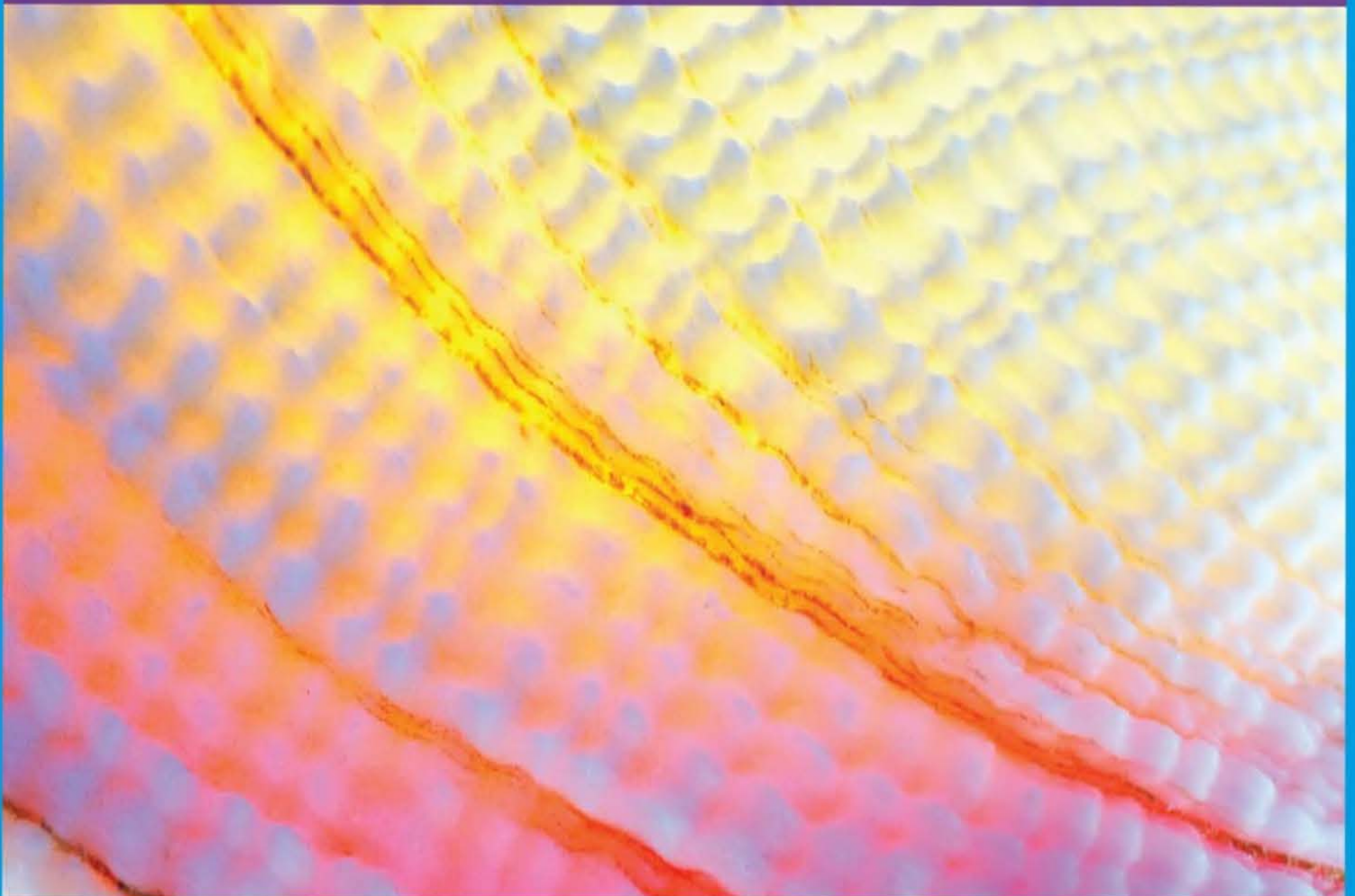


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**New Perspectives Microsoft® Office 365® Access®
2019 Comprehensive**

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Getting to Know Microsoft Office Versions

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Microsoft supports several versions of Office:

- **Office 365:** A cloud-based subscription service that delivers Microsoft's most up-to-date, feature-rich, modern productivity tools direct to your device. There are variations of Office 365 for business, educational, and personal use. Office 365 offers extra online storage and cloud-connected features, as well as updates with the latest features, fixes, and security updates.
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Creating a Database

Tracking Patient, Visit, and Billing Data

Case | *Lakewood Community Health Services*

Lakewood Community Health Services, a nonprofit health clinic located in the greater Atlanta, Georgia area, provides a range of medical services to patients of all ages. The clinic specializes in chronic disease management, cardiac care, and geriatrics. Donna Taylor, the office manager for Lakewood Community Health Services, oversees a small staff and is responsible for maintaining records for the clinic's patients.

In order to best manage the clinic, Donna and her staff rely on electronic medical records for patient information, billing, inventory control, purchasing, and accounts payable. Several months ago, the clinic upgraded to **Microsoft Access 2019** (or simply **Access**), a computer program used to enter, maintain, and retrieve related data in a format known as a database. Donna and her staff want to use Access to store information about patients, billing, vendors, and products. She asks for your help in creating the necessary Access database.

