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Microsoft

Microsoft® Office

Access™ 2007

INSIDE OUT

CD INCLUDES:

- Sample database applications
- References for the new interface
- eBook, bonus chapters, and more!

- The ultimate, in-depth reference
- Hundreds of timesaving solutions
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Dedication

For Suzanne, as always . . .

— John Viescas

*For the love of my life, Cheryl. Without your love, support, and patience,
I would not have been able to complete this project.*

Thank you for always believing in me.

*And for Amy, Aaron, and Arica. Thank you
for understanding why Daddy could not play
very much for a long time.*

*And thank you John for taking a chance
and giving an untested, slightly crazy, Access Junkie
the opportunity of a lifetime.*

— Jeff Conrad



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A book this large and complex requires a top-notch team to get what we put into Microsoft Office Word documents onto the printed pages you are now holding. We had some of the best in the business at both Microsoft Press and Publishing.com to get the job done. Many thanks to Sandra Haynes and Melissa von Tschudi-Sutton at Microsoft Press. Special thanks to Curt Philips, Rozanne Murphy Whalen, Andrea Fox, Kim Wimpsett, and Publishing.com. We couldn't have done it without you!

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John Viescas
Paris, France

Jeff Conrad
Bend, Oregon

February 2007

About the CD



The companion CD that ships with this book contains many tools and resources to help you get the most out of your Inside Out book.

CAUTION!

If you install the sample files on a Microsoft Windows Vista system, a Windows XP system, or a Windows Server 2003 or later system, you must run the installation program as an Administrator to install the files in the default location. If you do not do that, Microsoft Office Access 2007 opens all the database files as read-only. If you are unable to run the installation program as an Administrator, change the default installation location to a subfolder in My Documents.

Note

If for any reason you are unable to access the files from the CD, the files can also be downloaded from the Web at <http://www.microsoftpressstore.com/9780735623255>

What's on the CD

Your Inside Out CD includes the following:

- **Sample files** Click the Install Sample Files button on the Welcome tab to install the sample files and resources referenced in the book.
- **Additional eBooks** In this section you'll find the following resources:
 - *Microsoft Computer Dictionary*, Fifth Edition
 - *First Look 2007 Microsoft Office System* (Katherine Murray, 2006)
 - Sample chapter and poster from *Look Both Ways: Help Protect Your Family on the Internet* (Linda Criddle, 2007)
 - Windows Vista Product Guide
- **Extending Office** Here you'll find links to Microsoft and other third-party tools that will help you get the most out of your software experience.
- **Resources** In this section, you'll find links to white papers, users assistance articles, product support information, insider blogs, tools, and much more.
- **Bonus content** In the Bonus Content section, you'll find four chapters that will teach you additional skills for creating client/server applications in an Access project. You'll also find six articles that contain important reference materials.

Sample Applications

Throughout this book, you'll see examples from three sample Office Access 2007 applications included on the companion CD:

- *Wedding List (WeddingMC.accdb and WeddingList.accdb)*. This application is an example of a simple database that you might build for your personal use. It has a single main table where you can track the names and addresses of invitees, whether they've said that they will attend, the description of any gift they sent, and whether a thank you note has been sent. Although you might be tempted to store such a simple list in a Microsoft Excel spreadsheet or a Microsoft Word document, this application demonstrates how storing the information in Access makes it easy to search and sort the data and produce reports. The WeddingMC database is automated entirely using macros, and the WeddingList database is the same application automated with Microsoft Visual Basic.
- *Housing Reservations (Housing.accdb)*. This application demonstrates how a company housing department might track and manage reservations in company-owned housing facilities for out-of-town employees and guests. This application includes data access pages that could be published on a company intranet for use by employees logging in from remote locations. You'll also find *HousingDataCopy.accdb* and *HousingDataCopy2.accdb* files that contain many of the query, form, and report examples.
- *Conrad Systems Contacts (Contacts.accdb, ContactsData.accdb, Contacts.adp, and ContactsSQL.mdf)*. This application is both a contacts management and order entry database—two samples for the price of one! This sample database demonstrates how to build a client/server application using only desktop tools as well as how to “upscale” an application to create an Office Access 2007 project and related Microsoft SQL Server tables, views, stored procedures, and functions. You will need to install Microsoft SQL Server 2005 Express Edition to be able to fully use the project version of this database. You'll also find a *ContactsDataCopy.accdb* file that contains additional query, form, and report examples.

Please note that the person names, company names, e-mail addresses, and Web site addresses in these databases are fictitious. Although we preloaded both databases with sample data, the Housing Reservations and Conrad Systems Contacts databases also include a special form (zfrmLoadData) that has code to load random data into the sample tables based on parameters that you supply.

The examples in this book assume you have installed the 2007 Microsoft Office system, not just Access 2007. Several examples also assume that you have installed all optional features of Access through the 2007 Office release setup program. If you have not installed these additional features, your screen might not match the illustrations in this book or you might not be able to run the samples from the companion CD.

System Requirements

The following are the minimum system requirements necessary to run the CD:

- Microsoft Windows Vista, Windows XP with Service Pack (SP) 2, Windows Server 2003 with SP1, or newer operating system
- 500 megahertz (MHz) processor or higher
- 2 gigabytes (GB) storage space (a portion of this disk space will be freed after installation if the original download package is removed from the hard drive)
- 256 megabytes (MB) RAM
- CD-ROM or DVD-ROM drive
- 1024×768 or higher resolution monitor
- Microsoft Windows or Windows Vista-compatible sound card and speakers
- Microsoft Internet Explorer 6 or newer
- Microsoft Mouse or compatible pointing device

Note

An Internet connection is necessary to access the hyperlinks on the companion CD. Connect time charges may apply.

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<http://www.microsoftpressstore.com/title/9780735623255>.

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Note

This companion CD relies on scripting for some interface enhancements. If scripting is disabled or unavailable in your browser, follow these steps to run the CD:

1. From My Computer, double-click the drive that contains this companion CD.
2. Open the Webfiles folder.
3. Double-click Welcome.htm to open the CD in your default browser.

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Conventions and Features Used in This Book

This book uses special text and design conventions to make it easier for you to find the information you need.

Text Conventions

Convention	Meaning
Abbreviated commands for navigating the Ribbon	For your convenience, this book uses abbreviated commands. For example, “Click Home, Insert, Insert Cells” means that you should click the Home tab on the Ribbon, then click the Insert button, and finally click the Insert Cells command.
Boldface type	Boldface type is used to indicate text that you type.
Initial Capital Letters	The first letters of the names of tabs, dialog boxes, dialog box elements, and commands are capitalized. Example: the Save As dialog box.
<i>Italicized type</i>	<i>Italicized type</i> is used to indicate new terms.
Plus sign (+) in text	Keyboard shortcuts are indicated by a plus sign (+) separating two key names. For example, Alt+Shift+Tab means that you press the Alt, Shift, and Tab keys at the same time.

Design Conventions

INSIDE OUT

This Statement Illustrates an Example of an “Inside Out” Heading

These are the book’s signature tips. In these tips, you’ll get the straight scoop on what’s going on with the software—inside information about why a feature works the way it does. You’ll also find handy workarounds to deal with software problems.

Sidebars

Sidebars provide helpful hints, timesaving tricks, or alternative procedures related to the task being discussed.

TROUBLESHOOTING

This statement illustrates an example of a “Troubleshooting” problem statement.

Look for these sidebars to find solutions to common problems you might encounter. Troubleshooting sidebars appear next to related information in the chapters. You can also use “Index to Troubleshooting Topics” at the back of the book to look up problems by topic.

Cross-references point you to other locations in the book that offer additional information about the topic being discussed.

CAUTION!

Cautions identify potential problems that you should look out for when you’re completing a task or problems that you must address before you can complete a task.

Note

Notes offer additional information related to the task being discussed.



When an example has a related file that is included on the companion CD, this icon appears in the margin. You can use these files to follow along with the book’s examples.

Syntax Conventions

The following conventions are used in the syntax descriptions for Visual Basic statements in Chapter 19, “Understanding Visual Basic Fundamentals,” Chapter 20, “Automating Your Application with Visual Basic,” SQL statements in Article 2, “Understanding SQL,” and any other chapter where you find syntax defined. These conventions do not apply to code examples listed within the text; all code examples appear exactly as you’ll find them in the sample databases.

You must enter all other symbols, such as parentheses and colons, exactly as they appear in the syntax line. Much of the syntax shown in the Visual Basic chapter has been broken into multiple lines. You can format your code all on one line, or you can write a single line of code on multiple lines using the Visual Basic line continuation character (`_`).

Convention	Meaning
Bold	Bold type indicates keywords and reserved words that you must enter exactly as shown. Visual Basic understands keywords entered in uppercase, lowercase, and mixed case type. Access stores SQL keywords in queries in all uppercase, but you can enter the keywords in any case.
Italic	Italicized words represent variables that you supply.
Angle brackets < >	Angle brackets enclose syntactic elements that you must supply. The words inside the angle brackets describe the element but do not show the actual syntax of the element. Do not enter the angle brackets.
Brackets []	Brackets enclose optional items. If more than one item is listed, the items are separated by a pipe character (<code> </code>). Choose one or none of the elements. Do not enter the brackets or the pipe; they’re not part of the element. Note that Visual Basic and SQL in many cases require that you enclose names in brackets. When brackets are required as part of the syntax of variables that you must supply in these examples, the brackets are italicized, as in <i>[MyTable].[MyField]</i> .
Braces { }	Braces enclose one or more options. If more than one option is listed, the items are separated by a pipe character (<code> </code>). Choose one item from the list. Do not enter the braces or the pipe.
Ellipsis ...	Ellipses indicate that you can repeat an item one or more times. When a comma is shown with an ellipsis (<code>,...</code>), enter a comma between items.
Underscore _	You can use a blank space followed by an underscore to continue a line of Visual Basic code to the next line for readability. You cannot place an underscore in the middle of a string literal. You do not need an underscore for continued lines in SQL, but you cannot break a literal across lines.

Introduction

Microsoft Office Access 2007 is just one part of Microsoft's overall data management product strategy. Like all good relational databases, it allows you to link related information easily—for example, customer and order data that you enter. But Office Access 2007 also complements other database products because it has several powerful connectivity features. As its name implies, Access 2007 can work directly with data from other sources, including many popular personal computer database programs (such as dBASE and Paradox), with many SQL (Structured Query Language) databases on the desktop, on servers, on minicomputers, or on mainframes, and with data stored on Internet or intranet Web servers. Access 2007 also fully supports Microsoft's ActiveX technology, so an Access application can be either a client or a server for all the other 2007 Microsoft Office system applications, including Word, Excel, PowerPoint, Outlook, FrontPage, Publisher, and OneNote.

Access provides a very sophisticated application development system for the Microsoft Windows operating system. This helps you build applications quickly, whatever the data source. In fact, you can build simple applications by defining forms and reports based on your data and linking them with a few macros or Microsoft Visual Basic statements; there's no need to write complex code in the classic programming sense. Because Access uses Visual Basic, you can use the same set of skills with other applications in the Microsoft Office system or with Visual Basic.

For small businesses (and for consultants creating applications for small businesses), the Access desktop development features are all that's required to store and manage the data used to run the business. Access coupled with Microsoft SQL Server—on the desktop or on a server—is an ideal way for many medium-size companies to build new applications for Windows quickly and inexpensively. To enhance workgroup productivity, you can use Access to create an application linked to data on a Microsoft Windows SharePoint Services server. For large corporations with a big investment in mainframe relational database applications as well as a proliferation of desktop applications that rely on personal computer databases, Access provides the tools to easily link mainframe and personal computer data in a single Windows-based application. Access 2007 includes features to allow you to export or import data in XML format (the lingua franca of data stored on the Web).

Getting Familiar with Access 2007

If you have never used a database program—including Access—you'll find Access 2007 very approachable. Using the results of extensive productivity lab tests, Microsoft has completely revamped the user interface in all the Microsoft Office programs. The new Ribbon technology makes it much easier for novice users to get acquainted with Access and easily discover its most useful features. To get a new user jump-started, Microsoft has provided nearly a dozen local database templates that load onto your hard disk when you install Access. In addition, you'll find many additional database templates available for easy download from the Microsoft Office Web site directly from within

Access. Microsoft plans to continue to add templates after Access 2007 is released to further enhance your productivity.

Note

The Microsoft Office Fluent user interface is the term used to describe the new UI for the 2007 Microsoft Office system. The Ribbon is a component of the Microsoft Office Fluent user interface and the term used throughout this book to refer to the Ribbon component.

But if you have used any prior version of Access, you're in for a big surprise. Menus and toolbars are gone—all replaced by the new Ribbon. The Database window has been replaced by the Navigation Pane. When you first start using Access 2007, you'll probably notice a decrease in productivity—we certainly did—but it won't take you long to get comfortable with the new interface. You'll probably soon discover features that you didn't know were there. Nearly all the old familiar objects are around—tables, queries, forms, reports, macros, and modules, and you'll find that the standard design and data views you've come to know and love are still around. You'll also quickly learn that the new Layout and Report views rapidly increase your productivity.

About This Book

If you're developing a database application with the tools in Access 2007, this book gives you a thorough understanding of “programming without pain.” It provides a solid foundation for designing databases, forms, and reports and getting them all to work together. You'll learn that you can quickly create complex applications by linking design elements with macros or Visual Basic. This book will also show you how to take advantage of some of the more advanced features of Access 2007. You'll learn how to build an Access project that links directly to an SQL Server database. You'll also learn how to use Access tools to link to your Access data from the Web or link your Access application to data stored on the Web.

If you're new to developing applications, particularly database applications, this probably should not be the first book you read about Access. We recommend that you first take a look at *Microsoft Access 2007 Plain and Simple* or *Microsoft Access 2007 Step by Step*.

Microsoft Office Access 2007 Inside Out is divided into seven major parts:

- Part 1 provides an overview of Access 2007 and provides you with a detailed look at the new user interface.
 - Chapter 1 explains the major features that a database should provide, explores those features in Access, and discusses some of the main reasons why you should consider using database software.

- Chapter 2 thoroughly explores the new user interface introduced in the 2007 Office release. The chapter also explains content security, working with the Ribbon and the Navigation Pane, and setting options that customize how you work with Access 2007.
- Chapter 3 describes the architecture of Access 2007, gives you an overview of the major objects in an Access database by taking you on a tour through two of the sample databases, and explains the many ways you can use Access to create an application.
- Part 2 shows you how to create your desktop application database and tables and build queries to analyze and update data in your tables.
 - Chapter 4 teaches you how to create databases and tables.
 - Chapter 5 shows you the ins and outs of modifying tables even after you've already begun to load data and build other parts of your application.
 - Chapter 6 explains how to link to or import data from other sources.
 - Chapter 7 shows you how to build simple queries and how to work with data in Datasheet view.
 - Chapter 8 discusses how to design queries to work with data from multiple tables, summarize information, build queries that require you to work in SQL view, and work with the PivotTable and PivotChart views of queries.
 - Chapter 9 focuses on modifying sets of data with queries—updating data, inserting new data, deleting sets of data, or creating a new table from a selection of data from existing tables.
- Part 3 discusses how to build and work with forms and reports in a desktop application.
 - Chapter 10 introduces you to forms—what they look like and how they work.
 - Chapters 11, 12, and 13 teach you all about form design in a desktop application, from simple forms you build with a wizard to complex, advanced forms that use embedded forms or ActiveX controls.
 - Chapter 14 leads you on a guided tour of reports and explains their major features.
 - Chapters 15 and 16 teach you how to design, build, and implement both simple and complex reports in your desktop application.
- Part 4 shows you how to use the programming facilities in Visual Basic to integrate your database objects and make your application “come alive.”
 - Chapter 17 discusses the concept of event processing in Access, provides a comprehensive list of events, and explains the sequence in which critical events occur.
 - Chapter 18 covers macro design in depth and explains how to use the new error trapping and embedded macro features.

