FIT1013 - Week 10 Resources

Creating a Database and Defining Table Relationships

Week 10 Resources

Reference:

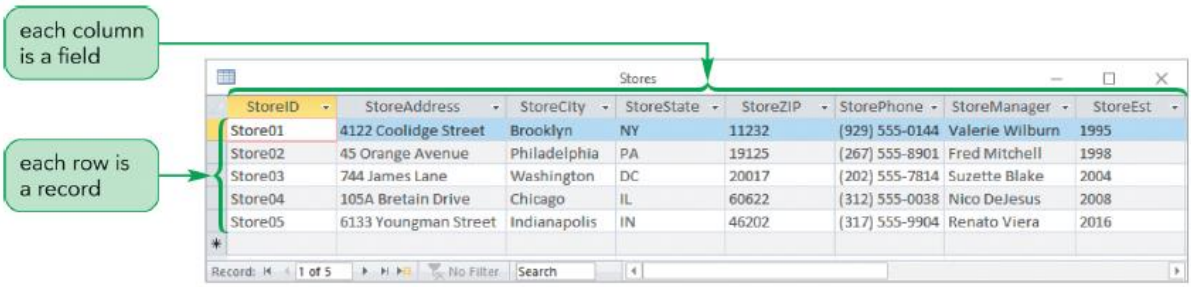
Microsoft Access 2016, New Perspectives Series, Shellman, Vodnik, Comprehensive Edn., Cengage Learning, **Module 1, 2**

1. Objectives

- Create a database
- Create a simple query, form and report
- Learn the guidelines for designing databases
- Create a table in Design view
- Define a relationship between two tables

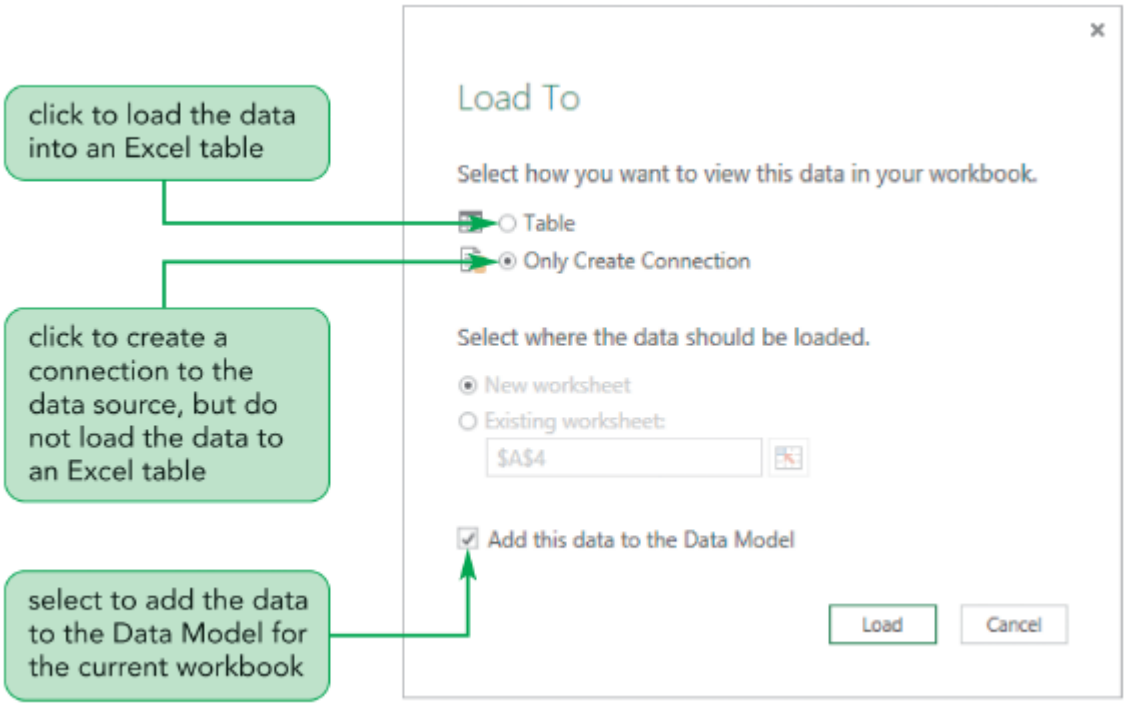
2. Introduction to Database Concepts

- A database is a structured collection of data
- Databases are commonly used as the data sources for Excel workbooks
- A database is divided into separate tables
- Each table is arranged in columns and rows; also referred to as fields and records
    - A field stores information about a specific characteristic of a person, place, or thing
    - A record is a collection of fields
- Excel can retrieve data directly from most database programs
- Different tables are connected through database relationships; fields common to each table are used to match records in different table
- A one-to-one relationship is one in which one record in a table is matched to exactly one record from a second table
- A one-to-many relationship is one in which one record is matched to one or more records in a second table
- Relational databases are ones in which tables can be joined through the use of common fields



Exploring the Data Model

- The data model is a database built into Excel that provides database tools
- Data model database contents are immediately available to PivotTables, PivotCharts, and other Excel features
- The data model is constructed from different tables related by common fields



Explore

- Power Pivot
- Drilling down into data
- Power view
- Power Map
- See Module 11, NP Excel 2016

Organizing Data

- A field is a single characteristic or attribute of a person, place, object, event, or idea
    - Patient ID, first name, last name, address, phone number, visit date, reason for visit, and invoice amount
- Related fields are grouped together into a table
    - A collection of fields that describes a person, place, object, event, or idea
    - The specific content of a field is called the field value
        - This set of field values is called a record
        - https://www.youtube.com/watch?v=frx7CvtgqW4

fields

Animal Table

AnimalID	AnimalName	AnimalType	AnimalBreed
12278	Bailey	Dog	Beagle
12296	Patches	Cat	Siberian
12304	Tweets	Bird	Parakeet
12318	Tracker	Dog	Bloodhound
12328	Lovie	Bird	Lovebird
12335	Hereford1	Cattle	Hereford

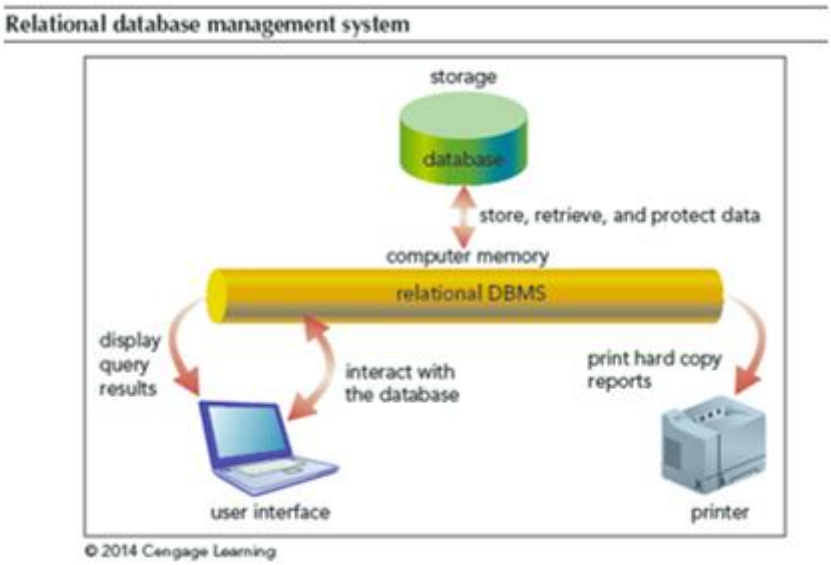
records

Databases and Relationships

- A **relational database** is a collection of related tables
- Records in the separate tables are connected through a common field
- A **primary key** is a field, or a collection of fields, that uniquely identify each record in a table
- Including the primary key from one table as a field in a second table to form a relationship between the two tables, it is called a **foreign key** in the second table

Relational Database Management Systems

- A **database management system (DBMS)** is a software program that lets you create databases and then manipulate the data they contain
- In a **relational database management system**, data is organized as a collection of tables. A relational DBMS controls the storage of databases and facilitates the creation manipulation, and reporting of data.



- A relational DBMS provides the following functions:
  - Allows you to **create database structures** containing fields, tables, and table relationships
  - Lets you easily add new records, change field values in existing records, and delete records
  - Contains a built-in **query language**, which lets you obtain immediate answers to the questions (or queries) you ask about your data

- Contains a **built-in report generator**, which lets you produce professional-looking, formatted reports from your data
- Protects databases through **security**, **control**, and **recovery** facilities

