Activity 2.3 Creating a Table; Setting the Primary Key Field; Modifying Properties in Design View

As an alternative to creating a table in Datasheet view, you can create a table in Design view. In Design view, you can set the field's properties the way you need them right away. When you use Design view, Access does not add the *ID* field to the new table automatically. As mentioned previously, a table should have a primary key field, or a field used to store a unique value for each record. Examples of fields suitable for a primary key field are those that store an identification value such as an employee number, a part number, a vendor number, or a customer number. If, when you are working on a table's design, you do not have any data suited to a primary key field, create a field labeled *ID* and set the data type to *AutoNumber*. When creating a table in Datasheet view, the Properties group on the Table Tools Fields tab contains buttons and an option for modifying or adding field properties. In Design view, the *Field Properties* section contains property boxes with options for adding or modifying field properties.

Worldwide Enterprises

What You Will Do Rhonda Trask, human resources manager, has asked you to work in the employees database. Rhonda would like you to create a new table in the file in which to store the employee benefit plan information. You decide to create this table in Design view and add and modify field properties.

Tutorial Creating a Table in Design View

Tutorial Setting the Primary Key Field

Tutorial Modifying Field Properties in Design View

1. Open **2-WEEmployees.accdb** and enable the contents, if necessary.

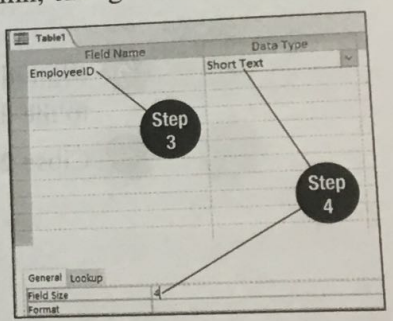
   This database is similar to the database you worked with in the Skills Review for Section 1. This version of the database has additional records added.

2. Click the Create tab and then click the Table Design button in the Tables group.

3. With the insertion point positioned in the *Field Name* column in the first row, type EmployeeID and then press the Enter key or the Tab key to move to the next column.

4. With *Short Text* already entered in the *Data Type* column, change the default field size from *255* to *4* by double-clicking the number *255* in the *Field Size* property box in the *Field Properties* section and then typing 4.

   The *EmployeeID* field will contain numbers; however, leave the data type defined as *Short Text* since no calculations will be performed with employee numbers. Notice the information that displays in the bottom right corner of the Design window. Access displays information about the field in which the insertion point is positioned.

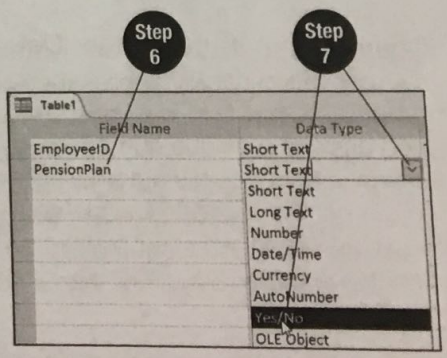


5. Click in the *Description* column to the right of *Short Text*, type Type the four-digit employee number, and then press the Enter key to move to the second row.

6. Type PensionPlan in the *Field Name* column in the second row and then press the Enter key.

7. Click the arrow at the right of the *Data Type* column and then click *Yes/No* at the drop-down list.

   In this field, the data is only one of two entries: *Yes* if the employee is enrolled in the pension plan or *No* if the employee is not.



In Brief

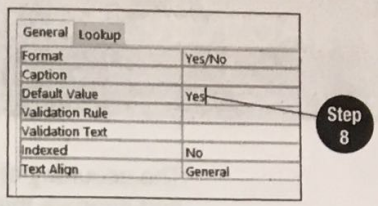
Create Table in Design View

1. Click Create tab.
2. Click Table Design button.
3. Type field names, change data types, add descriptions, or modify other field properties.
4. Assign primary key field.
5. Click Save button.
6. Type table name.
7. Click OK.