- Chapter 19 is a comprehensive reference to the Visual Basic language and object models implemented in Access. The final section of the chapter presents two complex coding examples with a line-by-line discussion of the code.
- Chapter 20 thoroughly discusses some of the most common tasks that you might want to automate with Visual Basic. Each section describes a problem, shows you specific form or report design techniques you must use to solve the problem, and walks you through the code from one or more of the sample databases that implements the solution.
- Part 5 is all about using Access tools with the Web.
 - Chapter 21 provides an overview of the ways you can publish data on a Web site.
 - Chapter 22 discusses specific ways to publish your Access applications using Windows SharePoint Services (version 3).
 - Chapter 23 covers the features in Access that handle XML, including importing, updating, and publishing data. The chapter also shows you how to use XML to modify table templates and design custom Ribbons.
- Part 6 covers tasks you might want to perform after completing your application.
 - Chapter 24 teaches you how to automate custom Ribbons, how to use the Performance Analyzer tool, how to design a switchboard, and how to set Startup properties.
 - Chapter 25 teaches you tasks for setting up your application so that you can distribute it to others.



- Part 7 expands on what you learned in Parts 2 and 3 by teaching you the additional skills you need to create client/server applications in an Access project.
 - Chapter 26 shows you how to build a new project file and explains how to define SQL Server tables from the project.
 - Chapter 27 teaches you how to design the project equivalent of desktop queries—views, stored procedures, and functions.
 - Chapter 28 builds on what you learned in Chapters 11–13 and shows you how forms work differently in an Access project.
 - Chapter 29 leverages what you learned in Chapters 15–16 and teaches you how to design reports in an Access project.
- The Appendix explains how to install the 2007 Office release, including which options you should choose for Access 2007 to be able to open all the samples in this book. It also discusses how to install Microsoft SQL Server 2005 Express Edition.



The CD also provides six Articles that contain important reference information:

- Article 1 explains a simple technique that you can use to design a good relational database application with little effort. Even if you're already familiar with Access or creating database applications in general, getting the table design right is so important that this article is a "must read" for everyone.
- Article 2 is a complete reference to SQL as implemented in desktop databases. It also contains notes about differences between SQL supported natively by Access and SQL implemented in SQL Server.
- Article 3 discusses how to export data and Access objects to various types of other data formats from your Access application.
- Article 4 lists the functions most commonly used in an Access application categorized by function type.
- Article 5 lists the color names and codes you can use in Access.
- Article 6 lists the macro actions you can use in Access.

Microsoft Office Access 2007 Overview

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Now that you are more comfortable with the user interface in Microsoft Office Access 2007, it's time to dig deeper into exactly what makes up an Access database. This chapter helps you understand the relationships among the main components in Access and shows you how to move around within the database management system.

The Architecture of Access

Access calls anything that can have a name an *object*. Within an Access database, the main objects are tables, queries, forms, reports, macros, and modules.

If you have worked with other database systems on desktop computers, you might have seen the term *database* used to refer to only those files in which you store data. In Access, however, a desktop database (.accdb) also includes all the major objects related to the stored data, including objects you define to automate the use of your data. You can also create an Access application using a project file (.adp) that contains the objects that define your application linked to a Microsoft SQL Server database that stores the tables and queries. Here is a summary of the major objects in an Access database:

- **Table.** An object you define and use to store data. Each table contains information about a particular subject, such as customers or orders. Tables contain *fields* (or *columns*) that store different kinds of data, such as a name or an address, and *records* (or *rows*) that collect all the information about a particular instance of the subject, such as all the information about a department named Housing Administration. You can define a *primary key* (one or more fields that have a unique value for each record) and one or more *indexes* on each table to help retrieve your data more quickly.
- **Query.** An object that provides a custom view of data from one or more tables. In Access, you can use the graphical query by example (QBE) facility or you can write SQL statements to create your queries. You can define queries to select, update, insert, or delete data. You can also define queries that create new tables from data in one or more existing tables. When your Access application is a project file connected to an SQL Server database, you can create special types of queries—functions and stored procedures—that can perform complex actions directly on the server.

- **Form.** An object designed primarily for data input or display or for control of application execution. You use forms to customize the presentation of data that your application extracts from queries or tables. You can also print forms. You can design a form to run a macro or a Microsoft Visual Basic procedure in response to any of a number of events—for example, to run a procedure when the value of data changes.
- **Report.** An object designed for formatting, calculating, printing, and summarizing selected data. You can view a report on your screen before you print it.
- **Macro.** An object that is a structured definition of one or more actions that you want Access to perform in response to a defined event. For example, you might design a macro that opens a second form in response to the selection of an item on a main form. You can include simple conditions in macros to specify when one or more actions in the macro should be performed or skipped. You can use macros to open and execute queries, to open tables, or to print or view reports. You can also run other macros or Visual Basic procedures from within a macro.
- **Module.** An object containing custom procedures that you code using Visual Basic. Modules provide a more discrete flow of actions and allow you to trap errors. Modules can be stand-alone objects containing functions that can be called from anywhere in your application, or they can be directly associated with a form or a report to respond to events on the associated form or report.

For a list of events on forms and reports, see Chapter 17, “Understanding Event Processing.”

INSIDE OUT

What Happened to Data Access Pages?

Office Access 2007 no longer supports designing *data access pages* (DAPs). Usability studies conducted by Microsoft show that DAPs are not a widely used feature within Access, and Microsoft is focusing more of their efforts on Microsoft Windows SharePoint Services for sharing data in corporate environments. To maintain backward compatibility with previous versions, Office Access 2007 will continue to support existing .mdb applications that contain DAPs, but you cannot create new data access pages or modify existing pages from within Access 2007.

Figure 3-1 shows a conceptual overview of how objects in Access are related. Tables store the data that you can extract with queries and display in reports or that you can display and update in forms. Notice that forms and reports can use data either directly from tables or from a filtered view of the data created by using queries. Queries can use Visual Basic functions to provide customized calculations on data in your database. Access also has many built-in functions that allow you to summarize and format your data in queries.

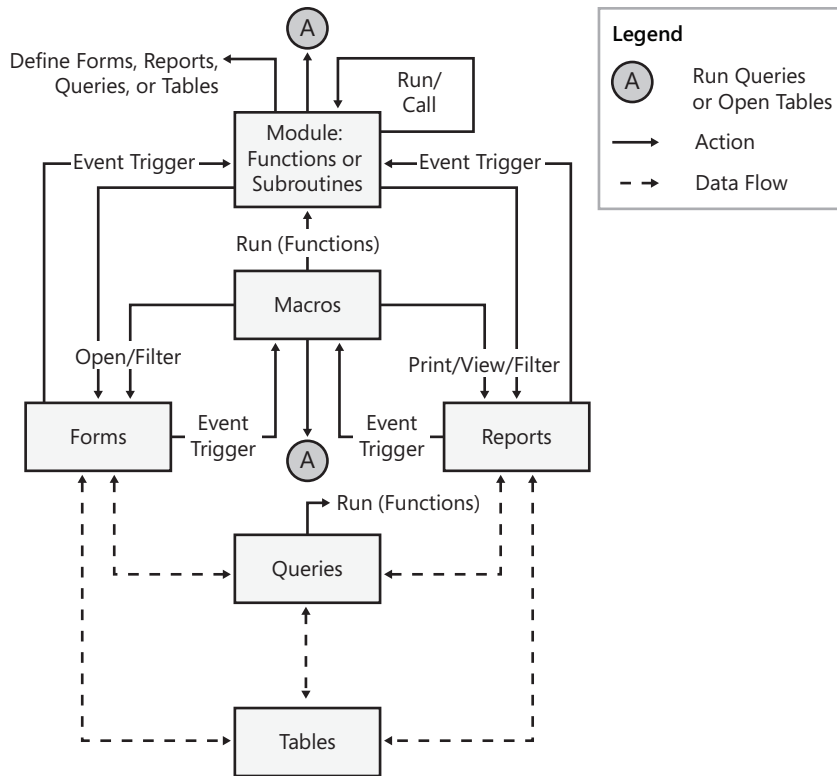


Figure 3-1. In an Access application, you can design queries to extract data from or update data in tables; you can build forms or reports on tables or queries, and you can write code in macros or modules to automate your application.

Events on forms and reports can trigger either macros or Visual Basic procedures. An event is any change in the state of an Access object. For example, you can write macros or Visual Basic procedures to respond to opening a form, closing a form, entering a new row on a form, or changing data either in the current record or in an individual control (an object on a form or report that contains data). You can even design a macro or a Visual Basic procedure that responds to the user pressing individual keys on the keyboard when entering data!

For more information about using Visual Basic within Access, see Chapter 19, “Understanding Visual Basic Fundamentals,” and Chapter 20, “Automating Your Application with Visual Basic.”

Using macros and modules, you can change the flow of your application; open, filter, and change data in forms and reports; run queries; and build new tables. Using Visual Basic, you can create, modify, and delete any Access object; manipulate data in your database row by row or column by column; and handle exceptional conditions. Using module code you can even call Windows application programming interface (API) routines to extend your application beyond the built-in capabilities of Access.

Exploring a Desktop Database—Housing Reservations



Now that you know something about the major objects that make up an Access database, a good next step is to spend some time exploring the Housing Reservations database (Housing.accdb) that comes with this book. First, follow the instructions at the beginning of this book for installing the sample files on your hard drive. When you start Access 2007, it displays the Getting Started window shown in Figure 3-2.

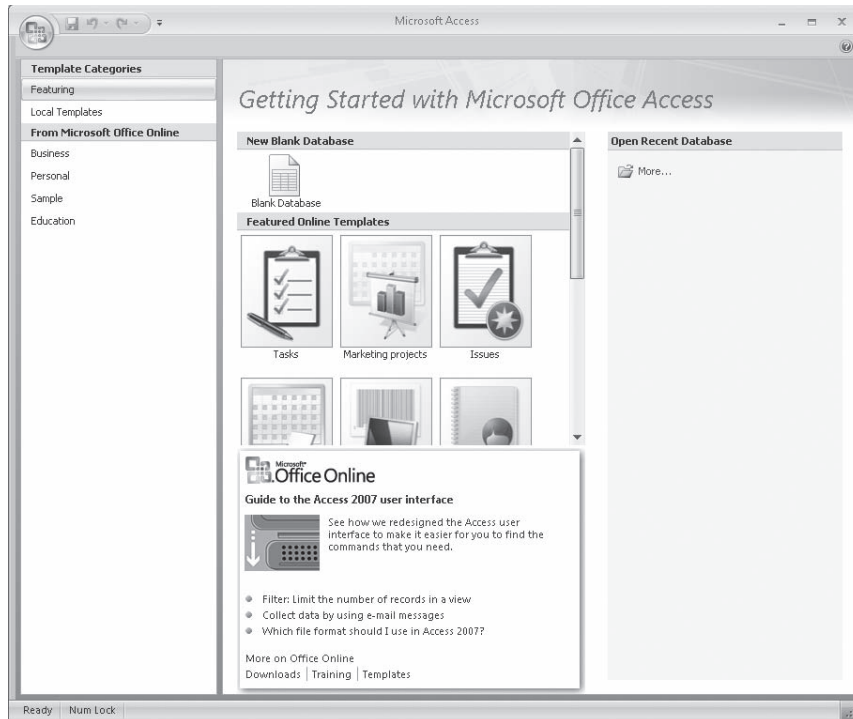


Figure 3-2 Access 2007 displays the Getting Started window every time you start the program.

Click the More link under Open Recent Database on the right side of the window to see the Open dialog box shown in Figure 3-3. In the Open dialog box, select the file Housing.accdb from the folder in which you installed the sample databases, and then click Open. You can also double-click the file name to open the database. (If you haven't set options in Windows Explorer to show file name extensions for registered applications, you won't see the .accdb extension for your database files.)

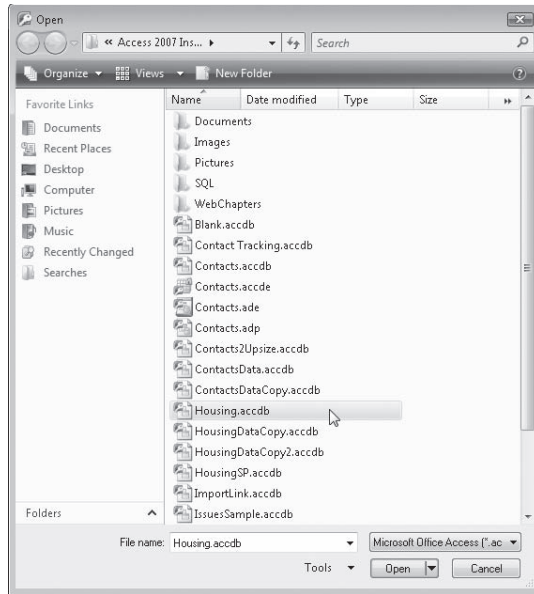


Figure 3-3 Use the Open dialog box to locate the database that you want to open.

When you open the Housing Reservations application, it displays a Not Trusted dialog box if you have not followed the instructions in the previous chapter to define the location of the sample files as trusted. If this happens, click the Close button to close the dialog box. The application also briefly displays a copyright information notice and then displays a message box instructing you to open the frmSplash form. Click OK to dismiss this message box, and then Access puts the focus on the frmSplash form in the Navigation Pane. (You can open the frmSplash form if you want to run the application.) Your Access window should look similar to Figure 3-4.

For an existing database, the Navigation Pane is always the same width as it was when you last set it. The title bar of the window normally shows the name of the database that you have open. As you'll learn later in this book, you can set options in the database to change the title bar of the main Access window to show the name of your application instead of Microsoft Access—we modified the sample database to display the title Housing Reservations on the title bar.