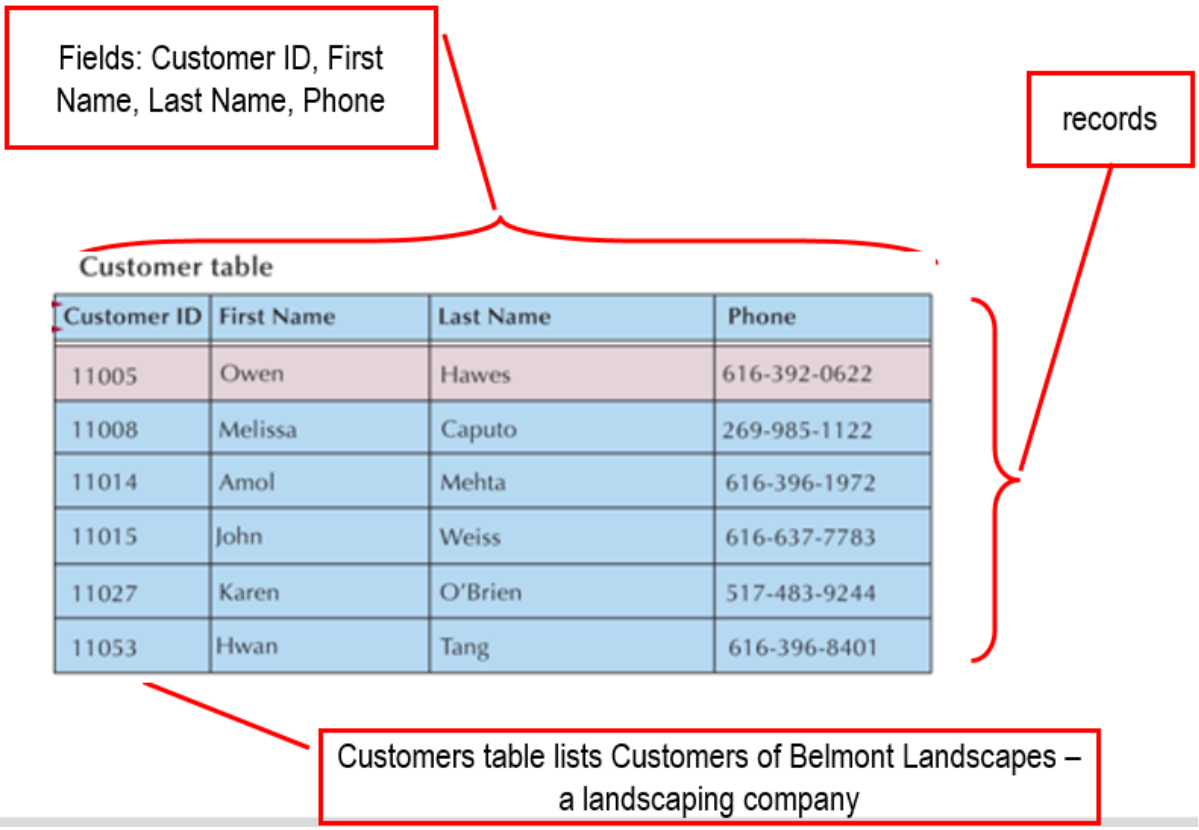
Relational database

- Collection of **tables** (tables are also called **relations**)
- Each table in the database contains information related to **one** particular subject (e.g. customer, product, student)
- The information in the table is contained in columns called **fields**
- Each field contains a **single** piece of information
- Tables are **linked** together using a **common field**

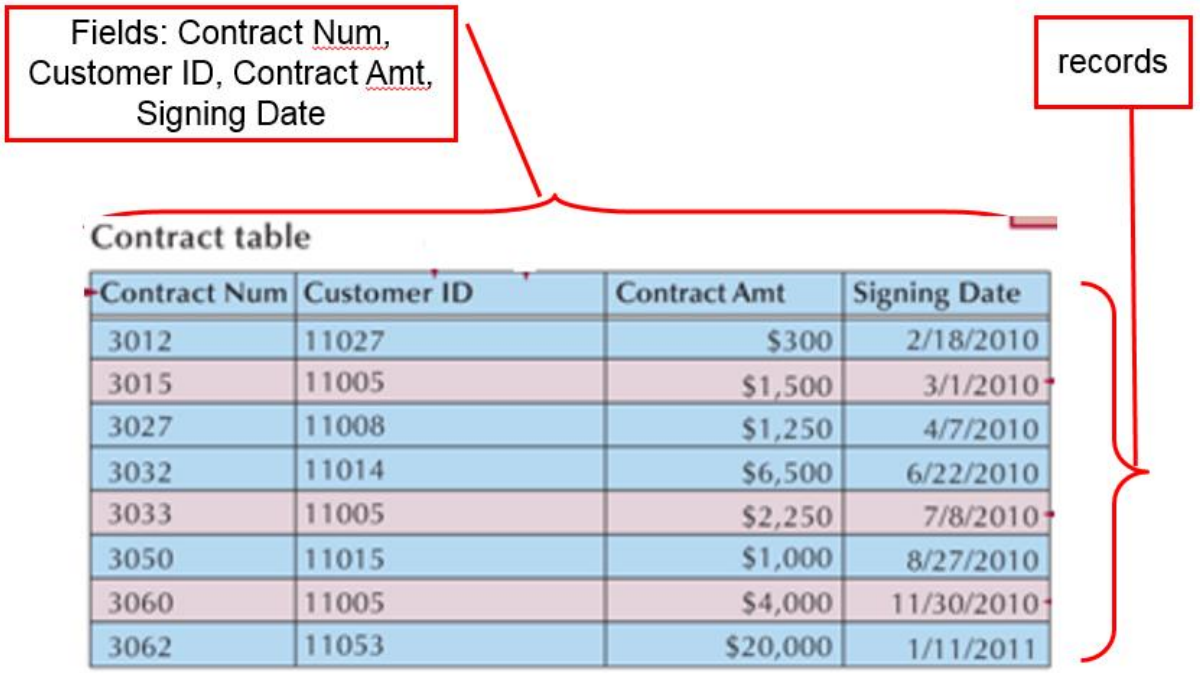
Customer table

Customer ID	First Name	Last Name	Phone
11005	Owen	Hawes	616-392-0622
11008	Melissa	Caputo	269-985-1122
11014	Amol	Mehta	616-396-1972
11015	John	Weiss	616-637-7783
11027	Karen	O'Brien	517-483-9244
11053	Hwan	Tang	616-396-8401

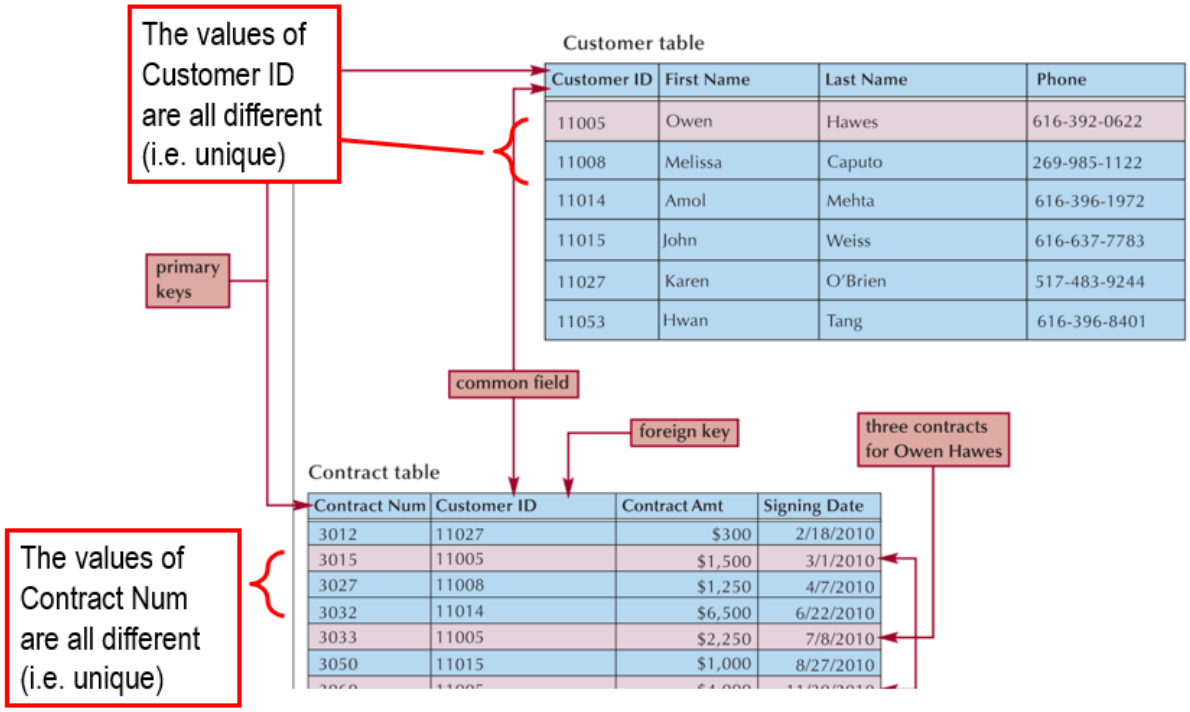
- A table of Customers



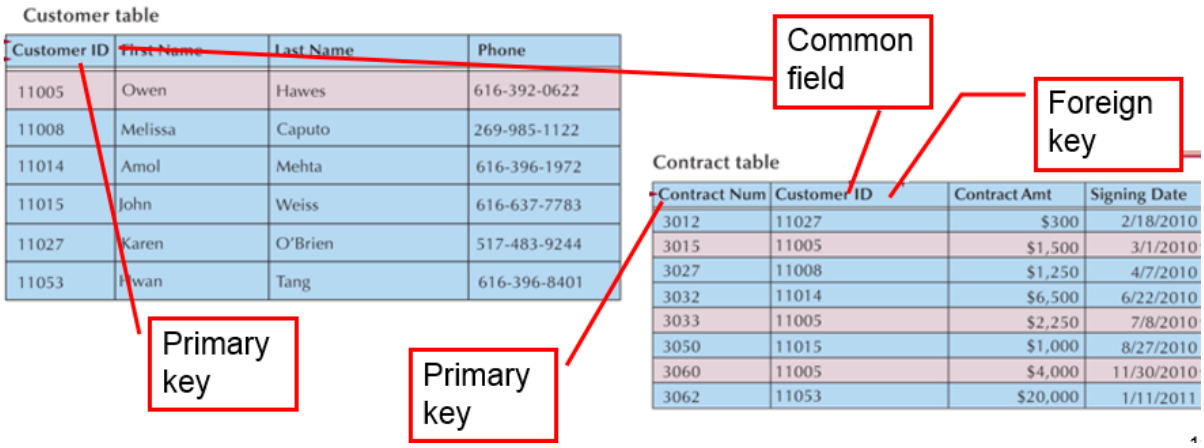
- Contract table – another table in the database - Provides information about the contracts between customer and company