Assign Primary Key Field

1. Open table in Design view.
2. Make primary key field active.
3. Click Primary Key button.
4. Save table.

8. Change the default value from *No* to *Yes* by double-clicking *No* in the *Default Value* property box in the *Field Properties* section and then typing Yes.



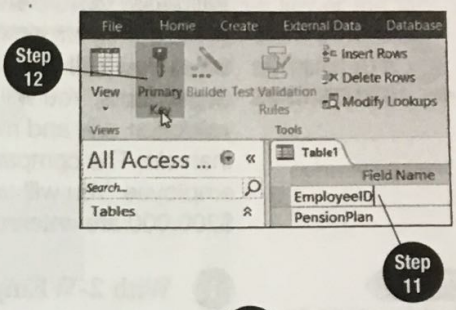
9. Click in the *Description* column to the right of *Yes/No*, type Click or press spacebar for Yes; leave empty for No, and then press the Enter key.

10. Enter the remaining field names, data types, and descriptions as shown in Figure 2.2 by completing steps similar to those in Steps 3–9. Change the default value for the *HealthPlan* field to *Yes*.

11. Click anywhere in the *EmployeeID* field name.

12. Click the Primary Key button in the Tools group on the Table Tools Design tab.

    A key icon appears in the field selector bar to the left of *EmployeeID*, indicating the field is the primary key field.



13. Click the Save button on the Quick Access Toolbar.

14. At the Save As dialog box, type Benefits in the *Table Name* text box and then press the Enter key or click OK.

15. Close the Benefits table.

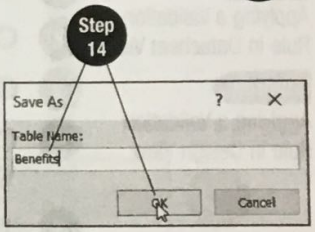


Figure 2.2 Design View Table Entries

Table1

Field Name	Data Type	Description (Optional)
EmployeeID	Short Text	Type the four-digit employee number
PensionPlan	Yes/No	Click or press spacebar for Yes; leave empty for No
DentalPlan	Yes/No	Click or press spacebar for Yes; leave empty for No
HealthPlan	Yes/No	Click or press spacebar for Yes; leave empty for No
Dependents	Number	Type the number of dependents related to this employee
LifeInsce	Currency	Type the amount of life insurance subscribed by this employee

Check Your Work Compare your work to the model answer to ensure that you have completed the activity correctly.

In Addition

Using the More Button on the Table Tools Fields tab in Datasheet View

Click the More Fields button to choose from a list of other field data types and fields that have predefined field properties. Scroll down the More Fields drop-down list to the *QuickStart* category. Options in this category allow you to add a group of related fields in one step. For example, click *Address* to add five new fields: *Address*, *City*, *StateProvince*, *ZIPPostal*, and *CountryRegion*.

Activity 2.4 Applying Validation Rules

The accuracy of data in a table is extremely important. To control the data entered in a field and improve the accuracy of the data, apply a validation rule. For example, a validation rule can be applied that specifies amounts entered in a field must be less than a certain number. Apply a validation rule to a field in Datasheet view with the Validation button in the Field Validation group on the Table Tools Fields tab or with the *Validation Rule* property box in Design view. A validation message can be included that displays if the data entered in a field violates the validation rule. Use the Validation button in Datasheet view or the *Validation Text* property box in Design view to create a validation message.

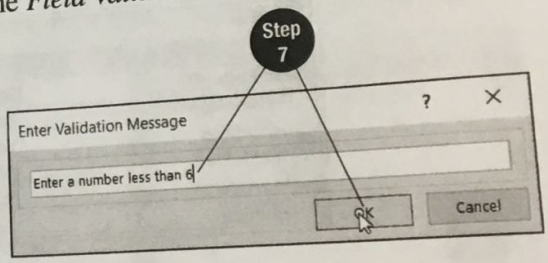
Worldwide Enterprises

What You Will Do Worldwide Enterprises offers health benefits to a maximum of five dependents. You will use the Validation button on the Table Tools Fields tab to add a validation rule and message indicating that the number in the *Dependents* field must be less than six. The company offers life insurance in amounts up to a maximum of $200,000 per employee. You will use field properties in Design view to ensure that no amounts greater than $200,000 are entered in the *LifeIns* field.