OBJECTIVES

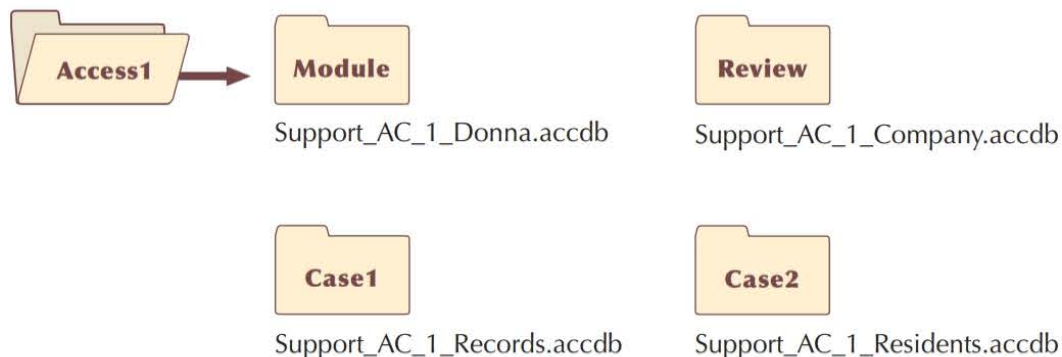
Session 1.1

- Define basic database concepts and terms
- Start and exit Access
- Identify the Microsoft Access window and Backstage view
- Create a blank database
- Create and save a table in Datasheet view and Design view
- Add fields to a table in Datasheet view and Design view
- Set a table's primary key in Design view

Session 1.2

- Open an Access database
- Open a table using the Navigation Pane
- Copy and paste records from another Access database
- Navigate a table datasheet and enter records
- Create and navigate a simple query
- Create and navigate a simple form
- Create, preview, navigate, and print a simple report
- Use Help in Access
- Identify how to compact, back up, and restore a database

STARTING DATA FILES

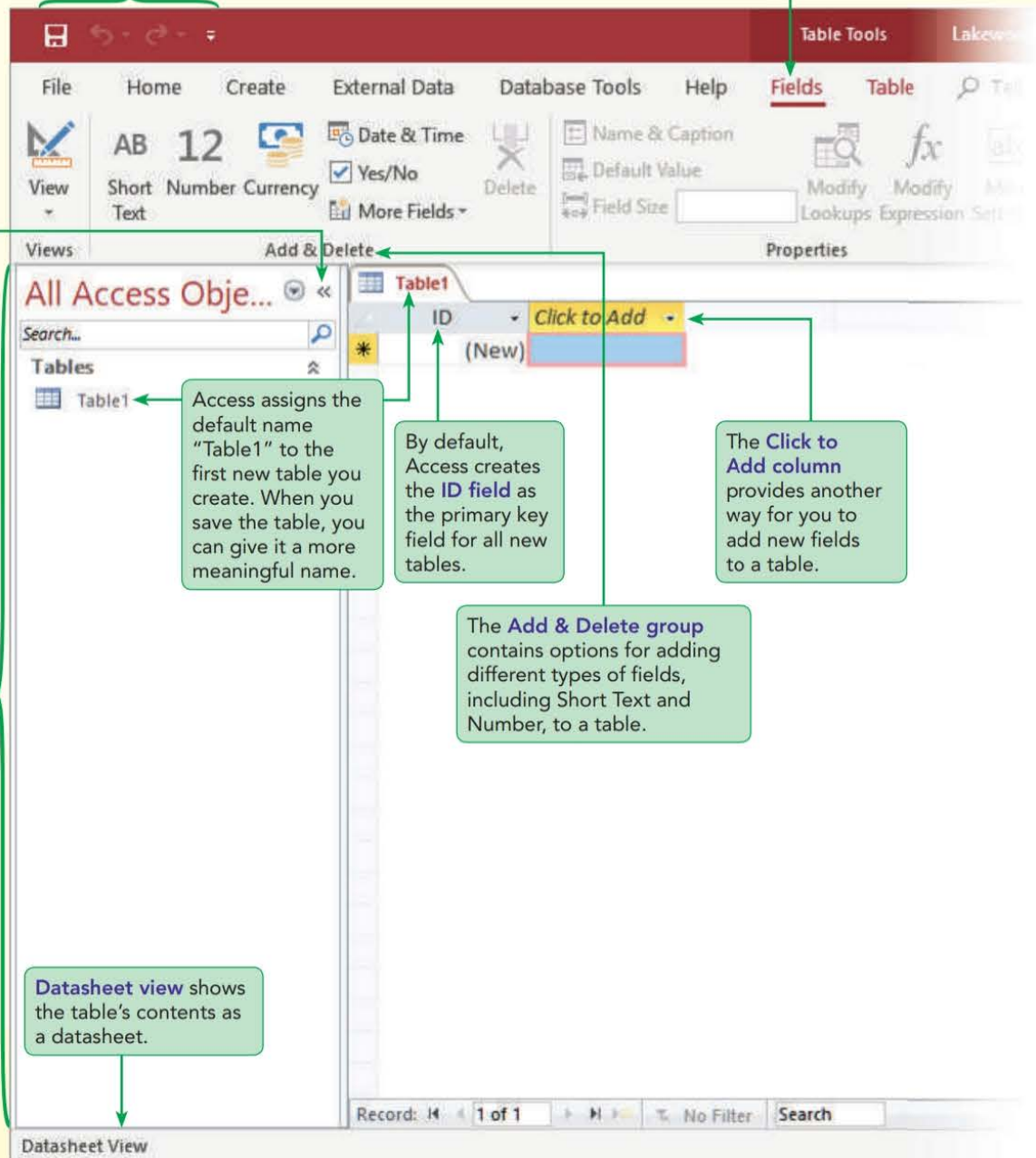


Session 1.1 Visual Overview:

The **Quick Access Toolbar** provides one-click access to commonly used commands, such as Save.

The **Table Tools Fields tab** provides options for adding, removing, and formatting the fields in a table.

The **Shutter Bar Open/Close Button** allows you to close and open the Navigation Pane; you might want to close the pane so that you have more room on the screen to view the object's contents.



Access assigns the default name "Table1" to the first new table you create. When you save the table, you can give it a more meaningful name.

By default, Access creates the **ID field** as the primary key field for all new tables.

The **Click to Add column** provides another way for you to add new fields to a table.

The **Add & Delete group** contains options for adding different types of fields, including Short Text and Number, to a table.