- Relationship between tables for Customers and Contracts

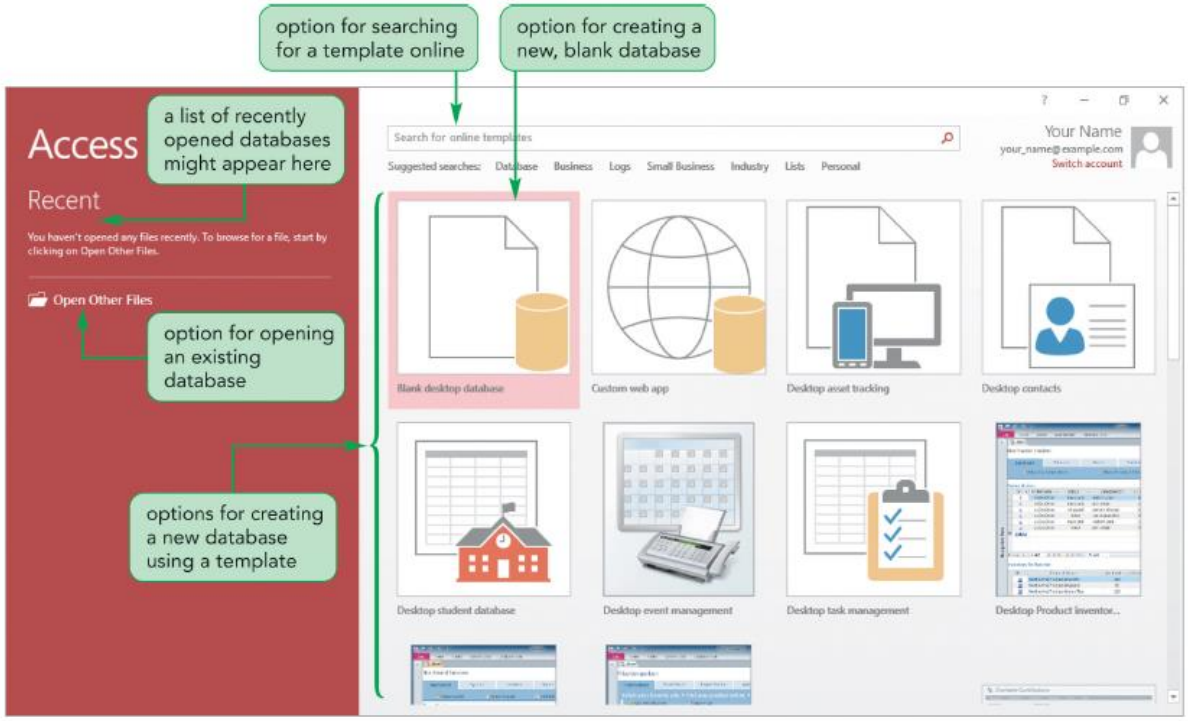


- Definitions:
  - Primary key: A field (or collection of fields) which uniquely identifies each record in a table.
  - Common field: a field that appears in two tables - defines a relationship between the tables.
  - Foreign key: a field in a table which is the same as the primary key in a related table



- Summary of definitions so far..
  - field a single characteristic or attribute of a person, place, object, event, or idea
  - field value the specific value, or content, of a field
  - table a collection of related fields that describe a person, place, object, event, or idea (sometimes called a relation)
  - record a set of field values
  - primary key a field, or a collection of fields, whose values uniquely identify each record in a table
  - foreign key a field in a table which is the same as the primary key in a related table
  - common field a field that appears in separate tables in a database. Defines a relationship between two tables.

3. Starting Access and Creating a Database



- When you start Access, the first screen that appears is **Backstage view** which contains commands that allow you to manage Access files and options

- The Recent screen in Backstage view provides options for you to create a new database or open an existing database
- To create a new database that does not contain any data or objects, you use the Blank desktop database option
- Use a **template** (a predesigned database that includes professionally designed tables, reports, and other database objects) If the database contains objects that match those found in common databases, such as databases that store data about contacts or tasks

Creating a Table in Datasheet View

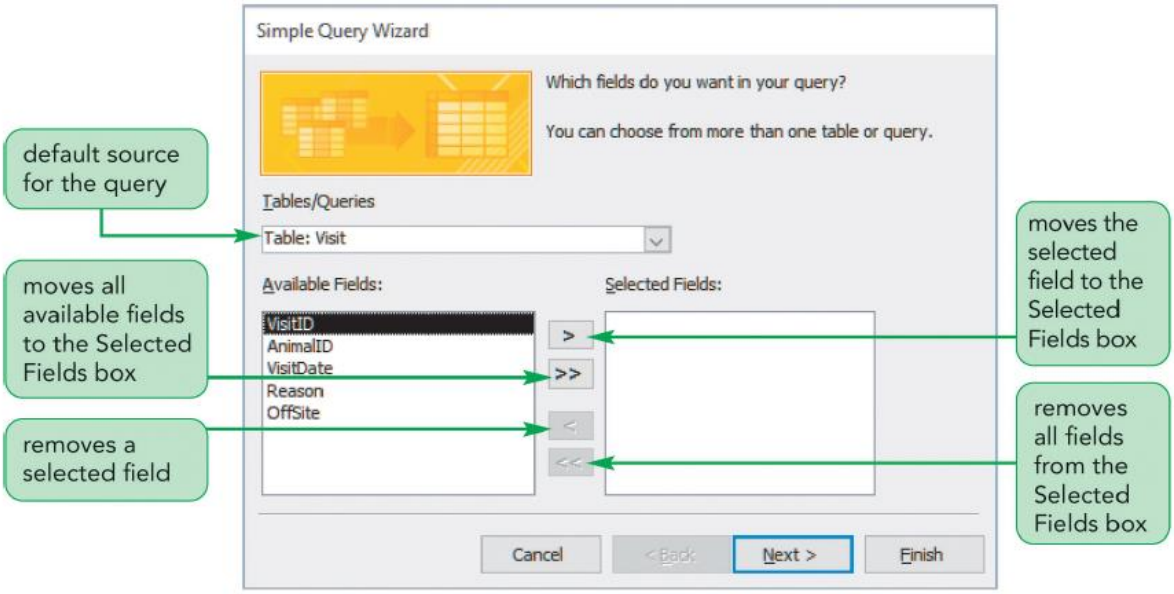
- On the ribbon, click the CREATE tab
- In the Tables group, click the Table button
- Rename the default ID primary key field and change its data type, if necessary; or accept the default ID field with the AutoNumber data type
- In the Add & Delete group on the FIELDS tab, click the button for the type of field you want to add to the table and then type the field name; Repeat this step to add all the necessary fields to the table
- In the first row below the field names, enter the value for each field in the first record, pressing the Tab or Enter key to move from one field to the next
- After entering the value for the last field in the first record, press the Tab or Enter key to move to the next row, and then enter the values for the next record.
- On the Quick Access Toolbar, click the Save button, enter a name for the table, and then click the OK button

Decision Making: Naming Fields in Access Tables

- One of the most important tasks in creating a table is deciding what names to specify for the table's fields. Keep the following guidelines in mind when you assign field names:
  - A field name can consist of up to 64 characters, including letters, numbers, spaces, and special characters, except for the period (.), exclamation mark (!), grave accent (`), and square brackets ([ ])
  - A field name cannot begin with a space
  - Capitalize the first letter of each word in a field name that combines multiple words, for example VisitDate
  - Use concise field names that are easy to remember and reference, and that won't take up a lot of space in the table datasheet
  - Use standard abbreviations, such as Num for Number, Amt for Amount, and Qty for Quantity, and use them consistently throughout the database.
    - For example, if you use Num for Number in one field name, do not use the number sign (#) for Number in another
  - Give fields descriptive names so that you can easily identify them when you view or edit records
  - Each field in an Access table must be assigned a data type. The data type determines what field values you can enter for the field
    - The AutoNumber data type automatically inserts a unique key for every record, beginning with the number 1 for the first record, the number 2 for the second, etc.
- Adding New Fields
  - When you create a table in Datasheet view, you can use the options in the Add & Delete group on the FIELDS tab to add fields to your table
- You can also use the Click to Add column in the table datasheet to add new fields
- Datasheet view shows a table's contents in rows (records) and columns (fields)
  - Each column is headed by a field name inside a field selector

- Each row has a record selector to its left
- Clicking a field selector or a record selector selects that entire column or row (respectively)
  - A field selector is also called a column selector
  - A record selector is also called a row selector
- Saving a Table
  - Records you enter are immediately stored in the database as soon as you enter them
  - However, the table's design—the field names and characteristics of the fields themselves, plus any layout changes to the datasheet—are not saved until you save the table
  - When you save a new table for the first time, you should give it a name that best identifies the information it contains
    - Like a field name, a table name can contain up to 64 characters, including spaces

4. Creating a Simple Query



5. Creating a Simple Form

- Forms display one record at a time
  - Provide another view of the data that is stored in the table
  - Allowing you to focus on the values for one record
- Access displays the field values for the first record in the table
- Each field appears on a separate line
- As indicated in the status bar, the form is displayed in Layout view
  - In Layout view, you can make design changes to the form while it is displaying data, so that you can see the effects of the changes you make immediately

6. Creating a Simple Report

- A report is a formatted printout (or screen display) of the contents of one or more tables or queries
- Reports show each field in a column, with the field values for each record in a row, similar to a table or query datasheet

- Reports offers a more visually appealing format for the data, with the column headings in a different color, borders around each field value, a graphic of a report at the top left, and the current day, date, and time at the top right
- Printing a Report
    - Print reports to distribute to others who need to view the report's contents