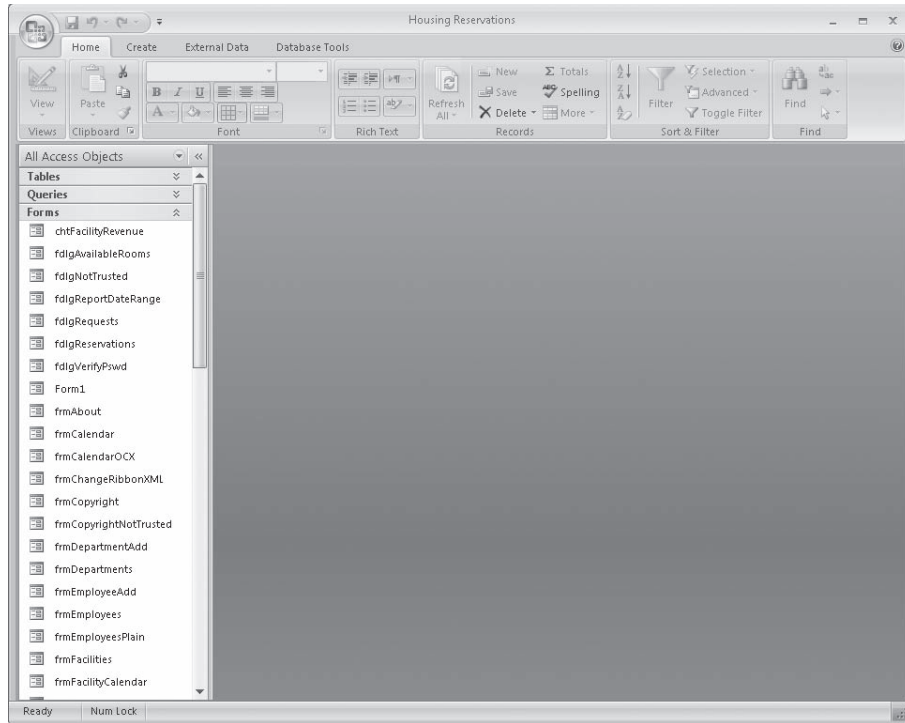


Figure 3-4 The Navigation Pane displays the objects defined in the Housing Reservations sample database.

As we discussed in the previous chapter, the Ribbon has four main tabs that are displayed at all times. As you explore Access 2007, you'll see that the Ribbon provides several contextual tabs that appear and disappear as you work with specific database objects and areas of the program. These contextual tabs make available commands that are useful only within the context of the object that has the focus and that object's current view. For example, it wouldn't make sense to show you table design commands when you have a table open to display its data (Datasheet view). Likewise, you don't need datasheet commands when you have a query open in Design view. We'll explain the various contextual tabs in more detail as we explore the database objects and other areas of Access in the following chapters.

Note

You can rest your mouse pointer on any command or option on the various Ribbon tabs for a second (without clicking the button), and Access displays a ScreenTip to help you discover the purpose of the button.

In the previous chapter, you learned that you can change how Access displays the list of objects in the database by using one of the built-in navigation categories (Object Type, Tables And Related Views, Created Date, and Modified Date) or by defining your own custom navigation category. You also learned that you can filter each navigation category to limit what group Access displays within each category so that you don't have to wade through a long list to find what you want.

In this chapter, we'll be exploring each of the types of objects in the Housing Reservations database, so click the Navigation Pane menu at the top of the Navigation Pane and click Object Type under Navigate To Category. Open the menu again and be sure that you have clicked All Access Objects under Filter By Group, as shown in Figure 3-5. Your Navigation Pane should now look similar to Figure 3-4. You can collapse an entire group of objects by clicking on the group's header bar. If you open the Navigation Pane menu, you can see the names of some custom groups we have defined under Navigate To Category to help organize your work. You'll learn how to work with groups later in this chapter.

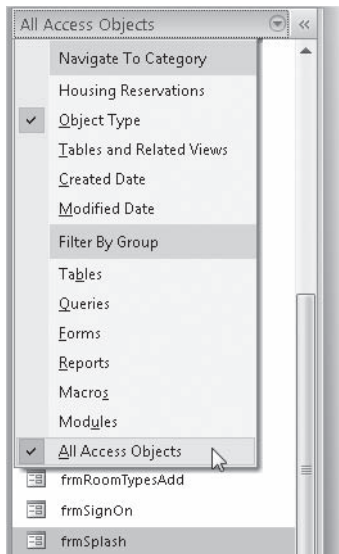


Figure 3-5 Select Object Type under Navigate To Category and then All Access Objects under Filter By Group to see all objects organized in groups by object type.

Tables

Click the menu bar at the top of the Navigation Pane and select Object Type under Navigate To Category. Open the menu again and select Tables under Filter By Group to display a list of tables available in the Housing Reservations database, as shown in Figure 3-6.

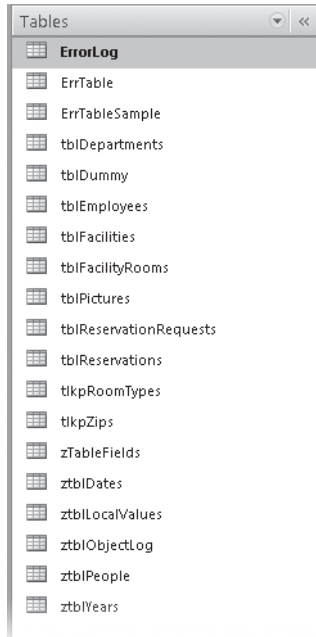


Figure 3-6 After filtering the Object Type category in the Navigation Pane, you can see only the tables in the Housing Reservations database.

You can open a table in Datasheet view to see the data in the table by double-clicking the table name in the Navigation Pane; or you can open the table in Design view by holding down the Ctrl key and double-clicking the table name. If you right-click a table name, Access displays a shortcut menu, as shown in Figure 3-7, that lets you perform a number of handy operations on the item you selected. Click one of the commands on the shortcut menu, or click anywhere else in the Access window to dismiss the menu.

INSIDE OUT

Turning on Single-Click

If you want to make it easier to open objects from the Navigation Pane, you can right-click the menu bar at the top of the Navigation Pane and select **Navigation Options** on the shortcut menu. In the lower-right corner of the Navigation Options dialog box, select **Single-Click** under **Open Objects With** and click **OK**. The examples in this chapter assume you are using the default **Double-Click** setting.

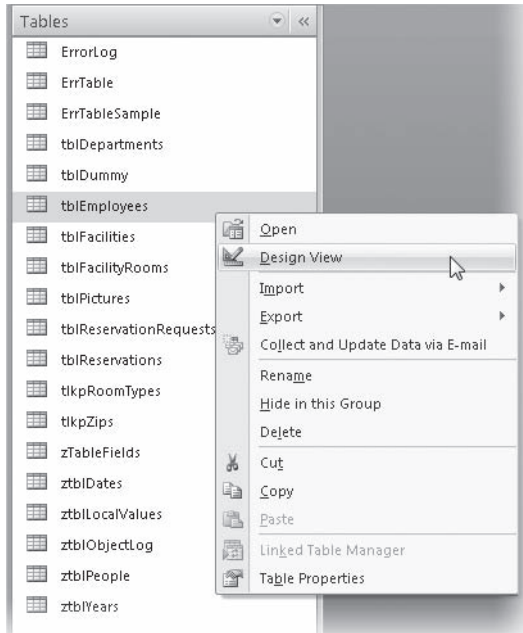


Figure 3-7 You can access many commands from the shortcut menu for a table in the Navigation Pane.

Table Window in Design View

When you want to change the definition of a table (the structure or design of a table, as opposed to the data in a table), you must open the Table window in Design view. With the Housing Reservations database open, right-click the `tblEmployees` table and select Design View from the shortcut menu; this opens the `tblEmployees` table in Design view, as shown in Figure 3-8. (Collapse the Navigation Pane to be able to see the entire width of the design area.) You'll learn about creating table definitions in Chapter 4, "Creating Your Database and Tables."

In Design view, each row in the top portion of the Table window defines a different field in the table. You can use the mouse to select any field that you want to modify. You can also use the Tab key to move from left to right across the screen, column to column, or Shift+Tab to move from right to left. Use the Up and Down Arrow keys to move from row to row in the field list. As you select a different row in the field list in the top portion of the window, you can see the property settings for the selected field in the bottom portion of the window. Press F6 to move between the field list and the field property settings portions of the Table window in Design view. Unlike previous versions of Access, pressing F6 again does not immediately move the focus back to the field list. If you press F6 repeatedly, the focus goes to the Navigation Pane, to the Ribbon, and then finally back to the field list.

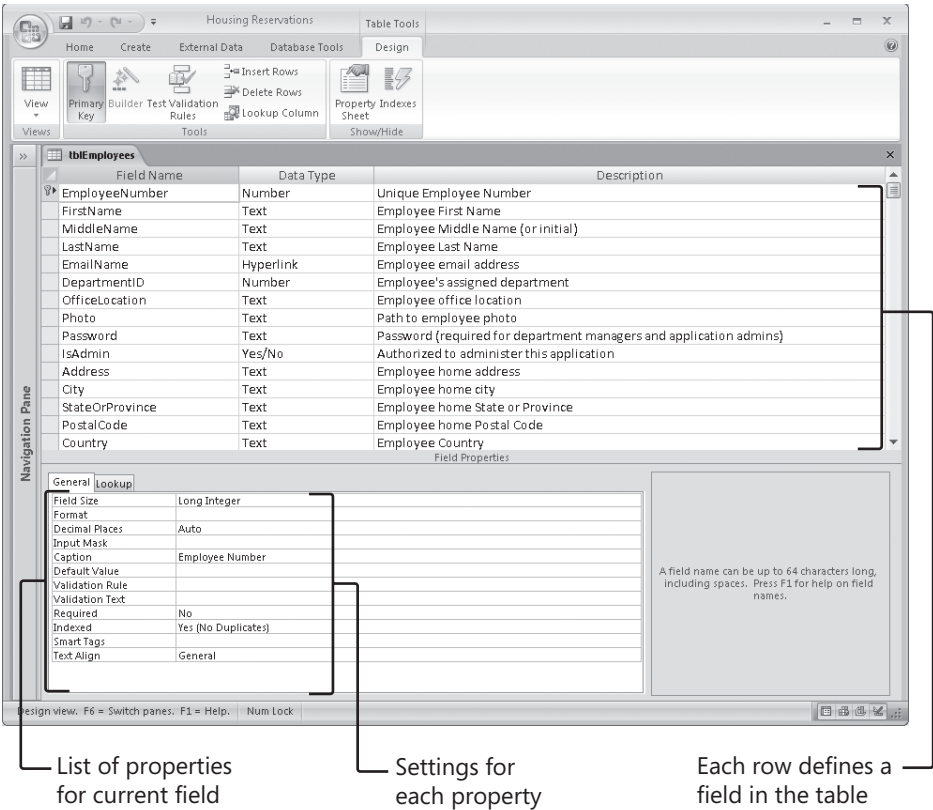
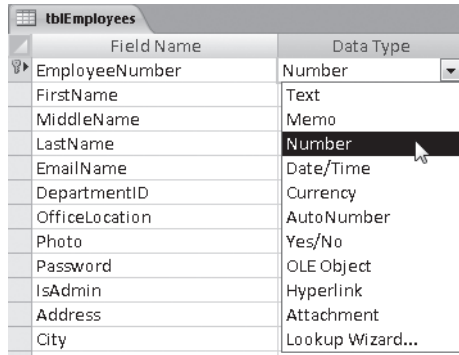


Figure 3-8 Open a table in Design view to change its structure.

Access has many convenient features. Wherever you can choose from a limited list of valid values, Access provides a list box to assist you in selecting the proper value. For example, when you tab to the Data Type column in the field list, a small arrow appears at the right of the column. Click the arrow or press Alt+Down Arrow to see the list of valid data types, as shown in Figure 3-9.

You can open as many as 254 tables (fewer if you are limited by your computer's memory). If you have selected Overlapping Windows in the Access Options dialog box, you can minimize any of the windows to an icon along the bottom of the Access workspace window by clicking the Minimize button in the upper-right corner of the window. You can also maximize the window to fill the Access workspace to the right of the Navigation Pane by clicking the Maximize/Restore button in that same corner. If you don't see a window you want, you can select it from the list of active windows in the Manage Windows command in the Window group on the Home tab on the Ribbon to bring the window to the front. Click the Close command from the Control Box in the upper-left corner or click the window's Close button in the upper-right corner to close any window.



Field Name	Data Type
EmployeeNumber	Number
FirstName	Text
MiddleName	Memo
LastName	Number
EmailName	Date/Time
DepartmentID	Currency
OfficeLocation	AutoNumber
Photo	Yes/No
Password	OLE Object
IsAdmin	Hyperlink
Address	Attachment
City	Lookup Wizard...

Figure 3-9 The Data Type list box shows you the available data types.

TROUBLESHOOTING

Why can't I see the Maximize/Minimize buttons on my table?

If you are using the tabbed documents interface (the setting used in the Housing Reservations sample database), each open object has its own tab to the right of the Navigation Pane. This option is the default for new databases you create in Access 2007. However, when you open older database files created in earlier versions of Access, the Document Window Options setting in the Access Options dialog box defaults to Overlapping Windows. With the Tabbed Documents setting, there is no need to constantly minimize and maximize object windows to switch views because each open object has an individual tab at the top of the Access workspace (the area below the Ribbon and to the right of the Navigation Pane). Clicking on these object tabs enables you to easily switch among any open objects, so Access 2007 does not provide the Maximize/Minimize buttons. To set your database to Overlapping Windows or Tabbed Documents, see “Using the Single-Document vs. Multiple-Document Interface” on page 83.

Table Window in Datasheet View

To view, change, insert, or delete data in a table, you can use the table's Datasheet view. A datasheet is a simple way to look at your data in rows and columns without any special formatting. You can open a table's Datasheet view by double-clicking the name of the table you want in the Navigation Pane or by right-clicking on the table name and selecting Open from the shortcut menu. When you open a table in Design view, such as the tblEmployees table shown in Figure 3-8, you can switch to the Datasheet view of this table, shown in Figure 3-10, by clicking the arrow in the Views group on the Ribbon and clicking Datasheet View from the list of available views. Likewise, when you're in Datasheet view, you can return to Design view by clicking the arrow in the Views group and clicking Design View from the available options. You can also switch views for the table by clicking the various view buttons on the status bar located in the lower-right corner of the Access window. You'll read more about working with data in Datasheet view in Chapter 7, “Creating and Working with Simple Queries.”

