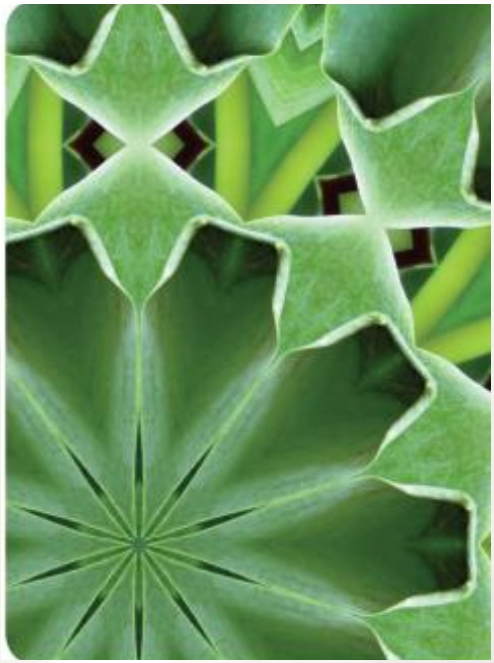
MICROSOFT®
Office 2007
Windows XP Edition

Access Tutorial 2

Building a Database and Defining Table Relationships



NEW PERSPECTIVES

FIRST COURSE

Objectives

- Learn the guidelines for designing databases and setting field properties
- View and modify field data types and formatting
- Create a table in Design view
- Define fields and specify a table's primary key
- Modify the structure of a table

Objectives

- Import data from an Excel worksheet
- Create a table by importing an existing table structure
- Delete, rename, and move fields
- Add data to a table by importing a text file
- Define a relationship between two tables

Guidelines for Designing Databases

- Identify all the fields needed to produce the required information
- Organize each piece of data into its smallest useful part
- Group related fields into tables
- Determine each table's primary key
- Include a common field in related tables
- Avoid data redundancy
- Determine the properties of each field

Guidelines for Setting Field Properties

- You must name each field, table, and other object
- Choose an appropriate data type

Data types for fields **Figure 2-4**

Data Type	Description	Field Size
Text	Allows field values containing letters, digits, spaces, and special characters. Use for names, addresses, descriptions, and fields containing digits that are not used in calculations.	0 to 255 characters; default is 255
Memo	Allows field values containing letters, digits, spaces, and special characters. Use for long comments and explanations.	1 to 65,535 characters; exact size is determined by entry
Number	Allows positive and negative numbers as field values. Numbers can contain digits, a decimal point, commas, a plus sign, and a minus sign. Use for fields that will be used in calculations, except those involving money.	1 to 15 digits
Date/Time	Allows field values containing valid dates and times from January 1, 100 to December 31, 9999. Dates can be entered in month/day/year format, several other date formats, or a variety of time formats, such as 10:35 PM. You can perform calculations on dates and times, and you can sort them. For example, you can determine the number of days between two dates.	8 bytes
Currency	Allows field values similar to those for the Number data type, but is used for storing monetary values. Unlike calculations with Number data type decimal values, calculations performed with the Currency data type are not subject to round-off error.	Accurate to 15 digits on the left side of the decimal point and to 4 digits on the right side
AutoNumber	Consists of integer values created automatically by Access each time you create a new record. You can specify sequential numbering or random numbering, which guarantees a unique field value, so that such a field can serve as a table's primary key.	9 digits
Yes/No	Limits field values to yes and no, on and off, or true and false. Use for fields that indicate the presence or absence of a condition, such as whether an order has been filled or whether an invoice has been paid.	1 character
OLE Object	Allows field values that are created in other Microsoft Windows programs as objects, such as spreadsheets and word-processing documents. These objects can be linked or embedded. Each field value is limited to a single file.	1 gigabyte maximum; exact size depends on object size
Hyperlink	Consists of text used as a hyperlink address, which can have up to four parts: the text that appears in a field or control; the path to a file or page; a location within the file or page; and text displayed as a ScreenTip.	Up to 65,535 characters total for the four parts of the Hyperlink data type
Attachment	Allows field values with one or more attached files, such as images, videos, documents, charts, and other supported files, similar to e-mail attachments. Provides greater flexibility than the OLE Object data type and uses storage space more efficiently.	2 gigabytes maximum; individual attached files cannot exceed 256 MB
Lookup Wizard	Creates a field that lets you look up a value in another table or in a predefined list of values.	Same size as the primary key field used to perform the lookup

Guidelines for Setting Field Properties

- The **Field Size property** defines a field value's maximum storage size for Text, Number, and AutoNumber fields only
  - Byte
  - Integer
  - Long Integer
  - Single
  - Double
  - Replication ID
  - Decimal