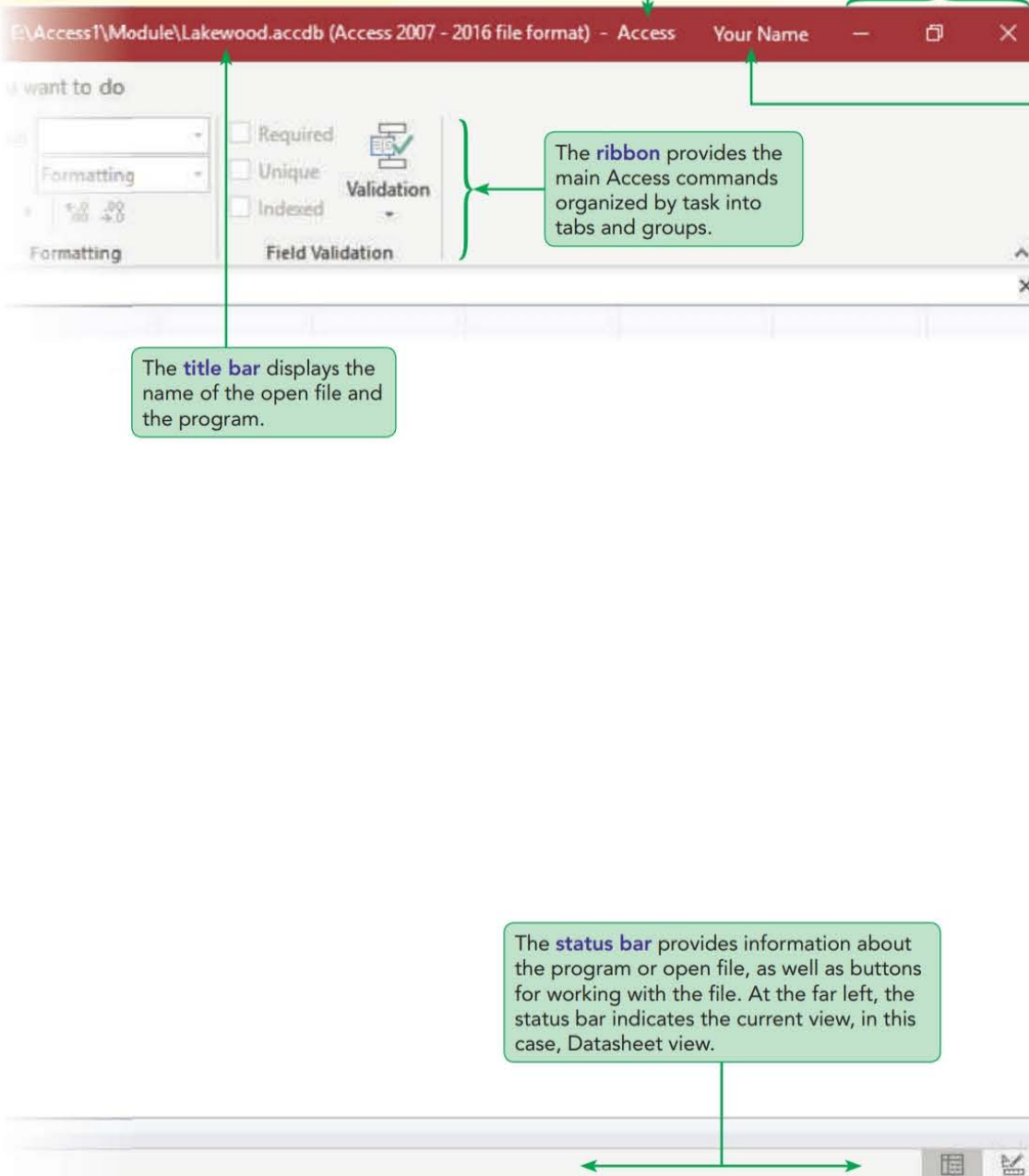
The **Navigation Pane** lists all the objects (tables, reports, and so on) in the database; it is the main control center for opening and working with database objects.

Datasheet view shows the table's contents as a datasheet.

The Access Window

The **Access window** is the program window that appears when you create a new database or open an existing database.

You use the window buttons to minimize, maximize, and close the Access window.



If you are signed into your Office account, your name appears here. If not are not signed in, the **Sign in link** will appear here, and you can click it to sign into your Office account.

The **ribbon** provides the main Access commands organized by task into tabs and groups.

The **title bar** displays the name of the open file and the program.

The **status bar** provides information about the program or open file, as well as buttons for working with the file. At the far left, the status bar indicates the current view, in this case, Datasheet view.

A **datasheet** displays the table's contents in rows and columns, similar to a table that you create in a Word document or an Excel worksheet. Each row will be a separate record in the table, and each column will contain the field values for one field in the table.

Introduction to Database Concepts

Before you begin using Access to create the database for Donna, you need to understand a few key terms and concepts associated with databases.

Organizing Data

Data is a valuable resource to any business. At Lakewood Community Health Services, for example, important data includes the patients' names and addresses, visit dates, and billing information. Organizing, storing, maintaining, retrieving, and sorting this type of data are critical activities that enable a business to find and use information effectively. Before storing data on a computer, however, you must organize the data.

Your first step in organizing data is to identify the individual fields. A **field** is a single characteristic or attribute of a person, place, object, event, or idea. For example, some of the many fields that Lakewood Community Health Services tracks are the patient ID, first name, last name, address, phone number, visit date, reason for visit, and invoice amount.

Next, you group related fields together into tables. A **table** is a collection of fields that describes a person, place, object, event, or idea. Figure 1-1 shows an example of a Patient table that contains the following four fields: PatientID, FirstName, LastName, and Phone. Each field is a column in the table, with the field name displayed as the column heading.

Figure 1-1 Data organization for a table of patients

PatientID	FirstName	LastName	Phone
13264	Alex	Olsen	404-555-9132
13273	Sofia	Garcia	470-555-3126
13276	Claire	Wilson	678-555-1247
13283	Harper	Rowe	404-555-1712
13290	Jim	Williams	770-555-4910
13299	Terry	Cruz	470-555-9982

The specific content of a field is called the **field value**. In Figure 1-1, the first set of field values for PatientID, FirstName, LastName, and Phone are, respectively: 13264, Alex, Olsen, and 404-555-9132. This set of field values is called a **record**. In the Patient table, the data for each patient is stored as a separate record. Figure 1-1 shows six records; each row of field values in the table is a record.