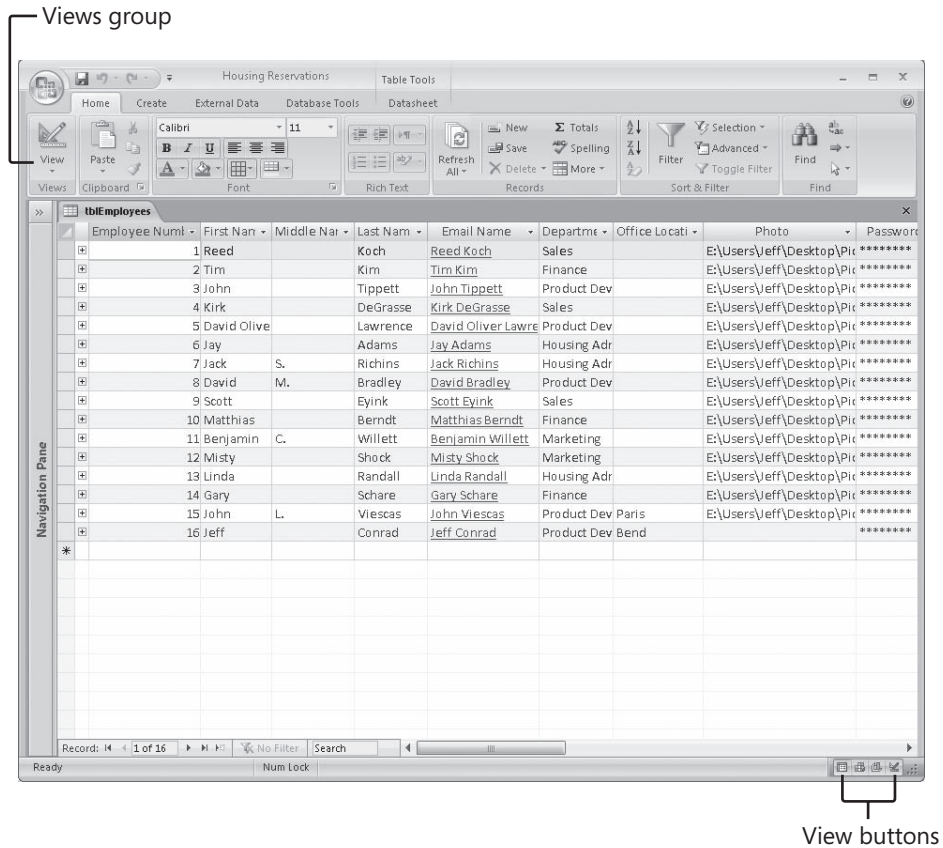


Figure 3-10 Use the Views button on the Ribbon or the individual view buttons on the status bar to switch from Design to Datasheet view.

As in Design view, you can move from field to field in the Table window in Datasheet view by pressing Tab, and you can move up and down through the records using the arrow keys. You can also use the scroll bars along the bottom and on the right side of the window to move around in the table. To the left of the horizontal scroll bar, Access shows you the current record number and the total number of records in the currently selected set of data. You can select the record number with your mouse (or by pressing F5), type a new number, and then press Enter to go to that record. You can use the arrows on either side of this record number box to move up or down one record or to move to the first or last record in the table. You can start entering data in a new record by clicking the New (Blank) Record button on the right.

Queries

You probably noticed that the Datasheet view of the tblEmployees table gave you all the fields and all the records in the table. But what if you want to see only the employee names and addresses? Or maybe you would like to see in one view information about employees and all their confirmed room reservations. To fill these needs, you can create

a query. Open the Navigation Pane menu, click Object Type under Navigate To Category if it isn't already selected, and then click Queries under Filter By Group to display a list of queries available in the Housing Reservations database, as shown in Figure 3-11.

TROUBLESHOOTING

Why does my table have extra rows in the lower half of the screen like a spreadsheet?

You might notice in Figure 3-10 that there are extra rows beneath our existing records, and this grid very much resembles a spreadsheet. This is a departure from previous versions of Access that displayed only one row for each record in that table plus one for a new record. For tables in Datasheet view in Access 2007, the remainder of the space in the application window is filled with dummy rows that you cannot click into. In essence, these extra rows are simply placeholders for possible future records. It might be confusing to think of this grid as a spreadsheet because of its appearance, but you must remember that Access is not a spreadsheet. What you see is only a visual aid and does not denote actual records in the tables.

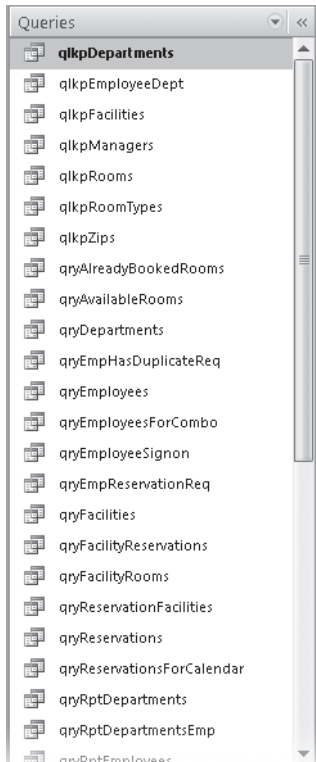


Figure 3-11 When you filter object types by queries in the Navigation Pane, Access displays a list of only the queries in the Housing Reservations database.

You can open a query in Datasheet view by double-clicking the query name, or you can open it in Design view by clicking on the query to select it, and then pressing Ctrl+Enter. You can also right-click a query and click the Open or Design View command on the shortcut menu.

Query Window in Design View

When you want to change the definition of a query (the structure or design, as opposed to the data represented in the query), you must open the query in Design view. Take a look at one of the more complex queries in the Housing Reservations query list by scrolling to the query named qryFacilityReservations. Select the query and then press Ctrl+Enter to display the query in Design view, as shown in Figure 3-12. Collapse the Navigation Pane to see more of the width of the query design.

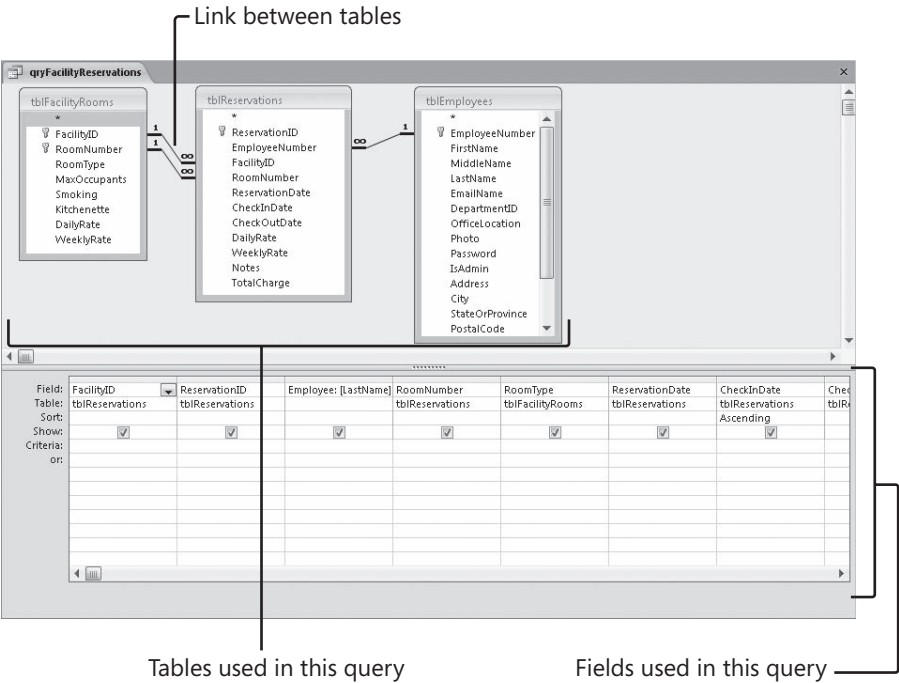


Figure 3-12 The qryFacilityReservations query in Design view shows data from three tables being linked.


In the upper part of a Query window in Design view, you see the field lists of the tables or other queries that this query uses. The lines connecting the field lists show how Access links the tables to solve your query. If you define relationships between two tables in your database design, Access draws these lines automatically when you include both tables in a query design. See Chapter 4 for details. You can also define relationships when you build the query by dragging a field from one field list and dropping it on another field list.

In the lower part of the Query window, you see the design grid. The design grid shows fields that Access uses in this query, the tables or queries from which the fields come (when you select Table Names in the Show/Hide group on the Ribbon's Design tab), any sorting criteria, whether fields show up in the result, and any selection criteria for the fields. You can use the horizontal scroll bar to bring other fields in this query into view. As in the Design view of tables, you can use F6 to move between the upper and lower portions of the Query window, but the F6 key also cycles through the Query window, the Navigation Pane, and the Ribbon.

You can learn how to build this type of complex multiple-table query in Chapter 8, “Building Complex Queries.” You can find this query used in the Housing Reservations database as the source of data for the fsubFacilityReservations form.

Query Window in Datasheet View

On the Design or Home tab on the Ribbon, click the View button to run the query and see the query results in Datasheet view, as shown in Figure 3-13. You can also right-click the query tab and click Datasheet View on the shortcut menu.



Facility	Reservation	Employee	Room	Type	Reservation	Check
South Campus Housing C	7	Koch, Reed	501	2BR Suite - 1 King, 2 Queen, Kitchenette	2/22/2007	2
Main Campus Housing A	1	Richins, Jack S.	810	Studio - Queen Sofa	2/6/2007	3
North Satellite Housing D	3	Lawrence, David	305	1BR Suite - 2 Queen Beds	2/13/2007	3
Main Campus Housing B	2	Richins, Jack S.	111	2BR Suite - 1 King, 2 Queen, Kitchenette	2/10/2007	3
Main Campus Housing A	12	Tippett, John	207	Room - King bed	3/14/2007	3
Main Campus Housing B	11	Lawrence, David	301	1BR Suite - 2 Queen Beds	3/13/2007	3
Main Campus Housing B	5	Tippett, John	214	Room - 2 Queen beds	2/15/2007	3
Main Campus Housing A	6	Berndt, Matthi	902	2BR Suite - 1 King, 2 Queen beds	2/19/2007	4
Main Campus Housing A	13	Bradley, David	111	1BR Suite - 1 King Bed, Kitchenette	3/23/2007	4
Main Campus Housing B	15	Adams, Jay	206	1BR Suite - 1 King Bed, Kitchenette	3/27/2007	4
Main Campus Housing A	4	Tippett, John	502	2BR Suite - 1 King, 2 Queen beds	2/14/2007	4
Main Campus Housing A	8	Bradley, David	509	Room - 2 Queen beds	2/25/2007	4
Main Campus Housing B	9	Kim, Tim	504	1BR Suite - 1 King Bed	2/25/2007	4
Main Campus Housing A	14	Richins, Jack S.	708	Studio - Queen Sofa, Kitchenette	3/24/2007	4
South Campus Housing C	17	DeGrasse, Kirk	101	2BR Suite - 1 King, 2 Queen, Kitchenette	4/2/2007	5
Main Campus Housing A	10	Tippett, John	707	Room - King bed	3/8/2007	5
South Campus Housing C	22	Bradley, David	103	1BR Suite - 1 King Bed	4/24/2007	5
Main Campus Housing A	20	Lawrence, David	309	Room - 2 Queen beds	4/9/2007	5
North Satellite Housing D	21	Bradley, David	402	1BR Suite - 1 King Bed, Kitchenette	4/12/2007	5
South Campus Housing C	16	Richins, Jack S.	111	Studio - Queen Sofa	3/27/2007	5
Main Campus Housing A	18	Bradley, David	702	2BR Suite - 1 King, 2 Queen beds	4/6/2007	5
Main Campus Housing B	19	Lawrence, David	610	2BR Suite - 1 King, 2 Queen, Kitchenette	4/8/2007	5
Main Campus Housing A	24	Tippett, John	207	Room - King bed	5/1/2007	5
Main Campus Housing B	28	Bradley, David	403	2BR Suite - 1 King, 2 Queen beds	5/7/2007	5
Main Campus Housing A	27	Willett, Benja	505	Room - King bed	5/6/2007	5
Main Campus Housing B	30	Randall, Linda	103	2BR Suite - 1 King, 2 Queen beds	5/15/2007	5

Figure 3-13 The Datasheet view of the qryFacilityReservations query shows you fields from three related tables.

The Query window in Datasheet view is similar to a Table window in Datasheet view. Even though the fields in the query datasheet shown in Figure 3-13 are from three different tables, you can work with the fields as if they were in a single table. If you're designing an Access application for other users, you can use queries to hide much of the complexity of the database and make the application simpler to use. Depending on how you designed the query, you might also be able to update some of the data in the

underlying tables simply by typing new values in the Query window as you would in a Table window in Datasheet view.

Forms

Datasheets are useful for viewing and changing data in your database, but they're not particularly attractive or simple to use. If you want to format your data in a special way or automate how your data is used and updated, you need to use a form. Forms provide a number of important capabilities.

- You can control and enhance the way your data looks on the screen. For example, you can add color and shading or add number formats. You can add controls such as list boxes and check boxes. You can display ActiveX objects such as pictures and graphs directly on the form. And you can calculate and display values based on data in a table or a query.
- You can perform extensive editing of data using macros or Visual Basic procedures.
- You can link multiple forms or reports by using macros or Visual Basic procedures that are run from buttons on a form.

Click the menu bar at the top of the Navigation Pane, click Object Type under Navigate To Category, and then click Forms under Filter By Group to display a list of forms available in the Housing Reservations database, as shown in Figure 3-14.

You can open a form in Form view by double-clicking the form name in the Navigation Pane. You can also open the form in Design view by clicking the form to highlight it, and then pressing Ctrl+Enter. Finally, you can right-click a form name and click a command on the shortcut menu. To create a new form, use the commands in the Forms group of the Create tab on the Ribbon.

Form Window in Design View

When you want to change the definition of a form (the structure or design, as opposed to the data represented in the form), you generally must open the form in Design view. As you'll learn in Chapter 12, "Customizing a Form," you can also set a form property to allow you to make changes in Layout view while you are designing the form. Take a look at the frmEmployeesPlain form in the Housing Reservations database. To open the form, scroll through the list of forms in the Navigation Pane to find the frmEmployeesPlain form, click the form to select it, then press Ctrl+Enter. This form, shown in Figure 3-15, is designed to display all data from the tblEmployees table. Don't worry if what you see on your screen doesn't exactly match Figure 3-15. In this figure, we opened the field list on the right so that you can see some of the main features of the Form window in Design view.

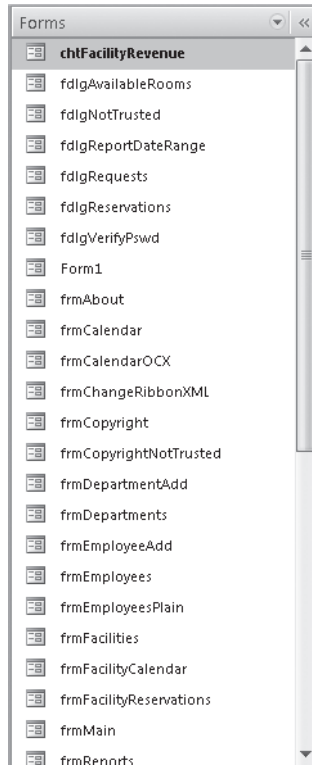


Figure 3-14 When you filter Object Type by Forms, Access displays a list of only the forms in the Housing Reservations database.

The large window in the center is the form design window where you create the design of the form. When you first open this form in Design view, you should see the Form Design Tools collection of two contextual tabs, Design and Arrange, on the Ribbon just to the right of Database Tools. These tabs are the action centers of form design—you'll use the tools here to add and arrange the design elements of your form.