Tutorial Applying a Validation Rule in Datasheet View

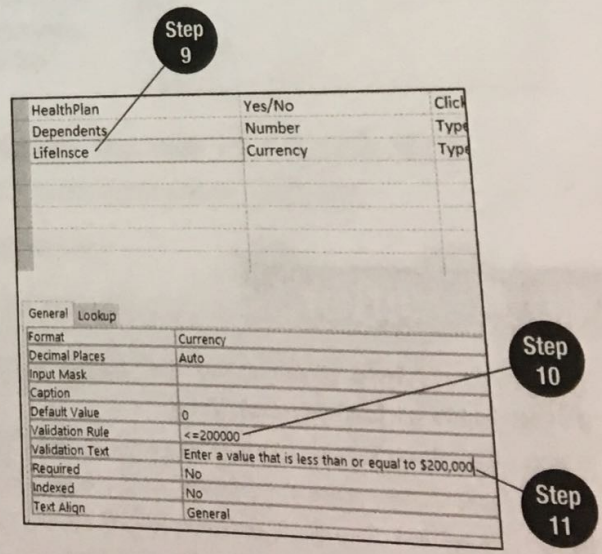
Tutorial Applying a Validation Rule in Design View

1. With **2-WEmployees.accdb** open, open the Benefits table in Datasheet view.
2. Click *Dependents* in the header row.
3. Click the Table Tools Fields tab.
4. Click the Validation button in the Field Validation group and then click the *Field Validation Rule* option.
5. Type <6 in the *Expression Builder* text box and then click OK.
6. Click the Validation button and then click the *Field Validation Message* option.
7. Type Enter a number less than 6 in the text box in the Enter Validation Message dialog box and then click OK.



8. Click the View button in the Views group to switch to Design view.
9. Click *LifeInsce* in the *Field Name* column to display the associated field properties.
10. Click in the *Validation Rule* property box, type <=200000, and then press the Enter key.

    Pressing the Enter key after typing the validation rule moves the insertion point to the *Validation Text* property box. If an invalid syntax error displays, check your typing. Do not type a dollar sign or comma in the validation rule statement. Also, make sure you have the correct less-than symbol (<) and equals symbol (=) and that the order is <=.



11. Type Enter a value that is less than or equal to $200,000 and then press the Enter key.

In Brief

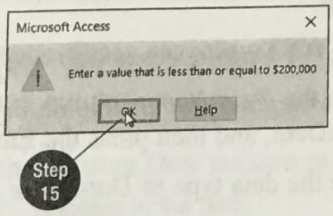
Create Validation Rule
1. Open table in Design view.
2. Click in field row from which you want to create rule.
3. Click in *Validation Rule* property box.
4. Type statement.
5. Click in *Validation Text* property box.
6. Type error message.
7. Click Save.

12. Click the Save button.
13. Click the View button in the Views group to switch to Datasheet view.
14. Add the following record to the table:

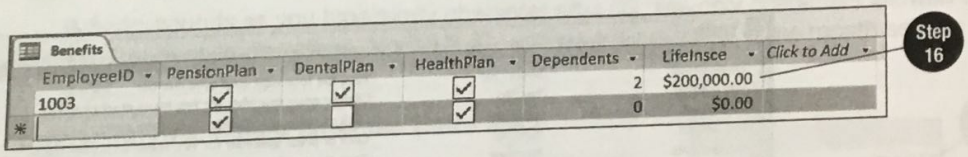
EmployeeID	1003
PensionPlan	Yes
DentalPlan	Yes
HealthPlan	Yes
Dependents	2
LifeInsce	210000

When you enter *210000* into the *LifeInsce* field and then press the Enter key or the Tab key, Access displays an error message. The text in the error message is the text you entered in the *Validation Text* property box.

15. Click OK at the Microsoft Access error message.



16. Delete *210000*, type 200000, and then press the Enter key.



17. Close the Benefits table.

Check Your Work Compare your work to the model answer to ensure that you have completed the activity correctly.