Databases and Relationships

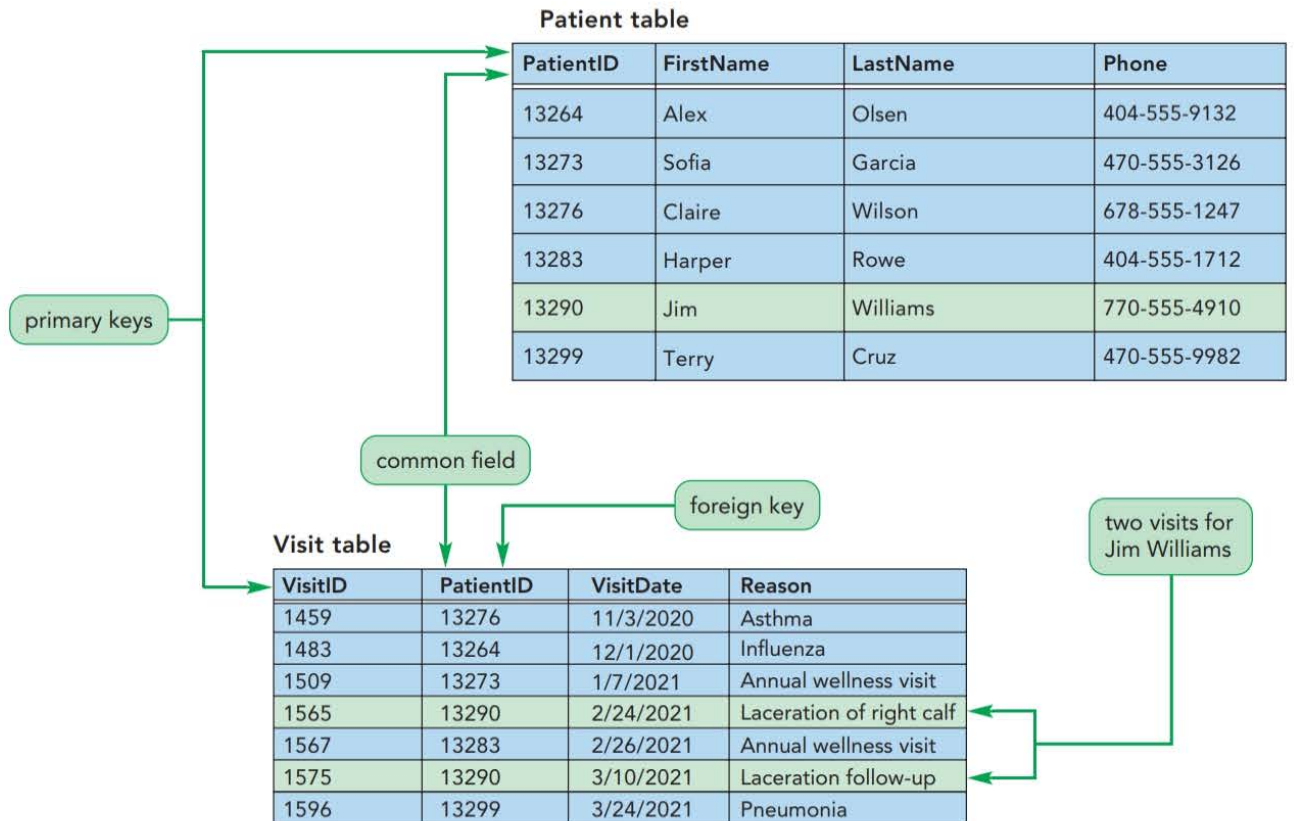
A collection of related tables is called a **database**, or a **relational database**. In this module, you will create the database for Lakewood Community Health Services, and within that database, you'll create a table named Visit to store data about patient visits. Later on, you'll create two more tables, named Patient and Billing, to store related information about patients and their invoices.

As Donna and her staff use the database that you will create, they will need to access information about patients and their visits. To obtain this information, you must have a way to connect records in the Patient table to records in the Visit table. You connect the records in the separate tables through a **common field** that appears in both tables.

In the sample database shown in Figure 1–2, each record in the Patient table has a field named PatientID, which is also a field in the Visit table. For example, Jim Williams is the fifth patient in the Patient table and has a PatientID field value of 13290. This same PatientID field value, 13290, appears in two records in the Visit table. Therefore, Jim Williams is the patient that was seen at these two visits.

Figure 1–2

Database relationship between tables for patients and visits



Each ID value in the Patient table must be unique so that you can distinguish one patient from another. These unique PatientID values also identify each patient's specific visits in the Visit table. The PatientID field is referred to as the primary key of the Patient table. A **primary key** is a field, or a collection of fields, whose values uniquely identify each record in a table. No two records can contain the same value for the primary key field. In the Visit table, the VisitID field is the primary key because Lakewood Community Health Services assigns each visit a unique identification number.

When you include 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, as shown in Figure 1–2. For example, PatientID is the primary key in the Patient table and a foreign key in the Visit table.

The PatientID field must have the same characteristics in both tables. Although the primary key PatientID contains unique values in the Patient table, the same field as a foreign key in the Visit table does not necessarily contain unique values. The PatientID value 13290, for example, appears two times in the Visit table because Jim Williams made two visits to the clinic.

Each foreign key value, however, must match one of the field values for the primary key in the other table. In the example shown in Figure 1–2, each PatientID value in the Visit table must match a PatientID value in the Patient table. The two tables are related, enabling users to connect the facts about patients with the facts about their visits to the clinic.