On the right side of the window shown in Figure 3-15, you can see a field list for this form. This form gets its information from a query called qryEmployees that selects all the fields in the tblEmployees table and then sorts the rows by last name and first name. If you don't see the field list, click the Add Existing Fields command in the Tools group of the Design contextual tab. You can resize this window by clicking on the far left edge of the box and dragging it to a new width toward the left side of the screen. When your mouse pointer is positioned over the title bar, it changes to cross arrows. Click the title bar and drag it to the left and down to undock the window from the right side and position it where you would like. When you undock the Field List window, it becomes a window that floats on top of the design area. When you read about form design in Chapter 11, "Building a Form," you'll see that you can drag a field from the field list to place a control on the form that displays the contents of the field.

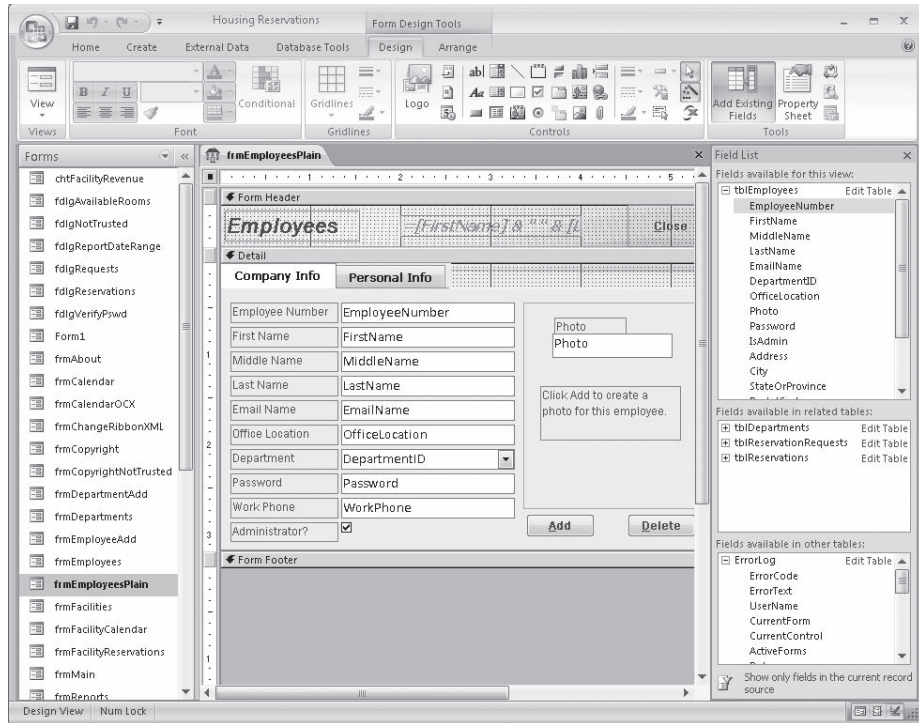


Figure 3-15 When you open the frmEmployeesPlain form in Design view, you can modify its design.

After you place all the controls on a form, you might want to customize some of them. You do this by opening the property sheet displayed in Figure 3-16. To see the property sheet, click the Property Sheet button in the Tools group of the Design tab. In Figure 3-16 we collapsed the Navigation Pane to show more of the property sheet.

The property sheet always shows the property values for the control selected in the form design. (The property sheet can also display the properties for the form or any section on the form.) Click the tabs at the top of the property sheet to display all properties or to display only properties for formats, data, or events. In the example shown in Figure 3-16, we clicked the text box named EmployeeNumber, near the top of the form, to select it. If you click this text box and then scroll down the list of properties for this text box, you can see the wide range of properties you can set to customize this control. As you learn to build applications using Access, you'll soon discover that you can customize the way your application works by simply setting form and control properties—you don't have to write any code.

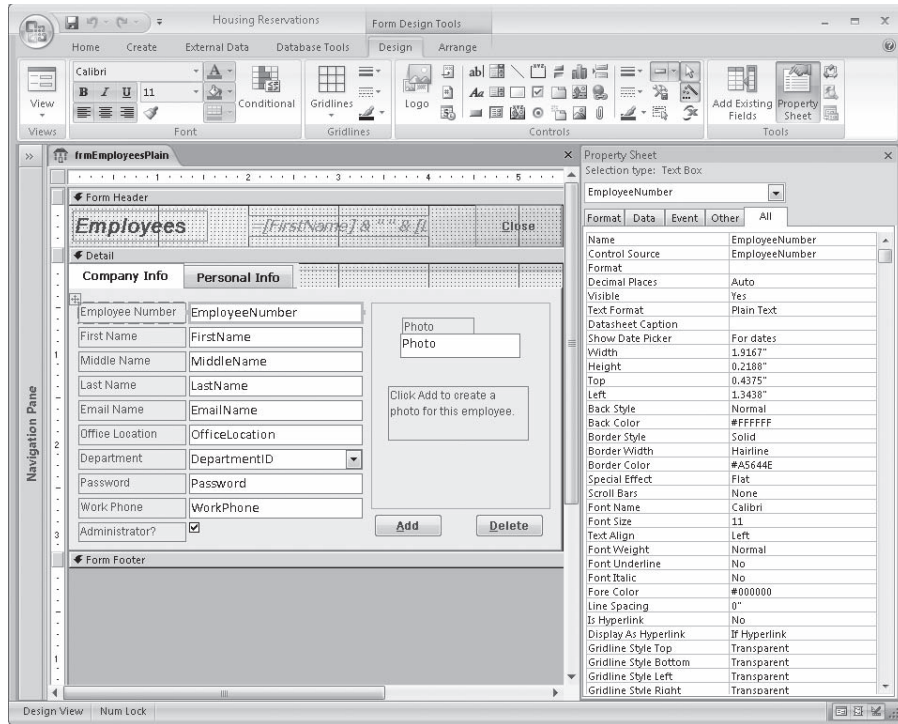


Figure 3-16 The property sheet lets you set individual properties for a form, form sections, or controls on the form.

If you scroll to the bottom of the property list, or click the Event tab, you'll see a number of properties that you can set to define the macros or Visual Basic procedures that Access runs whenever the associated event occurs on this control. For example, you can use the Before Update event property to define a macro or procedure that performs additional validation before Access saves any changes typed in this control. You can use the On Click or On Dbl Click event properties to perform actions when the user clicks the control. If you need to, you can even look at every individual character the user types in a control with the On Key event properties. As you'll discover later, Access provides a rich set of events that you can detect for the form and for each control on the form.

You might have noticed that Access made available all the commands and options in the Font group of the Design tab when you selected the EmployeeNumber control. When you select a text box on a form in Design view, Access enables the list boxes in this group to make it easy to select a font and font size, and it also enables buttons that let you set the Bold, Italic, and Underline properties. Underneath these buttons are three buttons that let you set text alignment: Align Text Left, Center, and Align Text Right. You can also set the font and fill colors using buttons in this group.

Form Window in Layout View

Access 2007 introduces a new view for forms called Layout view. If you have the frmEmployeesPlain form open in Design view from the previous section, you can switch to Layout view by right-clicking the frmEmployeesPlain tab and clicking Layout View on the shortcut menu. You should now see the form in Layout view, as shown in Figure 3-17. This unique view for forms gives the developer a fast and easy way to create and modify form designs.

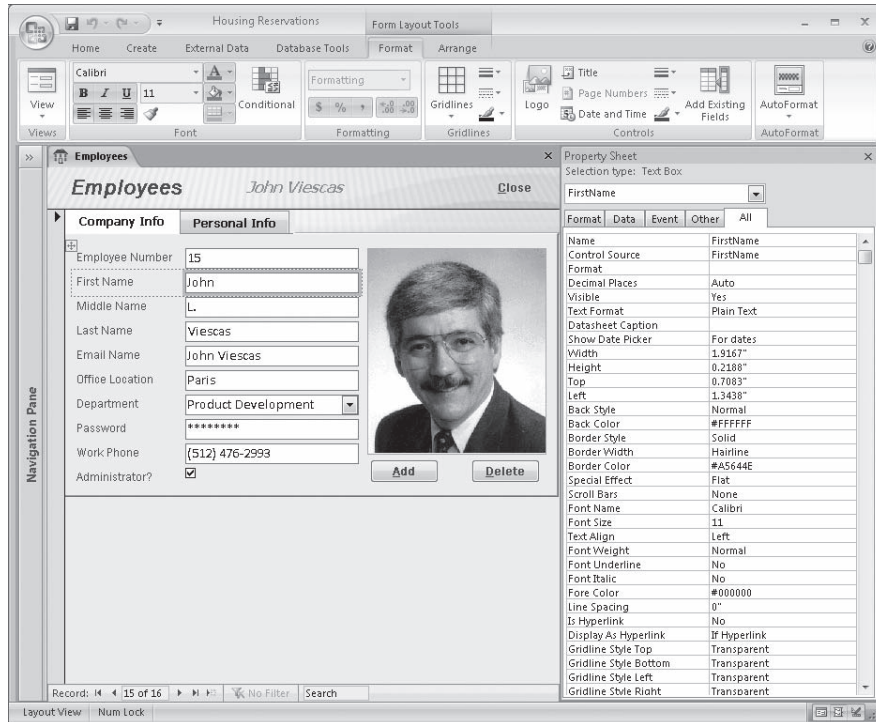


Figure 3-17 Layout view lets you see your data and also modify the design of the form.

Unlike Design view, Layout view enables you to work with the various control elements and form sections using existing live data. If, for example, you need to resize a text box to fit the available data, you do not have to continually switch back and forth between Form and Design view to see if your size change works effectively—you actually see data in the text box while resizing the control. This new What-You-See-Is-What-You-Get (WYSIWYG) form-authoring view provides the best of both worlds by combining the ability to change the structure of the data entry form at the same time you're accessing actual data.

In Layout view, if you have grouped a set of controls you can move them around the form design grid together to maintain their proximity and orientation to one another. In this sample form, we grouped all the controls in the first column in a stacked layout.

In Figure 3-18, you can see that we're dragging the Email Name field down below the Office Location field. A horizontal bar designates where Access will place the control after you release the mouse button. Because these controls are grouped, Access places the Email Name field and its label below the Office Location field and aligns them perfectly.

Figure 3-18 You can move a control within a group in Layout view, and Access keeps them perfectly aligned.

Form Window in Form View

To view, change, insert, or delete data via a form, you can use Form view. Depending on how you've designed the form, you can work with your data in an attractive and clear context, have the form validate the information you enter, or use the form to trigger other forms or reports based on actions you take while viewing the form. You can open a form in Form view by right-clicking the form's name in the Navigation Pane and clicking Open on the shortcut menu. If you still have the frmEmployeesPlain form open in Layout view from the previous section, you can go directly to Form view by clicking the arrow in the Views group and then clicking Form View.

Figure 3-19 shows a complex form that brings together data from three tables and loads the related employee picture from a file on your hard drive onto a screen that's easy to use and understand. This form includes all the fields from the tblEmployees table. You can tab or use the arrow keys to move through the fields. You can click the Personal Info tab to see additional information about the current employee. You can experiment with filtering by selection to see how easy it is to select only the records you want to see. For example, you can click in the Department field, select the department name, click the Selection button in the Sort & Filter group on the Home tab, and then click Equals "Selected Department" (where "Selected Department" is the department name you selected) to display records only for the current department.

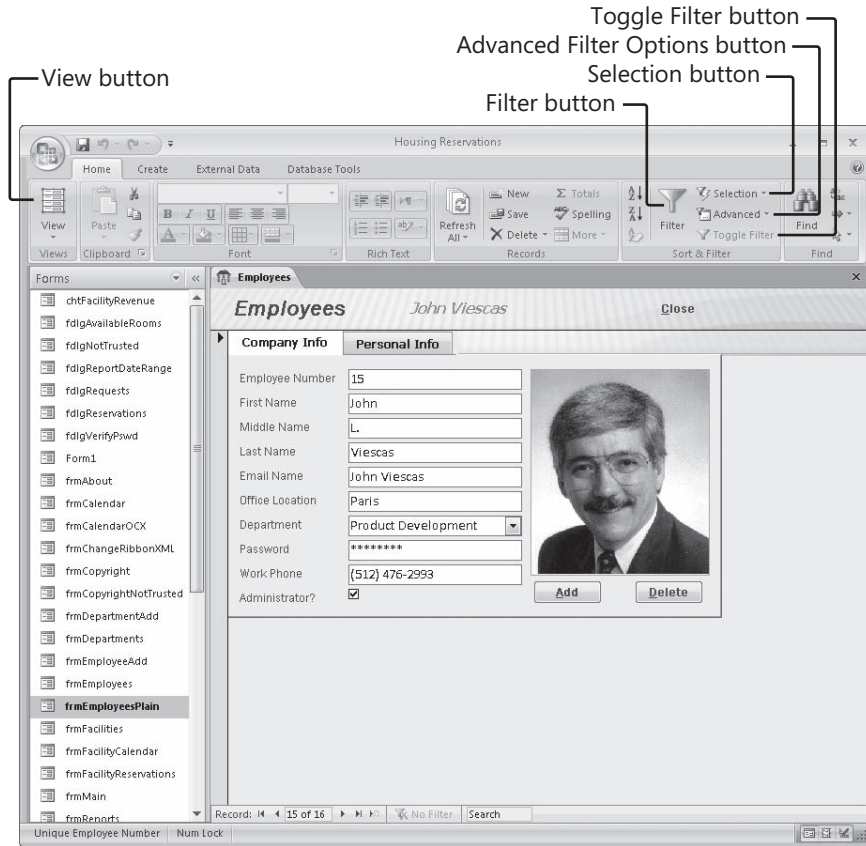


Figure 3-19 The frmEmployeesPlain form in Form view lets you view and edit employee data.

There are four other ways to look at a form: Datasheet view, PivotTable view, PivotChart view, and Print Preview. You can select the Datasheet view by clicking the arrow in the Views group and clicking Datasheet View to see all the fields in the form arranged in a datasheet—similar to a datasheet for a table or a query. When a form has been designed to display data in a PivotTable (similar to a spreadsheet) or graphed in a PivotChart, you can also select these views with the View button. You can click the Microsoft Office Button, move your mouse pointer to Print, and then click Print Preview on the submenu to see what the form will look like on a printed page. You'll read more about Print Preview in the next section.

Reports

If your primary need is to print data, you should use a report. Click the menu bar at the top of the Navigation Pane to open the Navigation Pane menu and click Object Type under Navigate To Category. Then open the menu again and click the Reports option under Filter By Group to display a list of reports available in the Housing Reservations database, as shown in Figure 3-20.

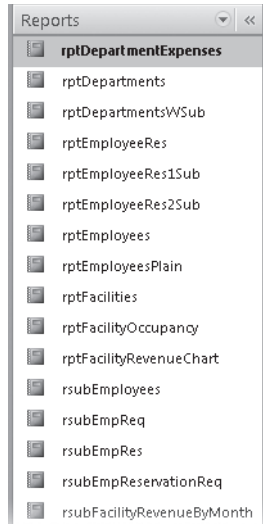


Figure 3-20 You can filter the Navigation Pane to show only a list of the reports in your database.

