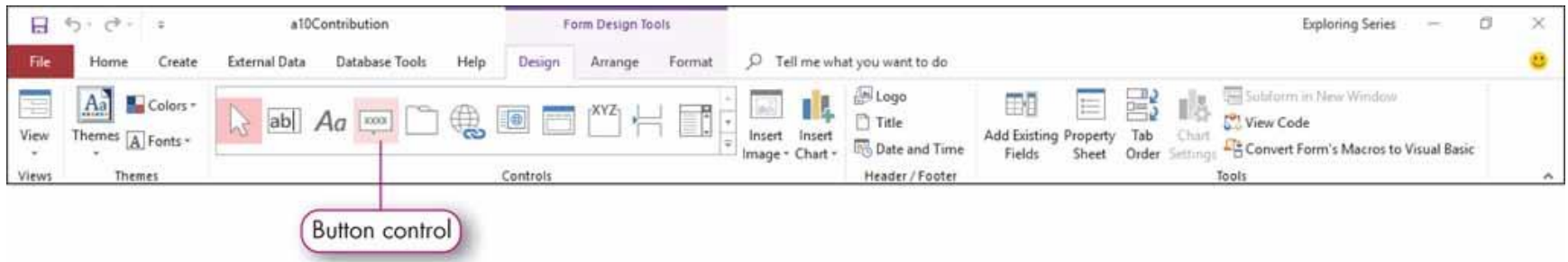
The screenshot displays the Microsoft Access Macro Builder interface. The title bar reads "Macro1". On the left, a tree view shows "OpenForm" selected. The main area contains the following fields:

- Form Name:** "Employee" (with a callout box stating "Employee form added from the Navigation Pane")
- View:** "Form"
- Filter Name:** (empty)
- Where Condition:** "="
- Data Mode:** (empty)
- Window Mode:** "Normal"

At the bottom left, there is a button labeled "Add New Action". At the bottom right, there is a link labeled "Update Parameters".

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Attaching an Embedded Macro to an Event (1 of 4)

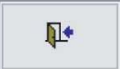


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Attaching an Embedded Macro to an Event (2 of 4)

Command Button Wizard

Sample:



What action do you want to happen when the button is pressed?

Different actions are available for each category.

Categories:	Actions:
Record Navigation	Apply Form Filter
Record Operations	Close Form
Form Operations	Open Form
Report Operations	Print a Form
Application	Print Current Form
Miscellaneous	Refresh Form Data

Cancel < Back Next > Finish

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Command Button Wizard

Sample:



Do you want text or a picture on the button?

If you choose Text, you can type the text to display. If you choose Picture, you can click Browse to find a picture to display.

☒ Text: Close Form

☐ Picture: Exit Doorway
Stop

Browse...

☐ Show All Pictures

Cancel < Back Next > Finish

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Attaching an Embedded Macro to an Event (3 of 4)

The screenshot displays a Microsoft Access form with the following sections:

- Form Header**
- Detail**
- Employee Information**
 - Social Security Number: SSN
 - Last Name: LastName
 - First Name: FirstName
 - Active Employee: ☒
 - 401K Contribution: 401K
 - Date Hired: HireDate
- Contribution Source Detail**
- Form Footer**
- YTD Summary**
 - Gross Pay: m) [txtSumGross]
 - Employee: 401KEmployee
 - Company Match: Sum401KMatch
 - YTD Contributions: um401KTotal