Viewing and Modifying Field Data Types and Formatting

Figure 2-5 Data type for the Customer ID field

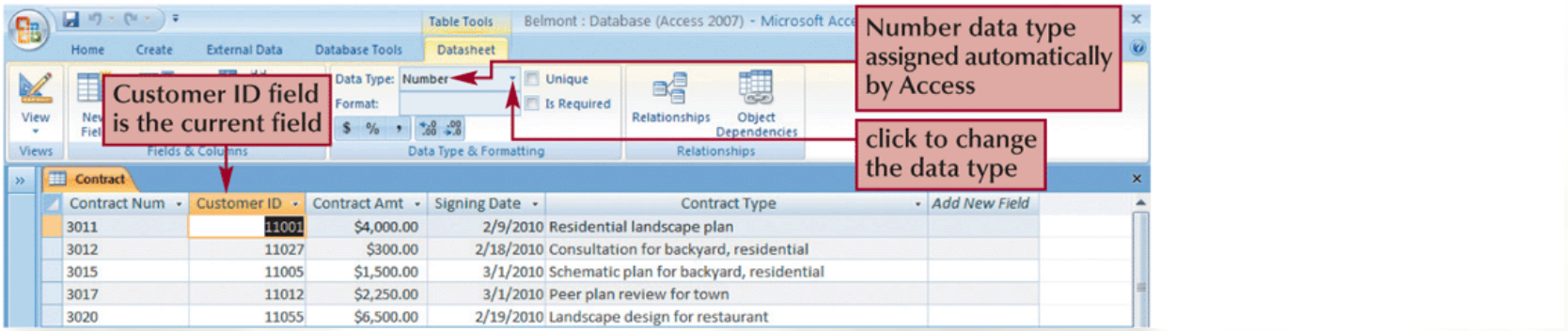
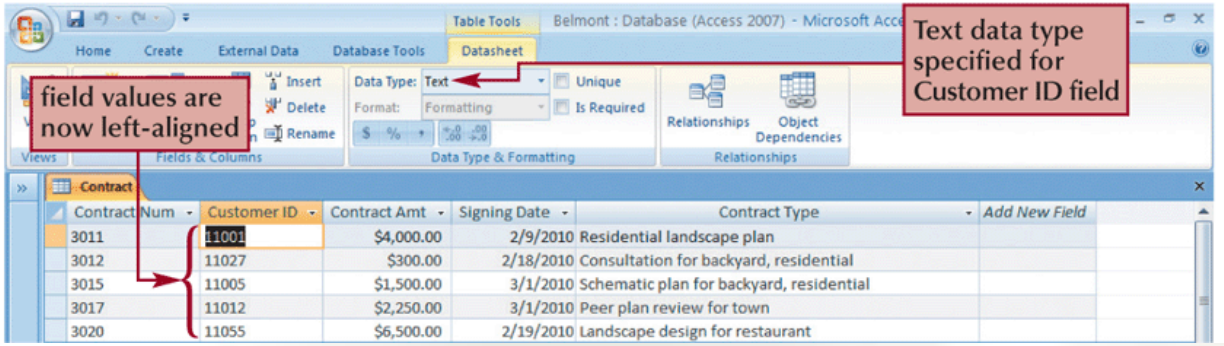
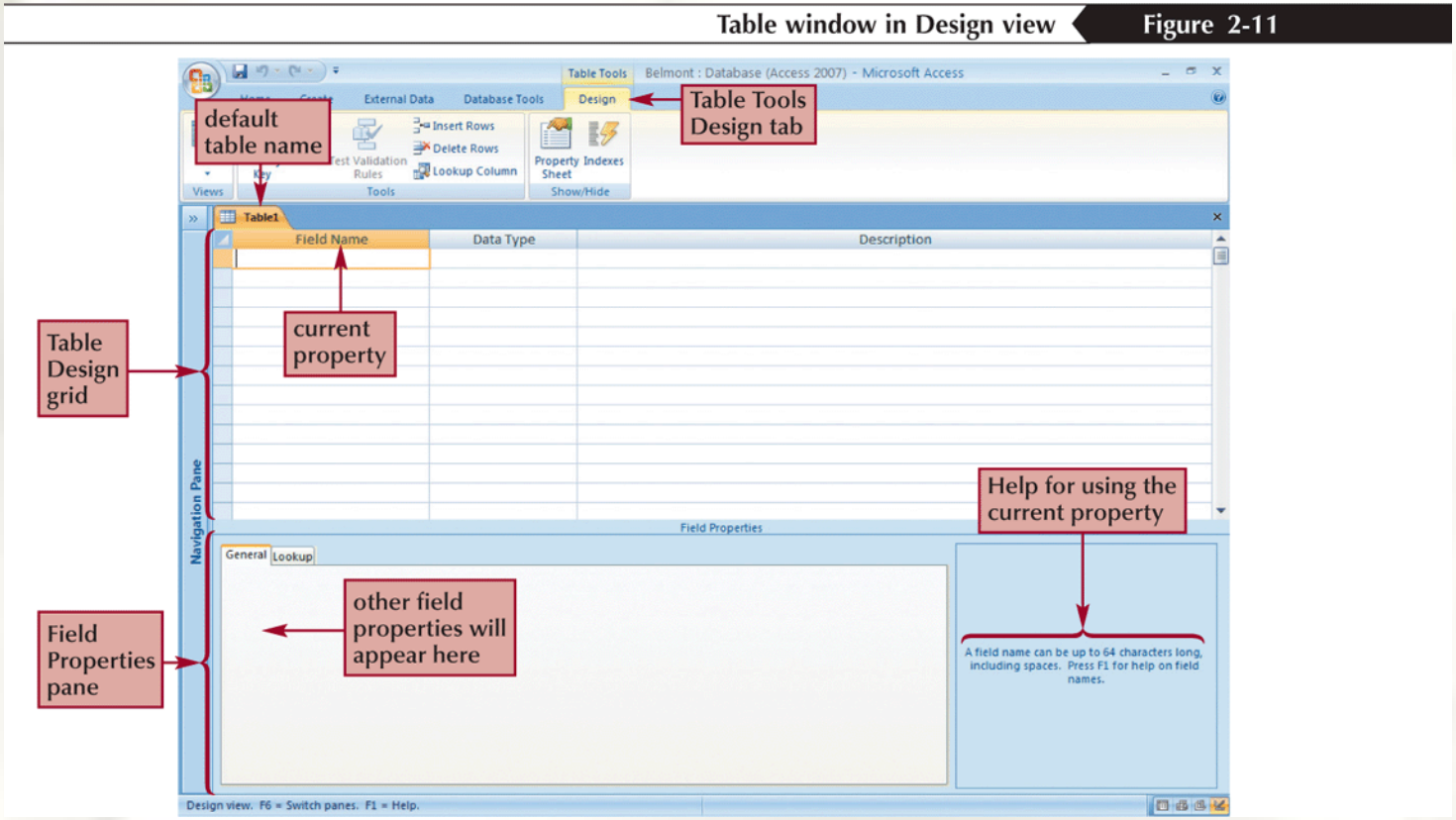