Although you can print information in a datasheet or a form, neither of these formats provides the flexibility that reports do when you need to produce complex printed output (such as invoices or summaries) that might include many calculations and subtotals. Formatting in datasheets is limited to sizing the rows and columns, specifying fonts, and setting the colors and gridline effects. You can do a lot of formatting in a form, but because forms are designed primarily for viewing and entering data on the screen, they are not suited for extensive calculations, grouping of data, or multiple totals and subtotals in print.

Report Window in Design View

When you want to change the definition of a report, you must open the report in Design view. In the report list for Housing Reservations, click on the rptEmployeesPlain report to select it, and then press Ctrl+Enter to see the design for the report, as shown in Figure 3-21. Don't worry if what you see on your screen doesn't exactly match Figure 3-21. We clicked the Add Existing Fields command on the Design tab under Report Design Tools to display the Field List window.

The large window in the center is where you create the design of the report. This report is designed to display all the information about employees by department. Notice that Design view for reports is similar to Design view for forms. (For comparison, see Figure 3-15.) Reports provide additional flexibility, allowing you to group items and to total them (either across or down). You can also define header and footer information for the entire report, for each page, and for each subgroup on the report. When you first open this report in Design view, you should see three new contextual tabs appear on the Ribbon just to the right of Database Tools under Report Design Tools: Design, Arrange, and Page Setup. These contextual tabs are the action centers of report design—you'll use the tools here to add the design elements you want.

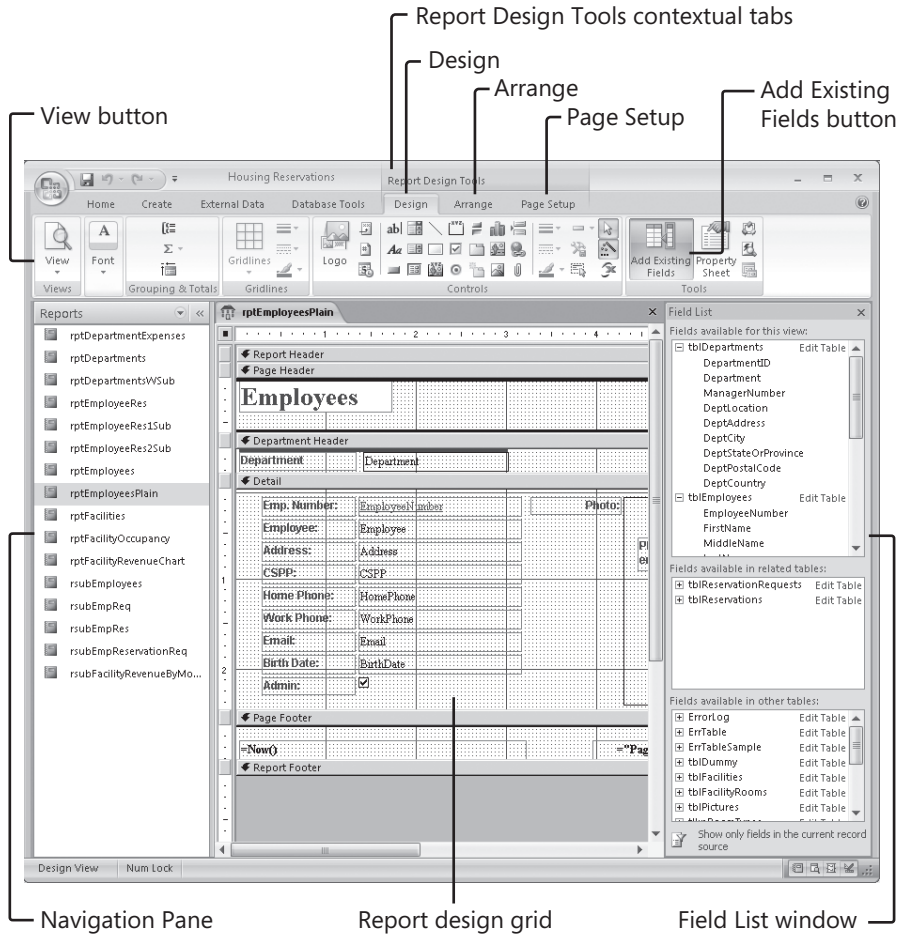


Figure 3-21 Open the rptEmployeesPlain report in Design view to modify its design.

On the right side of the window shown in Figure 3-21, you can see the field list for this report. This list shows all the fields returned by the record source for the report, qryRptEmployees—all the fields from the tblEmployees table and related fields from the tblDepartments table. If you don't see the field list, click the **Add Existing Fields** command in the **Tools** group on the **Design** contextual tab. You can resize this window by clicking on the far left edge and dragging it to a new width toward the left side of the screen. When your mouse pointer is positioned over the title bar, it changes to cross arrows. Click the title bar and drag it to the left and down to undock the window from the right side and position it where you would like. When you undock the Field List window, it becomes a window that floats on top of the design area. When you read about report design in Chapter 15, "Constructing a Report," you'll see that you can drag a field from the field list to place a control on the report that displays the contents of the field.

After you place all the controls on a report, you might want to customize some of them. Do this by opening the property sheet, which you can see on the right side of the screen in Figure 3-22. To see the property sheet, click the Property Sheet command in the Tools group of the Design tab. In Figure 3-22 we collapsed the Navigation Pane so you can see more of the property sheet.

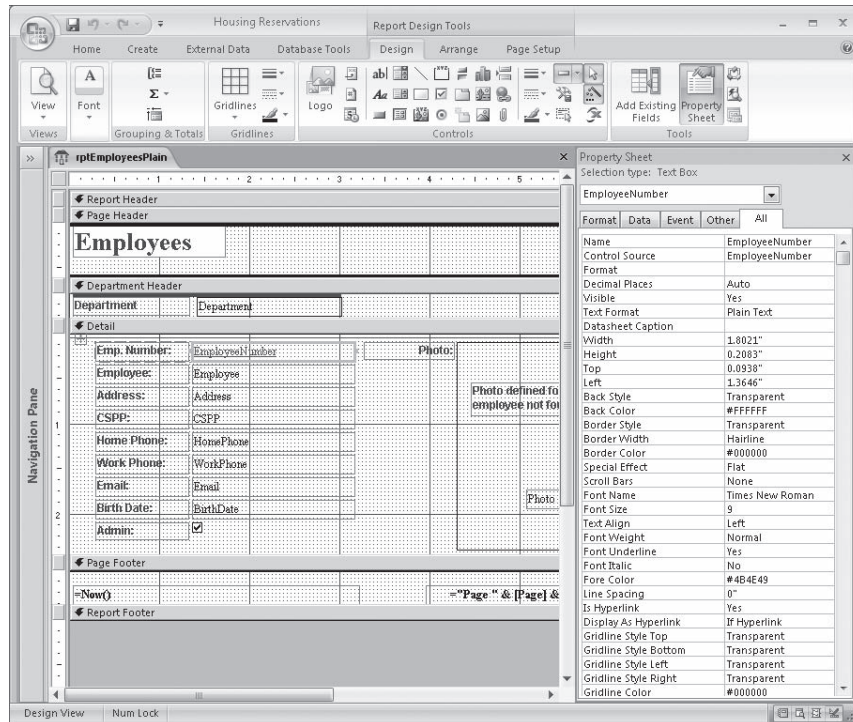


Figure 3-22 The property sheet lets you set individual properties for a report, report sections, or controls on the report.

The property sheet always shows the property settings for the control selected in the Report window. (The Property Sheet pane can also display the properties for the entire report or any section on the report.) In the example shown in Figure 3-22, we clicked the text box named EmployeeNumber to select it. If you click this text box, you can see that Access displays the EmployeeNumber field from the tblEmployees table as the control source (input data) for this control. You can also specify complex formulas that calculate additional data for report controls.

You might have noticed that Access made available some additional commands and options in the Font group of the Design tab when you selected the EmployeeNumber control. When you select a text box in a report in Design view, Access enables list boxes in the Font group that make it easy to select a font and font size. Access also enables buttons that let you set the Bold, Italic, and Underline properties. Underneath these buttons are three buttons that set text alignment: Align Text Left, Center, and Align Text Right. You can also set font and fill colors using buttons in this group.

Reports can be even more complex than forms, but building a simple report is really quite easy. Access provides report wizards that you can use to automatically generate a number of standard report layouts based on the table or query you choose. You'll find it simple to customize a report to suit your needs after the report wizard has done most of the hard work. You'll learn how to customize a report in Chapter 15 and Chapter 16, "Advanced Report Design."

Report Window in Print Preview

To see what the finished report looks like, click the arrow in the Views group and then click Print Preview when you're in the Report window in Design view. You can also right-click the report name in the Navigation Pane and then click Print Preview on the shortcut menu. Figure 3-23 shows a report in Print Preview.

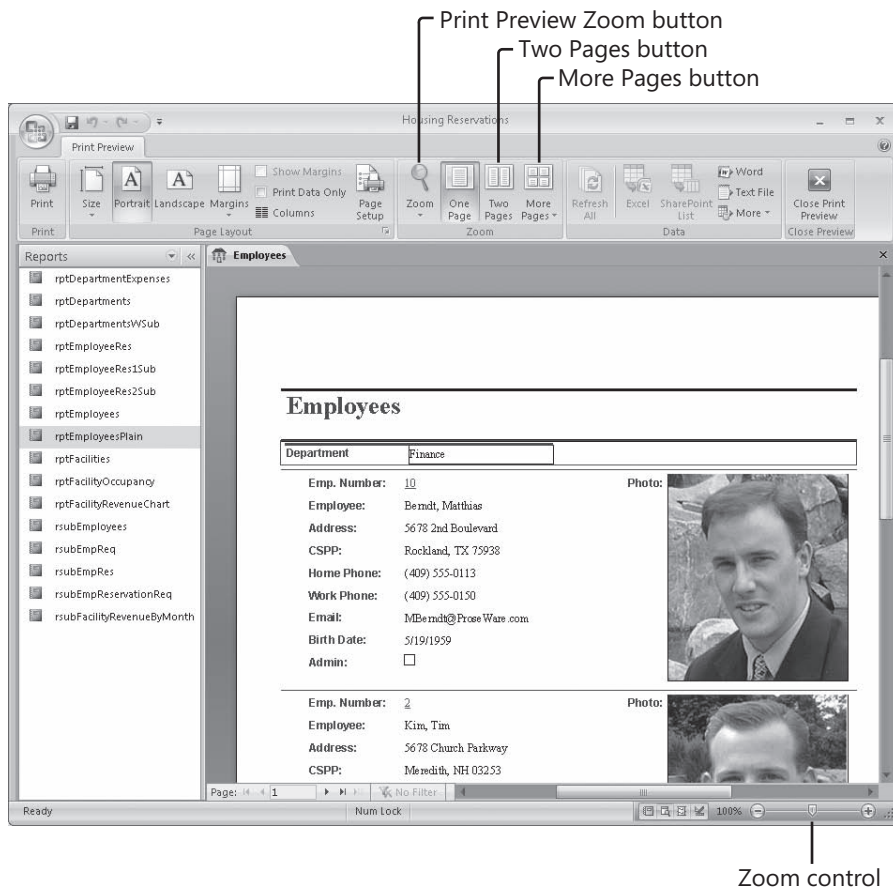


Figure 3-23 When you open a report in Print Preview, Access shows you how the report will look when you print it.

Access initially shows you the upper-left corner of the report. To see the report centered in full-page view in Print Preview, click the Zoom control in the lower-right corner of the status bar where it says 100%. Clicking that button automatically adjusts the zoom level percent so that you can see a full page of the report. To see two pages side-by-side, click the Two Pages button in the Zoom group of the Print Preview contextual tab. This gives you a reduced picture of two pages, as shown in Figure 3-24, and an overall idea of how Access arranges major areas of data on the report. Unless you have a large monitor, however, you won't be able to read the data. Click the More Pages button and then click an option (Four Pages, Eight Pages, or Twelve Pages) to see more than two pages. When you move the mouse pointer over the window in Print Preview, the pointer changes to a magnifying glass icon. To zoom in, click over an area that you want to see more closely. You can then use the scroll bars to move around in the magnified report. Use the Zoom control on the status bar to magnify or shrink your view. Access also provides several output options such as Word or Excel in the Data group of the Print Preview tab.

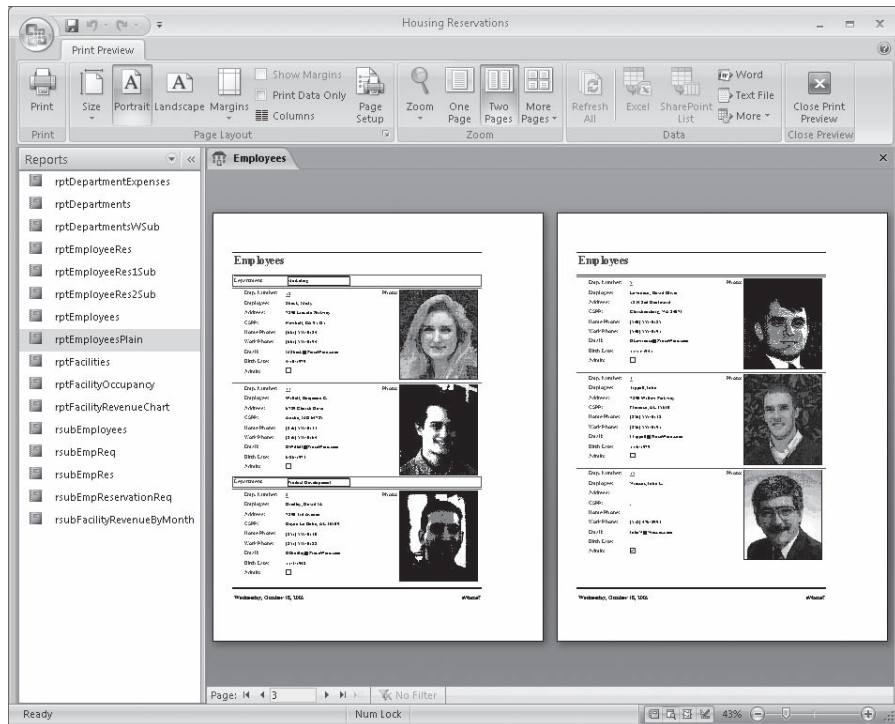


Figure 3-24 Click the Two Pages button to see two pages side-by-side in Print Preview.

Report Window in Layout View

Access 2007 introduces a new view for reports called Layout view. This unique view for reports gives the developer a fast and easy way to create and modify report designs.

Unlike Design view, Layout view enables you to work with the various control elements and report sections using existing live data. Similar to Layout view for forms, this new WYSIWYG report-authoring view provides the best of both worlds by combining the ability to change the structure of the report at the same time you're accessing the data.

To open the rptEmployeesPlain in Layout view, find the report in the Navigation Pane, right-click the report name, and click Layout View on the shortcut menu. Figure 3-25 shows the report in Layout view. In Figure 3-25 we collapsed the Navigation Pane so you can see more of the report design grid.