Storing Data in Separate Tables

INSIGHT

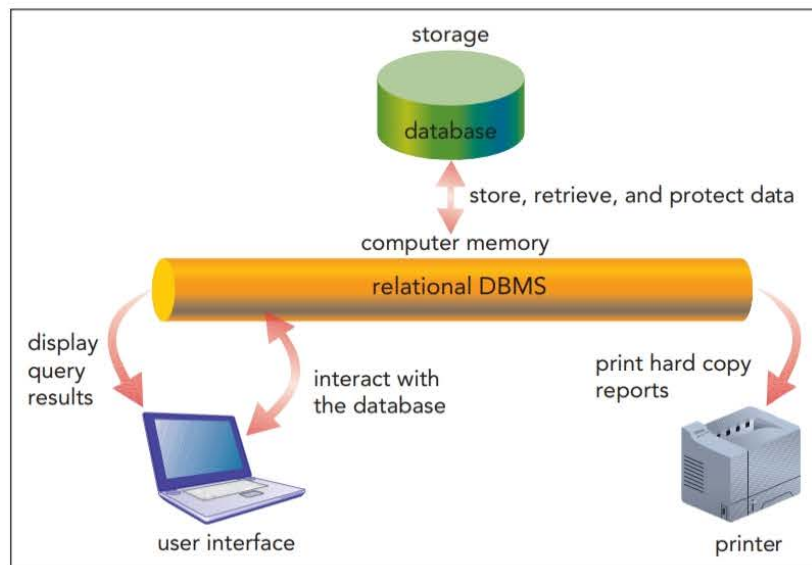
When you create a database, you must create separate tables that contain only fields that are directly related to each other. For example, in the Lakewood database, the patient and visit data should not be stored in the same table because doing so would make the data difficult to update and prone to errors. Consider Jim Williams and his visits to the clinic, and assume that he has many more than just two visits. If all the patient and visit data was stored in the same table, so that each record (row) contained all the information about each visit and the patient, the patient data would appear multiple times in the table. This causes problems when the data changes. For example, if the phone number for Jim Williams changed, you would have to update the multiple occurrences of the phone number throughout the table. Not only would this be time-consuming, it would increase the likelihood of errors or inconsistent data.

Relational Database Management Systems

To manage its databases, a company uses a database management system. A **database management system (DBMS)** is a software program that lets you create databases, and then manipulate the data they contain. Most of today's database management systems, including Access, are called relational database management systems. In a **relational database management system**, data is organized as a collection of tables. As stated earlier, a relationship between two tables in a relational DBMS is formed through a common field.

A relational DBMS controls the storage of databases and facilitates the creation, manipulation, and reporting of data, as illustrated in Figure 1-3.

Figure 1-3 Relational database management system



Specifically, a relational DBMS provides the following functions:

- It allows you to create database structures containing fields, tables, and table relationships.
- It lets you easily add new records, change field values in existing records, and delete records.
- It contains a built-in query language, which lets you obtain immediate answers to the questions (or queries) you ask about your data.
- It contains a built-in report generator, which lets you produce professional-looking, formatted reports from your data.
- It protects databases through security, control, and recovery facilities.

An organization such as Lakewood Community Health Services benefits from a relational DBMS because it allows users working in different groups to share the same data. More than one user can enter data into a database, and more than one user can retrieve and analyze data that other users have entered. For example, the database for Lakewood Community Health Services will contain only one copy of the Visit table, and all employees will use it to access visit information.

Finally, unlike other software programs, such as spreadsheet programs, a DBMS can handle massive amounts of data and allows relationships among multiple tables. Each Access database, for example, can be up to two gigabytes in size, can contain up to 32,768 objects (tables, reports, and so on), and can have up to 255 people using the database at the same time. For instructional purposes, the databases you will create and work with throughout this text contain a relatively small number of records compared to databases you would encounter outside the classroom, which would likely contain tables with very large numbers of records.

Starting Access and Creating a Database

Now that you've learned some database terms and concepts, you're ready to start Access and create the Lakewood database for Donna.

To start Access:


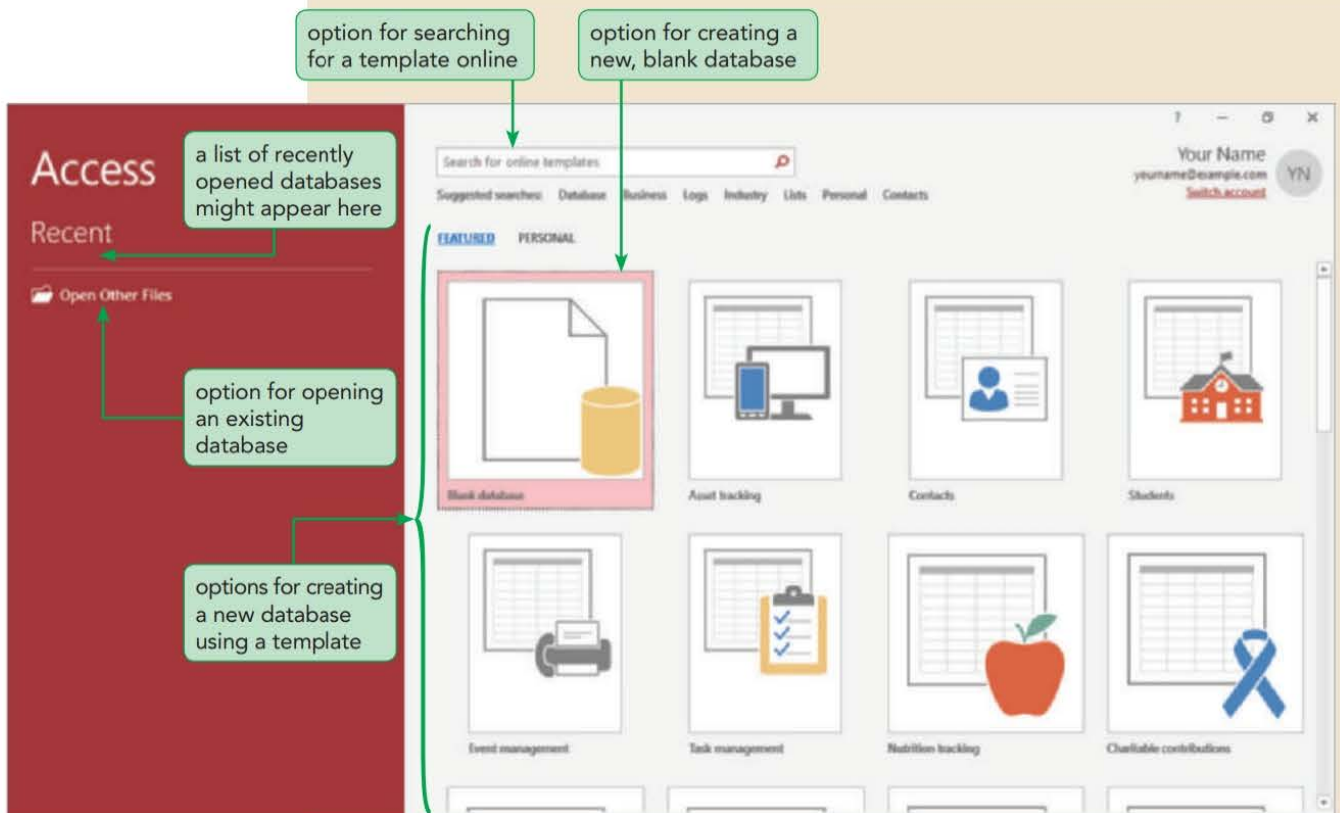
1. On the Windows taskbar, click the **Start** button . The Start menu opens.
2. On the Start menu, scroll down the list of apps, and then click **Access**. Access starts and displays the Recent screen in Backstage view. See Figure 1-4.