Figure 2-6 Customer ID field data type changed to Text



Creating a Table in Design View

Table window in Design view Figure 2-11

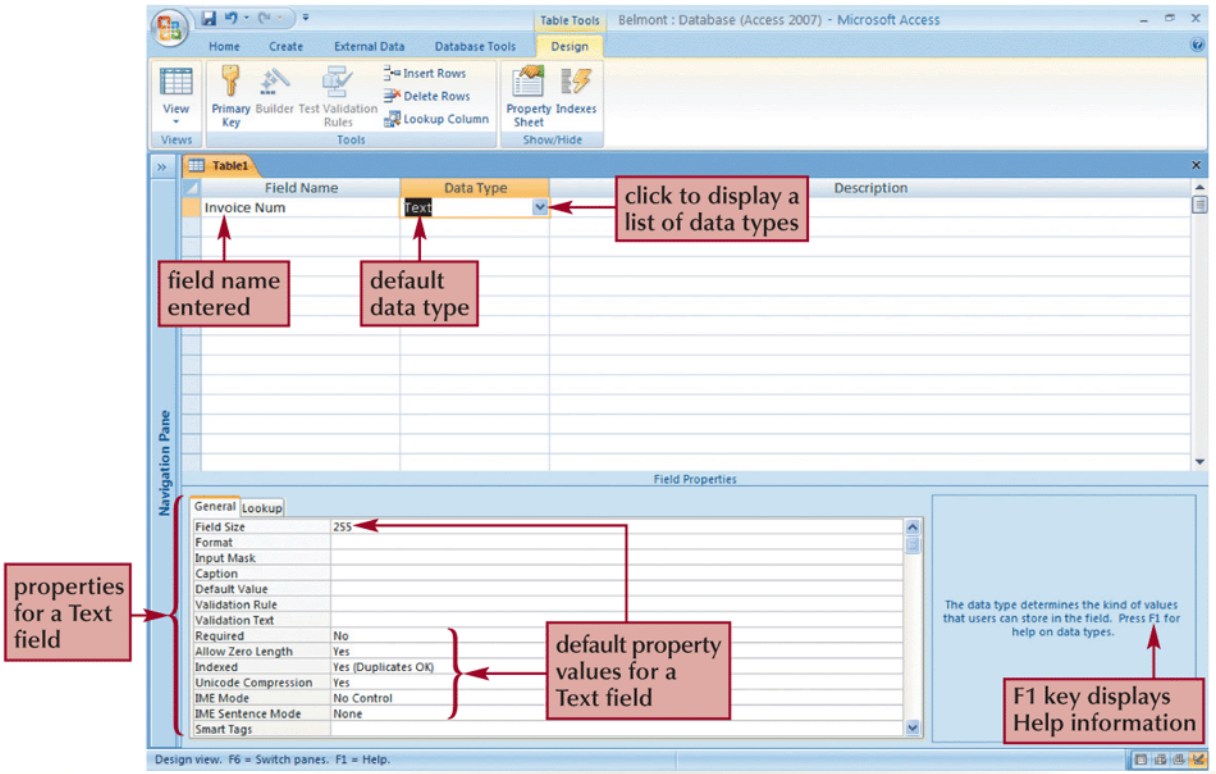


Defining a Field in Design View

- In the Field Name box, type the name for the field, and then press the Tab key
- Accept the default Text data type, or click the arrow and select a different data type for the field. Press the Tab key
- Enter an optional description for the field, if necessary
- Use the Field Properties pane to type or select other field properties, as appropriate

Defining a Field in Design View

Figure 2-12 Table window after entering the first field name

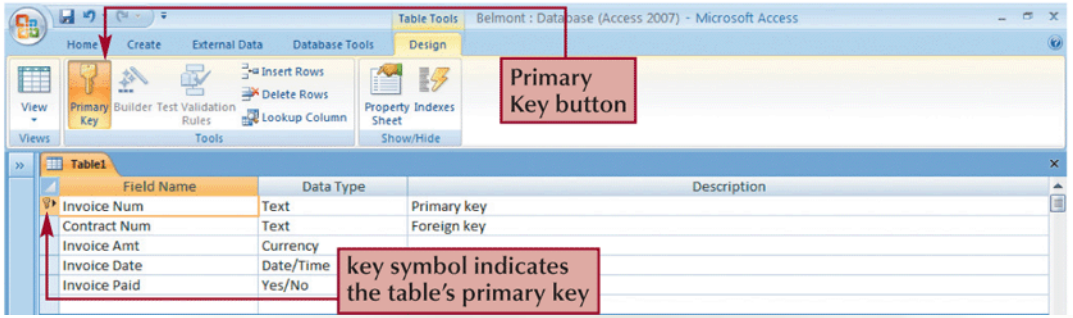


Specifying the Primary Key in Design View

- In the Table window in Design view, click in the row for the field you've chosen to be the primary key. If the primary key will consist of two or more fields, click the row selector for the first field, press and hold down the Ctrl key, and then click the row selector for each additional primary key field
- In the Tools group on the Table Tools Design tab, click the Primary Key button