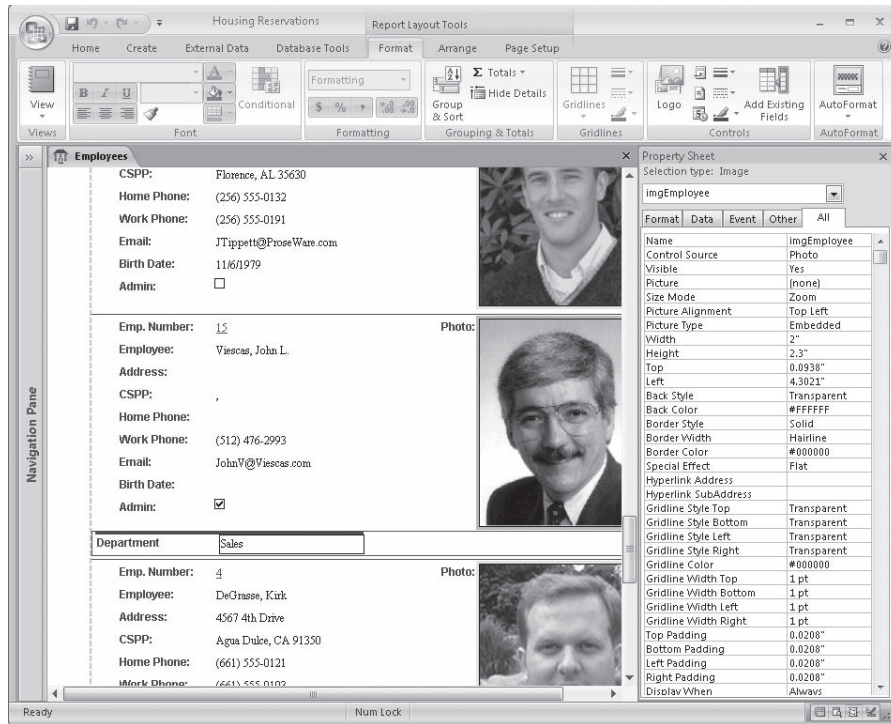


Figure 3-25 Similar to Layout view for forms, Layout view in reports lets you adjust design elements while looking at the data from your database.

Just like Layout view for forms, if you have grouped a set of controls, you can move them around the report grid together to maintain their proximity and orientation to one another. In Figure 3-26, you can see that we're dragging the Birth Date field above the Email field. A horizontal bar designates where Access will place the control after you release the mouse button. Because these controls are grouped, Access places the Birth Date field and its label above the Email field. The two controls swap places and align perfectly.

Emp. Number: 15
 Employee: Viescas, John L.
 Address:
 CSPP:
 Home Phone:
 Work Phone: (512) 476-2993
 Email: JohnV@Viescas.com
 Birth Date:
 Admin: ☒

Photo:

Figure 3-26 Access makes it easy to move controls around within a group in Layout view.

Report Window in Report View

In addition to Layout view, Access 2007 includes another new view for reports called Report view, an interactive view for reports that can respond to control events, much like data entry forms. If you have the rptEmployeesPlain report open in Layout view from the previous section, you can switch to Report view by right-clicking the Employees tab and clicking Report View on the shortcut menu. You should now see the report in Report view, as shown in Figure 3-27.

Housing Reservations

Home Create External Data Database Tools

View Paste Font Rich Text Refresh All Save Spelling Filter Selection Advanced Find

Reports

- rptDepartmentExpenses
- rptDepartments
- rptDepartmentsWSUB
- rptEmployeeRes
- rptEmployeeRes1Sub
- rptEmployeeRes2Sub
- rptEmployees
- rptEmployeesPlain**
- rptFacilities
- rptFacilityOccupancy
- rptFacilityRevenueChart
- rsubEmployees
- rsubEmpReq
- rsubEmpRes
- rsubEmpReservationReq
- rsubFacilityRevenueByMonth

Employees Employees

Employee: Tippet, John
 Address: 7890 Willow Parkway
 CSPP: Florence, AL 35630
 Home Phone: (256) 555-0132
 Work Phone: (256) 555-0191
 Email: JTippet@ProseWare.com
 Birth Date: 11/6/1979
 Admin: ☐

Photo:

Emp. Number: 15
 Employee: Viescas, John L.
 Address:
 CSPP:
 Home Phone:
 Work Phone: (512) 476-2993
 Email: JohnV@Viescas.com
 Birth Date:
 Admin: ☒

Photo:

Department: Sales

Emp. Number: 4
 Employee: DeGrasse, Kirk
 Address: 4567 4th Drive
 CSPP: 1234 5th Ave

Photo:

Employee home address Num Lock

Figure 3-27 When a report is in Report view, you can program controls to respond to mouse clicks to open a related form.

Previous versions of Access treat reports on screen as static. After you open a report on the screen, you can only view the report or print it. Report view in Access 2007 gives you the ability to interact with the report through filters to drill down to specific records and then print only this smaller group of records. You can include command buttons on your reports with Access 2007 and program the buttons to respond to a mouse click in Report view. In the new Report view, you can designate controls that respond to events as hyperlinks to provide a visual cue that an event occurs when clicking that control. In Figure 3-27, for example, observe that the Employee Number field looks like a hyperlink with a blue line underneath the data. (In Figure 3-27 we have scrolled down the records to show John's information.) Clicking the Employee Number field opens the frmEmployeesPlain form to display all information for that specific employee so that you can make any necessary changes. After closing the form and returning to the report, click the Refresh All command in the Records group of the Home tab on the Ribbon to see any changes you made to the data using the form reflected in the report. In Figure 3-27 you can see that the frmEmployeesPlain form opens on a new tab because we are using the tabbed interface.

Close the Form window and the Report window to return to the Navigation Pane.

Macros

You can make working with your data within forms and reports much easier by triggering a macro action. Office Access 2007 provides more than 70 actions that you can include in a macro. They perform tasks such as opening tables and forms, running queries, running other macros, selecting options from menus, and sizing open windows. You can also group multiple actions in a macro and specify conditions that determine when each set of actions will or will not be executed by Access.

Open the Navigation Pane menu and make sure Object Type is selected under Navigate To Category. Then open the menu again and click Macros under Filter By Group to display a list of macros available in the Housing Reservations database, as shown in Figure 3-28. You can run a macro by right-clicking the macro name in the Navigation Pane and clicking Run on the shortcut menu. To open a macro in Design view, right-click the macro name and click Design View on the shortcut menu. To create a brand new macro, click the New Object Macro button in the Other group of the Create tab on the Ribbon.

Macros are a great way to learn about the basics of responding to events and automating actions in an Access database. However, for any application that you intend to distribute to others, you should use Visual Basic to handle events and automate actions. Nearly all the sample databases use Visual Basic exclusively. You can take a look at the design of a macro example in the Housing Reservations database by selecting the SampleMacro macro in the Navigation Pane, and then pressing Ctrl+Enter. Access opens the Macro window in Design view, as shown in Figure 3-29.

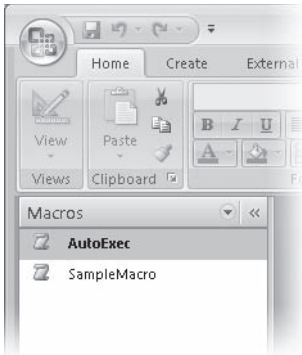


Figure 3-28 You can filter the Navigation Pane to show the Macros list in the Housing Reservations database.

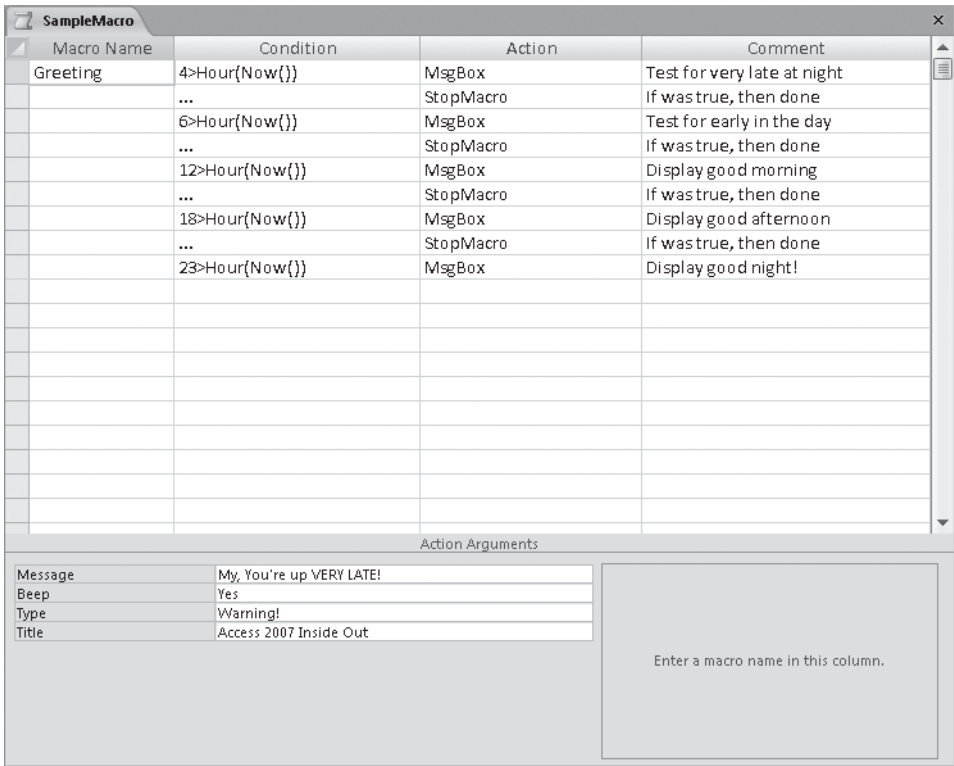


Figure 3-29 Open the SampleMacro macro object in the Housing Reservations database in Design view to examine and modify its definition.

You can design multiple macro actions within a single macro object and give each one a name in the first column. Any unnamed lines following a line with a name specified all

belong to the named macro. In the second column, you can optionally specify a condition test that must be true for the macro command on that line to execute. You can use a continuation indicator (...) on subsequent lines to specify additional commands that should also execute when the condition is true. You select the action you want to run from a list in the Action column and set the arguments required for the action in the Action Arguments section in the lower part of the design window. Some of the limitations of macros include limited ability to branch to other actions and very limited ability to loop through a set of actions.



If you want to see what this macro does, click the Run button in the Tools group of the Design contextual tab to execute it. You should see a greeting message appropriate to the time of day appear on your screen. To learn more about events and the macro design facility, see Chapter 18, “Automating Your Application with Macros.” You can find one sample application on the companion CD that is automated entirely using macros—WeddingListMC.accdb.

Close the Macro window now to return to the Navigation Pane.

Modules

You might find that you keep coding the same complex formula over and over in some of your forms or reports. Although you can build a complete Access application using only forms, reports, and macros, some actions might be difficult or impossible to define in a macro. If that is the case, you can create a Visual Basic procedure that performs a series of calculations and then use that procedure in a form or report.

If your application is so complex that it needs to deal with errors (such as two users trying to update the same record at the same time), you must use Visual Basic. Because Visual Basic is a complete programming language with complex logic and the ability to link to other applications and files, you can solve unusual or difficult programming problems by using Visual Basic procedures.

Version 2 of Access introduced the ability to code Basic routines in special modules attached directly to the forms and reports that they support. You can create these procedures from Design view for forms or reports by requesting the Code Builder in any event property. You can edit this code behind forms and reports by clicking View Code in the Tools group on the Design contextual tab when you have a form or report open in Design view. See Chapters 19 and 20 for details. In fact, after you learn a little bit about Visual Basic, you might find that coding small event procedures for your forms and reports is much more efficient and convenient than trying to keep track of many macro objects. You'll also soon learn that you can't fully respond to some sophisticated events, such as KeyPress, in macros because macros can't access special additional parameters (such as the value of the key pressed) generated by the event. You can fully handle these events only in Visual Basic.

Open the Navigation Pane menu and click Object Type under Navigate To Category. Open the menu again and click Modules under Filter By Group to display a list of modules available in the Housing Reservations database, as shown in Figure 3-30. The Housing Reservations database has several module objects that contain procedures

that can be called from any query, form, report, or other procedure in the database. For example, the modMedian module contains a function to calculate the median value of a column in any table or query. The modUtility module contains several functions that you might find useful in your applications.

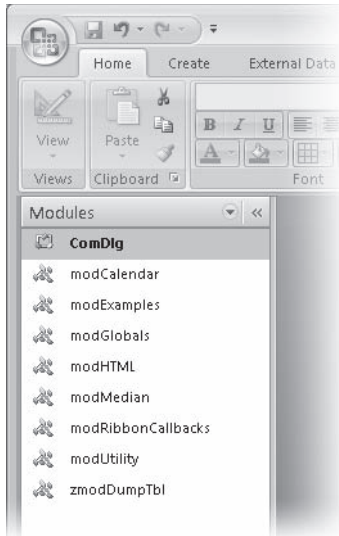


Figure 3-30 You can filter the Navigation Pane to display only the Visual Basic modules in the Housing Reservations database.

From the Navigation Pane, you can create a new module by clicking the arrow below Macro in the Other group of the Create tab on the Ribbon, or you can open the design of an existing module by double-clicking the name of the module in the Navigation Pane. In addition, you can right-click on the module name in the Navigation Pane and click Design View on the shortcut menu. In a module, you can define procedures that you can call from a macro, a form, or a report. You can also use some procedures (called functions) in expressions in queries and in validation rules that you create for a table or a form. You'll learn how to create procedures in Chapter 19.

Right-click the modUtility module in the Navigation Pane and then click Design View to open the Visual Basic Editor window containing the Visual Basic code in the module. Use the Procedure list box (in the upper right of the Code window) to look at the procedure names available in the sample. One of the functions in this module, IsFormLoaded, checks all forms open in the current Access session to see whether the form name, passed as a parameter, is one of the open forms. This function is useful in macros or in other modules to direct the flow of an application based on which forms the user has open. You can see this function in Figure 3-31.

Note that the Visual Basic Editor runs in an entirely different application window from Access, and it still uses the classic menus and toolbars found in earlier versions of Access. Click the View Microsoft Office Access button on the far left of the toolbar to easily return to the Access window.