Figure 1–4 Recent screen in Backstage view



When you start Access, the first screen that appears is Backstage view, which is the starting place for your work in Access. **Backstage view** 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 database option. If the database you need to create contains objects that match those found in common databases, such as databases that store data about contacts or tasks, you can use one of the templates provided with Access. A **template** is a predesigned database that includes professionally designed tables, reports, and other database objects that can make it quick and easy for you to create a database. You can also search for a template online using the Search for online templates box.

In this case, the templates provided do not match Donna’s needs for the clinic’s database, so you need to create a new, blank database from scratch.

To create the new Lakewood database:


1. **san** ↓ Make sure you have the Access starting Data Files on your computer.

Trouble? If you don’t have the starting Data Files, you need to get them before you can proceed. Your instructor will either give you the Data Files or ask you to obtain them from a specified location (such as a network drive). If you have any questions about the Data Files, see your instructor or technical support person for assistance.
2. On the Recent screen, click **Blank database** (see Figure 1–4). The Blank database screen opens.

Be sure to type **Lakewood** or you'll create a database named Database1.


TIP

If you don't type the filename extension, Access adds it automatically.

3. In the File Name box, type **Lakewood** to replace the selected database name provided by Access, Database1. Next you need to specify the location for the file.
4. Click the **Browse** button  to the right of the File Name box. The File New Database dialog box opens.
5. Navigate to the drive and folder where you are storing your files, as specified by your instructor.
6. Make sure the Save as type box displays "Microsoft Access 2007–2016 Databases."

Trouble? If your computer is set up to show file name extensions, you will see the Access file name extension ".accdb" in the File name box.

7. Click **OK**. You return to the Blank database screen, and the File Name box now shows the name Lakewood.accdb. The filename extension ".accdb" identifies the file as an Access 2007–2016 database.
8. Click **Create**. Access creates the new database, saves it to the specified location, and then opens an empty table named Table1.

Trouble? If you see only ribbon tab names and no buttons, click the Home tab to expand the ribbon, and then in the lower-right corner of the ribbon, click the Pin this pane button  to pin the ribbon.

Refer back to the Session 1.1 Visual Overview and spend some time becoming familiar with the components of the Access window.

INSIGHT

Understanding the Database File Type

Access 2019 uses the .accdb file extension, which is the same file extension used for databases created with Microsoft Access 2007, 2010, 2013, and 2016. To ensure compatibility between these earlier versions and the Access 2019 software, new databases created using Access 2019 have the same file extension and file format as Access 2007, Access 2010, Access 2013, and Access 2016 databases.

Working in Touch Mode


TIP



On a touch device, you tap instead of click.

If you are working on a touch device, such as a tablet, you can switch to Touch Mode in Access to make it easier for you to tap buttons on the ribbon and perform other touch actions. Your screens will not match those shown in the book exactly, but this will not cause any problems.

Note: The following steps assume that you are using a mouse. If you are instead using a touch device, please read these steps but don't complete them, so that you remain working in Touch Mode.

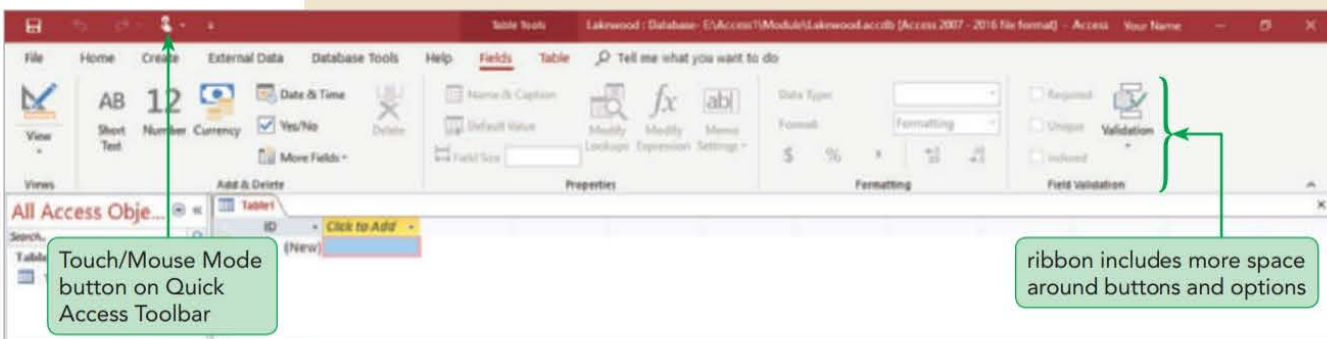
To switch to Touch Mode:

1. On the Quick Access Toolbar, click the **Customize Quick Access Toolbar** button . A menu opens listing buttons you can add to the Quick Access Toolbar as well as other options for customizing the toolbar.