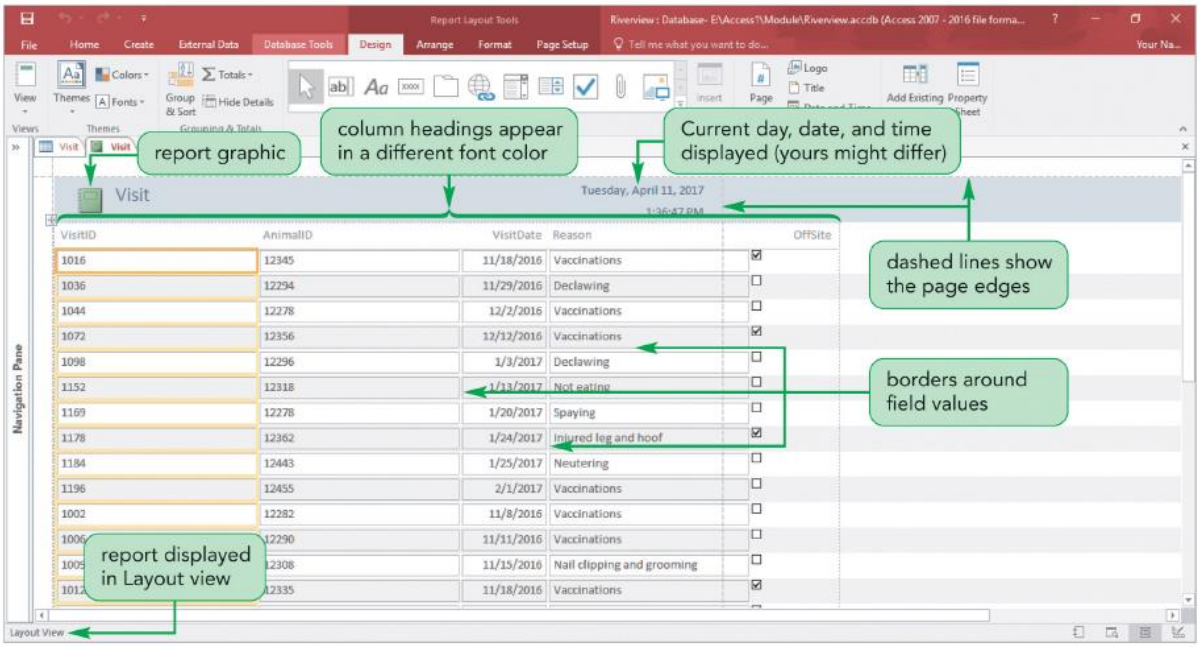


Figure 1-25 Report after resizing the VisitID column

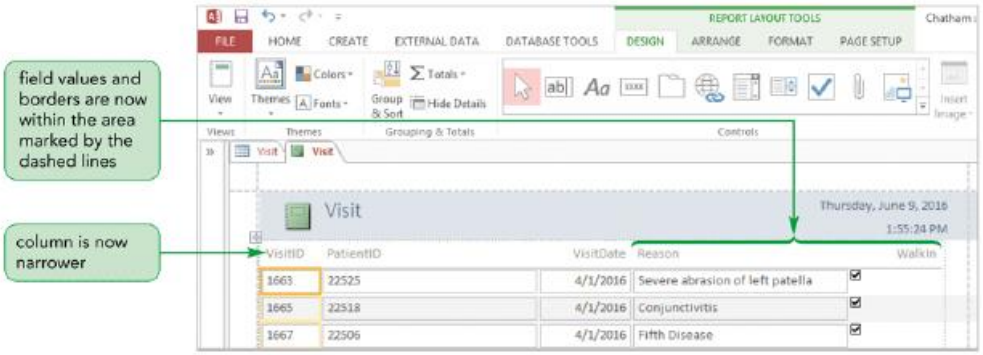
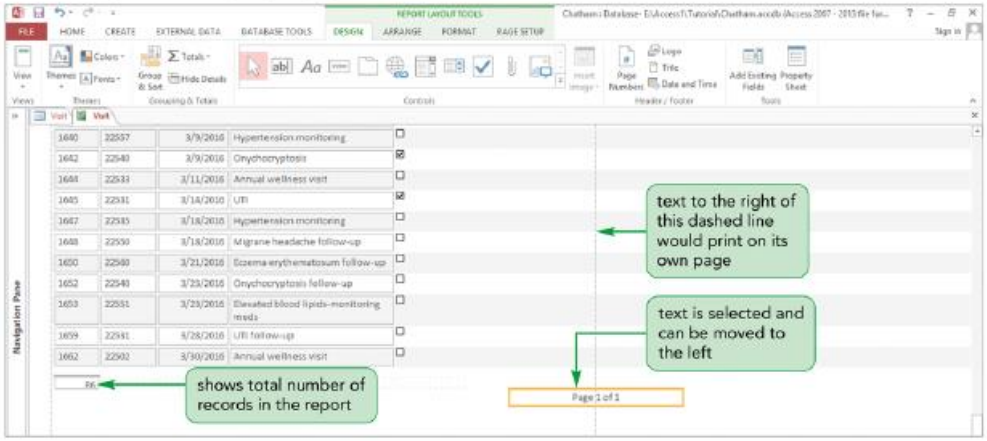


Figure 1-26 Report page number selected



    - Print reports to distribute to others who need to view the report's contents

- STEPS
  - Open the report in any view, or select the report in the Navigation Pane
  - Click the FILE tab to display Backstage view, click Print, and then click Quick Print to print the report with the default print settings
  - or
  - Open the report in any view, or select the report in the Navigation Pane
  - Click the FILE tab, click Print, and then click Print (or, if the report is displayed in Print Preview, click the Print button in the Print group on the PRINT PREVIEW tab). The Print dialog box opens, in which you can select the options you want for printing the report

Viewing Objects in the Navigation Pane

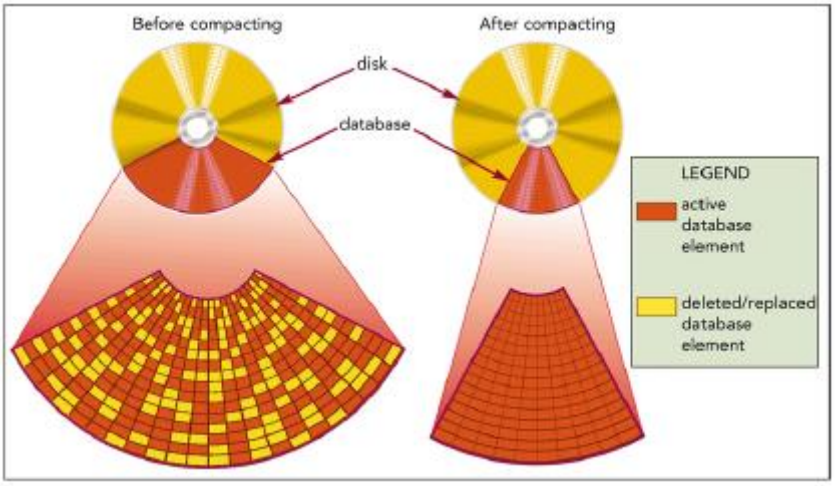
- The Navigation Pane currently displays the default category, **All Access Objects**, which lists all the database objects in the pane
- Each object type (Tables, Queries, Forms, and Reports) appears in its own group

Using Microsoft Access Help

- Start Help by clicking the Microsoft AccessHelp button in the top right of the Access window, or by pressing the F1 key

Managing a Database

- Activities involved in database management include compacting and repairing a database and backing up and restoring a Database
- **Compacting and Repairing a Database**
  - Rearranges the data and objects in a database to decrease its file size, thereby making more storage space available and enhancing the performance of the database



- Backing Up and Restoring a Database
  - The process of making a copy of the database file to protect your database against loss or damage
  - The Back Up Database command enables you to back up your database file from within the Access program, while you are working
  - Steps:
    - Click the FILE tab to display the Info screen in Backstage view
    - Click Save As in the navigation bar
    - Click Back Up Database in the Advanced section of the Save Database As pane
    - Click the Save As button
- Excel or Access?
  - Ask the following questions

1. Do you need to store data in separate tables that are related to each other?
2. Do you have a very large amount of data to store?
3. Will more than one person need to access the data at the same time?
    - If you answer "yes" to any of these questions, an Access database is most likely the appropriate application to use

7. Guidelines for Designing Databases

- Case – Riverview Veterinary Care Center
    - Database currently contains one table, named the Visit table
    - User wants to track information about the clinic's animals, their owners, and the invoices sent to them for services provided
        - This information includes such items as each owner's name and address, animal information, and the amount and billing date for each invoice
    - Create three new tables—named Billing, Owner, and Animal—to contain the additional data Kimberly wants to track
    - After adding records to the tables, you will define the necessary relationships between the tables, and learn how to modify the fields
- 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

VisitID	AnimalBreed	Zip
VisitDate	OwnerID	Email
Reason	FirstName	InvoiceNum
OffSite	LastName	InvoiceDate
AnimalID	Phone	InvoiceAmt
AnimalName	Address	InvoiceItem
AnimalBirthDate	City	InvoicePaid
AnimalType	State	

Guidelines for Setting Field Properties

- Naming Fields and Objects
    - You must name each field, table, and other objects in an Access database
- Assigning Field Data Types
    - Each field must have a data type
        - Data types are assigned automatically by Access or specifically by the table designer
        - The data type determines what field values you can enter for the field and what other properties the field will have

Data Type	Description	Field Size
Short 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
Long Text	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. A number 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
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

- Setting Field Sizes
  - The Field Size property defines a field value's maximum storage size for Short Text, Number, and AutoNumber fields only
  - The other data types have no Field Size property because their storage size is either a fixed, predetermined amount or is determined automatically by the field value itself
- Setting the Caption Property for Fields
  - The **Caption property** for a field specifies how the field name is displayed in database objects
  - If you don't set the Caption property, Access displays the field name as the column heading or label for a field

8. Creating a Table in Design View

- Creating a table in Design view involves entering the field names and defining the properties for the fields, specifying a primary key for the table, and then saving the table structure
- Defining Fields
  - When you first create a table in Design view, the insertion point is located in the first row's Field Name box, ready for you to begin defining the first field in the table
  - Enter values for the Field Name, Data Type, and Description field properties, and then select values for all other field properties in the Field Properties pane

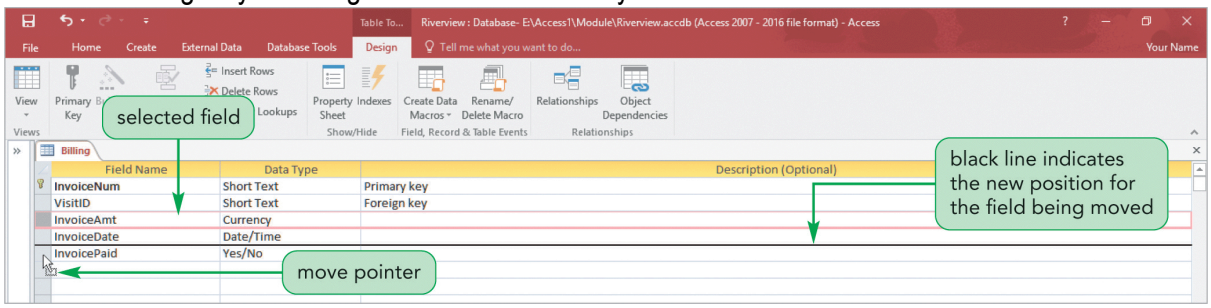
- These other properties will appear when you move to the first row's Data Type box