Specifying the Primary Key in Design View

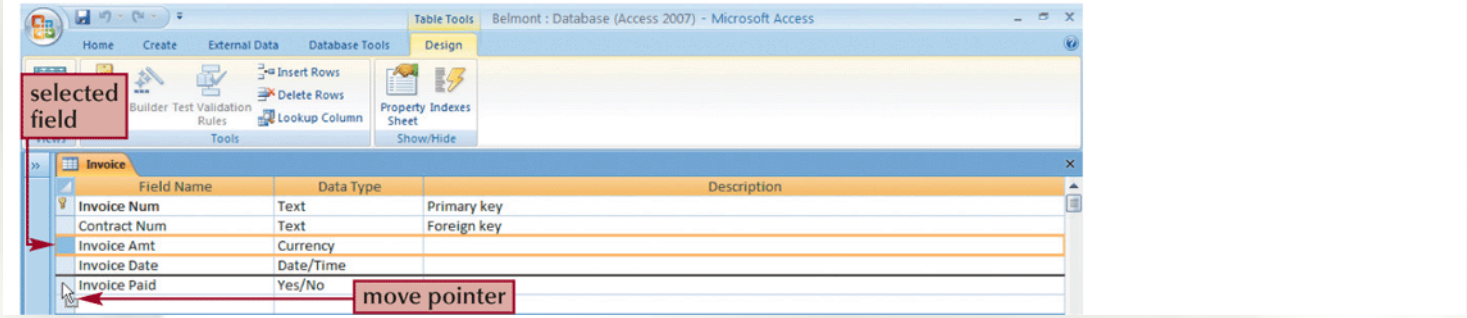
Figure 2-18 Invoice Num field selected as the primary key



Moving a Field

- To move a field, you use the mouse to drag it to a new location in the Table window in Design view

Moving the Invoice Amt field in the table structure Figure 2-19

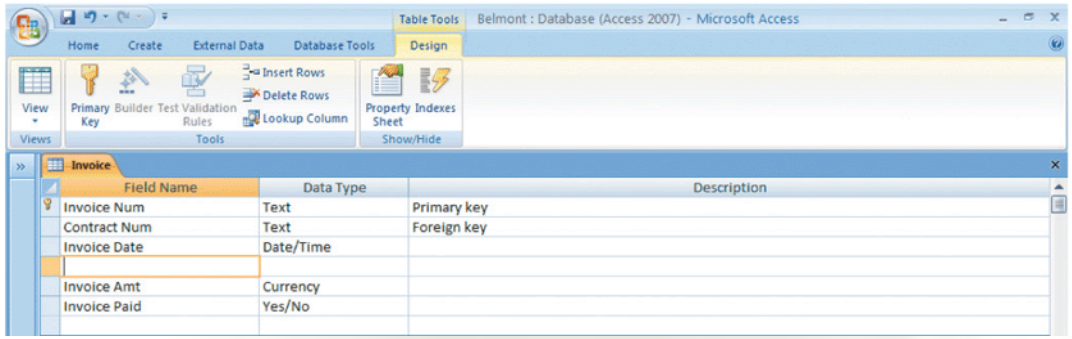


Adding a Field Between Two Existing Fields

- In the Table window in Design view, select the row for the field above which you want to add a new field
- In the Tools group on the Table Tools Design tab, click the Insert Rows button
- Define the new field by entering the field name, data type, optional description, and any property specifications

Adding a Field Between Two Existing Fields

Figure 2-20 Table structure after inserting a row

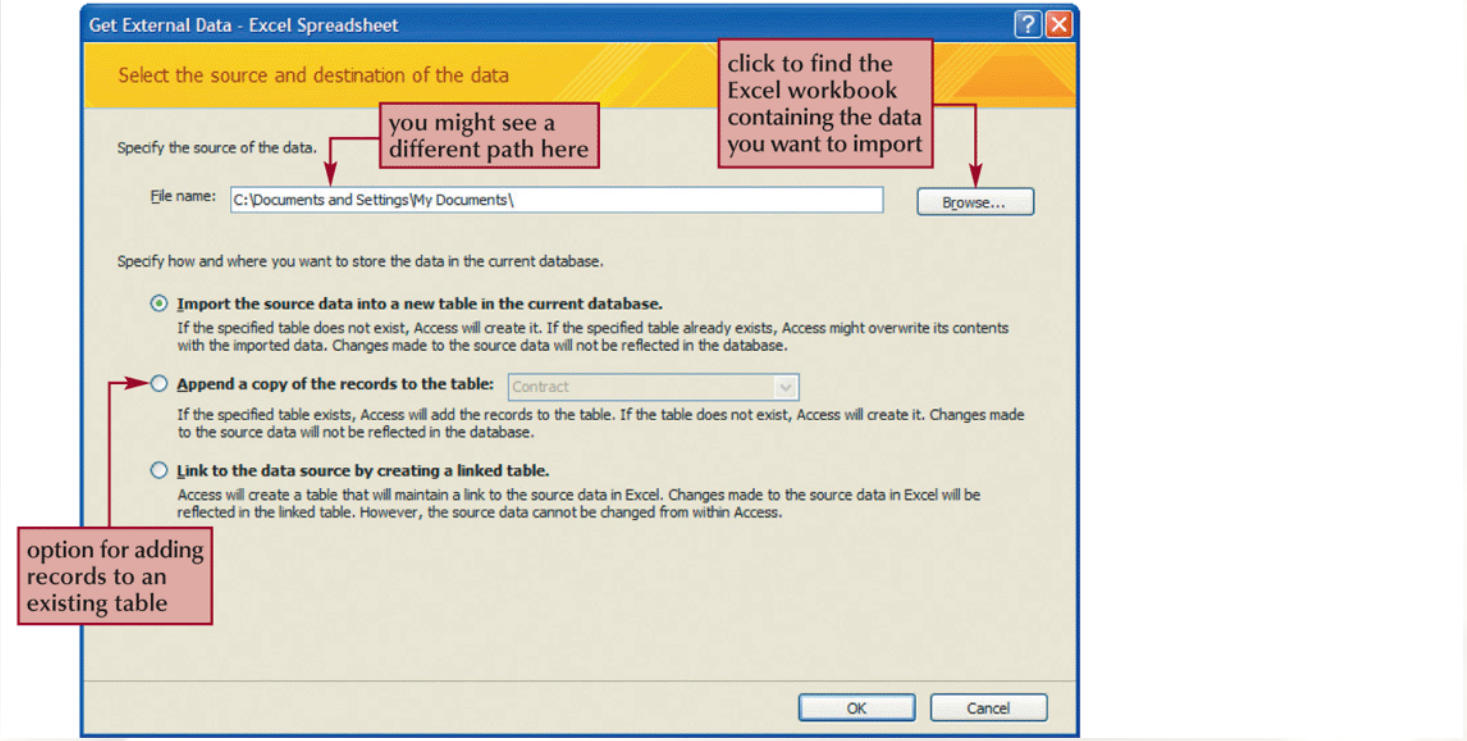


Importing Data from an Excel Worksheet

- The **import** process allows you to copy the data from a source without having to open the source file
- Click **External Data** on the Ribbon
- Click the **Excel** button in the Import group to start the wizard