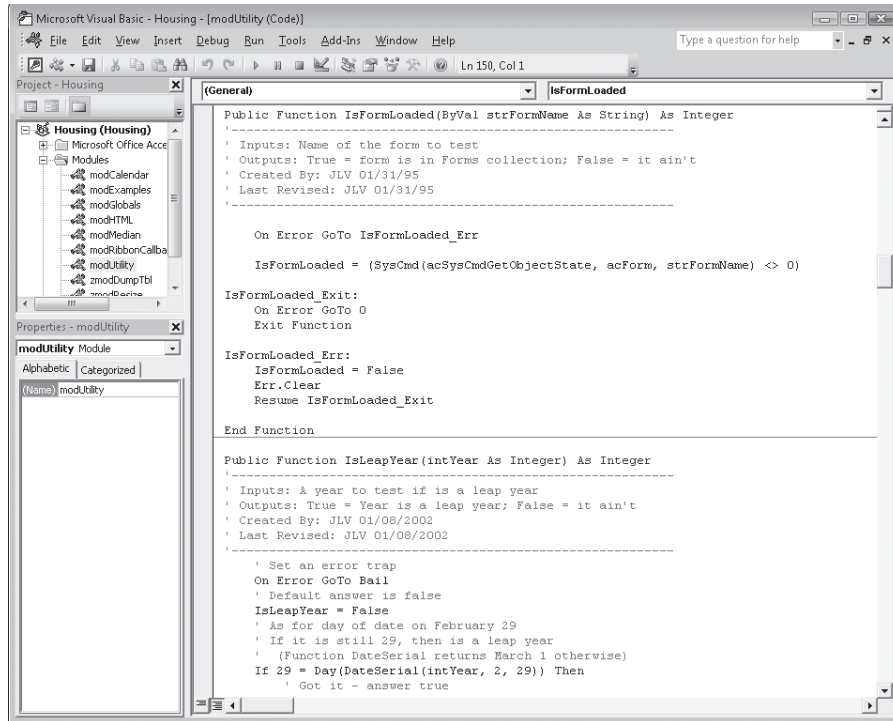


Figure 3-31 The Visual Basic Editor window displays the IsFormLoaded function in the modUtility module.

This completes the tour of the objects in the Housing Reservations sample database. Close the Visual Basic Editor window if you still have it open, return to the Access window, and close the database.

Exploring a Project File—Conrad Systems Contacts

Microsoft Access 2000 introduced an advanced facility that allows you to create a project file (with an .adp extension) that contains only your forms, reports, macros, and modules. When you create a new project file, you can specify an SQL Server database to support the project. SQL Server stores the tables and queries you use in the application that you design in the project. You can connect your project file to a Microsoft SQL Server version 6.5 database on a server or to a version 7.0 or later database on a server or on your desktop. Included with the 2007 Microsoft Office release is a special edition of SQL Server 2005, the Microsoft SQL Server Desktop Engine (MSDE), that you can install to run on your desktop computer.

You will see available tables in the server database as table objects in your project. You will also see views, functions, and stored procedures as query objects. Access 2007 includes special table and query editors to allow you to work directly with the objects in SQL Server. Your project file also contains forms, reports, macros, and modules that are virtually identical to those you develop in a desktop database (.accdb).



To see the differences in tables and queries in a project file, start Access and then open the Contacts.adp sample project file.

INSIDE OUT

Opening the Sample Project File

To be able to open the Contacts.adp file successfully, you must first install Microsoft SQL Server 2005 Express Edition or have access to an SQL Server edition that allows you Create authority. You can download SQL Server 2005 Express Edition from www.microsoft.com/sql/editions/express/default.msp. You'll need to attach the sample database files to a computer running a server version of Microsoft Windows, such as Microsoft Windows Server 2003, and possibly modify the connection properties of the sample project so that Access knows where to find the tables and queries required by the project. See the Appendix, "Installing Your Software," for details about how to install and start SQL Server 2005 Express Edition. See Chapter 26, "Building Tables in an Access Project," for details about setting project connection properties. If you are unable to perform these steps at this time, you can still read through this section to gain an understanding of some of the differences in project files.

Tables

Open the Navigation Pane menu and select Object Type under Navigate To Category. Open the menu again and select Tables under Filter By Group to see all the tables defined in the SQL Server database connected to the project. Figure 3-32 shows you the tables in the ContactsSQL database that is connected to the Conrad Systems Contacts project file.

As you can see, the Navigation Pane in a project file looks very similar to the one in a desktop database. You can see one additional object type listed on the Navigation Pane menu—Database Diagrams. SQL Server allows you to create a diagram of all the tables in your database, and the diagram shows you the relationships that you have defined between the tables.

Select the tblContacts table in the Navigation Pane, and press Ctrl+Enter to see the table in Design view, as shown in Figure 3-33.

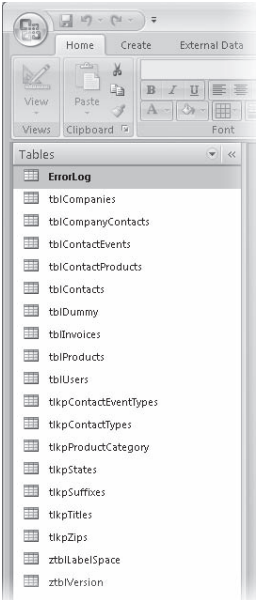


Figure 3-32 The Navigation Pane in a project file shows the tables in the database on SQL Server.

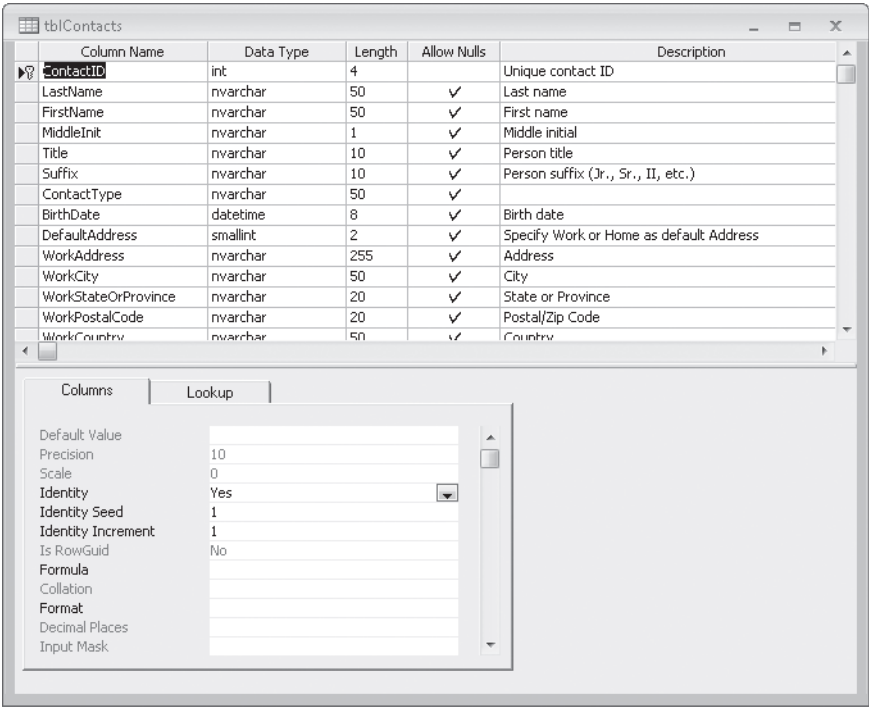


Figure 3-33 When you open a table in Design view in an Access project, you're editing the table in the database on SQL Server.

As you can see, the table design grid in an Access project is very similar to the one in a desktop database. (See Figure 3-8.) In an SQL Server database, fields are called columns. SQL Server supports a wider variety of data types than does a desktop database. Many of the data types are identical, but they have different names in SQL Server. For example, the int data type in SQL Server is the same as the Long Integer data type in a desktop database. If you want, you can click the Datasheet View option in the Views group to switch to Datasheet view, but you'll find that Datasheet view in an Access project is identical to that in a desktop database. You can learn all the details for creating tables in a project in Chapter 26. Close the table design grid to return to the Navigation Pane.

Views, Functions, and Stored Procedures

Although all query objects in a desktop database are called simply “queries,” you'll find that SQL Server stores three different types of objects—views, functions, and stored procedures—that Access displays when you click Queries under Filter By Group on the Navigation Pane menu, as shown in Figure 3-34.

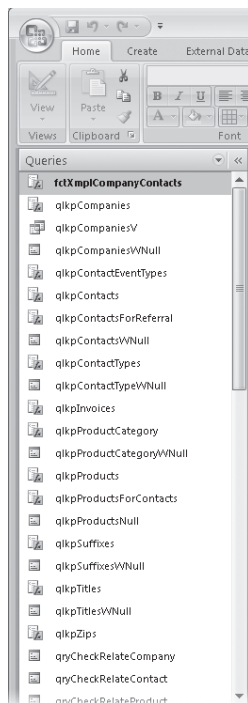


Figure 3-34 The list of queries in an Access project shows the views, functions, and stored procedures saved in the database on SQL Server.

A *view* returns a filtered view of data from one or more tables. A *function* can return a table, or it can perform a calculation and return a single value, much like a Visual Basic function. The difference is that a function that you see in the queries list in a project file

Navigation Pane executes on SQL Server, and the server returns the result to your project. A *stored procedure* can be as simple as an SQL statement that returns rows from one or more tables, or it can contain a complex program written in Transact-SQL that tests conditions and perhaps updates one or more tables in your database.

In many cases, you can design a view, function, or stored procedure using a query designer that is similar to the designer you use in a desktop database. To see an example of a query in a project file's query designer, scroll down the list of queries in the Conrad Systems Contacts sample project file, select qryContactProductsForInvoice in the Navigation Pane, and then press Ctrl+Enter. Access displays the query in Design view, as shown in Figure 3-35.

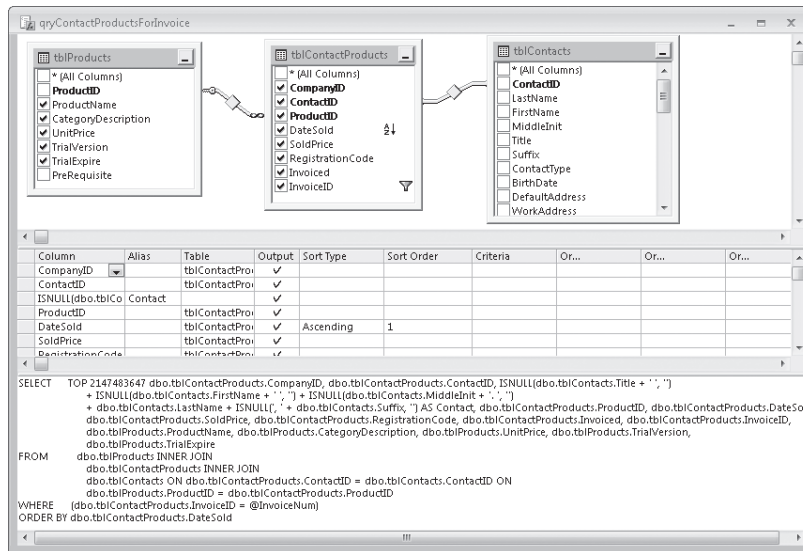


Figure 3-35 When you open a query in the query designer in an Access project, you're editing the view, function, or stored procedure stored in the server database.

This query is a function that returns columns from three tables. The query designer in an Access project is similar in some ways to the designer in a desktop database (see Figure 3-12). You can see the tables used in the query in the top pane of the designer window. In the center pane are the columns (fields) used in the query, but the columns are listed vertically here instead of horizontally as in the desktop database designer. In the bottom pane, you can see the SQL statement that defines this query on the server. You can close this pane if you like and work exclusively in the designer. Access reflects any change you make on the design grid by modifying the displayed SQL. When you become more expert in SQL, you can also modify the SQL statement, and Access changes the top two panes accordingly.



You can learn about the details of creating a query in an Access project in Chapter 27, "Building Queries in an Access Project," on the companion CD. For details about the SQL database language, see Article 2, "Understanding SQL," also on the companion CD.



You can close the query design grid now. As noted earlier, the forms, reports, macros, and modules in a project file are virtually identical to those in a desktop database. You can learn about the minor differences for forms and reports in Chapter 28, “Designing Forms in an Access Project,” and Chapter 29, “Building Reports in an Access Project,” both on the companion CD.

The Many Faces of Access

Access is not only a powerful, flexible, and easy-to-use database management system, but it is also a complete database application development facility. You can use Access to create and run, under the Windows operating system, an application tailored to your data management needs. Access lets you limit, select, and total your data by using queries. You can create forms for viewing and changing your data. You can also use Access to create simple or complex reports. Forms and reports inherit the properties of the underlying table or query, so in most cases you need to define such properties as formats and validation rules only once. Figure 3-36 gives you an overview of all the ways you can use Access to implement an application.

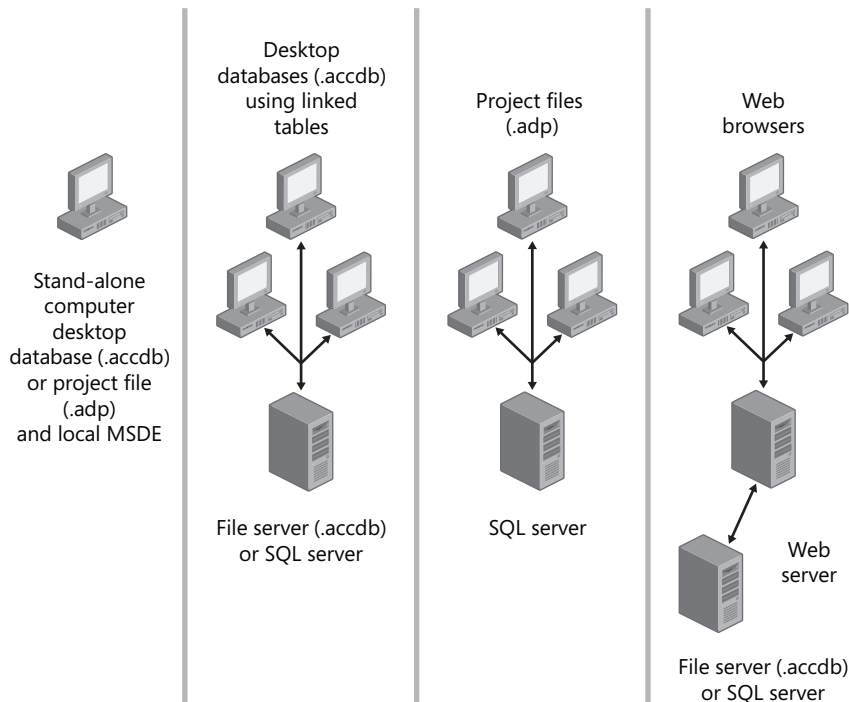


Figure 3-36 Although Access is primarily a desktop database system, you can use Access to build client/server applications.

The four sections in the figure illustrate ways you can implement an Access application, as follows:

- Using the desktop database facility or an Access project file linked to a local copy of MSDE, you can create a stand-alone application used by a single person.
- You can place a data-only desktop database on a file server or in a database in SQL Server and link the tables over a network to multiple desktop databases so that several users can share the same application.
- You can design your database in SQL Server and connect to the server over a network from multiple Access project files running on different computers.
- Finally, you can create Web pages that connect to data that you designed using Access.

To borrow a cliché, the possibilities are endless . . .

In this chapter, you've had a chance to look at the major objects in the Housing Reservations and Conrad Systems Contacts sample databases. You've also been introduced to the architecture of Access and the wide range of ways that you can use Access. You should be feeling comfortable that you can learn to use Access at the level appropriate to solve your database application needs. In the next chapter you'll learn how to create new databases and the tables you need to store your data."

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