In Addition

Understanding Other Types of Validation Rules

Validation rules should be created whenever possible to avoid data entry errors. The examples at the right illustrate various ways to use a validation rule to verify data.

Field Name	Validation Rule	Data Check
CustomerNo	>1000 And <1100	Limits customer numbers to 1001 through 1099.
CreditLimit	<=5000	Restricts credit limits to values of 5000 or less.
State	"CA"	Only the state of California is accepted.
Country	"CA" Or "US"	Only the United States or Canada is accepted.
OrderQty	>=25	Quantity ordered must be a minimum of 25.

Activity 2.5 Creating Input Masks; Formatting a Field

An input mask displays a pattern in a table or form indicating how data is to be entered into a field. For example, an input mask in a telephone number field that displays (___)___-____ indicates to the user that a three-digit area code is to be entered in front of all telephone numbers. Input masks ensure that data is entered consistently in tables. In addition to specifying the position and number of characters in a field, you can create masks that restrict the data entered to digits, letters, or characters, and specify whether or not each digit, letter, or character is required or optional. Create an input mask in Design view with the *Input Mask* property box. Use the *Format* property box to control how the data is displayed in the field after it has been entered.

Worldwide Enterprises

What You Will Do You will create a new field in the Benefits table for pension plan eligibility dates and include an input mask and format property in the field.

Tutorial Creating an Input Mask

1. With **2-WEEmployees.accdb** open, open the Benefits table in Design view.
2. Click in the *Field Name* column in the blank row below *LifeInsce*, type PensionDate, and then press the Enter key.
3. Change the data type to *Date/Time* and then press the Enter key.
4. Type Type date employee is eligible for pension plan in the format dd-mmm-yy (example: 31-Dec-18).

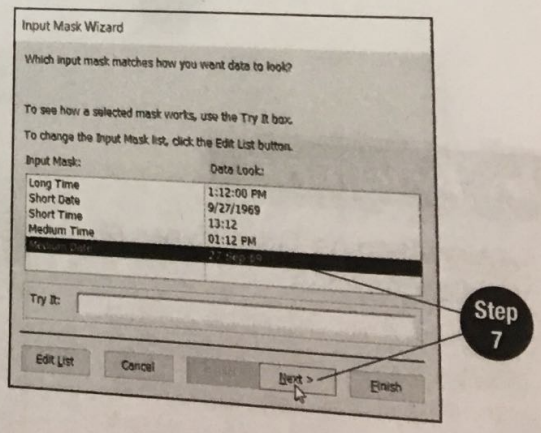
Benefits

Field Name	Data Type	Description (Optional)
EmployeeID	Short Text	Type the four-digit employee number
PensionPlan	Yes/No	Click or press spacebar for Yes; leave empty for No
DentalPlan	Yes/No	Click or press spacebar for Yes; leave empty for No
HealthPlan	Yes/No	Click or press spacebar for Yes; leave empty for No
Dependents	Number	Type the number of dependents related to this employee
LifeInsce	Currency	Type the amount of life insurance subscribed by this employee
PensionDate	Date/Time	Type date employee is eligible for pension plan in the format dd-mmm-yy (example: 31-Dec-18)

Step 2 Step 3 Step 4

5. Click the Save button.
6. With the *PensionDate* field active, click in the *Input Mask* property box in the *Field Properties* section and then click the Build button ... at the right side of the box.
7. Click *Medium Date* at the first Input Mask Wizard dialog box and then click the Next button.

   The input masks that display in the list in the first dialog box are dependent on the data type for the field for which you are creating an input mask.



8. Click the Next button at the second Input Mask Wizard dialog box.

   This dialog box displays the input mask code in the *Input Mask* text box and sets the placeholder character that displays in the field. The default placeholder is the underscore character.