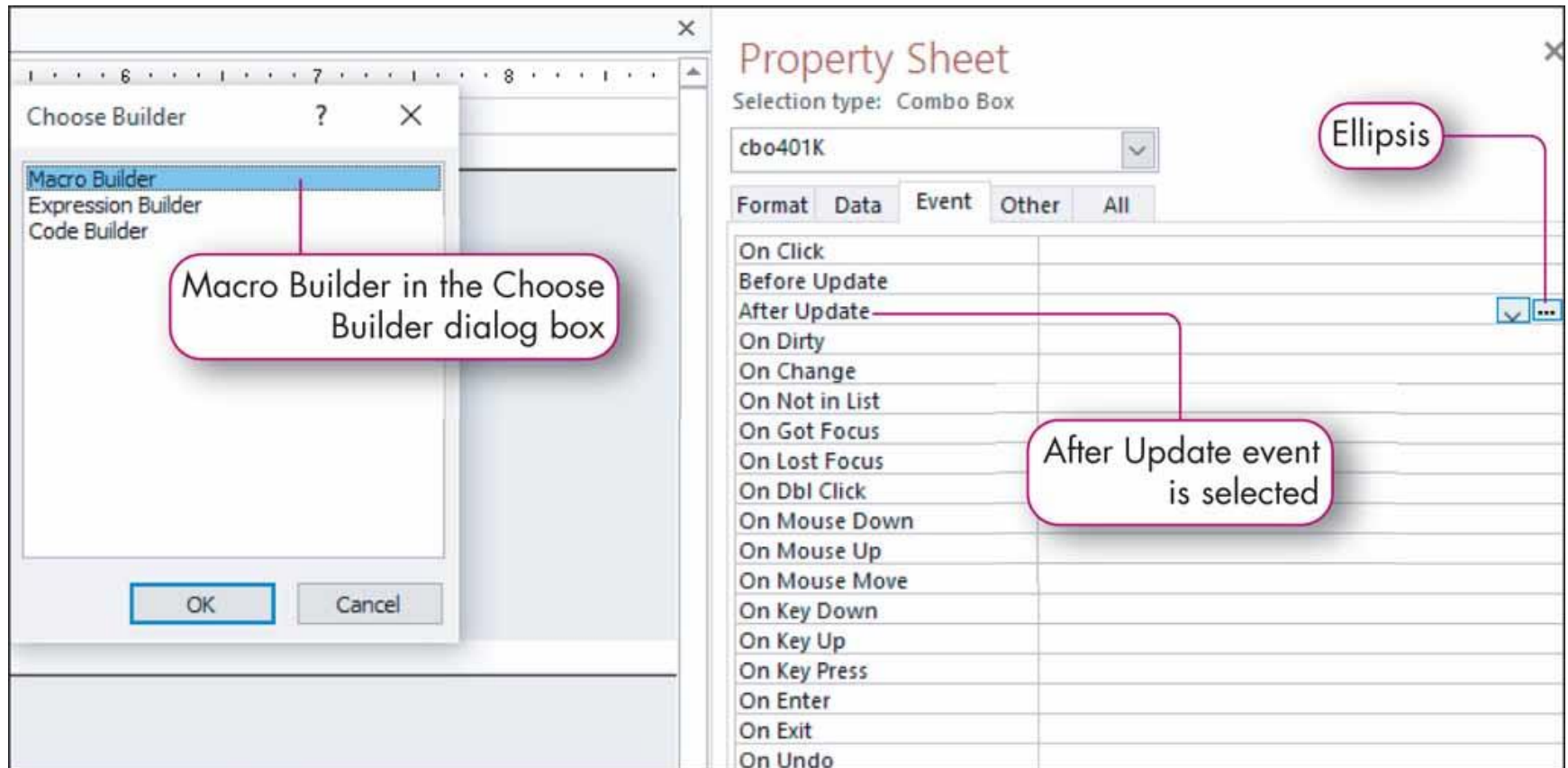
The **Property Sheet** is open for the **Close...** command button control. The **Event** tab is selected, showing the **On Click** event with the **cmdClose** selection type and the **[Event Procedure]** macro attached.

Callouts in the image:

- Command button Property Sheet
- Embedded macro attached to On Click event
- Command button control

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Attaching an Embedded Macro to an Event (4 of 4)



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Identifying When to Use a Data Macro

- Data macros
 - Used to validate and ensure the accuracy of data in a table
 - Can only be associated with table events
- Table events—when users enter, edit, and delete table data
- Event-driven data macros—programmed to run before or after a table event occurs

Creating an Event-Driven Data Macro

The screenshot shows the Microsoft Access interface. The 'Design' ribbon is active, and the 'Table Tools' group is expanded. The 'Create Data Macros' button is highlighted with a callout box. The 'Contribution' table is displayed in the lower pane, showing fields and their data types.

Field Name	Data Type
SSN	Short Text
PayDate	Date/Time
GrossPay	Currency
401KEmployee	Currency
401KMatch	Currency
401KTotal	Currency

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Creating a Named Data Macro (1 of 2)

The screenshot displays the Microsoft Access interface in design view for the 'Employee' table. The table structure is as follows:

Field Name	Field Type
SSN	Short Text
Number	Number
Gender	Date/Time
LastName	Number
FirstName	Currency
Address	Number
ZipCode	Number
JobCode	Currency
HireDate	Number
OfficeLocation	Currency
Salary	Number
401K	Yes/No
Active	

The 'Create Data Macros' menu is open, showing options: After Insert, After Update, After Delete, Before Delete, Before Change, Create Named Macro, and Edit Named Macro. A callout box titled 'Create Named Macro' explains: 'Create a set of automated steps that add or change data in your tables.'