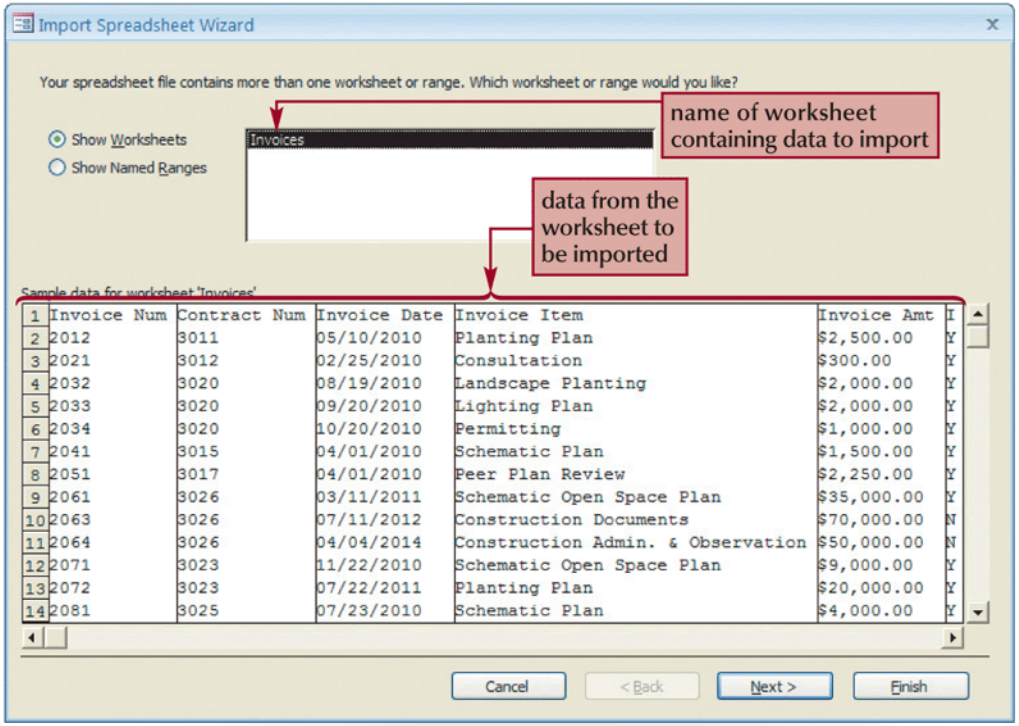
Importing Data from an Excel Worksheet

Get External Data - Excel Spreadsheet dialog box Figure 2-26



Importing Data from an Excel Worksheet

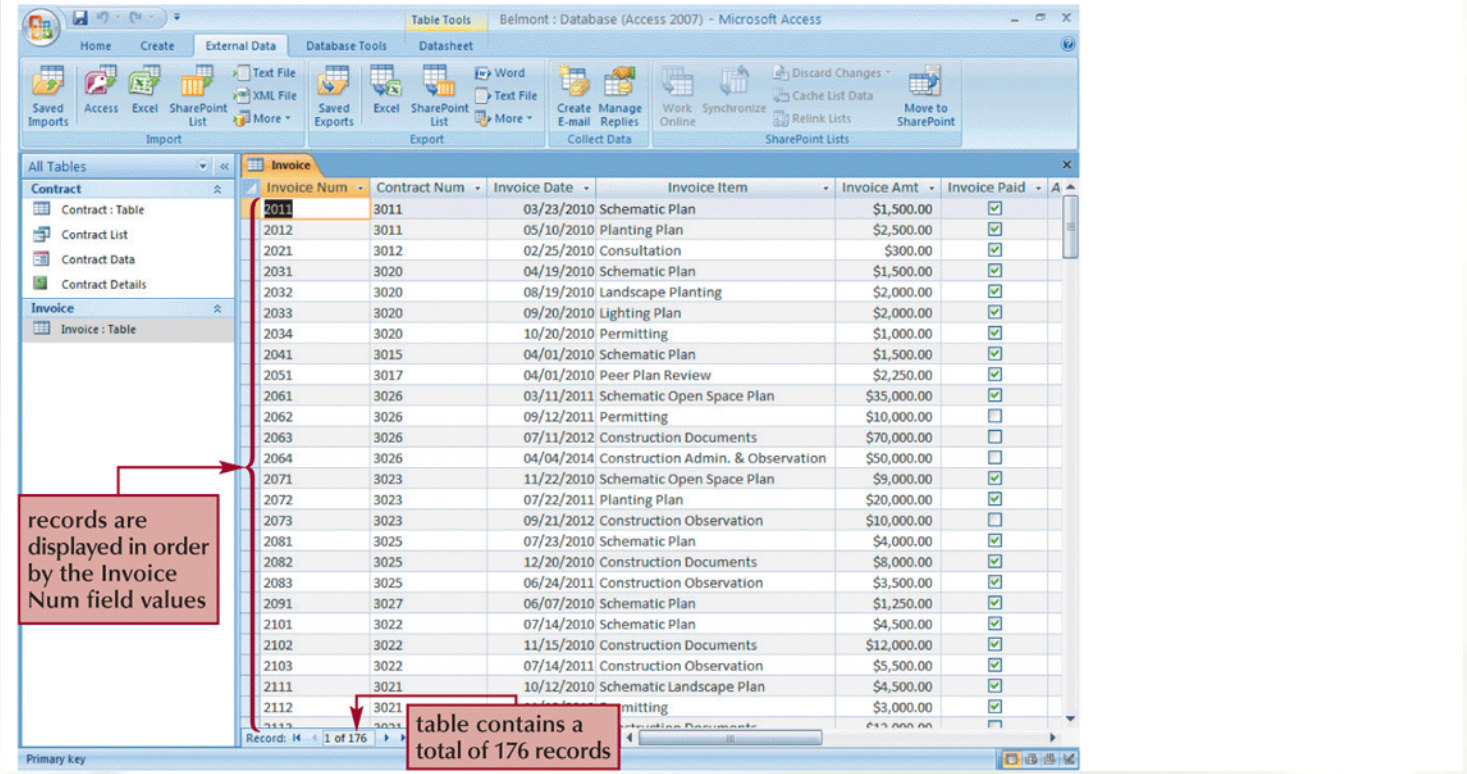
Figure 2-27 First Import Spreadsheet Wizard dialog box