In Brief

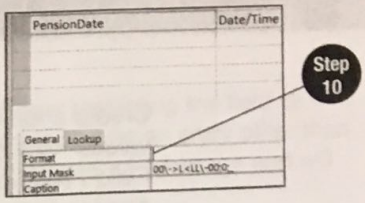
Use Input Mask Wizard

1. Open table in Design view.
2. Click in field row.
3. Click in *Input Mask* property box.
4. Click Build button.
5. Click input mask you want to create.
6. Click Next.
7. Select placeholder character.
8. Click Next.
9. Click Finish at the last wizard dialog box.
10. Click Save button.

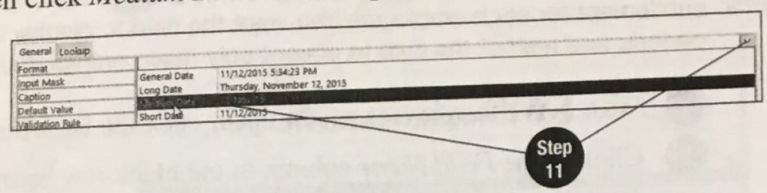
9. Click the Finish button at the last Input Mask Wizard dialog box to complete the entry in the *Input Mask* property box and then press the Enter key.

10. Click in the *Format* property box.

    The input mask controls how a date is entered into the field; however, by default, Access displays dates in the format *m/d/yyyy*. To avoid confusion, you will format the field to display the date in the same format that the input mask accepts the data.



11. Click the arrow at the right side of the property box and then click *Medium Date* at the drop-down list.



12. Click in the *Caption* property box and then type Pension Date.

13. Click the Save button and then switch to Datasheet view.

14. Click in the first field in the *Pension Date* column in the datasheet.

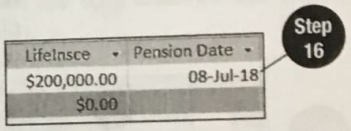
    The input mask __-___-__ appears in the field.

15. Type 080718.

    A beep sounds as you type every character after *08*. The only characters allowed after the first hyphen are letters. Notice the insertion point remains in the month section of the field.

16. Type 08jul18 and then press the Enter key.

    Notice that you did not have to type the hyphens or capitalize the first letter of the month. The greater than symbol (>) preceding *L* in the mask causes Access to convert the first character to uppercase.



17. Adjust the width of the *Pension Date* column to best fit the longest entry.

18. Close the Benefits table. Click Yes when prompted to save changes to the layout.

Check Your Work Compare your work to the model answer to ensure that you have completed the activity correctly.

In Addition

Input Mask Codes

The Input Mask Wizard is only available for fields with the Short Text or Date/Time data types. For fields with data types such as Number or Currency or for an input mask for which the wizard does not provide an option, you can create your own by entering the codes directly into the property box. At the right is a list of commonly used input mask codes.

Use	To restrict data entry to
0	digit, zero through nine, entry is required
9	digit or space, entry is not required
L	letter, A through Z, entry is required
?	letter, A through Z, entry is not required
>	all characters following are converted to uppercase
<	all characters following are converted to lowercase

Activity 2.6 Creating a Lookup List

Create a lookup field when you want to restrict the data entered into the field to a list of values from an existing table or a list of values that you create. The Lookup tab in the *Field Properties* section in Design view contains the options used to create a lookup field. Access includes the Lookup Wizard to facilitate entering the lookup settings.

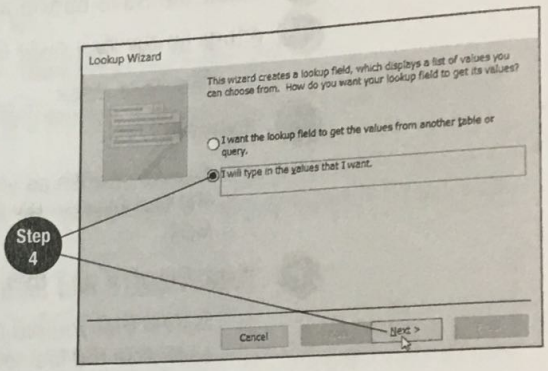
Worldwide Enterprises

What You Will Do You will create a new field in the Benefits table to store vacation entitlement for each employee. You want the field to display a drop-down list of vacation periods and restrict the field to accept only those entries that match items in the list.