Trouble? If the Touch/Mouse Mode command on the menu has a checkmark next to it, press ESC to close the menu, and then skip to Step 3.
2. Click **Touch/Mouse Mode**. The Quick Access Toolbar now contains the Touch/Mouse Mode button , which you can use to switch between Mouse Mode, the default display, and Touch Mode.
3. On the Quick Access Toolbar, click the **Touch/Mouse Mode** button . A menu opens with two commands: Mouse, which shows the ribbon in the standard display and is optimized for use with the mouse; and Touch, which provides more space between the buttons and commands on the ribbon and is optimized for use with touch devices. The icon next to Mouse is shaded to indicate that it is selected.



Trouble? If the icon next to Touch is shaded red, press ESC to close the menu and skip to Step 5.
4. Click **Touch**. The display switches to Touch Mode with more space between the commands and buttons on the ribbon. See Figure 1–5.

Figure 1–5 Ribbon displayed in Touch Mode



The figures in this text show the standard Mouse Mode display, and the instructions assume you are using a mouse to click and select options, so you'll switch back to Mouse Mode.

Trouble? If you are using a touch device and want to remain in Touch Mode, skip Steps 5 and 6.

5. On the Quick Access Toolbar, click the **Touch/Mouse Mode** button , and then click **Mouse**. The ribbon returns to the standard display, as shown in the Session 1.1 Visual Overview.
6. On the Quick Access Toolbar, click the **Customize Quick Access Toolbar** button , and then click **Touch/Mouse Mode** to deselect it. The Touch/Mouse Mode button is removed from the Quick Access Toolbar.

Creating a Table in Datasheet View

Tables contain all the data in a database and are the fundamental objects for your work in Access. You can create a table in Access in different ways, including entering the fields and records for the table directly in Datasheet view.

REFERENCE

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.
- On the Fields tab in the Add & Delete group, click the button for the type of field you want to add to the table (for example, click the Short Text button), and then type the field name; or, in the table datasheet, click the Click to Add column heading, click the type of field you want to add from the list that opens, and then press TAB or ENTER to move to the next column in the datasheet. 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 TAB or ENTER to move from one field to the next.
- After entering the value for the last field in the first record, press TAB or ENTER to move to the next row, and then enter the values for the next record. Continue this process until you have entered all the records for the table.
- On the Quick Access Toolbar, click the Save button, enter a name for the table, and then click OK.

For Lakewood Community Health Services, Donna needs to track information about each patient visit at the clinic. She asks you to create the Visit table according to the plan shown in Figure 1-6.

Figure 1-6

Plan for the Visit table

Field	Purpose
VisitID	Unique number assigned to each visit; will serve as the table's primary key
PatientID	Unique number assigned to each patient; common field that will be a foreign key to connect to the Patient table
VisitDate	Date on which the patient visited the clinic
Reason	Reason/diagnosis for the patient visit
WalkIn	Whether the patient visit was a walk-in or scheduled appointment

As shown in Donna's plan, she wants to store data about visits in five fields, including fields to contain the date of each visit, the reason for the visit, and if the visit was a walk-in or scheduled appointment. These are the most important aspects of a visit and, therefore, must be tracked. Also, notice that the VisitID field will be the primary key for the table; each visit at Lakewood Community Health Services is assigned a unique number, so this field is the logical choice for the primary key. Finally, the PatientID field is needed in the Visit table as a foreign key to connect the information about visits to patients. The data about patients and their invoices will be stored in separate tables, which you will create later.

Notice the name of each field in Figure 1-6. You need to name each field, table, and object in an Access database.



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.
- Although Access supports the use of spaces in field names (and in other object names), experienced database developers avoid using spaces because they can cause errors when the objects are involved in programming tasks.

By spending time obtaining and analyzing information about the fields in a table, and understanding the rules for naming fields, you can create a well-designed table that will be easy for others to use.

Renaming the Default Primary Key Field

As noted earlier, Access provides the ID field as the default primary key for a new table you create in Datasheet view. Recall that a primary key is a field, or a collection of fields, whose values uniquely identify each record in a table. However, according to Donna's plan, the VisitID field should be the primary key for the Visit table. You'll begin by renaming the default ID field to create the VisitID field.

TIP

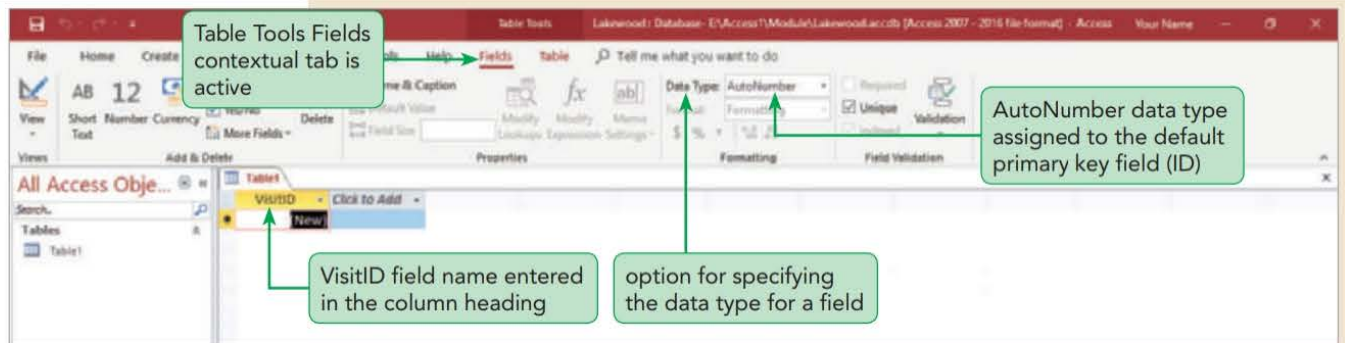
A shortcut menu opens when you right-click an object and provides options for working with that object.