Field Name	Data Type	Field Size	Description	Other
InvoiceNum	Short Text	5	Primary key	Caption = Invoice Num
VisitID	Short Text	4	Foreign key	Caption = Visit ID
InvoiceAmt	Currency			Format = Currency
				Decimal Places = 2
				Caption = Invoice Amt
InvoiceDate	Date/Time			Format = mm/dd/yyyy
				Caption = Invoice Date
InvoicePaid	Yes/No			Caption = Invoice Paid

- Specifying the Primary Key
  - A primary key uniquely identifies each record in a table
  - Access does not allow duplicate values in the primary key field
  - When a primary key has been specified, Access forces you to enter a value for the primary key field in every record in the table (entity integrity)
  - You can enter records in any order, but Access displays them by default in order of the primary key's field values
  - Access responds faster to your requests for specific records based on the primary key
- **Saving the Table Structure**
  - The last step in creating a table is to name the tableand save the table's structure

Modifying the Structure of an Access Table

- Moving a Field in Design View
  - To move a field, you use the mouse to drag it to a new location in the Table Design grid
    - You can move a field in Datasheet view by dragging its column heading to a new location, doing so rearranges only the display of the table's fields; the table structure is not changed
    - To move a field permanently, move the field in Design view
- Adding a Field in Design View
  - To add a new field between existing fields, you must insert a row
  - Begin by selecting the row below where you want the new field to be inserted



Modifying Field Properties

- Changing the Format Property in Datasheet View
  - The Formatting group on the FIELDS tab in Datasheet view allows you to modify formatting for certain field types
  - When you format a field, you change the way data is displayed, but not the actual values stored in the table
- Changing Properties in Design View
  - Each of the Short Text fields has the default field size of 255, which is too large for the data contained in these fields

Activity

1. What guidelines should you follow when designing a database?
2. List 3 reasons why you should specify a primary key for an Access table.

Hints:

- 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, and determine the properties of each field.
- A primary key uniquely identifies each record in the table; a primary key prevents duplicate values from being entered in the same field;
    - Access forces you to enter a value for the primary key field in every record in the table; records will always be displayed in a meaningful order by primary key, regardless of the order in which you entered them;
    - Access responds faster to requests for specific records based on the primary key.

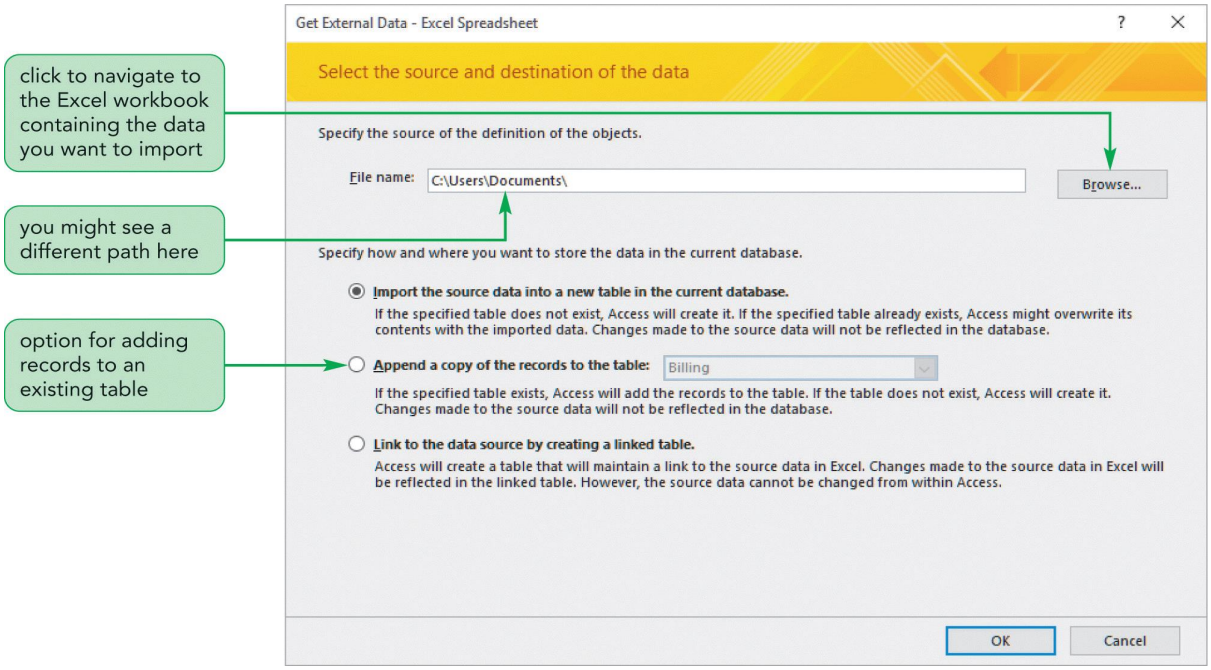
Adding Records to a New Table

- Adding Records to a New Table
    - The Visit table design is complete and you would like to add records to the table so it will contain the invoice data
    - Add records to a table in Datasheet view by typing the field values in the rows below the column headings for the fields

Invoice Num	Visit ID	Invoice Date	Invoice Amt	Invoice Item	Invoice Paid
42098	1002	11/09/2016	$50.00	Lab work	Yes
42125	1012	11/21/2016	$50.00	Off-site visit	No
42271	1077	12/15/2016	$45.00	Flea & tick medications	Yes
42518	1181	01/26/2017	$35.00	Heartworm medication	No

Importing Data from an Excel Worksheet

- When data you want to add to an Access table exists in another file -- like Word or Excel -- you can bring the data from other files into Access in different ways
    - Copy and paste the data from an open file
    - Import the data, which is a process that allows you to copy the data from a source without having to open the source file



9. Creating a Table by Importing an Existing Table Structure

- If another Access database contains a table—or even just the design, or structure, of a table—that you want to include in your database, you can import the table and any records it contains or import only the table structure into your database.

Field Name	Data Type	Field Size	Description	Caption
OwnerID	Short Text	4	Primary key	Owner ID
FirstName	Short Text	20		First Name
LastName	Short Text	25		Last Name
Phone	Short Text	14		
Address	Short Text	35		
City	Short Text	25		
State	Short Text	2		
Zip	Short Text	10		
Email	Short Text	50		

Adding Fields to a Table Using the Data Type Gallery

- The Data Type gallery (in the Add & Delete group on the FIELDS tab) allows you to add a group of related fields to a table at the same time, rather than adding each field to the table individually

Modifying the Structure of an Imported Table

- Deleting Fields from a Table Structure
  - After you've created a table, you might need to delete one or more fields (which also deletes all the values for that field from the table)
  - Before you delete a field, you should make sure that you want to do so and that you choose the correct field to delete
  - Fields can be deleted in either Datasheet view or Design view

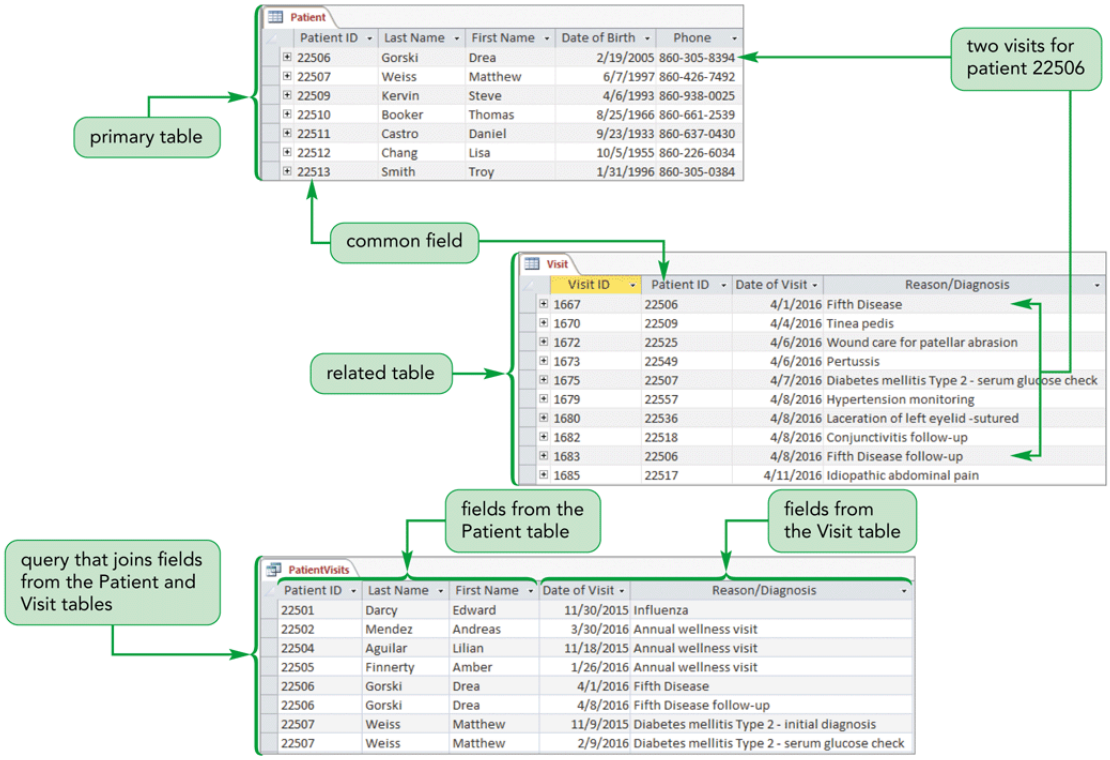
- Renaming Fields in Design View
  - To match the design for the Owners table, you need to rename the State/Province and ZIP/Postal fields
  - Fields can be renamed in Datasheet view or Design view
  - To match the design for the Owner table, you need to rename the State/Province and ZIP/Postal fields
  - Fields can be renamed in Datasheet view or Design view
- Changing the Data Type for a Field in Design View
  - All of the fields in the Patient table, except Birth Date, should be Short Text fields
  - The table structure you imported specifies the Number data type for the Phone field—it should be Short Text
  - The Data Type can be changed in Datasheet view or Design view
- The Default Value property for a field specifies what value will appear, by default, for the field in each new record you add to a table