	Invoice Num	Contract Num	Invoice Date	Invoice Item	Invoice Amt	I
2	2012	3011	05/10/2010	Planting Plan	$2,500.00	Y
3	2021	3012	02/25/2010	Consultation	$300.00	Y
4	2032	3020	08/19/2010	Landscape Planting	$2,000.00	Y
5	2033	3020	09/20/2010	Lighting Plan	$2,000.00	Y
6	2034	3020	10/20/2010	Permitting	$1,000.00	Y
7	2041	3015	04/01/2010	Schematic Plan	$1,500.00	Y
8	2051	3017	04/01/2010	Peer Plan Review	$2,250.00	Y
9	2061	3026	03/11/2011	Schematic Open Space Plan	$35,000.00	Y
10	2063	3026	07/11/2012	Construction Documents	$70,000.00	N
11	2064	3026	04/04/2014	Construction Admin. & Observation	$50,000.00	N
12	2071	3023	11/22/2010	Schematic Open Space Plan	$9,000.00	Y
13	2072	3023	07/22/2011	Planting Plan	$20,000.00	Y
14	2081	3025	07/23/2010	Schematic Plan	$4,000.00	Y

Importing Data from an Excel Worksheet

Invoice table after importing data from Excel — Figure 2-28

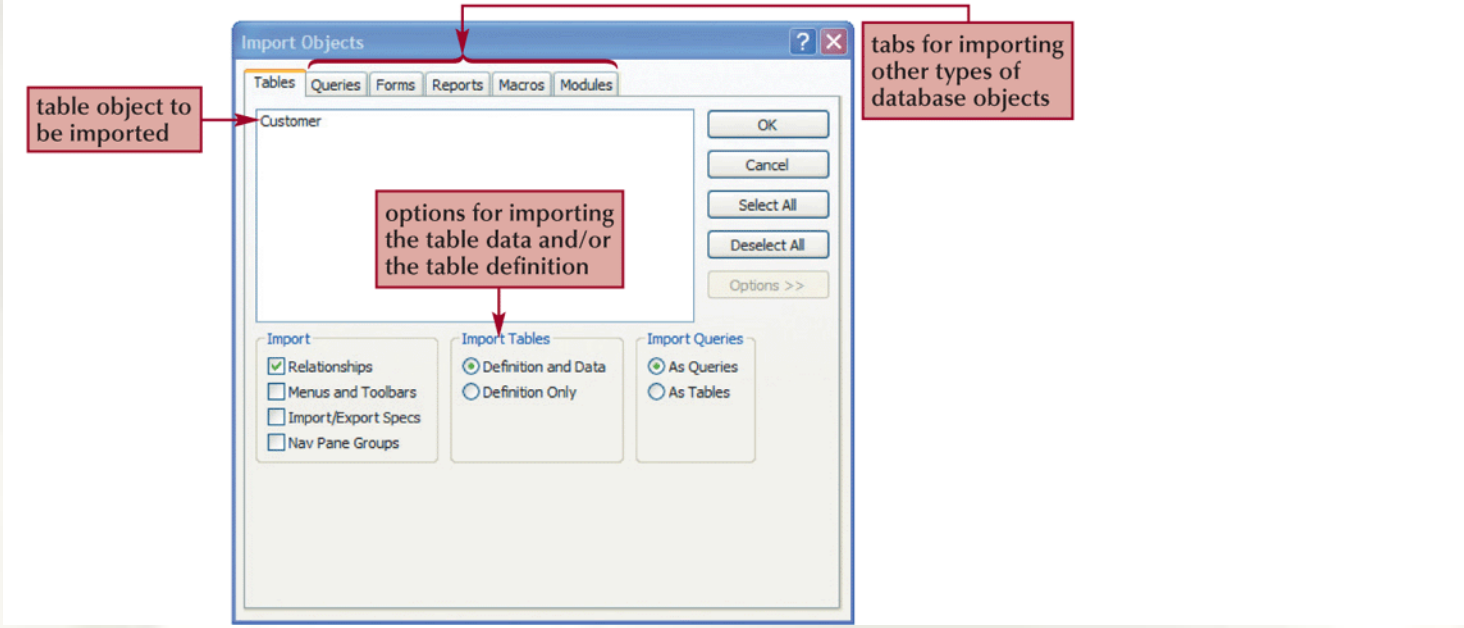


Creating a Table by Importing an Existing Table Structure

- Make sure the **External Data** tab is the active tab on the Ribbon
- In the Import group, click the **Access** button
- Click the **Browse** button
- Navigate to the file
- Make sure the **Import tables, queries, forms, reports, macros, and modules into the current database** option button is selected, and then click the **OK** button
- Click the **Options** button