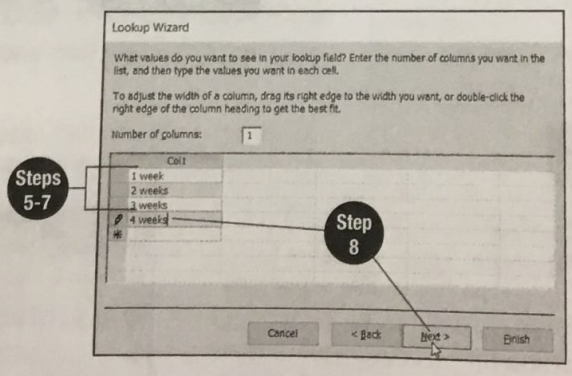
Tutorial Creating a Lookup Field

1. With **2-WEEmployees.accdb** open, open the Benefits table in Design view.
2. Click in the *Field Name* column in the blank row below *PensionDate*, type Vacation, and then press the Enter key.
3. Click the arrow at the right of the *Data Type* column and then click *Lookup Wizard* at the drop-down list.
4. At the first Lookup Wizard dialog box, click the *I will type in the values that I want* option and then click the Next button.

   If you press the Enter key by mistake and find yourself at the next step in the Lookup Wizard, click the Back button to return to the previous dialog box.



5. Click in the blank row below *Col1*, type 1 week, and then press the Tab key.
6. Type 2 weeks and then press the Tab key.
7. Type 3 weeks and then press the Tab key.
8. Type 4 weeks and then click the Next button.



9. Click the Finish button in the last Lookup Wizard dialog box to accept the default label *Vacation*. No entry is required in the *Description* column.

In Brief

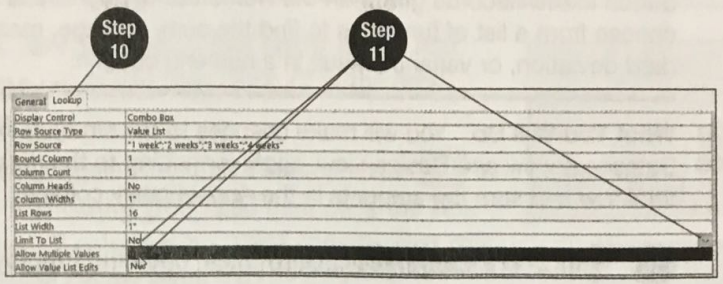
Create List of Values Using Lookup Wizard

1. Open table in Design view.
2. Type field name and press Enter.
3. Change data type to *Lookup Wizard*.
4. Click *I will type in the values that I want*.
5. Click Next.
6. Type field values in *Col1* column.
7. Click Next.
8. Click Finish.
9. Click Save.

10. Click the Lookup tab in the *Field Properties* section and then view the entries made to each property by the Lookup Wizard.

11. Click in the *Limit To List* property box, click the arrow that appears, and then click *Yes*.

    By changing the *Limit To List* property to *Yes*, you are further restricting the field to only those items in the drop-down list. If someone attempts to type an entry other than *1 week*, *2 weeks*, *3 weeks*, or *4 weeks*, Access will display an error message and will not store the data.



12. Click in the *Allow Value List Edits* property box, click the arrow that appears, and then click *No*.

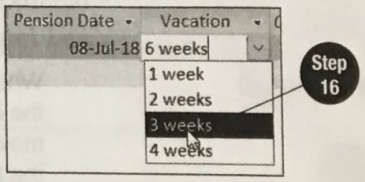
    You want to make sure that changes to the list that you created are not allowed by someone using the table or a form.

13. Click the Save button and then click the View button to switch to Datasheet view.

14. If necessary, scroll right in the table, click in the first field in the *Vacation* column, type 6 weeks, and then press the Enter key.

15. Click OK at the message that displays informing you that the text entered isn't an item in the list.

16. Click *3 weeks* at the drop-down list and then press the Enter key.



17. Display the table in Print Preview. Change to landscape orientation and then print the table.

18. Close the Benefits table.

Check Your Work Compare your work to the model answer to ensure that you have completed the activity correctly.