A callout box points to the table design, stating: 'Design view of the Employee table'.

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Creating a Named Data Macro (2 of 2)

Employee Employee : DataMacro-Email

Parameters
Name

SendEmail — SendEmail action

To DBAdmin@ACME.net

Cc

Bcc

Subject Employee table update

Body An employee record has just been updated.

+ Add New Action

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Employee Employee : After Update :

RunDataMacro

Macro Name Employee.DataMacro-Email

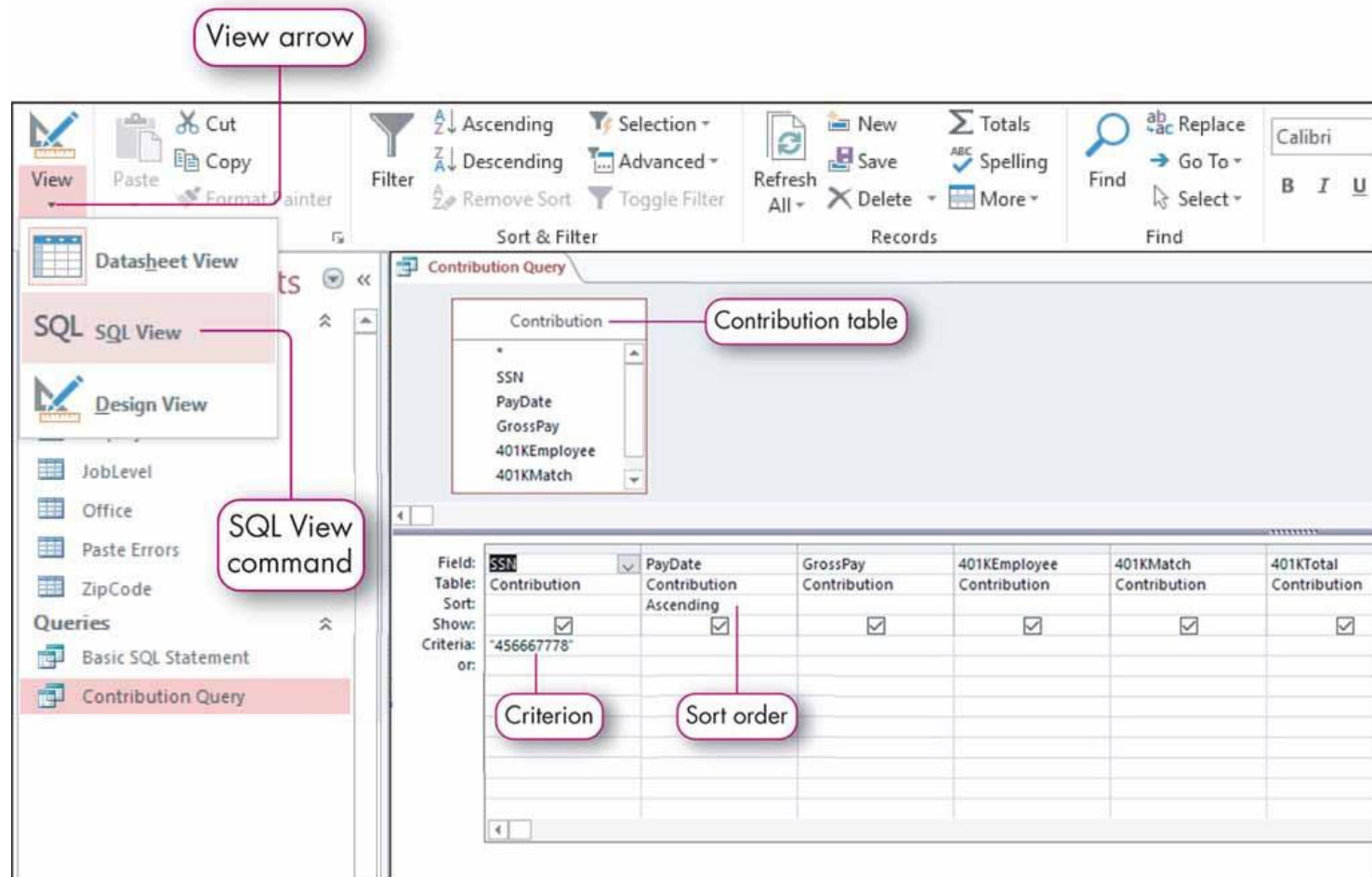
+ Add New Action

After Update event of the Employee table

Named data macro is attached using RunDataMacro action

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Structured Query Language (1 of 2)