Creating a Table by Importing an Existing Table Structure

Import Objects dialog box Figure 2-30



Deleting a Field from a Table Structure

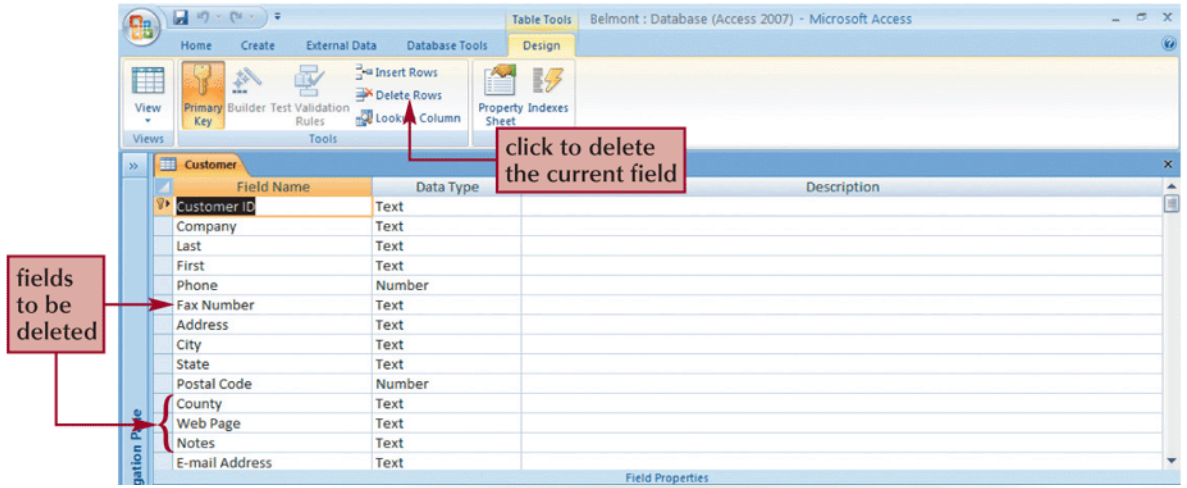
- In Datasheet view, select the column heading for the field you want to delete
- In the Fields & Columns group on the Datasheet tab, click the Delete button

or

- In Design view, click in the Field Name box for the field you want to delete
- In the Tools group on the Table Tools Design tab, click the Delete Rows button

Deleting a Field from a Table Structure

Figure 2-32 Customer table in Design view

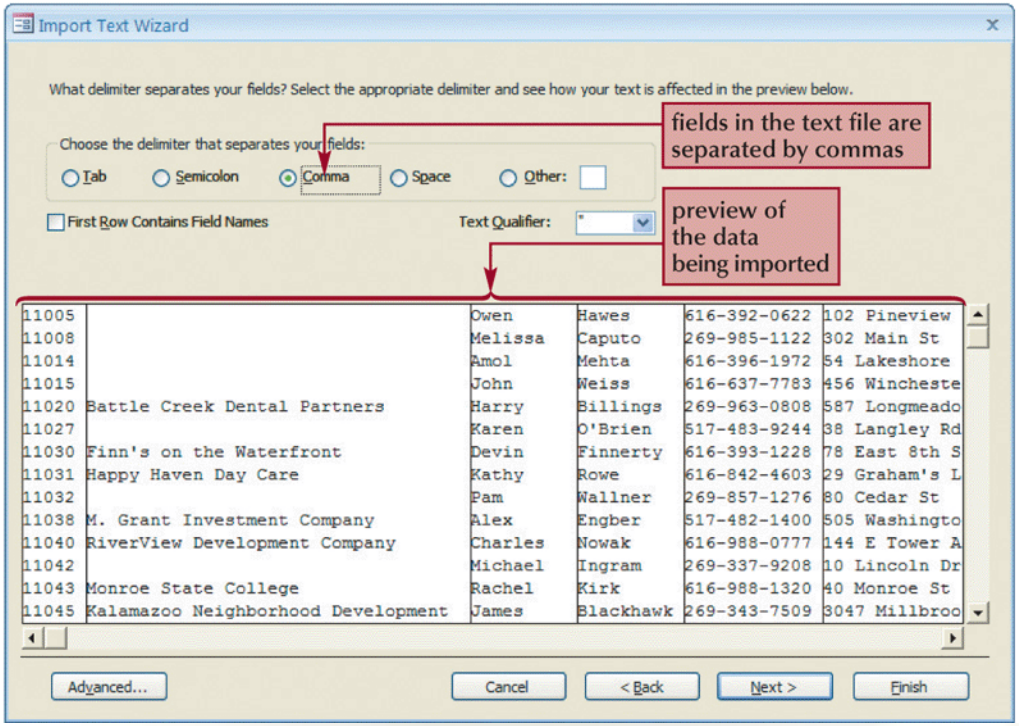


Adding Data to a Table by Importing a Text File

- Click the **External Data** tab on the Ribbon
- In the Import group, click the **Text File** button
- Click the **Browse** button
- Navigate to the file
- Click the **Append a copy of the records to the table** option button
- Select the table
- Click the **OK** button