In Addition

Looking Up Data from Another Table

Items in a drop-down list can also be generated by specifying an existing field in another table or query. To do this, click the Next button at the first Lookup Wizard dialog box to accept the default setting *I want the lookup field to get the values from another table or query*. In the remaining wizard dialog boxes, you choose the table or query and the field you want to use, choose the sort order for displaying the field values, adjust the column width for the lookup list, select the value to store, and assign a label to the column. Creating field entries using this method ensures that data is consistent between tables and eliminates duplicate typing of information that can lead to data errors. For example, in a database used to store employee information, one table could be used to enter employee numbers and then the remaining tables look up the employee number by scrolling a list of employee names.

Activity 2.7 Managing Fields; Formatting Data; Inserting a Total Row

Fields in Datasheet view can be inserted, moved, deleted, hidden, or frozen. Perform most field management tasks with buttons in the Records group on the Home tab. In Design view, fields can be inserted, moved, and deleted. Apply formatting to data in a table in Datasheet view with buttons and options in the Text Formatting group on the Home tab. Use the Totals button in the Records group on the Home tab to add a total row to a datasheet and then choose from a list of functions to find the sum, average, maximum, minimum, count, standard deviation, or variance result in a numeric column.

Worldwide Enterprises

What You Will Do You will make changes to the structure of the Employees table in Datasheet view and Design view, apply formatting to the data in the table, and then add a total row and sum the amounts in the *AnnualSalary* column.

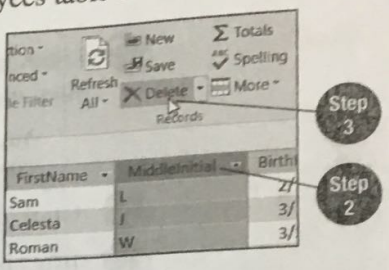
Tutorial Managing Fields in Datasheet View

Tutorial Managing Fields in Design View

Tutorial Formatting Table Data

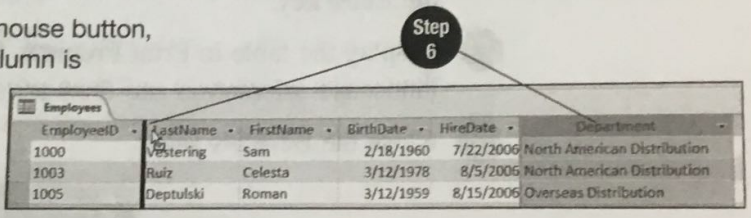
Tutorial Inserting a Total Row

1. With **2-WEEmployees.accdb** open, open the Employees table in Datasheet view.
2. Click the *MiddleInitial* field column heading.
3. Click the Delete button in the Records group on the Home tab.
4. At the message asking you to confirm the deletion, click Yes.
5. Select the *Department* field column by clicking the *Department* column heading.



6. Position the mouse pointer in the *Department* column heading (make sure the mouse displays as a white arrow); click and hold down the left mouse button, drag the thick, black, vertical line to the left so it is positioned between the *EmployeeID* and *LastName* field columns; and then release the mouse button.

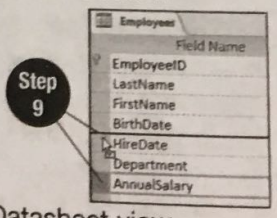
When you release the mouse button, the *Department* field column is moved between the *EmployeeID* and *LastName* field columns.



7. Click the View button to switch to Design view.

Even though the *Department* field column was moved in Datasheet view, the field remains in its original location in Design view.

8. Select the *AnnualSalary* field row by positioning the mouse pointer on the field selector bar to the left of *AnnualSalary* field row and then clicking the left mouse button.
9. Position the mouse pointer (white arrow) in the field selector bar for *AnnualSalary* field row; drag the black, horizontal line up so it displays between the *BirthDate* and *HireDate* field row; and then release the left mouse button.



The field moved in Design view remains in the original location in Datasheet view.