Structured Query Language (2 of 2)

 Contribution Query
<pre>SELECT Contribution.SSN, Contribution.PayDate, Contribution.GrossPay, Contribution.[401KEmployee], Contribution.[401KMatch], Contribution.[401KTotal] FROM Contribution WHERE (((Contribution.SSN)="456667778")) ORDER BY Contribution.PayDate;</pre>

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Keyword	Purpose
SELECT	Specifies the fields to include in the query.
FROM	Specifies the table(s) or query (or queries) where the fields can be found.
WHERE	Sets the criteria for the rows in the results.
ORDER BY	Determines how the rows will be sorted.

Using an SQL SELECT Statement as a Record Source (1 of 2)

The screenshot displays a software interface with a table titled 'Contribution' and a 'Property Sheet' panel on the right. The table contains 10 rows of data with columns: SSN, PayDate, GrossPay, 401KEmployee, 401KMatch, and 401KTotal. The 'Property Sheet' panel shows the 'Record Source' set to 'Contribution'. A callout box points to the 'Record Source' field with the text: 'Contribution table is record source for report'.

SSN	PayDate	GrossPay	401KEmployee	401KMatch	401KTotal
112-23-3334	1/15/2021	\$4,833.33	\$435.00	\$152.25	\$587.25
122-23-3334	1/15/2021	\$6,416.67	\$320.83	\$16.04	\$336.88
123-33-4445	1/15/2021	\$7,250.00	\$435.00	\$217.50	\$652.50
223-34-4445	1/15/2021	\$6,750.00	\$135.00	\$27.00	\$162.00
233-34-4445	1/15/2021	\$4,520.83	\$135.63	\$6.78	\$142.41
234-44-5556	1/15/2021	\$7,300.00	\$0.00	\$0.00	\$0.00
334-45-5556	1/15/2021	\$7,333.33	\$293.33	\$146.67	\$440.00
344-45-5556	1/15/2021	\$5,333.33	\$0.00	\$0.00	\$0.00
345-55-6667	1/15/2021	\$4,583.33	\$91.67	\$18.33	\$110.00
455-56-6667	1/15/2021	\$4,516.67	\$180.67	\$9.03	\$189.70

Property Sheet
Selection type: Report

Report

Format Data Event Other All

Record Source Contribution

Filter

Filter On Load No

Order By

Order By On Load Yes

Allow Filters Yes

Contribution table is record source for report

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Using an SQL SELECT Statement as a Record Source (2 of 2)

The screenshot displays the Microsoft Access interface. On the left, a report titled 'Contribution' is shown in Design View. The report has a header section with a title 'Contribution' and a page header section with fields: SSN, PayDate, GrossPay, 401KEmployee, 401KMatch, and 401KTotal. Below the page header is a detail section with the same fields. At the bottom, there is a page footer with a formula: '=Page * & [Page] & " of " & [Pages]' and a report footer with a formula: '=Sum([401KTo...'. On the right, the 'Property Sheet' is open for the 'Contribution' report. The 'Record Source' property is set to an SQL statement: 'SELECT Contribution.SSN, Contribution.PayC...'. A callout box points to this property with the text 'Record source is an SQL statement'.

Contribution

Report Header

Contribution

Page Header

SSN PayDate GrossPay 401KEmployee 401KMatch 401KTotal

Detail

SSN PayDate GrossPay 401KEmployee 401KMatch 401KTotal

Page Footer

=Page * & [Page] & " of " & [Pages]

Report Footer

=Sum([401KTo

Property Sheet

Selection type: Report

Report

Format Data Event Other All

Record Source SELECT Contribution.SSN, Contribution.PayC...

Filter

Filter On Load No

Order By

Order By On Load Yes

Allow Filters Yes

Record source is an SQL statement

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