Adding Data to a Table by Importing a Text File

- Many ways to import data into an Access database
  - Importing an Excel spreadsheet
  - Created a new table by importing the structure of an existing table
  - Import data contained in text files

10. Defining Table Relationships

Figure 2-40 One-to-many relationship and sample query

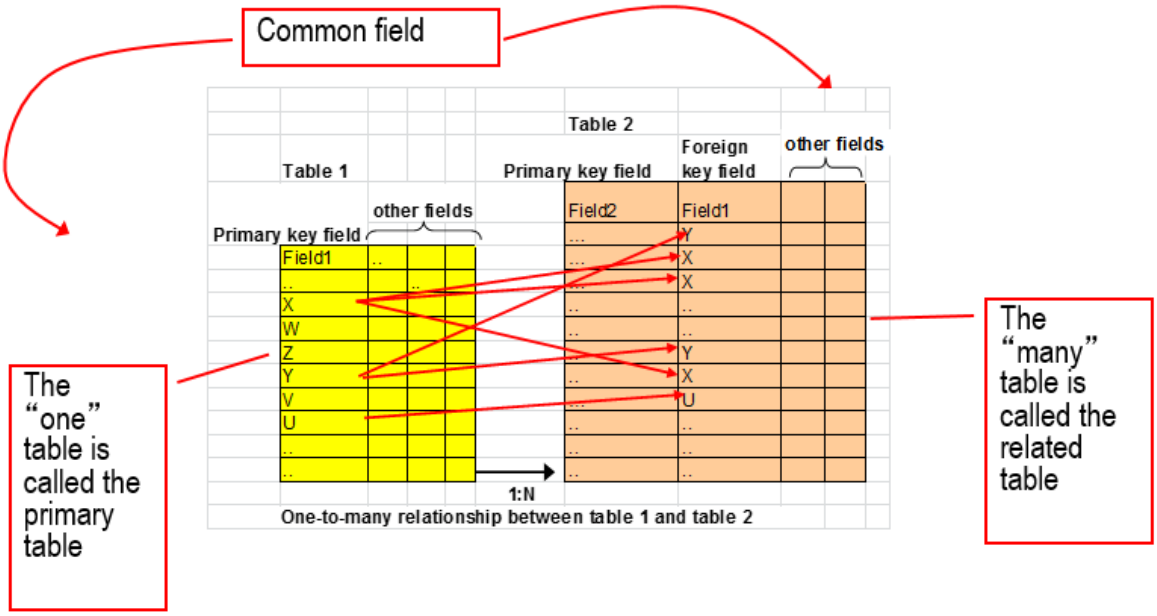


- One-to-Many Relationships
  - A one-to-many relationship exists between two tables when one record in the first table matches zero, one, or many records in the second table, and when one record in the second table matches at most one record in the first table
- Referential Integrity

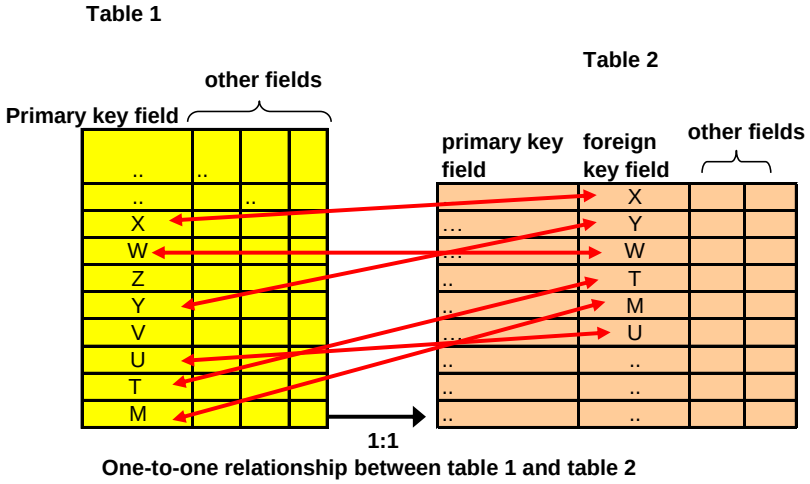
- A set of rules that Access enforces to maintain consistency between related tables when you update data in a database
- When you add a record to a related table, a matching record must already exist in the primary table, preventing the possibility of orphaned records
- If you attempt to change the value of the primary key in the primary table, Access prevents this change if matching records exist in a related table
- With the Cascade Update Related Fields option, Access permits the change in value to the primary key and changes the appropriate foreign key values in the related table
- If you attempt to delete a record in the primary table, Access prevents the deletion if matching records exist in a related table. However, if you choose the Cascade Delete Related Records option, Access deletes the record in the primary table and also deletes all records in related tables that have matching foreign key values

Table relationships

- One-to-many relationship (1:N):
  - a relationship that 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 exactly one record in the first table.
- One-to-many is the most common type of relationship

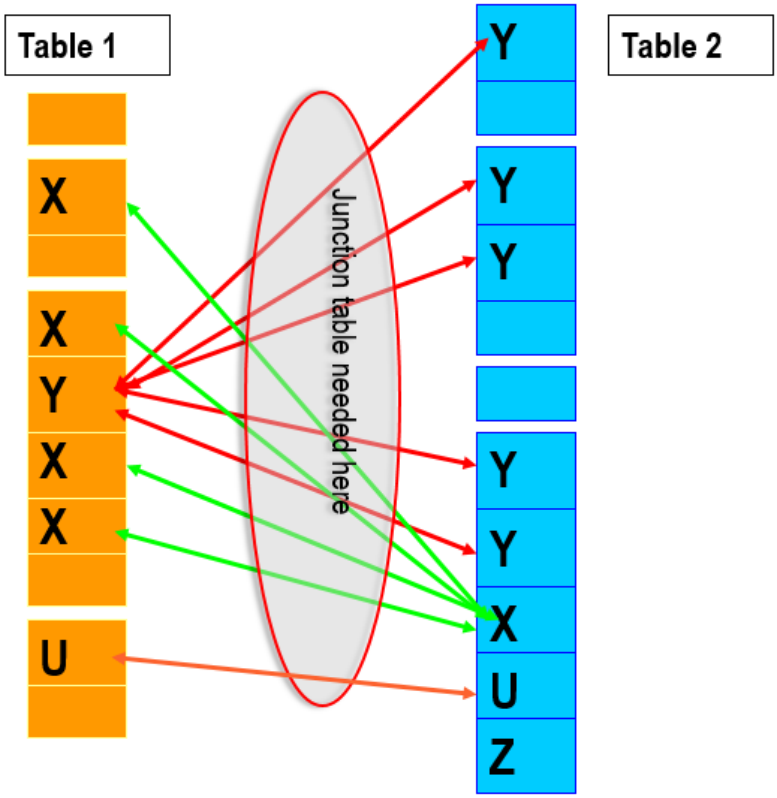


- Two tables with a one-to-one relationship. Each record in the first table matches at most 1 record in the second table and conversely each record in the second table matches at most 1 record in the first table.