10. Click in a field in the *Department* row.
11. Click the Insert Rows button in the Tools group on the Table Tools Design tab.

A new blank row is inserted above the *Department* field row.

In Brief

Delete Field in Datasheet View
1. Click field name in header row.
2. Click Delete button.
3. Click Yes.

Delete Field in Design View
1. Select field row.
2. Click Delete button.
3. Click Yes.

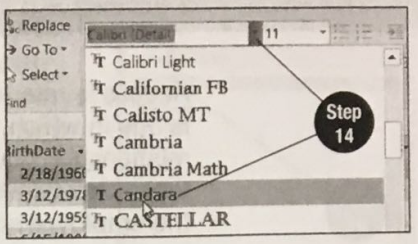
Insert Field in Design View
1. Make field active that will display after new field.
2. Click Insert Rows button.

Move Field in Datasheet View
1. Click field name in header row.
2. Drag vertical line to new position and then release button.

Move Field in Design View
1. Select field using field selector bar.
2. Drag horizontal line to new position and then release mouse button.

Insert Total Row
1. Display table in Datasheet view.
2. Click Totals button.

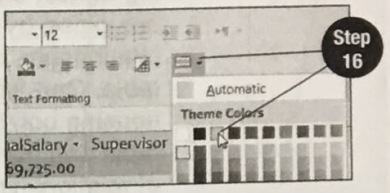
12. With the insertion point positioned in the *Field Name* column for the new row, type Supervisor and then press the Enter key. (Access will automatically assign the *Short Text* data type.)



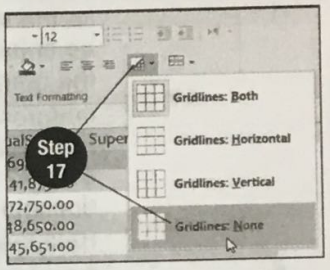
13. Click the Save button and then click the View button to switch to Datasheet view.

14. Click the *Font* option box arrow in the Text Formatting group on the Home tab, scroll down the drop-down list, and then click *Candara*.

15. Click the *Font Size* option box arrow in the Text Formatting group and then click *12* at the drop-down list.



16. Click the Alternate Row Color button arrow in the Text Formatting group and then click the *Tan, Background 2* color option (third column, first row in the *Theme Colors* section).



17. Click the Gridlines button in the Text Formatting group and then click *Gridlines: None* at the drop-down list.

18. Select the *EmployeeID* field by clicking the *EmpoyeeID* column heading.

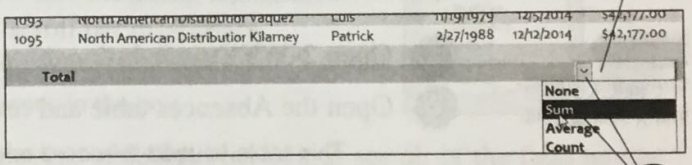
19. Click the Center button in the Text Formatting group.

20. Click the Totals button in the Records group on the Home tab.

    Access adds a row to the bottom of the table with the label *Total* at the left.

21. Click in the field in the *Total* row in the *AnnualSalary* column.

22. Click the arrow that appears at the left, click *Sum* at the drop-down list, and then click in any field in the table to deselect the total amount.



    The sum *$1,163,808.00* appears at the bottom of the *AnnualSalary* field column.

23. Automatically adjust the width of the *Department* column to best fit the longest entry.

24. Display the table in Print Preview, change to landscape orientation, and then print the table.

25. Close the Print Preview window and then close the Employees table. Click Yes when prompted to save changes.

26. Click the File tab and then click the *Close* option.

Check Your Work Compare your work to the model answer to ensure that you have completed the activity correctly.

In Addition

Working with Wide Tables

When working in a table with many columns, scrolling right can make relating to the record in which you need to make a change difficult, since descriptor field columns such as *EmployeeID* or *LastName* may have scrolled off the screen. To alleviate this problem, you can freeze columns so they do not disappear when the datasheet is scrolled right. To do this, select the columns you want to freeze, click the More button in the Records group on the Home tab, and then click *Freeze Fields*.