To rename the ID field to the VisitID field:

1. Right-click the **ID** column heading to open the shortcut menu, and then click **Rename Field**. The column heading ID is selected, so that whatever text you type next will replace it.
2. Type **VisitID** and then click the row below the heading. The column heading changes to VisitID, and the insertion point moves to the row below the heading. The **insertion point** is a flashing cursor that shows where text you type will be inserted. In this case, it is hidden within the selected field value (New). See Figure 1–7.

Trouble? If you make a mistake while typing the field name, use **BACKSPACE** to delete characters to the left of the insertion point or use **DELETE** to delete characters to the right of the insertion point. Then type the correct text. To correct a field name by replacing it entirely, press **ESC**, and then type the correct text.

Figure 1-7 ID field renamed to VisitID



Notice that the Table Tools Fields tab is active on the ribbon. This is an example of a **contextual tab**, which is a tab that appears and provides options for working with a specific object that is selected—in this case, the table you are creating. As you work with other objects in the database, other contextual tabs will appear with commands and options related to each selected object.

INSIGHT

Buttons and Labels on the Ribbon

Depending on the size of the monitor you are using and your screen resolution settings, you might see more or fewer buttons on the ribbon, and you might not see labels next to certain buttons. The screenshots in these modules were created using a screen resolution setting of 1366 x 768 with the program window maximized. If you are using a smaller monitor or a lower screen resolution, some buttons will appear only as icons, with no labels next to them, because there is not enough room on the ribbon to display the labels.

You have renamed the default primary key field, ID, to VisitID. However, the VisitID field still retains the characteristics of the ID field, including its data type. Your next task is to change the data type of this field.

Changing the Data Type of the Default Primary Key Field

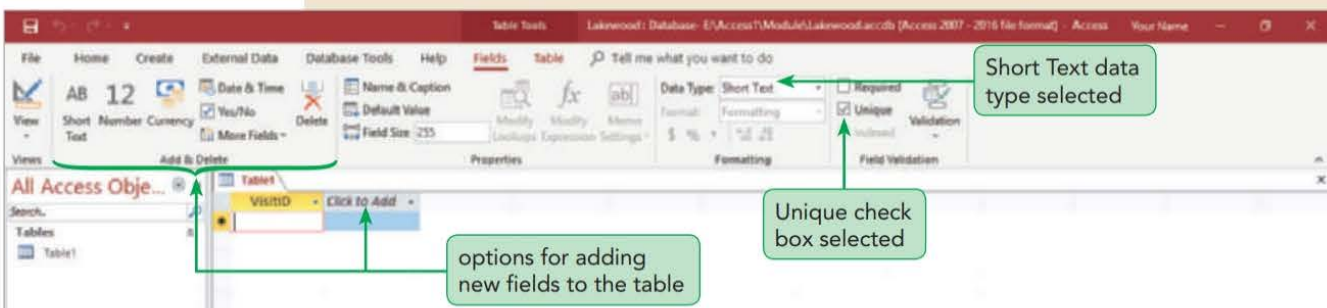
Notice the Formatting group on the Table Tools Fields tab. One of the options available in this group is the Data Type option (see Figure 1-7). Each field in an Access table must be assigned a data type. The **data type** determines what field values you can enter for the field. In this case, the AutoNumber data type is displayed. Access assigns the AutoNumber data type to the default ID primary key field because the **AutoNumber** data type automatically inserts a unique number in this field for every record, beginning with the number 1 for the first record, the number 2 for the second record, and so on. Therefore, a field using the AutoNumber data type can serve as the primary key for any table you create.

Visit numbers at Lakewood Community Health Services are specific, four-digit numbers, so the AutoNumber data type is not appropriate for the VisitID field, which is the primary key field in the table you are creating. A better choice is the **Short Text** data type, which allows field values containing letters, digits, and other characters, and which is appropriate for identifying numbers, such as visit numbers, that are never used in calculations. So, Donna asks you to change the data type for the VisitID field from AutoNumber to Short Text.

To change the data type for the VisitID field:

1. Make sure that the VisitID column is selected. A column is selected when you click a field value, in which case the background color of the column heading changes to orange (the default color) and the insertion point appears in the field value. You can also click the column heading to select a column, in which case the background color of both the column heading and the field value changes (the default colors are gray and blue, respectively).
2. On the Table Tools Fields tab, in the Formatting group, click the **Data Type arrow**, and then click **Short Text**. The VisitID field is now a Short Text field. See Figure 1-8.

Figure 1-8 Short Text data type assigned to the VisitID field



Note the Unique check box in the Field Validation group. This check box is selected because the VisitID field assumed the characteristics of the default primary key field, ID, including the fact that each value in the field must be unique. Because this check box is selected, no two records in the Visit table will be allowed to have the same value in the VisitID field.

With the VisitID field created and established as the primary key, you can now enter the rest of the fields in the Visit table.

Adding New Fields

When you create a table in Datasheet view, you can use the options in the Add & Delete group on the Table Tools 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. (See Figure 1-8.) You'll use both methods to add the four remaining fields to the Visit table. The next field you need to add is the PatientID field. Similar to the VisitID field, the PatientID field will contain numbers that will not be used in calculations, so it should be a Short Text field.

To add the rest of the fields to the Visit table:

1. On the Table Tools Fields tab, in the Add & Delete group, click the **Short Text** button. Access adds a new field named "Field1" to the right of the VisitID field. See Figure 1-9.