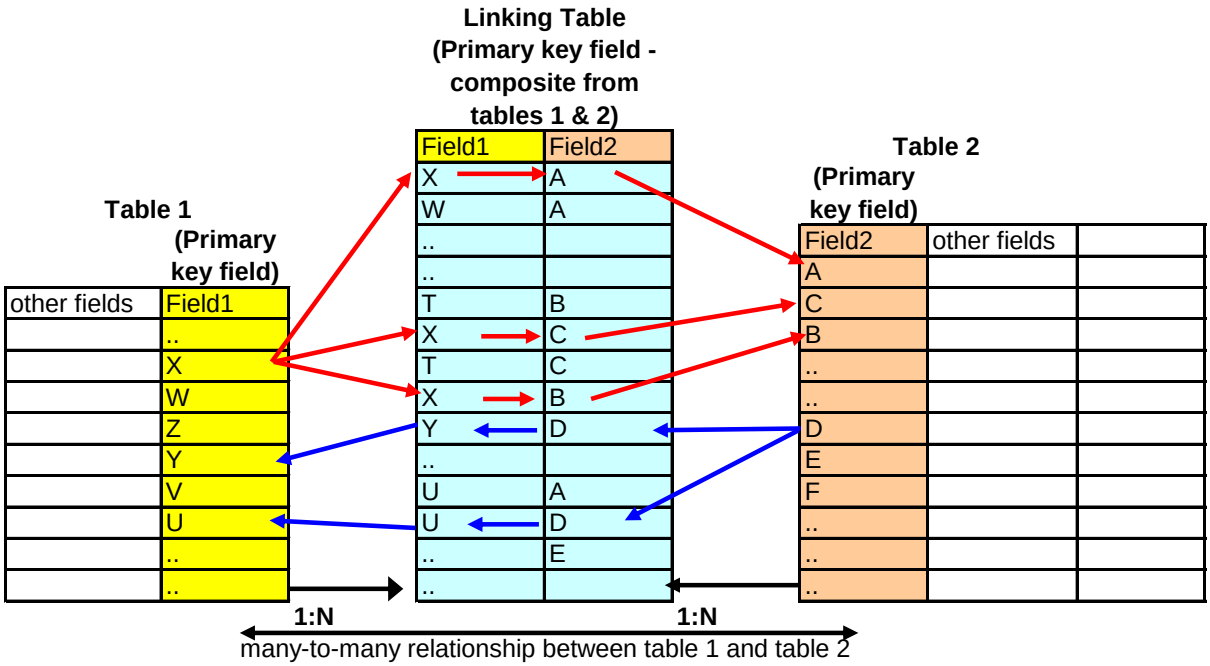


One-to-one relationship between table 1 and table 2

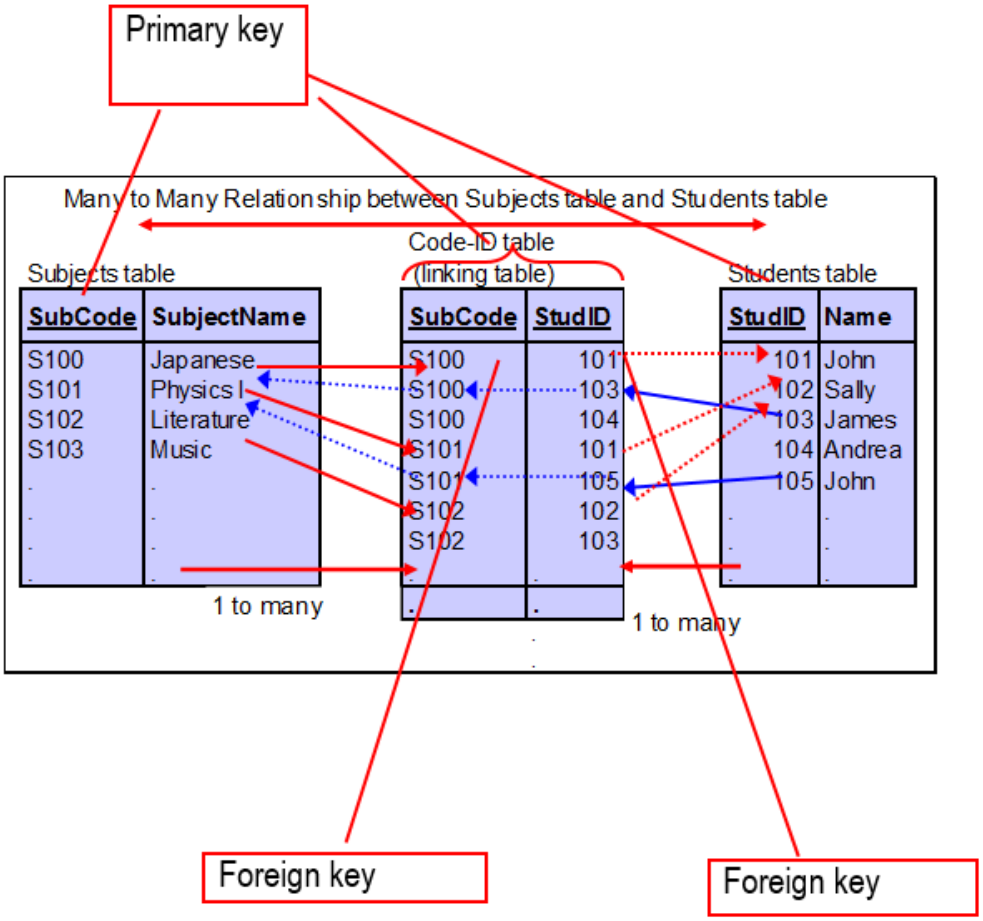
- Many to many relationships (M:N)
  - In a many-to-many relationship, a record in the first table can have 0, 1 or many matching records in the second table, and a record in the second table can have 0,1 or many matching records in the first table
  - In **Access**, this type of relationship is only possible by creating a third table (called a **junction table or linking table**) whose primary key contains two fields - the primary keys from both tables. (I.e., the linking table has a **composite** primary key).
- Many to many relationship – between table 1 and table 2 – requires a linking table also called a junction table



- Many to many relationship in Access



- Example - Many to Many Relationships



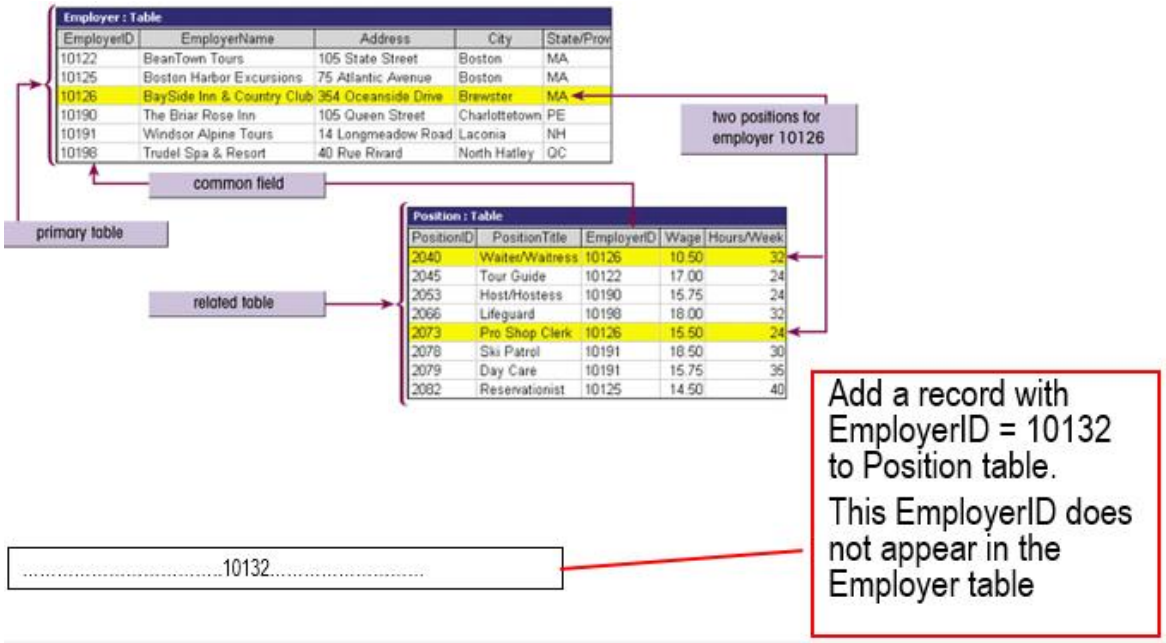
Parent-child relationships

- A one to many relationship is also known as a parent-child relationship.
- The Parent record comes from the primary table ("one" table).
- The Child record comes from the related table ("many" table).

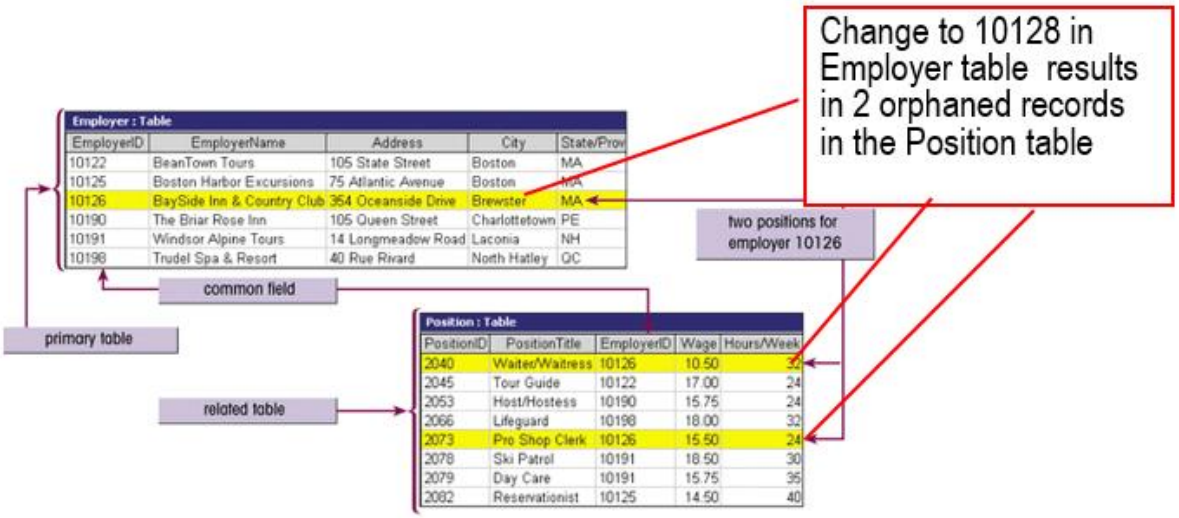
- An Orphaned record occurs when a record from the related table has no corresponding parent in the primary table. Orphaned records are one type of inconsistency that can occur in databases.

Database inconsistencies

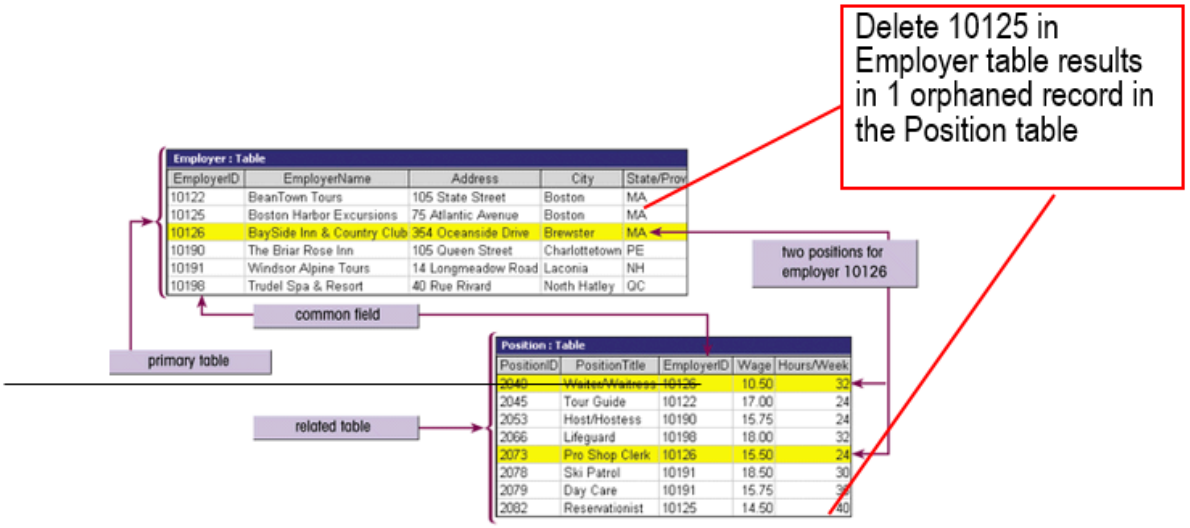
- Access has features which you can select to try and reduce the incidence of inconsistencies caused by orphaned records in databases
- These features are
    - Enforce referential integrity
    - Cascade update
    - Cascade delete
- First: examples of inconsistency problems that can occur in related tables.
    - The Employer table and the Position table have a 1 to many relationship with EmployerID as the common field
        - Problem 1:if we add a new record to the Position table with EmployerID = 10132
        - Results in: orphaned record (because a record with EmployerID = 10132 does not appear in the Employer table)