Adding Data to a Table by Importing a Text File

Figure 2-37 Second Import Text Wizard dialog box

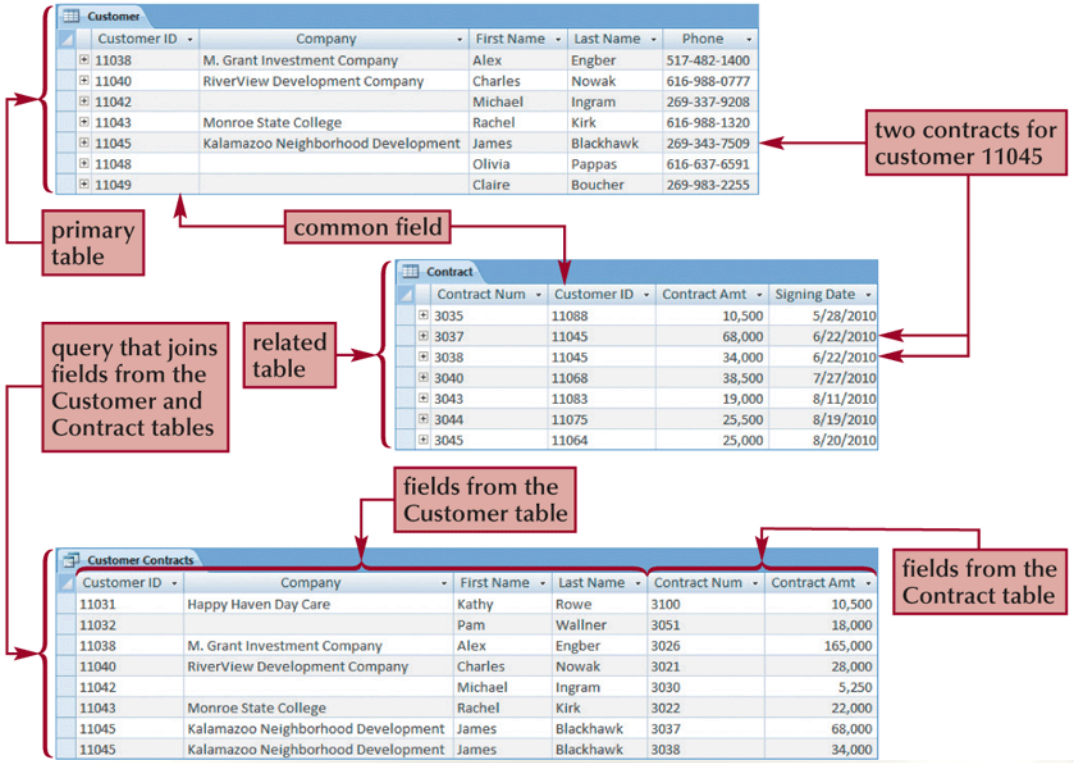


Defining Table Relationships

- One of the most powerful features of a relational database management system is its ability to define relationships between tables
- You use a common field to relate one table to another

Defining Table Relationships

Figure 2-39 One-to-many relationship and sample query



Defining Table Relationships

- A **one-to-many relationship** exists between two tables when one record in the first table matches zero, one, or many records in the second table, and when one record in the second table matches at most one record in the first table
  - **Primary table**
  - **Related table**

Defining Table Relationships

- **Referential integrity** is a set of rules that Access enforces to maintain consistency between related tables when you update data in a database
- The **Relationships window** illustrates the relationships among a database's tables
- Click the **Database Tools** tab on the Ribbon
- In the Show/Hide group on the Database Tools tab, click the **Relationships** button

Defining Table Relationships

Figure 2-40 Show Table dialog box

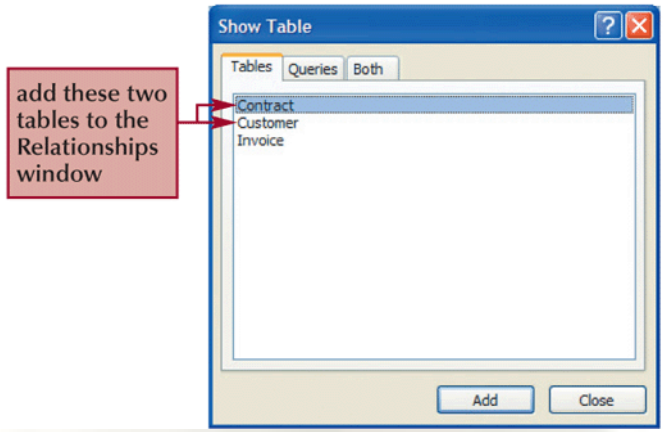
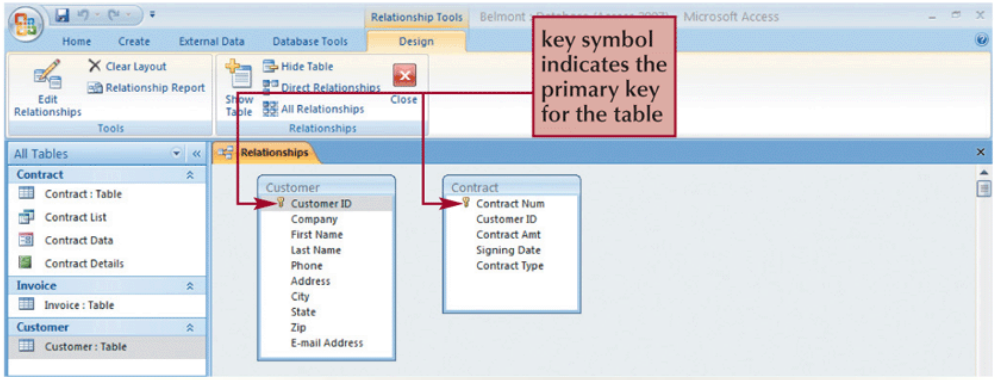


Figure 2-41 Field list boxes for the two tables



Defining Table Relationships

Edit Relationships dialog box **Figure 2-42**

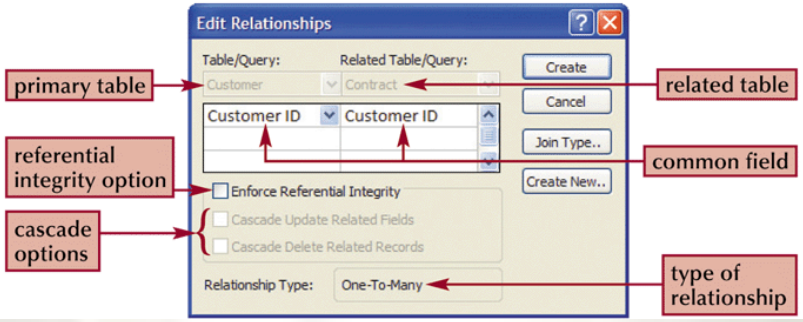


Figure 2-44 Both relationships defined