- Problem 2: if we change the EmployerId for BaySide Inn & Country Club from 10126 to 10128 in table Employer
- Results in: 2 orphaned records in the Position table



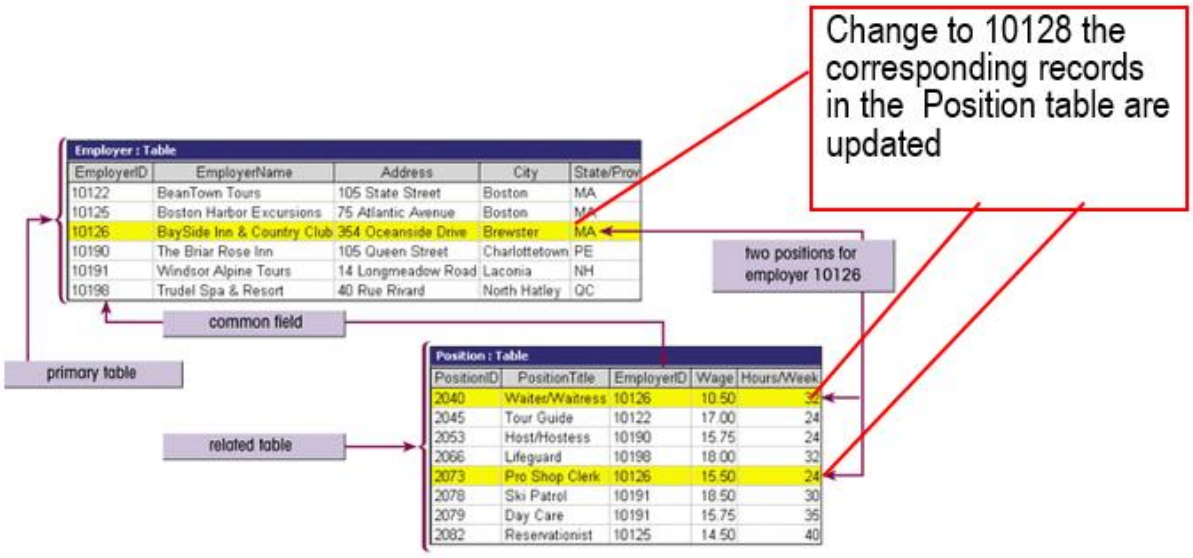
- Problem 3: if in table Employer we delete the record for Boston Harbour Excursions (EmployerID 10125) as they are no longer a client
- Results in: 1 orphaned records in the Position table



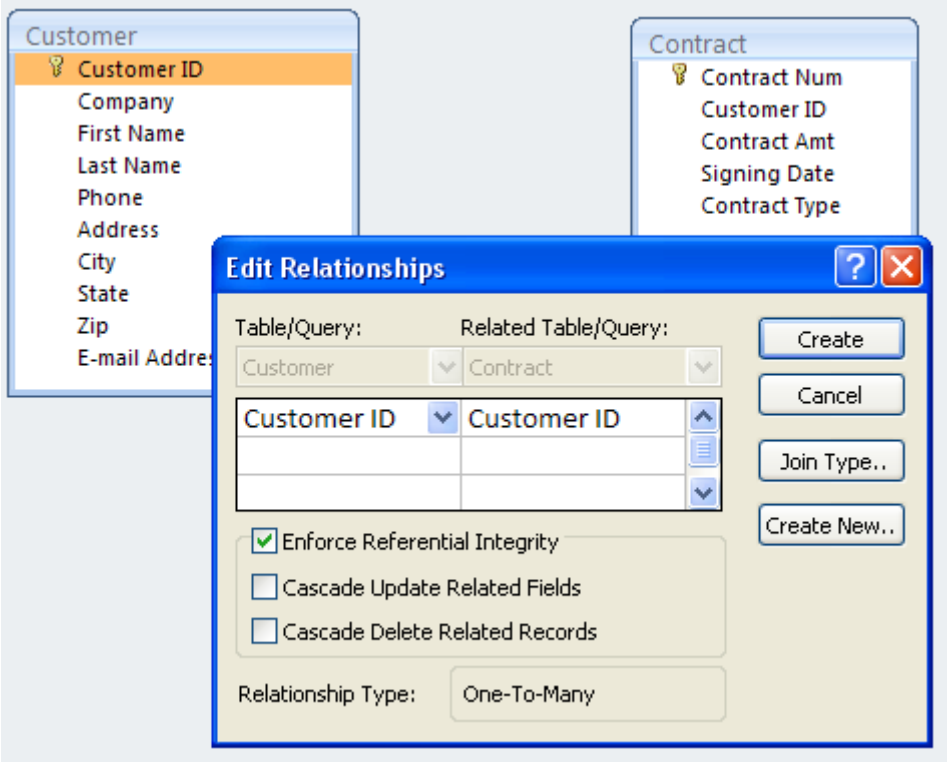
Referential Integrity

- How can we avoid problems of inconsistency?
- Answer:
  - Referential integrity - the set of rules that Access enforces to maintain consistency between related tables when you update the data in a database.
  - There are three referential integrity rules that Access enforces
- Referential Integrity Rules
  - Rule 1
    - If you add a record to a related table a matching record must exist in the primary table or Access will not accept the entry.
    - Inconsistencies that can occur in related tables:
      - Problem 1:
        - Add a new record to the Position table with EmployerID = 10132 which does not appear in Employer Table
        - With Referential Integrity enforced, Access prevents this happening!
  - Rule 2

- If you try to change the value of a primary key in a primary table thus leaving an orphaned foreign key, Access prevents you from doing so.
- Alternatively:
  - **cascade update** allows you to change the value of the primary key and automatically changes the appropriate foreign key values in the related table.
  - Problem 2:
    - Change the EmployerId for BaySide Inn & Country Club from 10126 to 10128
    - With Referential Integrity enforced, Access prevents you from doing this unless the Cascade update option is enforced then:
    - Access automatically updates the related table!

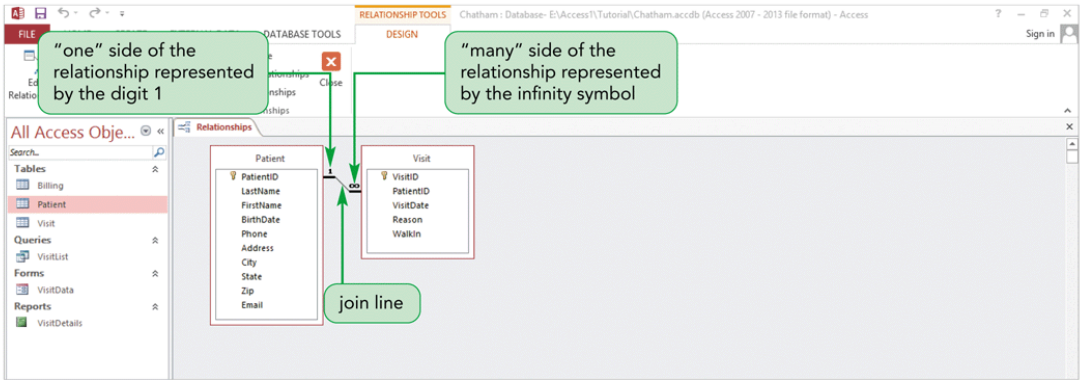


  - Rule 3
    - If you try to delete a record in a primary table, Access will prevent you from doing so if there are matching records in a related table.
    - Alternatively :
      - cascade delete allows you to delete a record in the primary table and then deletes all corresponding records in related tables.
      - Problem 3:
        - Delete the record for Boston Harbour Excursions (EmployerID 10125) as they are no longer required
        - With Referential Integrity enforced, Access prevents you from doing this unless the cascade delete option is selected then:
        - Access automatically deletes all related records!
- Enforcing Referential Integrity, cascade update and cascade delete
  - Referential Integrity can be selected when defining the table relationships.
  - Cascades Update and Cascade Deletes can also be selected when defining the table relationships.

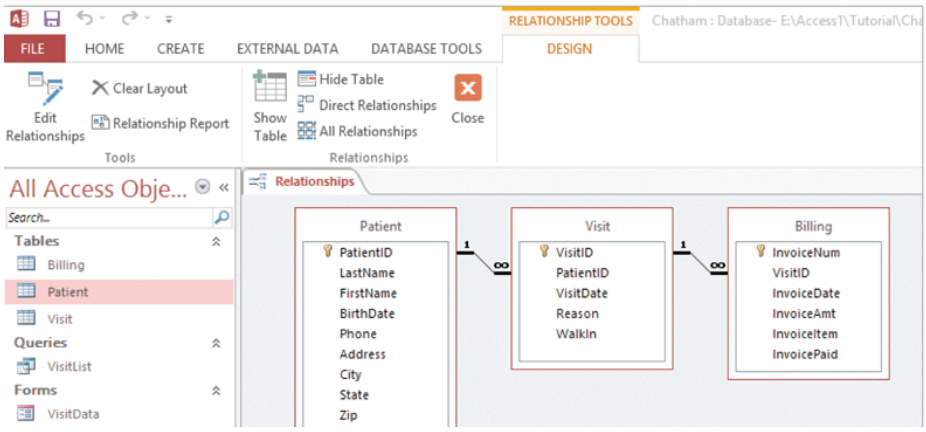


- Defining Table Relationships

Figure 2-43 **Defined relationship in the Relationships window**



Both relationships defined



Summary

- Database query, form and report

- Guidelines for designing databases and setting field properties
- A table in Design view
- Types of relationships between two tables

11. Practice and Apply

- Create a database
- Create a simple query, form and report
- Learn the guidelines for designing databases
- Create a table in Design view
- Define a relationship between two tables
- Complete Tutorial 10 Exercises